HANNIGAN ENGINEERING, INC.
8 MONUMENT SQUARE, LEOMINSTER, MA 01453 PHONE: (978) 534-1234 FAX (978) 534-6060 | CIVIL ENGINEERS & LAND SURVEYORS

Neil Angus, AICP CEP, LEED AP
Environmental Planner
DEVENS ENTERPRISE COMMISSION
33 Andrews Parkway
Devens, Massachusetts 01434

July 21, 2021

Re: Accumet Engineering, Inc. – DEC/ Peer Review
41 Lake George Street
Level II Unified Permit Application (#D21-064)

Dear Mr. Angus,

Hannigan Engineering, Inc. is in receipt of comments relative to the project submittal documentation submitted for a Level II Unified Permit for the construction of a new manufacturing facility at 41 Lake George Street at Devens, Massachusetts. As part of this review, a conference call was held with yourself and the Peer Review engineer, Jennifer Johnson of Nitsch Engineering. This letter is being prepared, along with modifications and revisions to the project Plans and supporting documentation for final review by the Devens Enterprise Commission (DEC). We summarize these items below.

Devens Utilities Comments:

WATER:

Comment#W1: Two water lines are shown on the Site Utility Plan connecting to the existing 8" water main in Lake George Street (one for domestic service and one for fire service). For ease of construction and to potentially save some money, one line could be brought to the site, then split just outside the building into domestic and fire service lines.

Response: *The water line has been changed to a single 6" service main terminating at a hydrant for flushing purposes. The fire and domestic service lines will connect to this service main and enter the building at the locations specified on the plans.*

Comment #W2: One water valve is shown on the fire service line, but no water valve is shown on the domestic service line. A water valve should be installed on the domestic service line to enable that line to be closed separately from the fire service line. If only one water line is brought into the site as suggested in comment #1 above, one water valve should be installed near the pipe interconnection at Lake George Street, and a water valve should be installed on the domestic service line outside the building after that line is separated from the fire service line.

Response: *As stated above, the water line has been changed to a single 6" service main terminating at a hydrant for flushing purposes. The fire and domestic service lines will connect to this service main and enter the building at the locations specified on the plans. Water valves have been provided at the street, prior to the flushing hydrant and on the fire service to the building. A water shutoff (corporation) is provided for the domestic connection.*

Comment #W3: Pipe sizes and pipe material should be indicated on the Site Utility Plan. (A callout on the fire service line says pipe size is to be determined so it appears pipe size was not known when the 5/19/2021 plans were produced.)

Response: *Piping sizes and materials have been added to the plans. At this time, the fire suppression system has not been designed for the building. However, based on past experience, the General Contractor is anticipating a 6" Fire Service Connection to the building.*

SEWER:

Comment #S1: Sewer manhole rim and invert elevations should be added to the Site Utility Plan.

Response: *The Schedule of Sewerage Elevations was inadvertently omitted from the plan set during printing and has been added to the plans.*

Comment #S2: Sewer pipe sizes, lengths, slopes, and material type should be added to the Site Utility Plan.

Response: *The Schedule of Sewerage Elevations was inadvertently omitted from the plan set during printing and has been added to the plans.*

Comment #S3: Proposed SMH #4 is located on the existing sewer line in Lake George Street. Flow will need to be maintained in that sewer line to serve existing customers during construction so there are two options: Build SMH #4 as a doghouse manhole around the existing pipe or maintain flow via a method such as bypass pumping if a traditional manhole is to be constructed. If a doghouse manhole is the choice, details should be provided on the plans. An example of a doghouse sewer manhole detail is attached.

Response: *To ensure watertight construction, the new sewer manhole will be installed with bypass pumping. This would allow for the full depth base section to be cored on site and fitted with appropriate gaskets to seal the connections. This manhole will be a drop inlet connection from the site to the manhole and this detail is depicted on the plans.*

Comment #S4: A Sewer Manhole – Internal Drop detail is included on Construction Details Sheet 8 of 11 but there is no indication on the Site Utility Plan where this structure is intended to be built, if at all, on this project. If proposed SMH #4 is intended to be a drop manhole, due to the depth of the existing sewer in Lake George Street (approx. 13' deep), then SMH #4 should be noted as a drop manhole on the Site Utility Plan.

Response: *The intention was to have SMH #4 as a drop manhole and this information is indicated on the Schedule of Sewer Elevations, which was inadvertently omitted from the original plan set. This will also be noted on the label at the manhole for clarity.*

Comment #S5: Proposed SMH #1 appears to connect to a floor drain at the proposed building. If this is the case, this SMH should be able to keep oil, gasoline, and solids such as sand from entering the sanitary sewer system such as shown on the Typical Gasoline and Sand Trap detail on Construction Details Sheet 9 of 11. If SMH #1 is the intended location for the Gasoline and Sand Trap, it should be noted as such on the Site Utility Plan.

Response: *The designation of SMH#1 is as a Gasoline and Sand Trap is the intention. This information was inadvertently omitted from the plan set during printing and has been added to the plans. This will also be noted on the label at the manhole for clarity.*

DEC Staff Comments:

GENERAL:

Comment G1: Drainage plans are accepting and treating drainage from public roadway on-site. Check Stormwater design with John Marc-Aurele from Devens Engineering (jmarc-aurele@massdevelopment.com).

Response: *This was discussed with the Peer Review engineer during our conference review of the project. Although there are sections of the existing roadway areas that are being reviewed as part of the Drainage Analysis, treatment of stormwater from these areas is not proposed as part of this Project. Additionally, the onsite system does not connect to the Devens drainage system.*

Comment G2: Pull grading back from wetland/slope are by using a retaining wall (requirement of negative RDA)

Response: *The grading in this area has been revised to incorporate a retaining wall along the driveway. This reduced the impact to the buffer zone area as requested.*

Comment G3: Viewshed and parking on south side of building – all existing trees on the south side of the property should be preserved to the maximum extent practicable to aid in screening the building and parking from the Viewshed sensitive receptors. We will be requesting the same of MassDevelopment for their land just south of this property.

Response: *This was discussed with the Peer Review engineer during our conference review of the project. Existing trees on the south side of the property were located and shall be preserved as much as practical. Additional tree plantings are provided on the Landscape Plan on the southeast corner of the building where the driveway entrance is proposed to shield the building from the Viewshed sensitive receptors.*

Comment G4: Maximum number of parking spaces permitted based on floor area proposed is 69 spaces. For parking calculations, please clarify the hours of operation and any intended shift work.

Response: *The parking has been reviewed and the number of spaces has been reduced to 69 spaces. At this time, a single shift is anticipated for the operations. Normal operational hours would extend from 7AM to 5 PM with some personnel arriving at the site prior to and remaining at the site after ours relative to setup and breakdown of daily processes.*

Comment G5: Ensure pavement types and sections comply with 974 CMR 3.04(3)(a)2. Note increased requirements for areas subject to truck traffic.

Response: *The pavement details have been updated on the plans to comply with this requirement.*

Comment G6: Lighting levels are high in a number of areas. Fixture locations and lighting intensity should be adjusted to bring footcandles down closer to 0.5 consistently across the site (0.5-2.0 range). This is more than adequate for safety and visibility. This may enable you to reduce the number of fixtures. Need to include both light fixture and highlight the proposed specifics in the detail. All lights must be dark-earth tone colors.

Response: *The Project has been sent back to the lighting company for revisions. The lighting specifications for the lights, poles, and fixtures will be provided as part of this revision. These plans are expected to be available before the meeting.*

Comment G7: The 2,000-gallon propane tank will trigger the requirement for a License for the Storage of Flammables and Combustibles. This will be required as a condition of any approval and be required to be obtained prior to the placement of this tank on-site. A permit from the Devens Fire Department will also be required.

Response: *Acknowledged. This process will be performed as part of the Construction Phase of the Project.*

Comment G8: In accordance with the DOC, please ensure the following are included in the next submittal and on the revised plans:

a. Required LEED Checklist.
b. Design Review Letter from MassDevelopment.
c. Plans should show bike parking, EV parking and rideshare parking proposed.
d. All trees within 100 feet of the property boundary
e. Property boundary setbacks (shown graphically)
f. Utility size and class labels

Response: *The information above is included as follows:*

a. LEED Checklist is attached.
b. Design Review letter form MassDevelopment has been requested.
c. Plans have been revised to show proposed bike parking, EV parking and Rideshare parking. A total of 7 Bike Spaces, 4 EV Spaces, and 4 Rideshare spaces are shown. As EV vehicles become more prominent, additional spaces and charging stations could be added.
d. Per our discussion with Neil Angus, we have added additional trees to the northeast portion of the property to enhance the tree canopy in this area. This area will also be reviewed for presence of viable trees of 4-inch caliper prior to cutting to determine if the new trees are necessary.
e. Property boundary setbacks and dimensions have been added to the plans.
f. Utility size and materials have been labeled on the plans.

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Peer Review Comments (Nitsch Engineering)

DEC SITE PLAN REVIEW DESIGN STANDARDS:

Comment P1: The parking space counts within the Application for Level 2 – Unified Permit, Site Plan Review, and in the Parking Summary table on Sheet 2 of 11 do not appear to be consistent with the parking shown on the plan (70 spaces vs. 71 spaces on plan). The Applicant should review this discrepancy and confirm the proposed number of spaces is in accordance with **974 CMR 3.04(3)(a)1.**

Response: *The maximum number of Parking Spaces permitted based on the building area is 69 spaces. This information has been reflected on the plans for clarification.*

Comment P2: The Applicant indicated that the site was analyzed for truck turning movements to support the roadway widths. We note that the roadways are wider than 24 feet in the back of the building and request that the Applicant provide turning movements to justify increased width in the back.

Response: *This information is provided with sketches attached to this letter. The driveway widths were designed to accommodate WB67 vehicles.*

Comment P3: 974 CMR 2.07(3) requires cement concrete or vertical granite curbing (VGC). The plan set does not clearly indicate the proposed curbing types so this should be clarified in subsequent plan sets. The curbing is not currently labeled on the plans and the linetype in legend does not match the plans but indicates bituminous berm. The curbing details include concrete curbing integrated with sidewalk and bituminous curb. We also note that there is no curbing in southeast corner to provide easement access. The Applicant should provide additional details on what that area will look like and provide measures to stabilize the edge of the pavement (i.e., flush curb or mountable curb).

Response: *The curbing has been updated on the plans to be vertical granite curbing throughout, with the exception of the areas where the sidewalk is adjacent to the parking in areas of accessible spaces. In these areas, the sidewalk portion will be flush with the pavement and no granite curbing is necessary. The tip-down sections will be constructed of granite curbing.*

Comment P4: 974 CMR 3.04(3)(a)2.c provides construction standards for pavement sections in parking lots and loading docks. The Applicant should revise the details provided on Sheet 10 for consistency with the specified sections.

Response: *The pavement details have been updated on the plans to comply with this requirement.*

Comment P5: 974 CMR 3.04(3)(a)1.h requires bicycle storage facilities for all developments. It does not appear that bicycle storage is proposed for the site.

Response: *This information has been added to the plans near the entrance to the building.*

Comment P6: 974 CMR 3.04(3)(a)1.d requires reflective yellow or reflective white paint for parking lot striping. A striping detail should be included in the plan set that references this requirement. Typical striping as well as a detail for the accessible spaces and aisles should be provided.

Response: *Striping details have been added to the plans to comply with this requirement.*

Comment P7: 974 CMR 3.04(3)(a)1.e encourages parking lots less than 10,000 square feet in area to utilize an open drainage system rather than a closed drainage system. The southwest parking lot should be considered under this approach as there appears to be an opportunity to integrate bioretention or similar measures for stormwater treatment. As noted in Comment 12, alternative pavement types including porous asphalt should also be considered for the parking stalls.

Response: *The pavement in the southwest parking area has been modified to be Porous Pavement. This will be for the entire parking area as well as the maneuvering aisle. This area is anticipated to experience lower volumes of traffic which will extend the life of this type of pavement on the project. The Construction Details have incorporated this detail.*

Comment P8: 974 CMR 3.04(4)(g) requires standard "STOP" at the intersection of driveways with streets and roads. The Applicant should evaluate the intersections of the internal driveways and curb cuts at Lake George Street to provide adequate signage for traffic safety.

Response: *This information has been added to the plans at appropriate locations.*

Comment P9: 974 CMR 3.04(5) requires that the Applicant shall obtain a letter from Fire Chief stating there is adequate access for fire equipment. This should be provided to the DEC.

Response: *A Copy of the revised Plan set has been provided to the Devens Fire Chief for their formal review.*

Comment P10: 974 CMR 3.04(10) requires that all proposed developments shall demonstrate that they have made reasonable efforts to consider and implement transportation demand management strategies early in the site planning and layout process. These include providing 5% of total parking spaces for each of the following: ridesharing, hybrid or zero/low-emitting vehicles, and hybrid/electrical vehicle plug-in/recharge stations. Understanding that limited parking is proposed onsite, the Applicant should clarify if designated spaces as noted above will be provided.

Response: *This information has been added to the plans in the rear parking lot area. Four (4) spaces have been designated for each use (EV and Rideshare). Provisions for adding charging stations to this area are simplified with the proximity of this location to the building..*

Comment P11: The plans currently indicate work on the northern portion of the site within the 100-foot buffer zone. This consists of grading to support the access driveway design. The Applicant should evaluate alternatives to reduce the impact within the buffer, including changes to the grading or incorporation for a short retaining wall along the driveway edge.

Response: *The grading in this area has been revised to incorporate a retaining wall along the driveway. This reduced the impact to the buffer zone area as requested.*

END OF TEXT THIS PAGE

DEC STORMWATER DESIGN STANDARDS:

Comment P12: **974 CMR 3.04(4)(b)** requires Stormwater Management options shall include green infrastructure and low impact development (LID) techniques, including but not limited to vegetated swales, rain gardens, bio-filtration landscape islands, rainwater harvesting, and pervious pavement, where feasible, to achieve infiltration/capture/reuse of stormwater runoff onsite. While we appreciate that proposed rain garden in the front of the site, the Applicant should further evaluate incorporating LID techniques in other areas of the site for pretreatment to the subsurface infiltration system.

Response: *This was discussed with the Peer Review engineer during a conference review of the project. Areas of pervious pavement have been provided within the southwestern parking area as this area has a relatively low traffic volume and can be easily maintained as required.*

Comment P13: 974 CMR 3.04(4)(a)(5) requires that roof runoff be reused or recharged on site. The hydrologic model shows that this is the case, but the design plans do not show how the roof runoff is conveyed to a recharge system. The plans should be updated to reflect roof drain connections.

Response: *The runoff from roof areas on the project are modeled to be directed to the Underground Storage System and to the rain garden at the front of the site. Information regarding the roof drainage system was not available at the time of the initial preparation of the plans. This information has been added to the plans with individual roof drain connections being directed to the rain garden at the front of the property and to a manifold connection to the Underground Storage System.*

Comment P14: 974 CMR 3.04(4)(b)(4) requires that catch basins or other drainage features in loading/unloading and/or fueling areas shall be equipped with post indicator valves on the outlets for containment in the event of any spills. DCB-4 appears to be in the loading dock area. The Applicant should confirm whether a post indicator valve is required in this location.

Response: *The drainage piping for this catchbasin has been changed to PVC, with a gate valve that can be closed should a spill occur. This will be accessible through a buffalo box type cover and signage with instructions will be placed in the area to make personnel aware of the ability to close this valve should conditions warrant.*

Comment P15: 974 CMR 4.08(2)(c)(ii) requires irrigation water shall be derived from detained treated stormwater (stormwater harvesting) or roof drainage to the maximum extent feasible. Onsite cisterns may be installed to store water for irrigation. The Applicant should confirm if irrigation is intended and, if so, provide clarification on how this requirement will be met.

Response: *At this time, the Applicant has indicated no irrigation for the landscape features on the property.*

Comment P16: 974 CMR 4.08(2)(c)(iii) requires that calculations shall be made separately for each drainage facility showing its location, total upstream drainage area, underlying soil types, and the flow paths for time of concentration, the design runoff, facility size, slope, and capacity and velocity of water through all the site drainage system. Please provide clear tables of upstream drainage areas and time of concentration flow paths.

Response: *This information has been prepared and is included in the revised Drainage Analysis and Report. This information is also provided attached to this letter for convenience.*

Comment P17: 974 CMR 4.08(3)(b) requires, in addition to compliance with the SMS, the post-development peak rate of stormwater discharge off-site shall not be greater than the pre-development peak rate of stormwater discharge for the 2-, 10-, 25-, 50-, and 100-year storm events from any point of discharge on the site. The post development peak rate of runoff for DP-2 was greater than pre-development for all of these storms. The Applicant should review and address this requirement.

Response: *This was discussed with the Peer Review engineer during a conference review of the project. As part of the proposed modifications, additional improvements have been incorporated into the design to ensure the post-development peak rate of runoff to DP-2 has been mitigated. This has been accomplished with a subsurface gravel prismoid being part of the construction and part of the drainage model. This detail has been added to the Construction Details of the Reference is made to the revised Drainage Analysis and Report.*

Comment P18: 974 CMR 4.08(4)(d) requires that detention/retention/recharge basins have an emergency outlet to accommodate storm flows in excess of the 100-year storm. The underground infiltration system does not have an outlet. If it overflows, the water may discharge to DCB #4 which is close to the building and could cause flooding. The Applicant should evaluate the impacts around the site if the system surcharges and evaluate adding a piped outlet as an emergency overflow.

Response: *This was discussed with the Peer Review engineer during a conference review of the project. The Underground Storage System does not experience a surcharge during the 100-year storm event. In the event there are multiple significant storms, an overflow pipe connection has been shown to discharge near the new retaining wall on the north side of the loop driveway.*

STORMWATER DESIGN AND CALCULATIONS:

Comment P19: The Stormwater Report does not provide a source for the rainfall data. It also refers to the storm type as Type III, 24-hour tropical storm which does not seem correct for Massachusetts. The Applicant should clarify the rainfall data source and verify storm type.

Response: *This was discussed with the Peer Review engineer during a conference review of the project. The reference to "tropical" is a relic term that has been removed from the language. This project utilizes the standard Type III, 24-hour storm event.*

Comment P20: Several of the subcatchments analyzed in the HydroCAD model include Lake George Road. P221, P222, P11, and P40 are all offsite areas that discharge to DP-2. The Applicant should clarify the intent for why these areas were included in the analysis.

Response: *This was discussed with the Peer Review engineer during a conference review of the project. These subcatchments were incorporated into the analysis as the runoff from the property currently overland flows to the drainage system within Lake George Street. These additional subcatchments were included to provide a comprehensive review of the drainage system within the area to accurately depict the impacts on the Design Points.*

Comment P21: The tree well is noted in the Stormwater Report as a way to attenuate peak rates for DP-2. However, it does not appear in the HydroCAD to have an effect on the peak rates. A detail was also not provided for the tree wells to show how they function, including the inlet and outlet conditions. The Applicant should clarify the intent of the tree well and provide a detail in the plans.

Response: *This was discussed with the Peer Review engineer during a conference review of the project. A Tree Well detail has been added to the Construction Details. This detail has been modified from the standard detail to include a gravel prismoid directly beneath the planting area to provide additional subsurface storage capacity.*

Comment P22: For confirmation of the information in the HydroCAD model and other stormwater calculations, please provide a table in the Stormwater Report that summarizes the land cover for each of the existing and proposed subcatchment areas on the site.

Response: *This information has been prepared and is included in the revised Drainage Analysis and Report. This information is also provided attached to this letter for convenience.*

Comment P23: The Site Utility Plan does not show inverts, rims, pipe material, or pipe diameter. Please provide this information on the design plans.

Response: *The Schedule of Drainage Elevations was inadvertently omitted from the plan set during printing and has been added to the plans.*

Comment P24: Water quality units are labeled as drain manholes and drain catch basins on the Site Utility Plan. This is confusing and could be simplified by labelling them as water quality structures on the plan.

Response: *The Schedule of Drainage Elevations was inadvertently omitted from the plan set during printing and has been added to the plans. The Water Quality Units are labeled in this Schedule.*

Comment P25: Runoff volumes were provided for DP-2 but not the other two (2) design points. Please provide runoff volumes for all three (3) design points.

Response: *This information has been prepared and is included in the revised Drainage Analysis and Report. This information is also provided belowfor convenience.*

Table #2: Volumetric Runoff

Design Point		2-yr Storm	10-yr Storm	25-yr Storm	50-yr Storm	100-yr Storm
#1	Pre-	0.048	0.084	0.112	0.140	0.173
	Post-	0.047	0.075	0.093	0.110	0.128
#2	Pre-	0.024	0.041	0.055	0.070	0.089
	Post-	0.009	0.017	0.025	0.034	0.045
#3	Pre-	0.000	0.007	0.018	0.029	0.042
	Post-	0.000	0.001	0.003	0.006	0.009

All volumes are in acre-feet

Comment P26: We offer the following comments with respect to the proposed rain garden:

a. The rain garden is deeper than recommended by the Massachusetts Department of Environmental Protection (MassDEP) and UNH Stormwater Center. Typical ponding depths range between 6 to 18 inches deep, while there is currently 3 feet proposed. However, it appears that the amount of storage provided is much greater than the amount needed.

Response: *This was discussed with the Peer Review engineer during a conference review of the project. The depth of the rain garden is driven by the outlet elevation of DCB#9 near the southerly entrance. Due to the shallow slopes in this area, the ability to direct runoff to this area is not achievable without the use of a catchbasin. As such, the catchbasin was maintain at this location.*

b. There is also no piped outlet provided for the rain garden. The spillway overflow could potentially cause flooding problems along the driveway. The Applicant should potential connection locations within the site in case the basin capacity is exceeded.

Response: *This was discussed with the Peer Review engineer during a conference review of the project. The original design had an overflow pipe connection to the existing infrastructure in the northerly driveway. This was eliminated at the request of the Devens Enterprise Commission. It is noted that if in the event of an overflow, the spillway would be directing this flow to the onsite drainage system and directed towards the proposed underground storage system.*

c. The rain garden and eastern roof tie into the municipal system and outfall in the HydroCAD report, which is inconsistent with the plans. The HydroCAD should be updated to reflect the current approach.

Response: *This information has been updated in the HydroCAD model to reflect consistency with the plans. No connection is proposed to the municipal system.*

d. Rain garden details are provided in both the engineering plans and landscape plans but are not consistent. These should be reviewed and updated accordingly.

Response: *The rain garden details within the landscaped plan have been removed, and the engineering plans will be utilized for the construction of the actual basin.*

e. The Applicant should consider adding a sediment forebay to provide additional pre-treatment prior to discharging to the rain garden.

Response: *A forebay has been incorporated into the proposed rain garden at the discharge point of DCB#9. It is noted that this catchbasin is also equipped with a water quality device.*

f. The rain garden is indicated to be a sediment basin during construction. This is not recommended as it can lead to over-compaction and difficulties with future function of the rain garden. We recommend this area be protected during construction.

Response: *This notation has been eliminated.*

Comment P27: The Erosion Control Plan should be updated to include the proposed drainage system, including catch basin locations, and protection for those structures.

Response: *The components of the proposed drainage system have been added to the Erosion Control Plan. As these structures come online, they will be provided with the same protective measures as proposed for existing structures.*

CONFORMANCE WITH THE MASSDEP STORMWATER STANDARDS:

In accordance with **974 CMR 4.08(2)(a),** Nitsch Engineering reviewed the stormwater design and calculations for general conformance with the MassDEP Stormwater Standards. Based on this review, Nitsch Engineering offers the following comments:

Comment P28: **Standard 2** requires stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. The post-development rates for Design Point 2 are greater than the pre-development rates for the 2-, 10-, 25-, 50-, and 100-year storms. The Applicant states in the report that this is diminimis; however, it appears possible to meet this requirement with additional stormwater controls on-site.

Response: *The drainage system has been redesigned and updated as to provide peak rate mitigation to Design Point #2. This is accomplished with the inclusion of a Tree Well with gravel prismoid for additional stormwater capture and storage during the smaller storm event.*

Comment P29: **Standard 4** requires that at least 44% of the TSS must be removed prior to discharge to the infiltration structure if the discharge is within an area with a rapid infiltration rate (greater than 2.4 inches per hour). The narrative indicates that the soils onsite are A soils and have a rapid infiltration rate. Please provide separate TSS removal calculations showing that the treatment trains for the underground infiltrations system and rain garden include this level of pre-treatment. As noted above, the Applicant should consider including a sediment forebay in the rain garden to increase pre-treatment.

Response: *As forebay has been incorporated into the rain garden to provide additional pretreatment. It is also noted that the combination of deep sump catchbasins and proprietary Hydroworks water quality units provides the required 80% TSS Removal prior to discharge to either the underground storage system or the proposed rain garden. This is in excess of the required 44%. This information is part of the Compliance Documentation in the Drainage Analysis & Report.*

Comment P30: **Standard 4** also requires a Long-Term Pollution Prevention Plan. Review both the Long-Term Pollution Prevention Plan and the Operations and Maintenance plan for compliance with the MassDEP stormwater management standards – particularly the maintenance requirements for rain gardens.

Response: *The Operation and Maintenance plan has been updated to include rain gardens and porous pavement.*

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Comment P31: **Standard 8** is covered by a National Pollutant Discharge Elimination System (NPDES) Construction General Permit, but no Stormwater Pollution Prevention Plan (SWPPP) has been submitted. A SWPPP should be submitted to the DEC before land disturbance begins.

Response: *Acknowledged. A copy of the certified SWPPP will be provided to the DEC before land disturbance begins.*

Comment P32: **Standard 10** prohibits illicit discharges to the stormwater management systems. The Illicit Discharge Statement should be provided and signed by the engineer of record before construction.

Response: *Acknowledged, a copy of the draft illicit discharge statement will be provided to DEC before construction for review. It is our understanding that the Illicit Discharge statement would be signed by the Landowner for long term compliance. This will be provided at the completion of construction following the preparation of the as-built drainage system plan and inspection of the system.*

Hannigan Engineering, Inc. is providing this information to assist the Devens Enterprise Commission in their review of this project for its anticipated approval. This submittal is being performed electronically, with hard copies being provided upon request. We will contact your office and coordinate relative to the number of hardcopies required. The submittal includes the update Site Development Plans, Drainage Analysis & Report, and other engineering documentation as noted herein. Please feel free to contact this office should you have any questions or concerns.

Sincerely,
HANNIGAN ENGINEERING, INC

Christopher M. Anderson, PE
Project Engineer

William D. Hannigan, PE
President

pc: Gregory Sexton, Accumet Engineering
Glen Houlihan, EGH Advisors
Mike Hodgman, Spectrum Builders

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LEED CHECKLIST

LEED v4 for BD+C: New Construction and Major Renovation

Project Checklist

Project Name: ACCUMET ENGINEERING
Date: 6/14/2021

Y	?	N			
			Credit	Integrative Process	1

Y	?	N		Location and Transportation	16
8			Credit	LEED for Neighborhood Development Location	16
	1		Credit	Sensitive Land Protection	1
	1		Credit	High Priority Site	2
	1		Credit	Surrounding Density and Diverse Uses	5
5			Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

Y	?	N		Sustainable Sites	10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
		0	Credit	Site Development - Protect or Restore Habitat	2
1			Credit	Open Space	1
3			Credit	Rainwater Management	3
	1		Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

Y	?	N		Water Efficiency	11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
2			Credit	Outdoor Water Use Reduction	2
3			Credit	Indoor Water Use Reduction	6
		0	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

Y	?	N		Energy and Atmosphere	33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
		0	Credit	Enhanced Commissioning	6
		0	Credit	Optimize Energy Performance	18
		0	Credit	Advanced Energy Metering	1
	0		Credit	Demand Response	2
		0	Credit	Renewable Energy Production	3
	0		Credit	Enhanced Refrigerant Management	1
	0		Credit	Green Power and Carbon Offsets	2

Y	?	N		Materials and Resources	13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
	1		Credit	Building Life-Cycle Impact Reduction	5
	1		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
2			Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
2			Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

Y	?	N		Indoor Environmental Quality	16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
2			Credit	Enhanced Indoor Air Quality Strategies	2
	1		Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
2			Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
2			Credit	Interior Lighting	2
1			Credit	Daylight	3
		0	Credit	Quality Views	1
1			Credit	Acoustic Performance	1

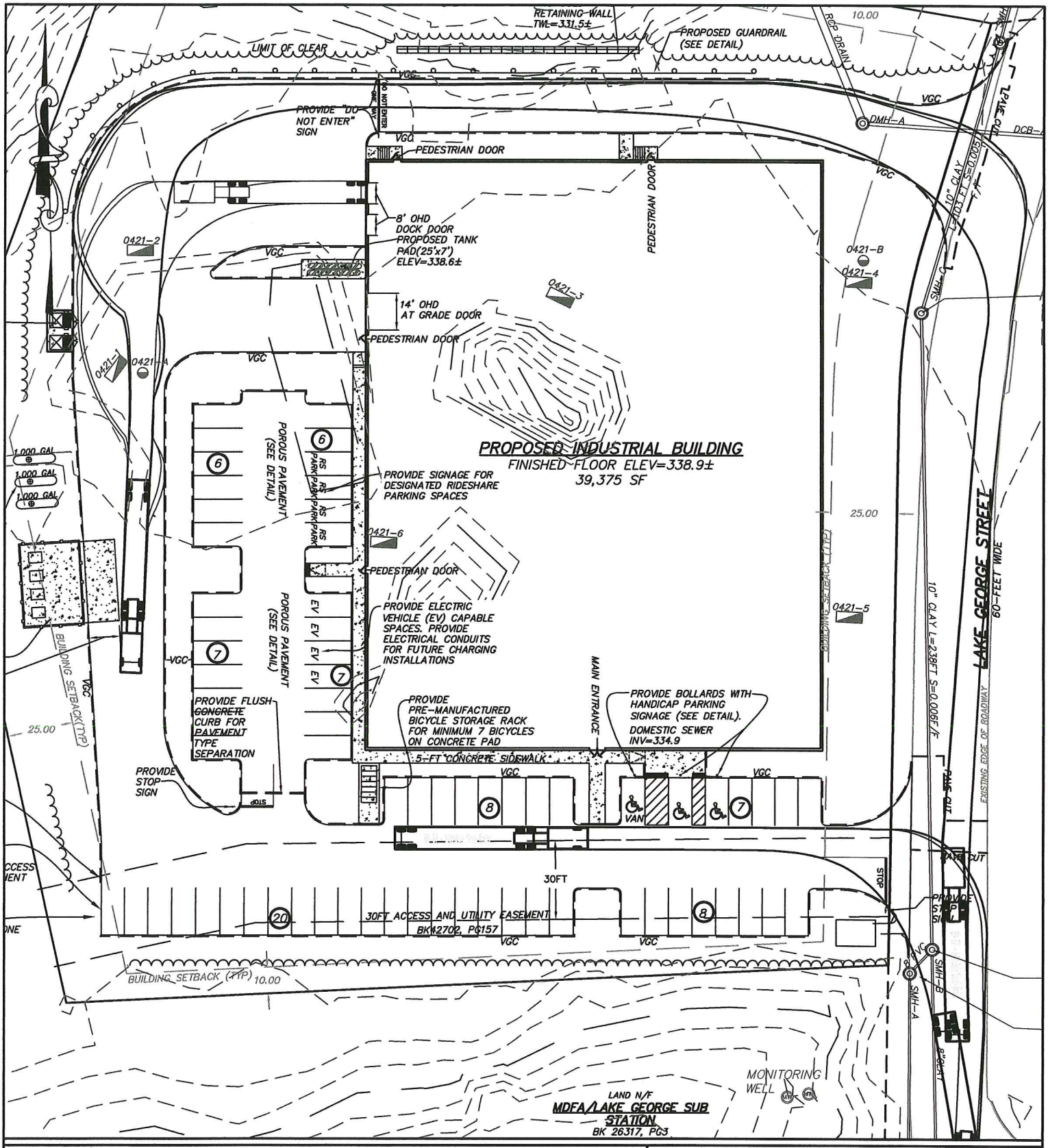
Y	?	N		Innovation	6
		0	Credit	Innovation	5
		0	Credit	LEED Accredited Professional	1

Y	?	N		Regional Priority	4
	0		Credit	Regional Priority: Specific Credit	1
	0		Credit	Regional Priority: Specific Credit	1
	0		Credit	Regional Priority: Specific Credit	1
	0		Credit	Regional Priority: Specific Credit	1

44	7	0	TOTALS	Possible Points: 110

Certified: 40 to 49 points, **Silver:** 50 to 59 points, **Gold:** 60 to 79 points, **Platinum:** 80 to 110

TURNING MANEUVERS



HANNIGAN ENGINEERING, INC.

CIVIL ENGINEERS & LAND SURVEYORS

8 MONUMENT SQUARE
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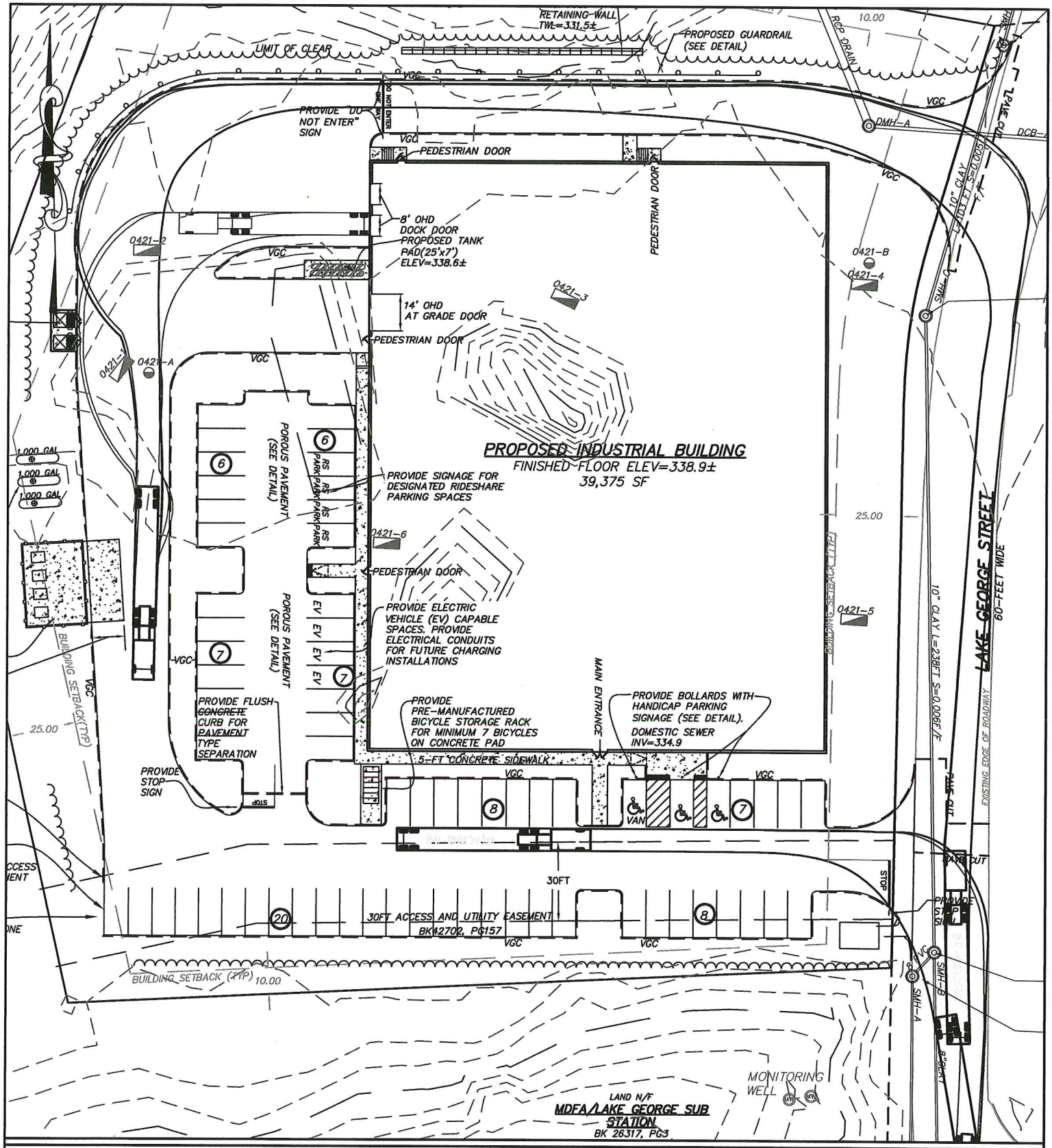
WB67-TURNING MANEUVERS (1 of 2)

JULY 20, 2021
SCALE: 1"=50'

PREPARED FOR:
ACCUMET ENGINEERING, INC.
123 OAK HILL ROAD
WESTFORD, MA



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WB67-TURNING MANEUVERS (2 of 2)

JULY 20, 2021
SCALE: 1"=50'

PREPARED FOR:
ACCUMET ENGINEERING, INC.
123 OAK HILL ROAD
WESTFORD, MA

SUPPLEMENTAL
DRAINAGE INFORMATION

1.9 PROJECT REVIEW

Area Coverage – Existing Subcatchments

Subcatchment	Grass Cover (s.f.)	Woods Cover (s.f.)	Impervious Cover (s.f.)	Total Area (s.f.)
E10	27,489	46,981	0	74,470
E11	5,281	0	5,054	10,335
E11A	6,792	0	0	6,792
E20	934	29,172	0	30,106
E20A	3,450	735	4,479	8,664
E20B	16,618	12,549	0	29,167
E30	34,423	8,684	0	43,107
E40	3,623	159	3,998	7,780
E40A	2,520	2,391	0	4,911
Total	101,130 (47.0%)	100,671 (46.7%)	13,531 (6.3%)	215,332

Area Coverage – Proposed Subcatchments

Subcatchment	Grass cover (s.f.)	Woods Cover (s.f.)	Impervious Cover (s.f.)	Total
P10	3,181	28,010	-	31,191
P11	5,492	-	5,054	10,546
P12	1,555	127	1,792	3,474
P120	5,704	-	-	5,704
P122	1,334	-	5,063	6,397
P123	1,379	-	5,454	6,833
P13	3,004	-	9,186	12,190
P14	152	-	827	979
P15	1,859	-	9,001	10,860
P16	3,807	-	11,262	15,069
P18	1,637	-	5,469	7,106
P19E	-	-	19,688	19,688
P19W1	-	-	5,500	5,500
P19W2	-	-	14,300	14,300
P20	934	29,172	-	30,106
P20B	3,831	2,230	-	6,061
P221	1,396	362	1,644	3,402
P222	2,509	-	3,591	6,100
P30	6,101	6,150	-	12,251
P40	3,110	586	3,880	7,576
Total	46,985	66,637	101,711	**215,333**
	21.8%	30.9%	47.2%	

Drainage Facility Calculations

DRAINAGE BMP TRAINS			
RAIN GARDEN #1			
TOTAL UPSTREAM LAND AREA		32,498 sf	
		Upland Area (s.f.)	Time of Concentration, Tc (min)
	P120	5,704	5.0
	P18	7,106	5.0
	P19E	19,688	5.0
UGS#1			
TOTAL UPSTREAM LAND AREA		75,602 sf	
		Upland Area (s.f.)	Time of Concentration, Tc (min)
	P12	3,474	5.0
	P122	6,397	5.0
	P123	6,833	5.0
	P13	12,190	5.0
	P14	979	5.0
	P15	10,860	5.0
	P16	15,069	5.0
	P19W1	5,500	5.0
	P19W2	14,300	5.0

LANDSCAPE ARCHITECT
PEER REVIEW RESPONSE LETTER

McCARTY Engineering, Inc.

Civil Engineers

June 21, 2021

Mr. Neal Angus, AICP
Devens Enterprise Commission
33 Andrews Parkway
Devens, MA 01434

RE: Accumet Engineering
41 Lake George Street
Devens, MA

Dear Mr. Angus:

The design team received a review memo from IBI Group, dated June 22, 2021 relative to the Definitive Site Plans and supporting documents prepared for the project located at 41 Lake George Street in Devens, MA. The IBI Group has provided comments pertaining to conformance with the Devens Enterprise Commission Site Plan approval and standard engineering practices.

For ease of review, the IBI Group comments are shown in italic font and the response comment is depicted below it. The comments received are as follows:

3.0 Site Plan:

3.02 Requirements:

1. 3.02 3 (b) 6a requires all existing landscape features, especially existing trees and woodland to remain to be shown on ALL site plan sheets.
Existing trees of 12" minimum caliper within 100' of the property line shall be shown onthe site plan; all trees to remain are to be shown on ***all*** *plan sheets. Call for the protection of all trees to remain on* ***all*** *plans using a uniform symbol that is keyed to thelegend on each sheet.*

-The existing trees along the perimeter have been identified to remain

Remove the 14" oak on the proposed curb line at the northwest corner of the siteindicated as a tree to remain and be protected.

- The existing 14" Oak has been identified to be removed.

Response to Devens Enterprise Commission
June 21, 2021

2. 3.02 3 (b) 6b requires planting plans to indicate the locations of all proposed lighting and the dimension, materials and finishes of all walks, walls and fences.

Provide information regarding the proposed fencing and retaining wall, includingdimensions, materials, and finishes.

- Please coordinate with the Civil Drawings

Relocate the three accessible spaces to occupy the spaces closest to the building entry.

- The Handicap spaces have been relocated to be closer to the Main Building entrance

3.02 Design Standards:

1. ***3.04 6 (a) 3 describes the requirements for site lighting fixture color and type, pole heights, light levels, coordination with planting plan, night time illumination, energy efficiency measures, and light trespass.***

   The photometric plan does not identify the light levels for the walkway along the southface of the building; provide this information.

Areas of the site have light levels considerably higher than the .5 fc required, creating excessive contrast between areas, typically near the wall packs along the building face and in the two loading areas at the rear. The light levels are especially high at the rear ofthe building at the base of the two pole light fixtures. Adjust the fixture spacing to allowfor less variation in light levels across the site.

The reproduction of the light fixture cutsheet is not readable. Clarify if a single fixture is to be used across the site. Confirm color and identify energy saving measures, and any areas of overnight lighting.

Eliminate light trespass on the south side of the site.

- An updated Lighting plan is forthcoming.

2. ***3.04 8 (c) 2 calls for native plants.***

   The proposed plant list is predominantly comprised of native species. Replace the two non-native shrubs—Goldflame spiraea and Chinese juniper—with native species, giventhe availability of comparable native plants. Ensure that the spiraea is replaced with a shrub that will not exceed 4' in height (see item #12 below).

   - The proposed plant list has been amended to include a mixture of native and ornamental species. This modification will ensure a longer blooming cycle and pollinator habitat.

Confirm that the selected plants for the raingarden are compatible with the projected time of inundation

- The plant material within with Raingarden has been amended to include plants that are compatible with periodic inundation of water

3. ***3.04 8 (c) 5 cites the minimum sizes for plant materials.***

Confirm that all proposed deciduous shade trees are a minimum 3" caliper.

- The plant legend has been amended to ensure that the proposed deciduous trees will be 3" caliper at installation

Confirm that all shrubs proposed for the screen of parking areas are a minimum of 3' inheight, and all others are a minimum of 18" in height.

- The plant legend has been amended to depict that the proposed shrubs will be a minimum of three- feet in height.

4. ***3.04 8 (c) 6 calls for planting to be laid out in informal drifts.***

Adjust the planting along the east side of the building to replace the line of inkberry against the face of the building with an arrangement that is integrated into the rest of the plant bed,recognizing that the raingarden runs parallel to the building face.

- The plantings along the east side of the building have been modified to depict a more integrated design

5. ***3.04 8 (c) 11 calls for disturbed areas intended for natural re-growth to be, at a minimum, graded, loamed and seeded.***

The treatment of the ground plane for disturbed areas at the west and north sides of thesite has not been identified. Other large portions of the site—the front edge along Lake George Street, the north side of the building, the south edge of the site, and all planting islands—are identified to receive only a mulch layer. Identify an appropriate native restoration seed mix or planting for all areas.

- Within the Landscape Plan, the areas that are to receive lawn and slope seed mix have been identified.

- The plantings within the landscape beds have been modified to include additional plant material.

6. ***3.04 8 (d) describes in depth the care to be taken to ensure the survival of existing trees.***

The trees proposed to remain and be protected on the north, west and south sides of the site (except for the 14" oak noted above) lie beyond the proposed location for the straw wattle/silt fence at the tree clearing line. The wattle/fence may serve as tree protection for the existing trees to remain, if the location of the wattle/fence is indicated on all drawings and it is identified as remaining in place for the entire durationof construction. Otherwise propose another tree protection system and ensure that it isindicated on all plans and labeled to remain in place as noted above.

- The straw wattles are depicted within the Landscape Plan and demarcates the limit of work.

Call for individual tree protection at 12" beyond the drip line for the three trees to remain along Lake George Street. Call for it to remain in place as noted above. Includeon all plans.

- A note has been added to the landscape plan to ensure the protection of the three existing trees along Lake George Street.

Identify the area to be used for laydown/trailer/parking to confirm that no existing treesto remain will be impacted by these activities.

- As noted previously, the straw wattles demarcate the limit of work and the existing trees to remain are outside the work zone.

7. ***3.04 8 (d) Soil testing***

Soil testing results for the soil as a planting medium have not been provided. Provide thetest results or call for the tests to be conducted during construction.

- A note has been added to the Landscape Plan stating that the existing Loam shall be tested. On the Landscape Plan, see note 12.

8. ***3.04 8 (f) requires all unpaved areas to be seeded at a minimum.***

As noted above (see item #5) specify the seeding of unplanted areas of the site. The Applicant is encouraged to limit the amount of manicured lawn areas on the site, proposingseed mixes of grasses and forbs instead.

- The site design has been amended to minimize the earth disturbance along the northerly side of the building and the lawn area has been centralized to just along Lake George Street.

9. ***3.04 8 (g) requires screening to soften the visual impact of buildings, parking areas, and unsightly site facilities as viewed from public ways.***

Provide year-round visually impermeable screening to frame the south entry drive to minimize views of the south parking area from Lake George Street. Install shrubs at a 3' minimum height at a spacing that achieves a visually impermeable screen in three growingseasons.

- The Landscape Plan has been amended to include evergreen plantings along the southerly driveway entrance

10. ***3.04 8 (h) 2 stipulates the number of trees required for parking areas to provide visual and climatic relief.***

The number of trees surrounding the south parking area does not meet the required number. Provide additional trees at the ends of the parking area, and if the building is shifted northward as suggested below (see item #14), add trees to the resulting plantingstrip.

- The site design and building placement has been amended to incorporate additional

plantings areas around the parking lot. Additional trees have been incorporated within these areas.

11. ***3.04 8 (h) 3 requires internal parking area plantings at a ratio of one deciduous shade treefor every 20 spaces, to be located 5' from the face of curb.***

Provide an additional intermediate island with a deciduous shade tree on the south edgeof the south parking area. Call for another deciduous shade tree in the existing intermediate island on that edge.

- The site design has been amended to incorporate additional plantings areas around the parking lot. Additional trees have been incorporated within these areas

Modify the intermediate island at the building entry by reducing the path width (see item # 12 below) and shifting it to one side of the island to create a larger plant bed thatallows a tree to be placed 5' from the curb.

- The configuration of the intermediate islands have been amended and additional trees have been incorporated into these spaces

12. ***3.04 8 (h) 4 requires parking islands to contain no more than 25% impervious surfaces withthe remainder of the island to be planted with grass, groundcover or shrubs. Shrubs shall not exceed 4' in height.***

The intermediate parking islands in both parking areas have more than 25% impervious surfaces and lack any planting. Correct the proportion and seed or plant unpaved portions ofthe islands.

- The plantings within the intermediate islands have been amended to include additional plantings.

13. ***3.04 8 (i) Viewshed Overlay Districts protects scenic vistas by requiring planting on the sideof the building facing Prospect Hill where existing tree canopies do not provide adequate screening.***

Given the openness of the landscape across Lake George St, it is possible views of thebuilding will be visible from the Prospect Hill sensitive receptor site; a section throughthe site line would help to determine its visibility.

The narrow landscape areas at the southeast corner of the site limit the number of treesthat can be planted. If the building is shifted as suggested below (see item #14), considerthe planting of trees in the newly created planting bed.

Tighten the spacing of the Scarlet oaks along Lake George St to add one or two more toenhance the screening at the southeast corner of the site.

- The site design and building placement has been amended to incorporate additional planting areas around the building and parking lot. Additional plantings are proposed within the southeast corner of the site and the plantings along Lake George Street has been amended to include additional street trees.

14. ***3.04 8 (l) describes the landscape treatment of building facades visible from roads.***

The proximity of the building to Lake George Street requires a continuous landscape treatment of trees and shrubs in informal drifts. Provide year-round visually impermeablescreening to frame the south entry drive to minimize views of the south parking area from Lake George Street (see item #9 above).

Parking areas shall be a minimum of 10' from a building face. The parking on the south side of the building is 5' from the building face. This distance can be increased by shiftingthe building northward and decreasing the width of the planting bed on the north side ofthe building.

- The site design and building placement has been amended to incorporate additional planting areas around the building and parking lot.

- The configuration of the plantings along Lake George Street have been amended to be in a more informal manner.

15. ***3.04 8 (n) 2 Maintenance***

Provide a landscape maintenance and water management plan, providing maintenanceprotocols by season for all plant materials—trees, shrubs, and seed mixes. Include protocols by month for the first three years for the establishment and management of all seed mixes.

Include protocols for rodent control and the removal and management of invasive plantspecies.

- A Landscape Maintenance Plan has been created for this project. See sheet L-2.

Identify snow storage areas to ensure compatibility of the weight of the snow with theproposed planting.

- Areas for snow storage have been added to the Landscape Plan

Response to Devens Enterprise Commission
June 21, 2021

We look forward to working with the Devens Enterprise Commission. Should you require additional information, please feel free to contact our office.

Respectfully,

Lar Greene, RLA