ALLEN ENGINEERING & ASSOCIATES, INC.
Civil Engineers, Surveyors
& Land Development Consultants

January 22, 2026

Bellingham Planning Board
c/o Robert Lussier, Director of Planning and Engineering
10 Mechanic Street
Bellingham, MA 02019

Re: **Comment Responses**
Stormwater and Engineering
Blackstone Street Improvements
AEA Project - 00527

Dear Planning Board Members:

On behalf of the Applicant, Wall Street Development Corp., Allen Engineering & Associates, Inc. (AEA) is providing responses to comments prepared by the Commission's peer review consultant, Beals and Thomas, dated December 5, 2025.

Each of the comments are restated (*italicized*) with a response following in standard **bold** text.

Please note that we have not carried forth comments and responses that have been fully addressed and/or reconciled with the reviewer. Only outstanding comments from the December, 2025 review are included.

Town of Bellingham Procedural Rules

3. *The number of the mature trees to be removed shall be minimized. The existing trees to be retained and protected shall be suitable if there is an average of one 4"-caliper (or larger) tree per 30 feet of individual lot frontage as identified by the Tree Warden. (§7.9.1(B)). We request the Applicant provide a narrative documenting compliance with the regulation.*

   AEA response: Section 7.91(B) of the Procedural Rules refers to Ch. 245, Subdivision Regulations, which are not applicable to ANR lots.

   B+T Response: It is our opinion that the Procedural Rules default to the Subdivision Regulations for certain requirements, regardless of whether or not the project is a subdivision.

   AEA response: The Applicant defers to the Planning Board on this matter. If warranted, the Applicant will request a waiver from this requirement (I.E. identification and approval by the Tree Warden). However, it should be noted that mature woodland exists on both sides of the roadway and existing trees greater than 4" as well as understory vegetation will remain within the majority of the lot frontages.

6. *Provide an Operation and Maintenance Plan in accordance with the Procedural Rules. While some best management practice maintenance information was provided in the report, the items outlined in Standard 9 of the Checklist for Stormwater Report should be provided. The Procedural Rules emphasize respective easement information shall be included, as well. (§7.8.3)*

   AEA response: AEA has provided a "Stand Alone" Operation and Maintenance Plan with the easement language included.

   B+T Response: While a standalone Operation and Maintenance Plan noting the respective stormwater easements has been provided, there are several inconsistencies compared to the explanation of Standard #9 in the Drainage Analysis report. For example, post-construction system ownership/responsibility and BMP inspection frequency.

   AEA response: The Inconsistencies in the O & M Plan have been corrected. The road is intended to be private and therefore the ownership of the BMP's will not be the Town of Bellingham.

7. *Stormwater management systems shall be designed to remove at least 90% of the annual pollutant load of Total Suspended Solids (TSS). Note, this requirement is above the standard 80% TSS removal rate required by MassDEP (and proposed by the Applicant). The Procedural Guidelines require 60% removal of the average annual load of Total Phosphorus is also required. As the three proposed basins retain and infiltrate runoff from the impervious areas routed to them, the requirement for Total Phosphorus is likely met, but the Applicant should document compliance. (§7.9.1(C)1)*

   AEA response: AEA has provided TSS removal and phosphorus removal calculations in Section 3 of the revised Drainage Report.

   B+T Response: While the TSS removal calculations demonstrate the 80% MassDEP removal requirement is met, the local 90% requirement is not. We defer to the Board on whether the 85% TSS removal is adequate in this case. Phosphorus removal calculations documenting compliance with the regulation has been provided.

   AEA response: The TSS removal has been increased to 90% with the revised plans and stormwater report. AEA has added a 7% credit for street sweeping and has added oil grit chambers to the treatment trains for each of the three basins. TSS removal sheets and oil grit details have been added.

9. *The proposed culverts shall safely pass the design storm (50-year rational storm event, at a minimum) based on MassDOT roadway functional classification. Adequate erosion protection shall be designed, as well. Rational calculations for the proposed culverts have not been provided. (§7.9.2(L))*

   AEA response: AEA has added the culvert design showing the 50-year storm event. SCS TR-20 calculations used with HydroCAD modeling is an industry standard which the Town of Bellingham has accepted numerous occasions.

B+T Response: We defer to the Board if there is precedent for SCS TR-20 hydrologic modelling for culverts. This methodology can be appropriate for culverts, given the complexity of the tributary watershed (as opposed to a finite area of pavement directed to a catch basin, for example). We also note the culvert would generally not be subject to the MassDOT bridge/culvert standards as the span does not exceed ten feet. If the MassDOT bridge/culvert standard was deemed applicable, we note the current design would not meet the MassDOT freeboard requirement of 2 feet, as the culvert is only two feet high.

AEA response: This item was discussed with the review and the Board during the public hearing held on December 11, 2025. The reviewer indicated this comment was for the Board's edification and is not applicable in this case.

Subdivision Regulations – Stormwater Management §245-13

3. *The Rational Method shall be used for sizing pipes culverts. (§245-13.A.(3))*

   AEA response: The rational method is an older form of computation. SCS TR-20 calculations used with HydroCAD modeling is an industry standard which the Town of Bellingham has accepted numerous occasions.

   B+T Response: The industry standard for hydraulic modelling (i.e. catch basin to manhole pipe networks) is the Rational Method. This calculates instantaneous flow rates for mostly-impervious areas tributary to the respective drain inlets. While there is a case for SCS TR-20 hydrologic modelling of the cross culvert given the complexity of the tributary watershed (as noted in other comments), we feel the Rational Method is appropriate for the design of the roadway drainage pipe network.

   AEA response: The Rational Method has been utilized as suggested. A 25 year storm event has been added to Section 4 of the Drainage Analysis report.

4. *The vernal pool should be considered a hydrologic evaluation point (ultimately routed to EV1) as it impounds runoff. Modify the subcatchment boundaries and time of concentration flow paths accordingly.*

   AEA response: The subcatchments have been adjusted as suggested.

   B+T Response: The original comment has been adequately addressed by the Applicant. However, we note the totals depicted on the Summary of Hydrology total the peak flows to each design/evaluation point, which is not accurate. Design point EV-1 is an interim design point ultimately routed to EV-2, and these flows are being double-counted.

   AEA response: The revised peak flow analysis has separated out EV-1 and EV-2 as suggested.

6. *The basin sediment forebays are modeled as separate ponds routed (in series) to the respective basins. It appears the intent was to model the forebays with the gabions modeled as weirs overflowing to the primary basin storage volumes, less the associated forebay volumes (at the respective stages). However, we request the Applicant confirm the contour areas in the HydroCAD Pond Summaries. For example, the area at upper elevation 288.50 for Basin #1 does not appear to include the area over the forebay; and the area at lower elevation 289.0 for Basin #3 appears to include the forebay footprint. Furthermore, runoff would likely flow right through the stone gabion voids, providing little to no actual retention within the forebay. Even if impermeable, the gabion would classify more as a broad-crested weir (as opposed to sharp-crested, which are relatively thin). We recommend the calculations be revised to accurately model the basin.*

   AEA response: AEA has modified the areas of the basins as suggested and modeled the gabion berm as a "broad" crested weir. The stone gabion baskets have been widely used and accepted in The Town of Bellingham on past projects.

   B+T Response: The surface areas at the incremental contour elevations were not updated. Our comment regarding basin volumes stands and, at the very least, we request the design is clarified. The design has been updated to model the gabion as a broad-crested weir, though the forebays would not necessarily perform as designed given the stone voids within the gabion. The water surface level within the forebay and basin would likely be equal; the forebay would not fill-up and subsequently spill into the larger basin volume.

   AEA response: Each of the three basins have been revised by eliminating the gabion baskets and using earthen berms to separate the sediment forebays from the infiltration basins. Subsequently each of the surface areas for the contours within the ponds has been reduced and revised.

7. *The stormwater conveyance system shall use the rational formula for determining pipe and culvert sizes. The hydrologic calculations models the pipes at reaches, though the tributary flows are not based on rational storm events. (§245-13.A.(3))*

   AEA response: The rational method is an older form of computation. SCS TR-20 calculations used with HydroCAD modeling is an industry standard which the Town of Bellingham has accepted numerous occasions.

   B+T Response: As previously noted, the industry standard for hydraulic modelling (i.e. catch basin to manhole pipe networks) is the Rational Method. This calculates instantaneous flow rates for mostly-impervious areas tributary to the respective drain inlets. While there is a case for SCS TR-20 hydrologic modelling of the cross culvert given the complexity of the tributary watershed (as noted in other comments), we feel the Rational Method is appropriate for the design of the roadway drainage pipe network.

   AEA response: The Rational Method has been utilized as suggested. A 25 year storm event has been added to Section 4 of the Drainage Analysis report.

13. *Basin depth shall not exceed five feet. Infiltration Basin #1 has a depth of 7.5 feet from the bottom of the basin to the top of the berm, though the ponding depth does not appear to exceed five feet. It is unclear as to why the basin is approximately three feet deeper than the 100-year maximum ponding depth. (§245-13.D(2)(a))*

    AEA response: The ponded water elevation is below 5 feet in depth. With the increase in the 100-year rainfall amount to 8.75" the basin is slightly larger than required.

    B+T Response: As the basins are dependent on exfiltration, we recommend that at a minimum there be a condition of approval for seasonal monitoring for a period upon project completion to ensure the basins effectively dewater as designed. If the basins do not draw down, the ponded depth will exceed five feet before cresting the spillway.

    AEA response: Each of the three basins has been revised to include outlet control structures. This will ensure drawdown and that there will not be more than 5 feet of standing water within the basins. Construction details and the Drainage Analysis Report have been revised accordingly.

18. *While not checked on the Checklist for Stormwater Report, it appears the site is subject to the 44% TSS pretreatment requirement for Standard 4. The requirement is met given the deep sump catch basins being routed to the forebays. The Water Quality Volume depth should be checked.*

    AEA response: It is AEA's opinion that this project does not meet the threshold to require 44% TSS removal prior to infiltration. The site is not considered a LUHPPL nor will any stormwater discharge within 100 feet of the vernal pool.

    B+T Response: The site would be subject to the 44% pre-treatment requirement, The presence of rapid infiltrating soils triggers the 44% pre-treatment requirement for infiltration basins, regardless of critical areas or LUHPPLs. It appears the stormwater calculations accounted for the 1" water quality volume.

    AEA response: A moderate rate of 1.1 feet/day has been used in the Hydrocad model for exfiltration. AEA has also revised the 72 hour drawdown calculation to reflect this rate.

Wetland Regulations – Stormwater Compliance §247-33

2. *We request the Applicant confirm the emergency spillways are designed to pass the 100-year inflow rate with 6" of freeboard to the top of berm (i.e. basin in failure (§247- 33.B(4))*

    AEA response: The revised Drainage Report shows that the ponding elevation does not reach any of the three overflow spillways under "failure" conditions even in the 100-year storm event. Thus the need to evaluate the spillway is not applicable.

B+T Response: Our interpretation of the regulation is that spillways are to hydraulically designed to pass flows tributary to the basin (ignoring detention; flow-in is equal to flow-out) with a minimum of 6" of freeboard between maximum flow elevation and the top of the berm. For a basin in failure, the assumption is that retained runoff will not draw-down within a reasonable period of time and the water surface elevation could reach the spillway after consecutive storms.

AEA response: Each of the three basin spillways has been evaluated for a 100-year storm event while subtracting out any storage below the spillway elevation as suggested. In this extremely unlikely event, the results show that the spillways are adequately sized. The calculation can be found in Section 3 of the revised Drainage Analysis Report.

General Engineering

1. *There are roadway centerline grades proposed at 10%, though the Subdivision Rules and Regulations (§245-12.E.(2)) specify an 8% maximum. We note this for the benefit of the Board and understand the Applicant is not filing a Definitive Subdivision Plan.*

   AEA response: Blackstone Street is an existing right-of-way and the Applicant does not own or control all of the adjacent land. For this reason, the proposed vertical alignment is constrained by the grade of the existing gravel roadway.

   B+T Response: While not a Definitive Subdivision Plan, the roadway will be utilized by the public in a residential area. Noting the referenced constraints, we defer to the Board on whether modifications to the design are warranted.

   AEA response: A 10% grade is proposed in one area for a distance of approximately 300 feet due to the aforementioned constraints. As a point of reference, a 10% grade is allowed in many surrounding communities. It should also be noted that the roadway is intended to be private.

2. *There are no sidewalks proposed. While we understand the Applicant is not filing a Definitive Subdivision Plan, a subdivision road would require a sidewalk per the Rules and Regulations (§245-15(A)(2)). The proposed roadway is a 1,900±-foot dead-end with restricted pedestrian access at wetland crossing approximately 250 to 500 feet west of the intersection with the existing road*

   AEA response: The Applicant is not proposing a sidewalk due to the constraints noted in the response to Comment no. 3 below.

   B+T Response: While not a Definitive Subdivision Plan, the roadway will be utilized by the public in a residential area. Noting the referenced constraints, we defer to the Board on whether modifications to the design are warranted.

   AEA response: The Applicant defers to the Planning Board on this item.

3. *The rate of curvature (K) values for some of the proposed vertical curves are appropriate only for speeds up to approximately 25 miles per hour. For example, the crest curve at STA 11+15 has a K=13.2 (design K=12 for 25 MPH per MassDOT Exhibit 4-26) and the sag at STA 15+25 has a K=21.7 (design K=26 for 25 MPH). We defer to the Board as to if there will be a posted speed limit or the Town speed limit of 25 MPH in thickly settled or business districts would apply.*

   AEA response: Blackstone Street is an existing right-of-way and the Applicant does not own or control all of the adjacent land. For this reason, the proposed vertical and horizontal alignments are constrained by the width and grade of the existing gravel roadway. Furthermore, the nearest posted speed limit is on North Street at the intersection of Blackstone Street, which his 25 MPH. Designing for 25 MPH is consistent with the surrounding neighborhood.

   B+T Response: We understand the existing constraints, but recommend the Applicant explore increasing K values to a minimum of 26 for the sag vertical curve to achieve a minimum design speed of 25 MPH.

   AEA response: K values have been increased to the maximum extent where site constraints allow.

4. *There does not appear to be adequate space to install the retaining wall in the vicinity of the wetland/vernal pool, especially along the southern wall. There appears to be approximately two feet between the face of the wall and sediment control barrier and there appears to be a one-foot toe per the wall detail. We request the Applicant provide a narrative on the anticipated retaining wall construction.*

   AEA response: The Applicant's goal is to minimize the wetland impact to the extent possible. We do however, concur that the construction corridor is narrow. For this reason, we have adjusted the work limits on both sides to allow additional room for construction. This has resulted in a slight increase in BVW impact from 2,302 sf to 2,525 sf. In addition, at the discretion of the Planning Board, the width of the travel way may be reduced from 22 feet to 20 feet.

   B+T Response: While the expanded work area may be adequate for construction of the wall, we recommend a condition requiring the staking and field confirmation of the sediment control barrier prior to commencement of the work. This will ensure additional wetland impacts are not warranted, as noted in the NOI review for the Conservation Commission.

   AEA response: The Applicant has no objection to the suggested condition.

6. *Sediment control barriers should be provided/extended to areas downgradient of proposed earthwork/trenching. For example, along the eastern perimeter of the drainage easement to Infiltration Basin 1, south of the roadway off-grading west of STA 7+00±, and around Infiltration Basin 2 and associated easement.*

   AEA response: The sediment control barrier has been extended at Basin 1. All other areas referenced are far removed from any wetland resource areas and therefore do not warrant erosion controls.

B+T Response: It is generally good construction practice to provide sediment control barriers along the downgradient limit of work to minimize the potential transport of sediment to undisturbed woodland, even in non-jurisdictional areas.

AEA response: Due to the nature of the soils conditions, it is unlikely that sediment laden runoff will be transported off of the site. However, the Applicant will take this under advisement.

7. *The proposed 2-foot high box culvert (at STA 3+45) appears as if it will have one foot of substrate placed within (per the roadway profile and invert elevation). Please provide a construction detail specific to the culvert and confirm this is the intent. If so, this will leave a relatively shallow one-foot-high opening. Please provide an operation and maintenance plan outlining measures to keep the culvert clear and functional in the wooded environment. It is also unclear how the substrate will be placed within the 37± foot culvert length, if that is the intent.*

   AEA response: There is no substrate proposed within the culvert. The profile view was simplified for clarity, which shows the left and right side of the culvert. A detail of the culvert has been added (see Sheet C-11).

   B+T Response: The original comment has been adequately addressed by the Applicant. However, we note the longitudinal slope of the box culvert is 4.41%, though the detail indicates 4%.

   AEA response: The box culvert slope has been corrected on the detail on Sheet C-11.

8. *The proposed 10-foot-wide box culvert appears as if it may have as little as 10 square feet of open area. Comparatively, the existing low point along the roadway extends at least 100 feet and excess runoff could theoretically crest over this length. Please confirm how the proposed culvert was sized and that it has adequate hydraulic capacity to convey any overflow from the vernal pool and wetland. Hydraulic analyses and water budgets may be warranted to demonstrate there are no adverse effects on the vernal pool or the wetlands.*

   AEA response: The proposed box culvert has an open area of 20 square feet. The culvert has been designed to convey the 50-year storm. Please refer to the drainage report. The inlet invert has been established at the same elevation as the gravel road where flow currently overtops the road in larger storm events. This will ensure that the vernal pool hydrology will function as it currently does.

   B+T Response: Existing culvert information has since been added to the plan. See General Engineering Comment #5. This culvert appears to have an inlet invert elevation of 291.31, indicating flows would pass below the existing gravel road prior to cresting over it. The new box culvert is proposed with an invert of 294.00, which would alter the hydrology, as the vernal pool would pond an additional 2.5+ feet in the post-development condition (as the existing culvert is being abandoned/filled).

AEA response: This item was discussed and clarified with the reviewer during public hearings with the Planning Board and Conservation Commission. The existing 12" culvert was completely blocked and dysfunctional for a prolonged period of time. The Applicant only recently unblocked the culvert, but has since filled it back over in response to an enforcement order issued by the Conservation Commission. The culvert remains blocked and the proposed hydrology to the vernal pool will remain unchanged.

12. *We request that the Applicant extend the ends of the gabion at Infiltration Basin 3 to the 291± contour elevation.*

    AEA response: The gabion has been extended as requested.

    B+T Response: While the western end of the gabion was extended to the required elevation, the eastern end has not.

    AEA response: The gabion (now an earthen berm) has been extended accordingly.

14. *We request the Applicant consider proposing outlet control structures at each of the infiltration basins, in accordance with the MassDEP Stormwater Handbook. The design is dependent upon the infiltrative capacity of the soils. Under frozen/frost conditions, the basins may not dewater within 72 hours as required by the MassDEP Stormwater Management Policy.*

    AEA response: The basins have been designed with exfiltration and emergency spillways as their outlets. The result is a larger basin than if additional outlets were added. This conservative approach will allow for future outlet control structures to be inserted after the final development of the property has been designed.

    B+T Response: Generally, infiltration basins are designed with outlets at lower stages (below the emergency spillway) to efficiently mitigate peak rates and retain the necessary recharge volume. The current design is wholly dependent on exfiltration, and the Applicant acknowledges the basins are oversized, accordingly. We recommend there be a condition of approval for seasonal monitoring for a period upon project completion to ensure the basins effectively dewater as designed. We acknowledge future development could warrant modifications to these basins.

    AEA response: Each of the three basins has been revised to include outlet control structures. This will ensure drawdown and that there will not be more than 5 feet of standing water within the basins. Construction details and the Drainage Analysis Report have been revised accordingly.

16. *We recommend drawdown devices be proposed to dewater each of the basins for maintenance, in accordance with the MassDEP Stormwater Handbook.*

    AEA response: As stated in response no. 14, there are no low flow structural outlet control devices designed. In the unlikely event that the basins do not drain, dewatering can be performed by using a temporary pump.

B+T Response: As previously noted, we recommend that at a minimum there be a condition of approval for seasonal monitoring for a period upon project completion to ensure the basins effectively dewater as designed.

AEA response: Each of the three basins has been revised to include outlet control structures. This will ensure drawdown and that there will not be more than 5 feet of standing water within the basins. Construction details and the Drainage Analysis Report have been revised accordingly.

Please feel free to contact me at 508 381-3212 ext. 109 with any questions regarding this correspondence.

Sincerely,
ALLEN ENGINEERING & ASSOCIATES, INC.

Michael J. Dryden, RLA
Senior Project Manager

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Cc: Lou Petrozzi, Wall Street Development Corp., LLC