



GRADY CONSULTING, L.L.C.

Civil Engineers ♦ Land Surveyors ♦ Landscape Architects

RESPONSE TO PEER REVIEW COMMENTS 2023-12-19

On behalf of the applicant, we hereby submit responses to Peer review comments #4, dated November 3, 2023 by TEC, The Engineering Corp. The plans and documents were reviewed by Mr. Peter F. Ellison, PE, Director of Strategic Land Planning of TEC, Inc. We utilized the review outline and have provided our responses in **bold** and Mr. Ellison's comments in *italics*.

Ms. Karen Joseph
Town Planner
Town of Scituate
600 Chief Justice Cushing Highway
Scituate, Massachusetts 02066

November 3, 2023

Re: 817 Country Way
Civil/Stormwater Peer Review #4

Dear Ms. Joseph and Members of the Board:

On behalf of the Town of Scituate, TEC, Inc. (TEC) reviewed documents as part of a civil engineering peer review for the proposed multi-family residential development located at 817 Country Way in Scituate, Massachusetts. Option C Properties, LLC (the "Applicant") submitted the following documents which TEC reviewed for conformance with the Town of Scituate Zoning & Stormwater Bylaws, Massachusetts Stormwater Standards, and generally accepted industry standards:

- *Application for Approval of Site Plan Review, prepared by Grady Consulting, L.L.C, dated February 2, 2023*
- *Country Way Estates Site Plans, prepared by Grady Consulting, L.L.C, revised June 19, 2023*
- *Stormwater Management Design Calculations, prepared by Grady Consulting, L.L.C, revised June 19, 2023*
- *Transportation Impact Assessment, prepared by Vanasse & Associates Inc, dated May 2023*
- *Lighting Layout, prepared by Grady Consulting, L.L.C, revised June 19, 2023*
- *Country Way Estates Public Benefit Improvement Plan, prepared by Grady Consulting, L.L.C, dated February 2, 2023*
- *Design Set Building 1 and 2 Architectural Plans, prepared by Axiom Architects, Inc., dated January 2023*
- *Design Set Building 3 Architectural Plans, prepared by Axiom Architects, Inc., dated January 2023*
- *Country Way Estates Rendering, prepared by Axiom Architects, Inc.*

For consistency, the original comment numbers have been retained from the most recent TEC Peer Review letter dated July 11, 2023. Comments that have previously been noted as resolved have been removed from the list. The Applicant's responses to the comments are shown as **bold**; TEC's responses are shown as *italic*.

Upon review of the documents and plans, TEC has compiled the following comments for the Board's consideration:

General Comments

1. The Architectural Plans were provided as two PDF files. The Plans reference buildings 1, 2, and 3. TEC believes that these references do not correspond with the Site Plan building numbering of 2, 3, and 4. The Architectural Plans should be revised with proper building labeling on each sheet.

Grady Consulting: The building numbers have been revised. The buildings were renumbered on the Civil plans to go from front to back.

TEC: No changes have been made to the building numbers on the civil plan set. No new architectural plans have been provided. The building numbers do not correspond between plan sets.

Grady Consulting: New architectural plans are being provided with this response. The building numbers have been coordinated.

TEC: Comment addressed.

2. On Sheet 5 of the Site Plans, a callout to remove the retaining wall is shown, but the proposed conditions show that the wall is to remain. The Site Plans should be revised to clearly label the limits of wall removal, if at all.

Grady Consulting: The notes on sheet 5 to remove the wall have been removed as requested.

TEC: Comment partially addressed. The notes on sheet 5 have been removed. Callouts to "retain existing wall" and "remove wall" remain on Sheets 7, 10, 11, 21, 23, and 25, and proposed contours remain throughout the wall on the grading plan. Proposed changes to the wall remain unclear.

Grady Consulting: The callouts have been updated.

TEC: Comment addressed.

4. The Applicant should confirm if a van accessible parking space should be provided for each of the 4 buildings. As currently drawn, the accessible parking for building 1 and 2 does not provide an adequate access aisle for van parking (minimum aisle width of 8-feet).

Grady Consulting: The accessible aisle has been revised to 8 ft as requested. Building #1 is an existing building and is not an accessible building. The new proposed building will provide accessible opportunities within the development.

TEC: The plans propose to convert the existing building into a 55+ building. Given the intended age demographic, it is especially important that the parking and building are accessible. The Applicant should consider if further building upgrades are warranted.

Grady Consulting: Parking areas have been relocated and an accessible route is

provided.

TEC: All doors at the existing building appear to be accessed by stairs, no ramp is proposed. The Applicant should confirm if the intent is to provide an accessible path into the building.

Grady Consulting: All entrances are accessible. Building 2 has stairs in the front but there is also a ramp.

5. The drive aisle, parking spaces, and paved walkway between building 1 and 2 is proposed at a slope of 9.23%. TEC does not find this to be an acceptable design slope for parking spaces. Slopes over 5% will lead to the doors of vehicles swinging open and hitting the car in the next parking space.

Grady Consulting: The parking spaces have been revised to angled parking to help reduce the potential for door swing conflict.

TEC: TEC does not support the design of parking (perpendicular or angled) on a 9.23% slope. It is TEC's opinion that a parking lot sloped at 9%+ is not functional or practical for its users. TEC continues to recommend a maximum parking slope of 5% for this new construction project.

Grady Consulting: Parking areas have been relocated. Parking spaces now have a suitable slope.

TEC: Comment addressed.

6. The Applicant should confirm that the proposed grading is fully in compliance with Architectural Access Board (AAB) regulations 521 CMR 20.00 and 521 CMR 22.00. Section 20.2 states that an accessible route shall be provided from accessible parking, accessible loading zones, and public streets or sidewalks to the accessible building entrance they serve. Section 22.3 states that walkways with a running slope greater than 5% shall comply with 521 CMR 24.00: Ramps.

Grady Consulting: It is our opinion that the accessible routes only need to be from the accessible spaces to the individual's residence. There does not need to be accessible routes between the buildings as there are no common areas to be shared within any of the buildings. Each building has accessible access to an amenity space via an accessible route. Private residences are not *accessible elements*.

TEC: TEC disagrees with this opinion. The development is considered a "multiple dwelling" with 3 or more dwelling units (521 CMR 5.00). Multiple dwellings are considered public buildings, even if privately owned/operated. 521 CMR 10.00 states that public use and common use spaces of multiple dwellings shall comply with 521 CMR. Public and common use spaces include walks, sidewalks, parking lots, etc.

Additionally, Town of Scituate's Zoning Bylaw Section 760.8(F)(2) Parking Design Standards states "Pedestrian access from parking lots must lead directly to a public

sidewalk and to the primary building". TEC's interpretation of the local Bylaw is that the pedestrian access is meant to be accessible, meaning that the slope requirements should be provided at 5% or less running slope, or should comply with the requirements of a ramp under 521 CMR 24.00.

TEC does not support the design of the drive aisle, parking spaces, and paved walkway at 9.23%.

Grady Consulting: Accessible routes with suitable slopes are now provided.

TEC: It appears that the accessible route is intended to run behind building 1 & 2. The Applicant should confirm that the 90-foot section of existing asphalt walkway behind building 1 meets ADA requirements. Additionally, the proposed ramp at the back of building 1 is designed with a ~9.67% slope. The maximum allowable running slope on a ramp is 8.33%, with level landings provided every 30-feet.

Grady Consulting: A note has been added to sheet 7 to place a new pavement course. The slope is 0.4%. The walkway meets ADA requirements. The ramp has been revised to meet min/max slopes. Each section of the ramp is 30 ft long or shorter. Level landing areas are provided. A 10-scale detail of the ramp has been added to sh 7. A note has been added to sheet 7 stating "Contractor is responsible to construct accessible routes in compliance with 521 CMR"

7. The Site Plans should be revised to show detailed grading at each accessible parking space and access aisle. Per AAB regulations, accessible parking spaces must be a maximum slope of 2% in all directions. As currently drawn, the accessible parking for Building 1 is proposed at a 9% cross slope.

Grady Consulting: Building #1 is an existing building and is not an accessible building. The new proposed building will provide accessible opportunities within the development.

TEC: Revised accessible parking spaces are graded to be AAB compliant and accessible spaces for Building 1 have been removed. TEC recommends providing accessible parking for Building 1 given the plans to convert the space to retirement/55+ units and to provide spot grades on all accessible parking spaces.

Grady Consulting: Accessible parking for building 1 is now being proposed.

TEC: Revised accessible parking spaces are graded to be AAB compliant. Comment addressed.

8. The Applicant should provide additional detail on the proposed ramp into building #2. It appears that some form of fall protection will be required at the back of walkway. Additionally, there appears to be a low point at the bottom of the ramp that would collect water.

Grady Consulting: Additional details can be provided at the next plan iteration when the architectural review is completed.

TEC: There is a 4' height difference between the top of the proposed accessible ramp at Building 2 and the walkway below. The site plans should call out a retaining wall in this location. The proposed rail along this ramp should be continued along the proposed retaining walls surrounding Building 2.

Grady Consulting: The grading around building 2 has been adjusted.

TEC: The proposed pathway east of Building 2 runs parallel to the existing 4' tall retaining wall. The Applicant should consider if a fence is required for fall protection at the top of the existing wall.

Grady Consulting: A fence has been added to the plan in this location as requested. There is now a fence plan sh 29.

9. On sheet 11 of the Site Plan, the Fire Truck Turning Analysis shows the truck backs into the guard rail to the south and partially drives over a parking stall. The turning analysis should be revised to avoid these conflicts. Additionally, the Applicant should confirm that they have coordinated with the Scituate Fire Department and the ladder truck shown on the plan matches the largest emergency vehicle in current operation.

Grady Consulting: We have revised the turning analysis to address the conflict with the fence and the end parking space has been removed.

TEC: The Applicant should confirm that they have coordinated with the Scituate Fire Department and the ladder truck shown on the plan matches the largest emergency vehicle in current operation.

Grady Consulting: On an email from the Fire Department Deputy Chief to the Town Planner dated 4/27/2023, it was confirmed that room for turning around is sufficient.

TEC: The updated Fire Truck and Single Unit Truck Turning Analyses utilize potentially occupied parking spaces to turn around. TEC does not view this as an acceptable design. The Applicant should coordinate again with the Scituate Fire Department.

Grady Consulting: The two parking spaces have been removed from the plan. The conflict has been resolved. The fire department indicated in an email to Karen Joseph on 4/27/23 that the "turning is sufficient". An additional hydrant has been added between building 1 and 2 as requested (SH 10).

12. The Grading Plan should show the top and bottom elevation of the existing and proposed retaining walls at a minimum interval of every 25-feet. It is difficult for TEC to confirm the feasibility of the walls without have clear labeling.

No response provided.

TEC: Top and bottom elevations have not been provided for the proposed retaining walls.

Grady Consulting: The spot grades have been added to the plan as requested.

TEC: Comment not addressed. Spot grades should be added at a consistent 25-foot interval along the top and bottom of all interior and site perimeter retaining walls. This is a critical detail to understand the design of the project and any potential impact to abutting properties.

Grady Consulting: spot grades have been added (SH 7) as requested. A profile of the entire perimeter wall has been added to the plan set (SH 30).

14. Additional existing topography should be added to the Plan at the rear of Building #3. It is unclear if the proposed grading at the rear of Building #3 has been adequately tied into the existing.

Grady Consulting: Additional existing spot grades have been added behind building #3. The plan proposes a retaining wall across the back of building #3.

TEC: The site plans should clearly indicate all proposed retaining walls.

Grady Consulting: Building 3 has been eliminated from the plan. The plan shows all proposed retaining walls.

TEC: Comment addressed.

Stormwater Comments

18. TEC does not support the use of bends in newly proposed drainage lines. TEC recommends that all changes in direction of proposed drainage lines be provided through a drainage structure. The drainage structure allows for access, inspection, and long-term maintenance of the system.

Grady Consulting: The pipe bend has been removed as requested.

TEC: Proposed pipe bends remain at the Subsurface Drainage Area #1 outlet pipe.

Grady Consulting: Pipe bends have been removed.

TEC: Proposed pipe bends are located at the Subsurface Drainage Area #3 and #6 outlet pipes.

Grady Consulting: Pipe bends have been removed.

19. Sheet 10 of the Site Plans shows the detailed information for the drainage system and other proposed utilities. On Sheet 10, the proposed drainage piping is shown in several different styles, making it extremely difficult to understand. The Site Plan should be revised to consistently show the drainage piping for clarity.
- Several drain pipes are shown with a solid black outline – see piping between CB 10 and DMH 11
 - Several drain pipes are shown with a dashed outline – see piping around foundation of Building #2
 - Several drain pipes are shown as a single dashed line – see piping outlets from subsurface drainage areas #1 and #2
 - The discharge pipe from subsurface drainage area #1 is shown with a single

dashed line and “D” symbol (--D--).

Grady Consulting: The drain pipes have been revised to the same line type as requested.

TEC: The majority of the drainage pipes are displayed as solid inner diameter outlines. Several drainage pipes remain single solid lines – see Subsurface Drainage Areas #2 and #4.

Grady Consulting: The drain pipes are shown with the same line type

TEC: SDA#2 outlet remains a single dashed line.

Grady Consulting: The line type style has been revised as requested.

20. Several proposed drainage pipes appear to be less than the industry standard minimum 0.5% slope. The Site Plan should be revised to provide pipe slopes equal to or greater than 0.5% pitch for proper functionality of the drainage system.

Grady Consulting: The hydro-CAD model demonstrates that the pipes provide adequate slope to drain the stormwater to the various elements. TR-16 which is the regulation for sewer pipe that convey solids requires a velocity of 2 fps to move solids through pipes allows .0019 slope in a 12” dia pipe and this varies with diameter. It is our opinion that proper pipe slopes have been provided.

TEC: TEC continues to advise maintaining standard industry minimum pipe slope throughout the design.

Grady Consulting: There is no industry standard that requires all pipes to be .05% or steeper. Minimum pipe slopes depend on the diameter of the pipe. We are proposing pipes at a slope that provide a velocity of 2 fps or greater which is an industry standard to move solids within a pipe. We have provided a table demonstrating the required slopes.

TEC: TEC agrees with the use of a minimum velocity of 2 feet per second as a scour velocity. The provided table shows that a minimum of 2 feet per second is achieved. Comment addressed.

21. The invert out of the proposed drainage manholes is designed at the same elevation as the invert in. Industry standard at manholes is to provide a minimum 0.1’ elevation drop to the invert out of the structure.

Grady Consulting: 0.1’ elevation drop has been provided as requested.

TEC: Comment not addressed. DMH 11 does not have a 0.1’ elevation drop to the structure outlet.

Grady Consulting: An 0.1’ elevation drop has been provided as requested.

TEC: DMH 2 does not have a 0.1’ elevation drop to the structure outlet.

Grady Consulting: An 0.1' elevation drop has been provided on all drain manholes.

22. On Sheet 18 of the Site Plans, the outlet protection detail appears to have been copied from another project. It does not appear applicable to the 817 Country Way project and should be revised or deleted from the Plan.

Grady Consulting: The outlet protection detail has been revised to a generic detail.

TEC: The Applicant should specify if/where the water quality swale in the outlet protection detail is proposed.

Grady Consulting: The callout for water quality swale on the outlet protection detail on sheet 18 has been removed. There is no water quality swale proposed.

TEC: Comment addressed.

25. Per the Massachusetts Stormwater Handbook, a minimum of 1 test pit should be provided per 5,000 square feet of infiltration basin. Subsurface Drainage Areas (SDA) #1 and #2 exceed 5,000 square feet in area, and therefore a 2nd test pit is required within each basin.

Grady Consulting: SDA #1 is 1583 SF and SDA #2 is 1960 SF. Additional soils testing is not required.

TEC: TEC miscalculated the subsurface drainage areas due to incorrect graphic scales shown on several sheets. Test pit comment addressed. See comment 40 regarding graphic scales.

- *Sheet 10 incorrectly shown at 40 scale*
- *Sheet 11 incorrectly shown at 40 scale*

Grady Consulting: Graphic scales have been revised

TEC: Sheet 25 is incorrectly shown at 40 scale.

Grady Consulting: Graphic scales have been revised

27. Per the Massachusetts Stormwater Handbook, infiltration basins should not be located within 10-foot downslope or 100-foot upslope of any building foundations including slab foundations without basements. As currently drawn, the infiltration basin is 12.4-foot upslope of Building #2.

Grady Consulting: The top of stone elevation is 36.86 and the finish slab elevation on building #3 is 39.0 and building #2 38.0. Both are above the top of stone. Additionally, SDA #1 has an overflow outlet at elev 35.0 which is 3 ft lower than the lower slab. The living area is protected from impacts from the stormwater system. For additional measure we have proposed a 40 mil poly barrier around SDA #1.

TEC: The Stormwater Handbook states that a minimum distance from any building foundation should be 10-foot downslope and 100-foot upslope. It appears that both buildings #2 and #3 would require some form of foundations below elevation 35.00 based on site grading.

Grady Consulting: There is no living space below the proposed slab, the wall is a frost wall.

*TEC: Comment not addressed. See Massachusetts Stormwater Handbook, Volume 2, Chapter 2, page 88, Table IB.1 – Site Criteria for Infiltration Basins. Criteria #7- “Distance from **any building foundations including slab foundations without basements** - Minimum of 10 ft. downslope and 100 ft. upslope.” The current layout of the Site Plan and infiltration system does not meet this criteria.*

SDA#1 is hydraulically downgradient of building #2 slab. SDA#1 has been modified to a storage/detention system and is enclosed by a poly barrier between the system and the foundation. The living space will be protected from the SDA#1 in the event of failure as the site slopes away from the building. The foundation below the slab will be placed on a footing that is located below the frost line. Structural fill and natural site material will be located within the foundation beneath the slab foundation.

28. The Applicant should review and confirm that the peak elevation of stormwater within each pond does not exceed the top elevation of the basin. It appears that the detention tank and SDA #3 are overtopped in the 100-year storm event.

Grady Consulting: The 100-year flood elevation is now lower than the tank.

TEC: Comment addressed.

Grady Consulting: There is no flooding on Country Way or off site occurring during the 100-year storm event.

TEC: The HydroCAD model does not report SSD overtopping in the 100-year storm, however, given the various errors in the model this comment cannot be fully addressed. See comment 43 for a list of inconsistencies in the HydroCAD model.

Grady Consulting: The stormwater model has been revised, no flooding on Country Way or off site occurring during the 100-year storm event.

30. Per Cultec manufacturer specifications, a minimum of 12-inches of cover should be provided above the top of stone in unpaved settings. It does not appear that this cover requirement is met for SDA #4.

Grady Consulting: The grading has been modified to provide the cover requested.

TEC: The grading continues to reflect less than 1' of cover over SDA #2 and #4. The revised grade should be updated in the Cultec Recharger Data table.

Grady Consulting: Grades have been updated on the Cultec Recharger Data table.

TEC: The proposed grading continues to reflect less than 1' of cover over SDA #2 and #4.

Grady Consulting: Grades have been updated to have at least 1' of cover over the

systems.

32. The test pits provided at each SDA show that either loamy sand or sandy loam material is present at the site. The Applicant has used an infiltration rate of 1.02 inches/hour for all SDAs corresponding to sandy loam soil. The stormwater analysis should reflect the actual infiltration rate at each SDA. Where loamy sand is present, an infiltration rate of 2.41 inches/hour should be utilized.

Grady Consulting: The NRCS soils mapping calls for C/D soils. It is our professional opinion that the drainage systems should be designed on the slower infiltration rate and that the 1.02 in/hr is appropriate for this site.

TEC: TEC finds it acceptable to use the more conservative infiltration rate, however, pretreatment should be provided in the case that actual infiltration rates exceed 2.41 inches/hour.

Grady Consulting: It is our professional opinion that the existing soils on site are not rapid infiltration and that 1.02 in/hr is the appropriate infiltration rate. A review of the soil logs indicates the presence of sandy loam in several areas.

TEC: Comment not addressed. 44% pretreatment is required where test pits indicate a loamy sand soil (2.41 inches/hour infiltration rate).

Grady Consulting: 44% pretreatment has been provided prior to the stormwater treatment facilities as requested.

33. SDAs with an infiltration rate of 2.41 inches/hour will require additional pre-treatment prior to discharge to the system. Loamy sand soil qualifies as a “rapid infiltration rate” and therefore a minimum of 44% TSS removal is required for pretreatment.

Grady Consulting: The NRCS soils mapping calls for C/D soils. It is our professional opinion that the drainage systems should be designed on the slower infiltration rate and that the 1.02 in/hr is appropriate for this site.

TEC: Test pit data is a more accurate reflection of existing conditions. The drainage system should be designed to provide adequate pretreatment for rapid infiltration conditions.

Grady Consulting: It is our professional opinion that the existing soils on site are not rapid infiltration and that 1.02 in/hr is the appropriate infiltration rate. A review of the soil logs indicates the presence of sandy loam in several areas.

TEC: 44% pretreatment must be provided at SSD2 and SSD3. See response to comment 32.

Grady Consulting: 44% pretreatment has been provided prior to the stormwater treatment facilities as requested.

Zoning Review

38. It appears that the street facing wall width of Building 1 is 128.2-feet, exceeding the

maximum allowed width of 100-feet listed in Table 1.A.

Grady Consulting: The applicant is proposing to utilize an existing building. The use of the existing building will not alter the character of the neighborhood.

TEC: The Applicant should request a waiver from the Town of Scituate for the street facing wall maximum width.

Grady Consulting: A waiver has been requested and is shown on sheet 2.

TEC: Based on TEC's coordination with Town of Scituate, the re-use of the existing building will require a Special Permit. TEC ultimately defers to the Town of Scituate to determine the required permitting.

Grady Consulting: "The existing building is a pre-existing non-conforming structure. The proposed project does not seek to expand, alter, extend or structurally change the building. Consequently, no special permit is required. See [M.G.L. Chapter 40A, Sections 6 and 7](#). Additionally, counsel for the Applicant has conferred with Robert Vogel, Zoning Enforcement Officer, on this issue, and Mr. Vogel agrees no special permit is required."

39. It appears that the parking space furthest south in front of Building #4 will not have adequate maneuvering space required in Section 760.3 of the Bylaw.

Grady Consulting: The parking space is serviced by an aisle of 20 ft. The user of this space may need to back out to the north instead of to the south. There is an additional 3 ft space adjacent to this space that will aid in the maneuvering.

TEC: The Applicant should provide a vehicle turning analysis entering and leaving the space to ensure that it is functional.

Grady Consulting: The parking space has been rotated to eliminate any possible conflicts.

TEC: Comment addressed.

Additional Comments 6/22/23

40. Graphic scales should be revised to 1"=20' on multiple sheets.

Grady Consulting: Graphic scales have been revised

TEC: Comment not addressed. Sheet 25 is incorrectly shown at 40 scale.

Grady Consulting: Graphic scales have been revised

41. The applicant does not denote the source for the rainfall depths used in the stormwater model and they differ significantly from the values found on NOAA's Atlas 14.

Grady Consulting: The values used are from the NOAA Atlas 14 as listed in the HydroCAD software (see below for screenshot).

TEC: Comment addressed.

42. As currently designed, there are several stormwater infiltration systems and leaching fields near proposed retaining walls. The retaining wall details show a 4" drain pipe that outlets at the end of the wall. It appears that the 4" drain pipe and the geosynthetic reinforcement would conflict with the proposed infiltration/leaching systems.

Grady Consulting: A poly barrier has been added to SDA#4 between the system and the retaining wall drain pipe. SDA#2 is proposed below the retaining wall drain and does not conflict. SDA#1 is proposed below the retaining wall drain and does not conflict.

TEC: The reinforced retaining wall detail references profile drawings that specify the length of the geosynthetic reinforcement. The Applicant should provide profile drawings for each retaining wall to confirm the layout is feasible.

Grady Consulting: The majority of the retaining walls are less than 4 ft in height and do not require reinforcement/Geo-grid. The leaching field in the South parking lot is located over 10 ft from the retaining wall which leaves room for the geogrid.

43. The following comments are regarding the HydroCAD design:

- a. The time of concentration and drainage area for subcatchment 9 is not consistent between sheet 25 and the post HydroCAD.

Grady Consulting: Times of concentration are coordinated in the plan and the model.

- b. CB5, CB6, CB9, DMH7, DMH11, and CB13 rim and invert elevations are not consistent between the site plans and HydroCAD. The Applicant should review and revise all structure elevations in HydroCAD.

Grady Consulting: Structure elevations have been revised.

TEC: The following errors are present in the HydroCAD model (as compared to the callouts on the Subsurface Drainage BMP Plan).

- a. The structures & pipe network leading to SSD#6 are not modeled.

Grady Consulting: SSD#6 has been renumbered to SSD#5, structures and pipe network have been updated in the plan and the model.

- b. DMH2:

- i. Overtops in the 100-year storm

Grady Consulting: 100 yr storm elevation is now below rim elevation

- ii. Incorrect flood elevation

Grady Consulting: flood elevation is now at rim elevation

- iii. Incorrect outlet elevation and length

Grady Consulting: pipe elevation and length have been updated

- c. CB1

- i. Incorrect flood elevation

Grady Consulting: CB 1 has been eliminated.

Grady Consulting: CB 9 has been renumbered to CB 7, flood elevation is now at rim elevation

ii. *Incorrect primary outlet elevation*

Grady Consulting: CB 9 has been renumbered to CB 7, outlet elevation has been updated

j. **DMH11**

i. *Incorrect primary outlet elevation*

Grady Consulting: DMH 11 has been renumbered to DMH 1, outlet elevation has been updated

k. **DMH7**

i. *Incorrect flood elevation*

Grady Consulting: DMH 7 has been renumbered to DMH 6, flood elevation is now at rim elevation

ii. *Incorrect primary outlet elevation*

Grady Consulting: DMH 7 has been renumbered to DMH 6, outlet elevation has been updated

l. **SSD1**

i. *Incorrect primary outlet size*

Grady Consulting: Primary outlet size has been updated.

ii. *A secondary outlet is modeled, there is no secondary outlet on the plans*

Grady Consulting: The secondary outlet refers to the rim on CB 5.

m. **SSD2**

i. *A secondary outlet is modeled, there is no secondary outlet on the plans*

Grady Consulting: The secondary outlet refers to the rims on CB 7 & 8.

n. **SSD3**

i. *Incorrect primary and secondary outlet elevations and sizes*

Grady Consulting: Outlet elevations and sizes have been updated.

o. **SSD4**

i. *Horizontal orifice is not modelled*

Grady Consulting: Horizontal orifice is now modeled as a secondary outlet.

p. **SSD5**

i. *A secondary outlet is modeled, there is no secondary outlet on the plans*

Grady Consulting: SSD5 has been eliminated.

q. **SSD6**

i. *Incorrect primary outlet length*

Grady Consulting: SSD6 has been renumbered to SSD 5. Outlet pipe length has been updated.

ii. *A secondary outlet is modeled, there is no secondary outlet on the plans*
Grady Consulting: The secondary outlet refers to the rim on CB 3.

r. *TEC is unable to determine if Time of Concentration remains consistent. See comment below regarding the post-development Drainage Figure.*

Grady Consulting: Times of concentration are coordinated in the plan and the model.

44. The Applicant should update invert data in the Cultec Recharger Data Table.

Grady Consulting: The Cultec Recharger Data Table has been updated.

TEC: The following inconsistencies are present in the Cultec Recharger Table:

- a. *SSD1 outlet size*
- b. *SSD2 outlet size*
- c. *SSD3 outlet elevation and size*

Grady Consulting: The Cultec Recharger Data Table has been updated.

45. TEC recommends providing continuous pedestrian access from the street to all buildings. Additional paved walkway to Building 4 may be necessary.

Grady Consulting: Additional walkways have been added as requested.

TEC: It appears that a walkway has been provided though there are errors with the grading of the proposed ramp.

Grady Consulting: The walkway grades have been revised. We have added slope information along all the accessible paths to show compliance with ADA slope requirements.

46. Standard #3 recharge calculations should be revised using an infiltration rate and volume to recharge factor that reflects the presence of loamy sand.

Grady Consulting: It is our professional opinion that the existing soils on site are not rapid infiltration and that 1.02 in/hr is the appropriate infiltration rate. A review of the soil logs indicate the presence of sandy loam in several areas.

TEC: Comment not addressed. Revised infiltration rates and recharge calculations are required. See response to Comments 32 and 33.

Grady Consulting: The model has been updated to provide an infiltration rate of 2.41 in/hr and 44% pretreatment has been provided prior to other stormwater treatment facilities.

47. The drawdown calculation and water quality volume calculation should be revised for SDA #4.

Grady Consulting: Drawdown and water quality calculations have been revised.

TEC: Comment not addressed. Drawdown calculations should be revised to reflect infiltration rates. See response to Comments 32 and 33.

Grady Consulting: Drawdown calculations have been updated with a rapid infiltration rate.

48. The mounding recharge rates should be revised for SDA #1 and #4. Mounding analyses should be revised with updated infiltration rates in locations of loamy sand.

Grady Consulting: It is our professional opinion that the existing soils on site are not rapid infiltration and that 1.02 in/hr is the appropriate infiltration rate. A review of the soil logs indicate the presence of sandy loam in several areas.

TEC: Comment not addressed. Mounding analyses should be revised to reflect infiltration rates. See response to Comments 32 and 33.

Grady Consulting: Mounding calculations have been updated.

49. The project disturbance is greater than 1 acre. The MassDEP Stormwater Checklist should reflect NPDES CGP coverage and SWPPP status.

Grady Consulting: A SWPPP will be provided prior to construction.

TEC: The MassDEP Stormwater Checklist should reflect NPDES CGP coverage and SWPPP status.

Grady Consulting: The stormwater checklist has been updated.

50. The Applicant should specify whether infiltration is proposed in the stone trench at the SDA #4 outlet, given that the trench is within 50' of leach field #1. A detail should be provided for the stone trench.

Grady Consulting: The infiltration trench is for erosion control only and it is not an infiltration device. The outlet is lower than the adjacent septic system and will not interfere. A detail has been added to sheet 22.

TEC: Comment addressed.

51. The Applicant should specify the proposed locations of conservation area signs.

Grady Consulting: Conservation posts have been added to the erosion control plan (sh 23) as requested.

TEC: Comment addressed.

52. The Applicant should consider revising the location of the proposed shade trees or provide a statement guaranteeing the current location of the root systems will not impact the subsurface drainage systems or soil absorption systems.

Grady Consulting: Shade trees have been relocated as requested.

TEC: Shade trees continue to be located near or above SSD1, SSD 2, SSD 5, and the soil absorption systems.

Grady Consulting: Trees have been located around the subsurface utilities and conflicts have been eliminated.

53. The Applicant should provide an Illicit Discharge Compliance Statement signed by the Owner accompanied with a sketch displaying the locations of any stormwater structures on site.

Grady Consulting: A sketch plan with a signed illicit discharge statement has been added to the stormwater report (rear pocket) as requested.

TEC: TEC did not receive the signed illicit discharge statement and defers to the Town to verify a copy was received.

Grady Consulting: The signed Illicit discharge statement has been added to the stormwater report

54. Grading to the rear of Building #4 does not clearly indicate how the existing grade will tie into the proposed grade. TEC recommends including the area behind Building #4 in the Grading Plan (Sheet 7).

Grady Consulting: The proposed grades tie into the existing grade via a retaining wall that surrounds building #3 (formerly bld#4).

TEC: See response to Comment 12 regarding retaining wall spot grades.

Grady Consulting: Spot grades have been added as requested,

Additional Comments 10/17/23

71. No test pit has been provided within the footprint of SSD1, SSD5, and SSD6. A test pit should be provided to confirm soil classification and depth to groundwater.

Grady Consulting: SDA 5 has been eliminated and SDA 6 has been changed to SDA 5 and does not infiltrate. TH 7 lies within SDA 1. An additional testhole has been conducted with SDA#1

72. The following drainage pipes are over maximum capacity:

- a. DMH11 to SSD3

Grady Consulting: DMH 11 to SDA 3 has been renamed to DMH 1 to SDA 3, the outflow to SDA 3 during the 25 year storm is 1.62 CFS, a 12" pipe with a 0.2% slope has a capacity of 1.63 CFS.

- b. BLDG 2 to SSD1

Grady Consulting: The roof for building 2 has been divided to flow partially into SDA 1 and SDA 5. The runoff flow from the portion of roof going

towards SDA 1 is 0.52 CFS, a 6" pipe with a 1% slope has a capacity of 0.60 CFS

- c. BLDG 3 to SSD4
Grady Consulting: The roof for building 3 has been divided into 2 outlets which flow into SDA 4. The runoff flow from the roof at the 25-year storm event is 0.79 CFS, 2-6" pipes with a 1% slope have a total capacity of 1.20 CFS.
 - d. SSD1 to DP3
Grady Consulting: The outflow of SDA 1 during the 25-yr storm is 0.69 CFS, a 10" pipe with a 2.2% slope has a capacity of 3.20 CFS
 - e. SSD3 to DP3
Grady Consulting: The outflow of SDA 3 during the 25-yr storm is 1.71 CFS, a 10" pipe with a 0.8% slope has a capacity of 2.0 CFS
 - f. SSD4 to DP2
Grady Consulting: The outflow of SDA 4 towards DP2 during the 25-yr storm is 0.08 CFS, a 4" pipe with an 8.3% slope has a capacity of 0.60 CFS
 - g. SSD5 to DMH11
Grady Consulting: SDA 5 has been eliminated
 - h. CB (unnamed) to SSD6 capacity cannot be determined without invert information.
Grady Consulting: CB 3 to SDA 5 (renamed from SDA 6) has an outflow of 0.83 CFS during the 25-year storm event, a 12" pipe with a 0.4% slope has a capacity of 2.3 CFS.
73. The peak flows for Design Point 3 are listed incorrectly in the "Summary of Stormwater Flows" for all storm events.
Grady Consulting: Peak flows for all design points have been updated and coordinated between the model and the stormwater report.
74. TEC requests that the Summary of Stormwater Flows in the Drainage Report be revised to also provide a summary of total volume of runoff for each design storm.
Grady Consulting: Pre and post development runoff volumes are now included in the stormwater report summary.
75. Drainage pipe material should be specified on the plans.
Grady Consulting: A note has been placed on the pipe network sheet stating all pipes shall be ADS N-12 HDPE pipes or approved equal unless otherwise noted.
76. Pervious paver location and elevations should be added to the grading plan. A detail should be added to the plans.
Grady Consulting: The proposed pavers are no longer pervious.
77. A previous paver maintenance description should be added to the O&M. Snow should not be stored on the pervious pavers as it will lead to buildup of salt and sand within the

pavers.

Grady Consulting: The proposed pavers are no longer pervious.

78. It would seem to be more appropriate to combine the SSD1 and SSD6 outlet pipes, rather than run them parallel to each other.

Grady Consulting: There's only 1 proposed drain pipe along the northern edge of the property.

79. DMH-2 does not appear to connect to SSD5 on the plans.

Grady Consulting: SSD5 has been eliminated, DMH 2 now connects to an oil/grit separator and directly into SSD1.

80. The Subsurface Drainage BMP sheet does not display all inlets. The roof drain layer appears to be frozen.

Grady Consulting: All drainage BMP's and pipes are now shown on the Pipe Network sheet.

81. There does not appear to be adequate cover on multiple roof drains. The roof drain at the northeast corner of Building 2 appears to be above grade.

Grady Consulting: Roof drain elevations have been adjusted to the new grading.

82. The roof drain southeast of Building 1 does not appear to connect to SSD3.

Grady Consulting: Roof drains have are now shown connected to SSD3.

83. There is no structure callout or invert information for the two structures southeast of Building #2 and the structure south of SSD3. These structures are not modelled in HydroCAD.

Grady Consulting: Callouts have been revised are now shown for all structures.

84. The provided post-development drainage figure is not consistent with the HydroCAD model. Additionally, the figure no longer contains time of concentration paths.

Grady Consulting: Time of concentration paths are shown for catchment areas with a time of concentration larger than 5 minutes. All catchment areas have been coordinated with the model.

85. The grading at Building 3 appears to slope towards the building entrance.

Grady Consulting: The grading has been updated to slope away from the building.

86. Site grading has been designed to meet building slab elevation. The provided architectural drawings show first floor elevation at a height of 8". The Applicant should confirm first floor elevation and display on the plans.

The 8" slab height is only representing the required foundation exposure along the exterior of the building.

87. The Architectural Plans should provide revision dates so the Board can easily track the revisions to the project through the review process.

We can add dates going forward but we have not tracked them going backward.

88. TEC recommends a minimum height of 6-feet for privacy fences.

The privacy fence detail has been revised to 6 ft as requested (detail on Sh 19).

89. The photometric plan shows light spilling over onto private residential property across the northern, western, and southern, property lines.

The photometric plan has been updated.

90. The proposed light pole locations and foundation detail should be added to the plan set to confirm that the pole foundations will not interfere with the subsurface drainage areas.

The photometric plan has been updated and any conflict with subsurface utilities has been addressed.

91. The Applicant should propose curb stops at the Building #1 ADA parking spaces.

Grady Consulting: Curb stops have been added to the parking spaces.