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

January 18, 2023

Re: 817 Country Way
Civil/Stormwater Peer Review #6

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:

- *Response to Planning Board Comments, prepared by Grady Consulting, L.L.C, dated* December *19, 2023*
- *Country Way Estates* Site Plans, prepared by Grady Consulting, L.L.C, revised December 14, 2023
- *Stormwater Management Design Calculations*, prepared by Grady Consulting, L.L.C, revised December 14, 2023
- Lighting Layout, prepared by Grady Consulting, L.L.C, revised December 15, 2023
- *Design Set Building 2* Architectural Plans, prepared by Axiom Architects, Inc., dated December 2023
- *Design Set Building 3* Architectural Plans, prepared by Axiom Architects, Inc., dated December 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 November 3, 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

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.

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 or 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"

TEC: The Town of Scituate Building Commissioner has made several comments (in a separate correspondence) related to the location, design, and compliance of the provided accessible route. TEC ultimately defers to the Building Commissioner on this issue.

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.

TEC: Comment addressed.

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).

   TEC: Comment addressed.

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 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).

TEC: Spot grades have been added. 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.

    TEC: Comment addressed.

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.
    a. Several drain pipes are shown with a solid black outline – see piping between CB 10 and DMH 11
    b. Several drain pipes are shown with a dashed outline – see piping around foundation of Building #2
    c. Several drain pipes are shown as a single dashed line – see piping outlets from subsurface drainage areas #1 and #2
    d. 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 linetype

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

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

TEC: 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.

    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

    TEC: Comment addressed.

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

Grady Consulting: 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.

TEC: SDA#1 has been changed to detention. Comment addressed.

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.

TEC: Comment addressed.

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.

TEC: Comment addressed.

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 or 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.

TEC: Comment addressed.

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 or 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.

TEC: Comment addressed.

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."

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

    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.

    TEC: SDA#4 is within 5 feet of the retaining wall, a gravity retaining wall system may be required in this location to avoid conflicts with the geogrid. Comment addressed.

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.

    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: Comment 43.a. thru 43.r. have been addressed. TEC identified the following data differs between the HydroCAD and the callouts on the Subsurface Drainage BMP Plan.

a) *Daylight outlet invert from DMH5*
b) *Primary DMH1 invert at SDA 3*
c) *Both DMH2 inverts at SDA 1*
d) *Both DMH6 inverts at SDA 2*

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.

TEC: The following inconsistencies remain present between the Cultec Recharger Table and plan callouts:
a. *SSD1 outlet elevation*
b. *SSD3 outlet elevation and size*
c. *SSD4 outlet sizes*

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.

TEC: Comment addressed.

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.

TEC: Comment addressed.

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.

TEC: Comment addressed.

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.

TEC: Comment addressed.

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.

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.

TEC: Comment addressed.

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

TEC: Comment addressed.

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,

TEC: Comment addressed.

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

TEC: Comment addressed.

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.

TEC: Comment addressed.

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.

TEC: Comment addressed.

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.

TEC: Comment addressed.

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.

TEC: Comment addressed.

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.

TEC: Comment addressed.

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.

TEC: Comment addressed.

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: Theres only 1 proposed drain pipe along the northern edge of the property.

TEC: Comment addressed.

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.

TEC: Comment addressed.

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.

TEC: Comment addressed.

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.

    TEC: Roof drain with less than 1' of cover is located along the south side of Building 2.

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.

    TEC: Comment addressed.

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.

    TEC: Comment addressed.

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.

    TEC: Comment addressed.

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.

    TEC: Comment addressed.

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.

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

    TEC: Comment addressed.

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

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

    TEC: Comment addressed.

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

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

    TEC: Comment addressed.

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

    Grady Consulting: The photometric plan has been updated.

    TEC: Comment addressed.

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.

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

    TEC: Location conflicts have been addressed. Comment 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.

    TEC: Commend addressed.

New Comments 1-18-2024:

92. *As currently drawn, the water main conflicts with DMH3 and is located within 4-feet of the northerly property line. TEC is concerned about the feasibility of constructing the water main in this location without impacting trees, vegetation, and the abutting property. Based on the changes to the stormwater system, it appears that running the water main under the site driveway would be feasible. The Applicant should consider relocating the water main under the site driveway.*

93. *The discharge point from SSD3 and DMH5 warrants further review. TEC does not recommend daylighting these discharge pipes at the corner of the property in this manner. The Applicant should review if re-use of the existing drain pipe connection to*

the municipal system is feasible at this location. Additional grading information is needed in this corner of the site.

94. *A playground structure and gazebo are proposed over SDA#1. Structure foundation details should be added to the plan set to confirm feasibility.*

95. *The proposed snow storage area covers approximately 20 parking spaces and impedes the fire truck turnaround area. Snow storage should be revised.*

96. *The Applicant should confirm if they intend to construct a "dry" sewer connection (for future use) that would connect all 3 buildings to Country Way. It does not appear that this has been included on the plans, though it has been discussed in previous meetings.*

97. *"Sheet 25 – Erosion Control Plan" includes a note that states to retain existing parking for exist building during construction of Building 2, 3 & 4. This note should be updated as building 4 has been eliminated from the project.*

98. *The Applicant should provide a narrative and plan to describe the construction sequencing proposed for the project. Will the entire project be constructed in one phase? Will the tenants of building 1 remain in the building during construction of the other two buildings? Or will the entire site be closed during construction?*

Please do not hesitate to contact me directly if you have any questions concerning our peer review at 978-794-1792. Thank you for your consideration.

Sincerely,
TEC, Inc.
*"**T**he **E**ngineering **C**orporation"*

Peter F. Ellison, PE
Director of Strategic Land Planning