

Date September 27, 2021
To Bourne Zoning Board of Appeals
From Thomas C. Houston, PE, AICP
Project Cape View Way Comprehensive Permit Project
Subject Peer Review of the Second Submittal of Civil Engineering/Septic Design

Professional Services Corporation, PC (PSC) reviewed the First Submittal of the Site Plans, Stormwater, and related design for the Cape View Way Comprehensive Permit Project (Proposed Project) and issued our peer review memorandum on August 11, 2021.

We are now in receipt of as the Second Submittal of the Site Plans and Stormwater Report as well as the response to comments submitted by the engineer of record, the Horsley Witten Group, Inc. (HSG).

PSC's August 11th comments are restated herein in standard font, HSG's August 14th responses are restated in italic font, and PSC's evaluation of responses is provided in bold font. Comment numbers 1 through 62 correspond to the comment numbers in our August 11th memorandum. Comment numbers 63 through 79 have been added to summarize our review of the revised septic system design.

SECOND SUBMITTAL

- A. "Horsley Witten Group Memorandum Re Cape View Way Civil Engineering/Site Design Peer Review Responses," prepared by the Horsley Witten Group, Inc., dated September 14, 2021.



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- B. "Cape View Way Permitting Plans, Bourne Massachusetts, September 2021," prepared by the Horsley Witten Group, Inc, containing 23 sheets, signed and sealed September 13, 2021.
- C. Stormwater Analysis and Drainage Report, Cape View Way, Bourne, Massachusetts, prepared by the Horsley Witten Group, Inc., dated March 5, 2021, revised September 10, 2021.
- D. Cape View Bourne 40B Application Waivers Updated 210909.
- E. Preservation of Cape Code and Housing Assistance Corporation, Cape View Way 40B Project, Further Details Regarding the Requested Subdivision Regulation Waivers, May 13, 2021 (Revised September 9, 2021)
- F. Cape View Way Permitting Plans, Bourne Massachusetts, Landscape Rendering, prepared by the Horsley Witten Group, Inc. containing 21 sheets, dated March 5, 2021.
- G. Cape View Way, Bourne, Massachusetts, Existing Conditions, prepared by the Horsley Witten Group, Inc., dated June 2019.
- H. Photometric Study – Run 2 – King Luminare & Heper, prepared by speclines and manufacturer's literature.
- I. Town of Bourne Board of Appeals, Comprehensive Permit Application, Pursuant to MGL Ch. 40B § 20-23 and 760 CMR 56.00.
- J. Development Agreement by and between Preservation of Affordable Housing, Inc. ("POAH") and Housing Assistance Corporation ("HAC," and jointly with POAH, the "Developer") and the Bourne Housing Authority

REFERENCE

- A. Town of Bourne Zoning Bylaw, as most recently the special town meeting, October 2019, printed February 13, 2020.
- B. 2021 Approved Zoning Bylaws, Approved ATM 2021 zoning article for Lowland Regulations.
- C. Town of Bourne General Bylaws, Section 3.7 Wetland and Natural Resources Protection.



SUBDIVISION

The Applicants intend to modify the layout of Cape View Way which was created by the Meeting House Subdivision (1987) while combining the five of the original subdivision lots into a single parcel.

The status of the “Meetinghouse Place” subdivision should be researched to determine if the approved subdivision is valid and was recorded in the registry of deeds. The 1987 Planning Board Decision should be reviewed to determine if there are sunset provisions. If the subdivision has expired there may be the requirement to upgrade the subdivision to comply with the current Planning Board Rules and Regulations. It should be noted that the northwesterly segment of the subdivision roadway has a new alignment, and the cul-de-sac has a revised layout and is in a different location.

1. Determine if the “Meetinghouse Place” subdivision was recorded in the registry of deeds.

HWG: The “Meetinghouse Place” subdivision plan as endorsed by the Planning Board was duly recorded on August 12, 1987, in the Barnstable Registry of Deeds at Book 437, Page 50. A copy of the recorded subdivision plan is attached hereto as Exhibit A.

PSC: We sought information as to whether the Meeting House Subdivision (1987) was recorded and remains valid. Based upon the information provided in this response and in the response to Comment 2, we reach the position that the Meeting House Subdivision (1987) was recorded and remains valid. Under the pending Comprehensive Permit Application, the Applicant seeks to modify both the right-of-way and construction requirements of Cape View Way.

However, review of the Meeting House Subdivision (1987) reveals that the boundaries of the Subdivision extended beyond the land included in the current Comprehensive Permit application. The Meeting House Subdivision (1987) included lots 1 and 2 now owned by Gately as Trustee of the Ostek Family Irrevocable Trust (Ostek Lot) and used as the post office and lots 3, 4, and 5 which are owned by the Town and are used as Bourne Fire Department Station 3 (Town Lot). Further, no information is provided as to who owns the right-of-way of Cape View Way. Where the subdivision was never constructed and never accepted, the right-of-way may be owned by the 1987 developer, Equity Associates Trust. Alternatively, the right-of-way may be owned by the abutting lots to the centerline.



We believe that all parties having an ownership interest in the subdivision must be parties to the pending application for subdivision modification, either through written agreements consenting to the Applicant's petition or as co-applicants on the subdivision modification.

With respect to the Town Lot (fire station), we believe that agreements affecting interests which the Town may have in real property require a super majority vote of the Town meeting.

The submitted plan shows the existing Cape View Way right-of-way being terminated within the roadway segment abutting the Ostek Lot. Between the proposed point of termination and the west property line of the Ostek Lot land within the abandoned segment of the right-of-way is either owned by the Ostek Family Irrevocable Trust to the centerline of the right-of-way or it is owned by Equity Associates Trust for the full width of the right-of-way. This land is not available for incorporation into the Project Site.

These ownership interest issues can be resolved by agreement among the parties. Alternatively, a title opinion and potentially a land court decision may be required to establish ownership and further revision of the subdivision modification as currently proposed may be required to protect these ownership interests. The ZBA which in this instance has authority to grant subdivision approval or modification, can choose to require equitable resolution of these ownership issues prior to Decision.

Alternatively, the ZBA can issue a Decision on the subdivision as currently submitted and require clarification of ownership interests and potential further modification of the currently proposed subdivision modification to protect these interests prior to Building Permit as a Condition of Approval.

We recommend that the Board seek advice of Town Counsel in this matter.

Upon review of the Meeting House Subdivision (1987), we also note that an approximately 15-foot-wide strip of land has been added along the south boundary of original Lot 10. Please confirm that this lot boundary is accurately shown.

2. Determine if the 1987 Planning Board "Decision" contains sunset provisions which after a specified period either voids an unconstructed subdivision or requires upgrades to comply with the current Planning Board Rules and Regulations as a condition of extending the unconstructed subdivision.

HWG: The 1987 Subdivision Decision does not contain an automatic sunset provision and the 1987 Subdivision approval is still in force and effect. A copy of the June 30, 1987 Subdivision Decision is attached hereto as Exhibit B.



The June 30, 1987 Subdivision Decision has a condition that construction of the Meetinghouse Place Subdivision shall be completed within a two year period; however, the Town Clerk's Office provided us with the subdivision regulations that were in effect when the 1987 Subdivision was approved and the regulations, at that time, did not provide for automatic rescission of the approval of a subdivision due to lack of compliance with the construction schedule contained in the decision; and, instead, the regulations provided that, if the construction schedule imposed by the Planning Board was not satisfied "within seven years of the approval of the Definitive Plan," then that would simply "constitute reason for the Planning Board to consider rescission of such approval within the requirements and procedures of Section 81W, Ch.41. G.L." There is no evidence that the Planning Board took any steps to rescind the 1987 subdivision approval.

The subdivision regulations in effect when the 1987 Subdivision was approved did provide that a subdivision approval would be automatically rescinded if the endorsed subdivision plan was not recorded within six months of Planning Board approval; however, the 1987 Subdivision Plan was recorded on August 12, 1987, well within six months of the June 30, 1987 subdivision approval decision.

Subdivision Modification

The Applicants note that the Zoning Board of Appeals, acting under MGL c.40B, §§ 20-23, may modify, amend, or rescind the 1987 Subdivision Decision and the 1987 Subdivision Plan without regard to the statutory restrictions that would apply when a planning board acts to modify or amend or rescind a subdivision under MGL c.41, §81W. The Appeals Court has expressly concluded that MGL c.41, §81W "has no effect on a zoning board of appeals and in no way limits that board's authority under G.L. c.40B." Blue View Construction, Inc. v. Town of Franklin, et al., 70 Mass. App. Ct. 345, 353, review denied 450 Mass. 1105 (2007).

However, to avoid confusion and to provide full clarity for the record, the Applicants request that, when the Zoning Board of Appeals approves the proposed plan, that it do so using the following or similar language:

- *The plan approved under this decision (the "40B Plan") shall supersede the 1987 Subdivision Plan recorded at Barnstable Registry of Deeds Plan Book 437, Page 50 (the "1987 Plan") as follows:*
 - *The Lots 6-10 and Open Space Lot on the 1987 Plan shall be reconfigured as shown on the 40B Plan into one parcel (the "40B Parcel").*



- *The Way on the 1987 Plan shall be reconfigured as shown on the 40B Plan.*
- *The Way on the 1987 Subdivision, as reconfigured and approved under the 40B Plan, shall provide access only to the 40B Parcel and to the former 1987 Subdivision Lot 5 (said Lot 5 having been combined and merged with Lots 3 and 4 on the 1987 Plan (the site of the Bourne Fire Station at 51 Meetinghouse Road)).*
- *The Board determines that the Way shown on the 40B Plan approved hereunder provides sufficient access for the 40B Project and for the rear parking lot of the Bourne Fire Station at 51 Meetinghouse Road and that all frontage requirements that are necessary to support the Project and the Fire Station either are satisfied or are hereby waived.*
- *The June 30, 1987 Subdivision Decision is hereby modified to remove "Condition d" which provided that Lot 5 (i.e., now the rear parking area for the Fire Station) was restricted and "shall become a residential and not a business lot."*

PSC: Based on the information provided we reach the position that the 1987 subdivision was recorded and remains valid. Any subdivision modification should be subject to equitable resolution of property ownership issues. We take no exception to the proposed approval language. See evaluation of responses to Comments 1, 3, 4, 5, and 6.

3. Either apply to the Zoning Board of Appeals (acting as Planning Board) for a new definitive subdivision approval or for modifications to an approved subdivision if the subdivision remains valid. In either case the subdivision road is eligible to apply for approval, the issue is to identify the appropriate procedure.

HWG: See answer to comment 2 above.

PSC: The applicant has applied for modification of the Meeting House Subdivision (1987) which can be granted subject to equitable resolution of ownership issues. See evaluation of responses to Comments 1, 2, 4, 5, and 6.

4. In the drop off area at the main building entrance, revise the cul-de-sac island to accommodate fire apparatus and any large vehicles expected to use the site requires a new subdivision approval or modification.



HWG: The Applicant has included the emergency vehicle turning radius template with this memo to show that a fire truck is able to use the turnaround as well as a letter from Assistant Fire Chief Pelonzi regarding fire access at the proposed site.

PSC: Resolved.

5. As the subdivision roadway is unconstructed it cannot currently provide vital access. Therefore, procedurally the Applicants must petition to merge the subdivision lots under the subdivision process (with the ZBA acting as Planning Board). Given the incomplete construction of the subdivision road (no vital access), lots cannot be combined through the ANR or 81P process.

HWG: See response to comment 2 above.

PSC: Resolved; lots can be combined as shown on Sheet C-3 through subdivision modification.

6. Provide a subdivision plan complying with all requirements for recording in the registry of deeds.
 - a. Provide a signature block for the ZBA (serving as Planning Board) to endorse the plan.
 - b. Show metes and bounds for the Cape View Way layout. The general requirement of the registry of deeds is that sufficient geometric data must be provided to allow all points on the layout to be field located.
 - c. Show bounds to define the layout.
 - d. Record the approved plan in the Registry of Deeds.

HWG: The Applicant will provide a subdivision plan with all requirements for recording in the registry of deeds when the Site Plan Review is complete.

PSC: A subdivision modification can be granted subject to equitable resolution of the property ownership issues. See our evaluation of the response to Comment 1. In our opinion, only a single plan sheet showing the proposed subdivision "lot" need be prepared. Sheet 3 and serve as the basis for preparing the Definitive Subdivision Plan. The subdivision plan should be submitted prior to the ZBA prior to the vote to modify the existing Definitive Plan and prior to the ZBA vote on the overall project. We recommend seeking an opinion from Town Counsel as to whether separate notice is required prior to final action on the Definitive Subdivision Plan. Sheet C-3 of the plan set could be modified to serve as the Definitive Subdivision Plan with revisions which include the following:



- a. Add the title "Definitive Subdivision Plan"
- b. Provide a signature block for the ZBA (serving as Planning Board) to endorse the plan and the Town Clerk block.
- c. Show bounds (permanent monuments) to define the layout (PC, PT, and corner roundings).
- d. The new lot (all land outside the right-of-way) should be labeled as "Lot 1" with the area and area of upland stated.
- e. Show the Zoning District.
- f. The current lots be labeled as "Former Lot 86," "Former Lot 88," etc.
- g. The edge of right-of-way beyond the roadway terminus should be shown with dashed lines and the right-of-way labeled as "To Be Abandoned." Graphically, Lot 1 should be depicted so it is clear it includes the segment of the former right-of-way that is to be abandoned.
- h. Properties at 45 Meetinghouse Lane (original subdivision Lots 1 and 2) and 51 Meetinghouse Lane (original subdivision Lots 3, 4, and 5) should be graphically depicted so it is clear that they are included in the subdivision modification.
- i. Note that 51 Meetinghouse Lane (original subdivision Lots 3, 4, and 5) must be shown in their entirety.
- j. Graphically show the perimeter of the subdivision more prominently and adjust line weights for non-subdivision lots so it is clear what land is included in the subdivision.

Prior to building permit, the final modified Definitive Subdivision Plan should be recorded in the Registry of Deeds.

ZONING

The Applicants request waiver of certain provisions of the Town of Bourne Zoning Bylaws as follows: "Inspector of Buildings, Zoning Enforcement" (ZBL §1210), "Certification" (ZBL §1220), "Site Plan Special Permit Approval" (ZBL §1230), "Maximum Lot Coverage" (ZBL §2454), "Maximum Building Height" (ZBL §2455), "Enforcement.(ZBL §2460), "Subdivision Control Law Compliance" (ZBL §2498), "Rate of Development Scheduling" (ZBL §2640), "Exemptions.(ZBL §2650), "Table of" (*Parking*) Requirements" (ZBL §3320), "Number of Plants" (ZBL §3512(II)), "Parking Area Plantings" (ZBL §3513(IV)), "Natural Cover Removal" (ZBL §3570), "Earth Removal" (ZBL §4400)

In addition to requested waivers, additional waivers of strict compliance may be required.



7. Determine compliance or request waiver of strict compliance with the provisions of “Lot Shape” (ZBL §2480).

HWG: The perimeter of the lot is approximately 2,581 feet and the total area of the lot is 157,598 square feet. Therefore, the proposed project does not comply with the Lot Shape requirement (ZBL §2480). The Applicant will submit to ZBA a waiver from this requirement.

PSC: OK: waiver of strict compliance to be requested.

The Project Site is located in the R-40 Zoning District. The Town of Bourne Zoning Bylaw (ZBL) provides for single family residential and two-family use in the R-40 District (ZBL §2200). As a mid-rise multifamily residential use, the Proposed Project does not comply with the use and certain dimensional requirements of the R-40 District. The Applicants have requested waiver of certain provisions of the R-40 District. These waivers are necessary in order to allow the Proposed Project to be constructed as submitted. The Applicants zoning analysis and the waiver requests presume Cape View Way has the status of a way. See Comments 1 through 5.

The proposed project complies with the requirements of the R-40 District with respect to minimum lot area of 40,000 square feet (100,000+ square feet provided), the minimum frontage of 125 feet (125+ feet provided), the minimum side yard of 15 feet (15+ feet provided), and minimum usable open space of 20 percent (64% provided) (ZBL §2500).

8. The submittal states the usable open space provided is 64% of the lot area. Explain the apparent inconsistency of 47% total impervious materials coverage versus 68% total open space per the “Tabulation of Ground Area Coverages” in the Application.

HWG: The Applicant has reviewed this information and corrected it below and on the site plans. The areas have changed from the original submission due to the changes in the proposed subdivision plan.

PSC: Resolved; the “Tabulation of Ground Coverages” Table is revised to show total impervious coverage is 39%; total open space is 61%.

The applicants request waiver of strict compliance with the certain dimensional requirements of the R-40 District with respect to minimum front yard setback of 30 feet (10 feet provided), minimum rear yard of 15 feet (7.8 feet provided), maximum lot coverage of 20% (32% provided), and maximum building height of 35 feet (38.9 feet provided) (ZBL §2500).



STORMWATER

The site is provided with a stormwater management system that collects, treats, and infiltrates stormwater on site. Based upon on site wetlands, the Proposed Project is subject to the Massachusetts Wetlands Protection Act (MGL c. 131, § 40) and the stormwater management system must comply with the DEP Stormwater Standards and with the guidance of the Massachusetts Stormwater Handbook. The stormwater management system must also comply with Town of Bourne stormwater management requirements (unless waived) as set forth in the zoning bylaw and the Subdivision Rules and Regulations of the Planning Board.

Compliance with the Massachusetts Stormwater Standards

We evaluated the discussion of compliance the Massachusetts Stormwater Standards provided in the Stormwater Analysis and Drainage Report, and we conclude as follows:

Standard 1: No New Untreated Discharges or Erosion to Wetlands. There is no proposed discharge to wetlands.

HWG: No response required

PSC: No response is required.

Standard 2: Peak Rate Attenuation. Stormwater management system shall be designed so that post development peak discharge rates do not exceed pre-development peak discharge rates. The submitted Stormwater Analysis and Drainage Report tentatively demonstrates compliance. However, supplemental soils testing is required for final confirmation of compliance. See evaluation of response to Comment 11.

HWG: See response to Comment 11 below.

PSC: Resolved; peak rate attenuation will be confirmed by requiring a Massachusetts Soil Evaluator to confirm soil textures during construction and by redesign if soil textures observed during construction are not consistent with the submitted design.

Standard 3: Stormwater Recharge. Loss of the annual recharge to groundwater shall be eliminated or minimized through the use of infiltration measures, including environmentally sensitive site design, low impact development techniques, stormwater management best practices, and good operation and maintenance. As a minimum, the annual recharge from the post development site shall approximate the annual recharge from the pre-development site based on soil type. The standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook. The stormwater management system. The submitted Stormwater



Analysis and Drainage Report tentatively demonstrates compliance. However, supplemental soils testing is required for final confirmation of compliance. See evaluation of response to Comment 11.

HWG: See response to Comment 11 below.

PSC: Resolved; soil texture to be verified during construction. See evaluation of response to Comment 11.

Standard 4: Water Quality. Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS). This Standard is met when: 1) suitable practices for source control and pollution prevention are identified in a long-term pollution prevention plan, and thereafter are implemented and maintained; 2) structural stormwater best management practices are sized to capture the required water quality volume determined in accordance with the Massachusetts Stormwater Handbook; and 3) pretreatment is provided in accordance with the Massachusetts Stormwater Handbook. The submitted Stormwater Analysis and Drainage Report tentatively demonstrates compliance; however, additional pretreatment must be provided for the CB 100 infiltration system.

HWG: A Flexstrom® Pure Permanent Inlet Protection has been added to all catchbasins to provide additional pre-treatment.

PSC: Refer to Comment 26.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs). This standard is not applicable for the Project Site.

HWG: No response required.

PSC: No response required.

Standard 6: Critical Areas. The Project Site does not fall within a Critical Area as defined by the SWH and compliance with this standard is not required.

HWG: No response required.

PSC: No response required.

Standard 7: Redevelopment Project. This standard is not applicable for the Project Site.

HWG: No response required.

PSC: No response required.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Controls: The Applicant has provided sufficient information to demonstrate compliance.

HWG: No response required.

PSC: No response required.



Standard 9: Operation and Maintenance Plan. The Applicant has provided sufficient information to demonstrate compliance.

HWG: No response required.

PSC: No response required.

Standard 10: Prohibition of Illicit Discharges. An Illicit Discharge Compliance Statement has not been submitted.

9. Submit or state the timing for submittal of an Illicit Discharge Prohibition Statement.

HWG: The Applicant has updated the Stormwater Report to include this statement.

PSC: Resolved; the stormwater report states that an Illicit Discharge Prohibition Statement provided in the SWPPP.

Soils

The natural Resource Conservation Service mapping provided in the Stormwater Report classifies most of the on-site soils as “Carver Loamy Sand, 3 to 8 percent slopes (259B)” and a portion in the south portion of the site as Hinkley Loamy Sand, 3 to 8 percent slopes (245B). Both of these soil groups are well drained and are classified as Hydrologic Soils Group A (HSG A).

Numerous test pits have been excavated on the site and show a reasonably consistent soil profile. With some exceptions, the test pits show surface layers of Sandy Loam underlain by Sand. Test Pits E and F located in the northwest portion of the site are an exception. They show upper layers of Sandy Loam underlain by Gley Silt Loam, which is underlain by Fine Sandy Loam and sand or sand.

The Stormwater Handbook specifically requires soil testing at the location of the infiltration Best Management Practice (BMP). The on-site stormwater management system includes 6 subsurface structures including 4 URC systems with “Stormtech MC-3500” units and 2 precast concrete Recharge Basin (RB) systems. For the Storm Tech MC 3500 units, the Stormwater Handbook bases test pit requirements on the requirements for infiltration trenches. For URC-1 five test pits are required and for URC-2, URC-3 and URC-4, two test pits are required for each. There are no test pits located at any of the six on site infiltration BMP's which is not in compliance with the Stormwater Handbook. Due uniformity of the sites soil profile, it may be possible to defer additional testing until the construction phase. We recommend that the Sandy Loam layers be removed down to the sand layers and the excavation backfilled with Title 5 sand in order to ensure long term operation of the infiltration BMP's. We recommend that removal of the Sandy Loam be verified on-site by the engineer of record. The requirement for



on-site observation of removal of the Sandy Loam layers can be combined with on-site verification of the textural classification of sand layers at lower levels. The Applicants assume some risk that the subsurface structures may have to be redesigned; however, there is room on-site for expansion of these BMPs if required.

10. Revise the drawings to require on-site observation of removal of the sandy loam layers and backfilling with Title 5 sand at each of the 6 subsurface structures during construction.

HWG: The Applicant has added the following note "A registered Massachusetts soil evaluator must assess soil at every subsurface infiltration structure prior to installation to ensure consistency with the design."

PSC: We recommend inclusion of a Condition of Approval in any favorable Decision requiring that a Massachusetts soil evaluator shall assess soil at every subsurface infiltration structure prior to installation to ensure consistency with the design and in any instance where sandy loam remains below the bottom of stone, it shall be replaced with Title 5 sand.

11. Revise the drawings to require on-site soil texture classification by a Massachusetts Soil Evaluator at each of the 6 subsurface structures during Construction and to require design revisions if location specific soil data is not consistent with the submitted design.

HWG: The Applicant has added the following note on sheet C-8: "On-site soil texture classification by a Massachusetts Soil Evaluator at each of the 6 subsurface structures will be conducted during Construction and to require design revisions if location specific soil data is not consistent with the submitted design."

PSC: Resolved.

Calculations.

Revise the HydroCAD calculations as follows:

12. Limit sheet flow length to 50 feet in determining the time of concentration.

HWG: The Applicant has revised the HydroCAD calculations to limit sheet flow to 50 feet.

PSC: Resolved.

13. Revise the first flush calculations using 1.7 inches per the subdivision regulations.



HWG: The Applicant has requested a waiver from this requirement. The Massachusetts Stormwater Management Handbook requires 1 inch for calculating the water quality volume.

PSC: For the rapidly permeable soils found at the Project Site, the Massachusetts Stormwater Handbook allows use of 1-inch in calculating the water quality volume. Given that 1-inch is now the standard in Massachusetts, waiver of strict compliance with the local standard of 1.7-inches can be considered.

14. Add flow path to the watershed maps.

HWG: The flows paths have been made more prominent, so they are visible on the drainage maps. The updated drainage maps are included in the revised Stormwater Report.

PSC: Resolved.

Infiltration structures.

Subsurface structure peak water elevations are shown on sheet 15. However, the data is not labeled to show the URC system for which the peak elevations are determined. The top row of the chart which appears to show elevations for URC-1 the elevations do not match the HydroCAD Reports. The “Underground Chambers, Design Storm Elevations” table on sheet 15 should be deleted and replaced with a new table on sheet C-8 or C-9.

15. Revise the “Underground Chambers, Design Storm Elevations” table on sheet 15 to include labels for the rows as URC-1, URC-2, URC-3, URC-4. Revise the WQv (for 1.7-inch) peak elevation and add the 2-yr. peak elevation. The elevations in the top row do not appear to match the HydroCAD calculations.

HWG: The Applicant has requested a waiver from the 1.7-inch WQv requirement. The Massachusetts Stormwater Management Handbook requires 1-inch for calculating the water quality volume.

PSC: The “Underground Chambers, Design Storm Elevations” table has been revised. Refer to Comment 13 with respect to the 1.7-inch requirement.

16. Supplement the URC “Specifications” table on Sheet 17 providing the elevations for the bottom of stone elevation, bottom of structure elevation, top of structure elevation, top of stone elevation. Alternatively, this information could be labeled for each structure on Sheets C-8 and C-9.

HWG: The Applicant has provided this information on Sheet C-19 in the revised plan set.



PSC: Resolved.

17. Due to the maintenance burden, revise structure URC-1 to provide a single isolator row.
HWG: The Applicant has revised URC-1 to provide a single isolator row.

PSC: Resolved.

18. A double-ring infiltrometer test was performed at TP-F which resulted in an infiltration rate of 7.0-inches/hour. This infiltration rate was used to design URC-3. Although contiguous to URC-3, subsurface structure URC-2 is designed with an infiltration rate of 8.27-inches per hour. Revise the design of URC-3 using an infiltration rate of 7.00-inches per hour or provide two test pits substantiating the design infiltration rate of 8.27-inches per hour.

HWG: The Applicant has revised the HydroCAD calculations to use an 8.27-inches per hour infiltration rate for the design of URC-3, which is consistent with the soils observed in this area.

PSC: There is only one test pit in the vicinity of URC-2, URC-3, and URC-4 which is not sufficient. However, soils though much of the site are consistent. Therefore, we have agreed to allow soils testing during construction along with revision of the infiltration structures if required in order to use the infiltration rates based on actual soil texture. If the subsurface structures have to be enlarged, there is sufficient room on-site to accommodate larger footprints.

19. Provide time to drain calculations for URC-1, URC-2, URC-3, URC-4.

HWG: The Applicant has added the time to drain calculations in the revised Stormwater Report.

PSC: Resolved; all these structures drain in less than 72 hours.

20. Revise the design of Bioretention Area 2 in order to accommodate the revised island geometry at the building entrance. See evaluation of response to Comment.

HWG: The Applicant has revised the HydroCAD calculations to include the revised island geometry (i.e., drop off zone). Bioretention Area 2 was oversized and revising the area is not required. Due to minor changes in the drainage areas for the roof and the turnaround area, URC-4 has been changed from 15 to 12 chambers.

PSC: Resolved.



21. Provide requirements for bulkheading subsurface structures until the site is fully stabilized.
HWG: The Applicant has added an additional note on sheet C-2 of the revised plan set.
PSC: Resolved.

Treatment BMPs

22. The Water Quality Volume used in the sizing of the Bioretention Areas and the Tree Trenches is based on the 1-inch rainfall, not the 1.7-inch rainfall required by the Planning Board Rules and Regulations (PBR §352 D 1).
HWG: The Massachusetts Stormwater Management Handbook requires 1 inch for calculating the water quality volume. The Applicant has requested a waiver from this requirement.
PSC: We acknowledge that the Stormwater Handbook uses 1-inch in calculating the water quality volume in rapidly permeable soils. Refer to Comment 13.
23. Label the Sidewalk Inlet Grate on sheets C-8 and C*9 and reference the detail on Sheet 16.
HWG: Labels have been added to the Sidewalk Inlet Grate on sheets C-6 and C-8 of the revised plan set.
PSC: Resolved.

Collection System

24. Label pipe diameters, materials, and slopes.
HWG: The Applicant has provided labels on the revised plan set.
PSC: Resolved.
25. Relocate DMH 200 and eliminate the acute reverse flow angle.
HWG: DMH 200 has been adjusted to reduce the reverse angle.
PSC: Resolved; stormdrain system revised and DMH 200 is eliminated.
26. The CB 100 – RB 101 – RB 102 system provides 25% TSS removal prior to discharge to the infiltration BMP whereas 44% TSS removal is required.
HWG: Flexstorm® Pure Permanent Inlet Protection inserts have been added to all catch basins to provide additional 25% TSS removal. The manufacturer information has been added to the appendices of the Stormwater Analysis and Drainage Report



PSC: No objective government agency evaluation has rated this product for TSS removal efficiency, and we have concerns about durability as the insert could be damaged by a conventional clamshell bucket. Consider installing a DMH with 4-ft. sump and hood between CB 100 and RB 101.

Stormwater Waivers

The proposed stormwater management system does not comply with the planning board rules and regulations. Revise the submittal to comply or request waiver of strict compliance with the following.

27. Water Quality Depth shall be 1.7 inches.

HWG: The Applicant had requested a waiver from this requirement. The Massachusetts Stormwater Management Handbook requires 1 inch for calculating the water quality volume.

PSC: We acknowledge that the Stormwater Handbook uses 1-inch in calculating the water quality volume in rapidly permeable soils. Refer to Comment 13.

28. Request waiver of requirements for RCP pipe (PBRR §352 A 7).

HWG: The Applicant requested this waiver in a supplemental submission submitted to ZBA on May 13, 2021.

PSC: Use of HDPE pipe is allowed on private site in many communities. Extra care must be used in installation to avoid deformation and sags in pipe lengths. However, waiver of strict compliance can be considered and would not adversely impact the functionality of the stormwater management system.

29. Request waiver of prohibition for subsurface structures (PBRR §352 D 3.b).

HWG: The Applicant requested this waiver in a supplemental submission submitted to ZBA on May 13, 2021.

PSC: Subsurface structures are commonly used, and, in our opinion, waiver of strict compliance can be considered and would not adversely impact the functionality of the stormwater management system.

SITE PLAN

30. The building domestic water service and the building water protection line, and the proposed fire hydrant are located in proximity (hereinafter the “three connections”). To



improve reliability and safety, add two 8-inch diameter gate valves, one of each site of the “three connections” to enable the domestic water service, the building water protection line, and the hydrant to be fed from either direction. Adjust the waterline location slightly in order to enable locating the valve boxes for both recommended gate valves within the pavement.

HWG: The Applicant agrees with the comment and has updated the Utility Plans accordingly.

PSC: Resolved.

31. Coordinate with the Fire Department and determine the following:

- a. Is a second on-site fire hydrant required.

HWG: A second fire hydrant has been added to the plans at approximately 470-feet from the intersection with Meetinghouse Lane to comply with the maximum separation distance of 500-feet.

PSC: Resolved.

- b. Is a PIV valve required where the fire service enters the building?

HWG: Based on communication with Assistance Fire Chief Pelonzi, a PIV is not required.

PSC: Resolved.

32. Research availability of record data or provide a fire flow test.

HWG: The NSWDC conducted a fire flow test on July 22, 2021, at two hydrants closest to the proposed site. A letter summarizing the fire flow test results, from Resilient CE to the North Sagamore Water District, dated July 27, 2021, is attached to this memo.

PSC: Resolved.

33. Specify bituminous coated cement lined ductile iron pipe.

HWG: The NSWDC allows the use of PVC pipe for water mains. The plans have been updated to note watermain as PVC.

PSC: Given that PVC watermains are the community standard, their use should be allowed on the site. Further, should an emergency repair be required, the Water District is likely to have spare pipe and fittings in stock.

34. Show the limits of the waterline to be abandoned and identify the point of connection for the watermain extension.



HWG: Based on discussion with the NSWDC, the existing tapping sleeve and gate will remain in Meetinghouse Lane. A new gate valve will be installed in close proximity to the existing gate valve. The new watermain will be brought into the site after the new gate valve. The plans have been updated with additional detail.

PSC: Resolved as the connection reportedly complies with NSWDC requirements.

35. Coordinate with the Water District and determine if a three-valve connection is required or if a tapping sleeve and valve is permitted on Homestead Road.

HWG: Based on discussion with the NSWDC, the connection on Homestead Road will be a cut-in connection. A new gate valve will be installed on the northwest portion of the existing Homestead Road water main. A second gate valve and hydrant will be installed on the new connection from the site.

PSC: Resolved as the revised connection reportedly complies with NSWDC requirements.

36. Show a supply line if natural gas service is available.

HWG: Natural gas service is not available. Electric heat is proposed.

PSC: Resolved.

37. If natural gas service is not available show the location and spill protection provisions for the heating oil storage tank. The oil storage tank must comply with Fire Department requirements.

HWG: Electric heat will be provided, therefore a heating oil storage tank is not required.

PSC: Resolved.

38. Show an emergency generator if proposed and provide visual and acoustical screening. The generator should be gas fired if natural gas service is available. The generator should be located to minimize noise impacts on residents and abutters. If not desired to power the entire building, an emergency generator may be required in order to operate the elevator and maintain handicapped accessibility to the second and third floors of the building.

HWG: The Applicant has added a location for a diesel or propane powered emergency generator (diesel) pad in between the proposed building and the upper parking lot.

PSC: Resolved.



39. Specify the material for vertical faced curbing. Although more expensive than precast concrete curb, vertical faced granite curb is recommended in the turnaround area due to restricted vehicle maneuvering and tight geometry for snow plowing.
HWG: The Applicant currently is proposing granite curb where sidewalks are located and in the parking lots. Asphalt berm is proposed for the island at the turn around and along the southern side of the access road. A similar application has been used at other POAH developments successfully.

PSC: Resolved.

40. Specify a 4" thick superpave pavement section with a 1½-inch thick surface course and a 2½-inch thick intermediate course. Increasing the surface course from 1¼-inch thick specified in the subdivision regulations allows for increased aggregate size and increased strength.

HWG: As the driveway will not be a public road and the parking lots are on private property; the Applicant does not believe a 4" pavement section is required and the typical 3" pavement thickness is sufficient. The Applicant will submit to ZBA a waiver from this requirement (Subdivision 326.e).

PSC: A pavement section consisting of a 1½-inch thick surface course and a 1½-inch thick intermediate course is commonly used and while having less long-term durability than a 4-inch-thick pavement, the 3-inch superpave pavement section can be allowed.

41. The Zoning Bylaw which proscribes requirements for site lighting, limits the max./min. ratio to 4.0 whereas the max./min. ratio provided on the "speclines" photometric plan for Driveway is 14.0, for Parking A is 25.5, and for Parking B is 24.5 (ZBL §3453 c)). However, illumination levels provided are similar to illumination levels provided in comparable developments.

HWG: The Illuminating Engineering Society recommends a uniformity ratio maximum of 15:1 for parking lots. The Applicant reviewed other possible configurations to reduce the max./min. ratio. Due to the maximum coverage requirement of the proposed leachfield, lighting cannot be sited within the parking lot. As mentioned in the comment, the proposed lighting is similar to what is used in comparable developments. The Applicant will request a waiver from this requirement.

PSC: Although not optimal, an excess max to min ratio can be allowed for the site lighting system to reduce cost.



SEPTIC SYSTEM

Our peer review memorandum on the First Submittal of the Site Plans included twenty-one comments (Comments 42 through 62) on the preliminary design of the on-site septic system as shown on the submitted plans. The septic system proposed was a Presby system, a proprietary passive soil absorption and treatment, system approved by DEP for general use. In evaluating our comments, Horsley Witten determined that the proposed system did not comply with the requirements of the DEP General Use Authorization. The Second Submittal has deleted the Presby system and now provides a conventional Title 5 system. *Therefore, we note that in particular, Comments 49 through 53, 57, 58, 61, and 62 are not applicable as the Presby system is no longer proposed.* Additional Comments have been added.

42. The conventional Title 5 system location is shown as an outline of dashed lines overlapping the Presby beds. The Presby's state approval letter requires that the site to support a conventional system (primary and reserve). It's not clear that the area must be in a different location on the property, but the rectangular space provided is not supported with design calculations to prove that the space shown represents the conventional system's primary and reserve.

HWG: Based on further review of the design requirements for the Presby Innovative/Alternative leaching field previously proposed, HW has redesigned the leaching area to a pressure dosed Title 5 leaching trench system. This comment is no longer applicable.

PSC: Comment no longer applicable.

43. The site evaluation data excludes percolation tests. Granted sandy soil percolation rates are predictable but this test data will be required for final approval.

HWG: Percolation tests were conducted in Test Pits (TP)-B and TP-5. Results are shown in the soil test pit logs located on sheet C-11.

PSC: See new Comment 64.

44. Redoximorphic features (mottles) was recorded in the soil profiles but in a different area not representing the soils underneath the soil absorption system.

HWG: Soils in the area of the soil absorption system were found to be sandy in nature with no redoximorphic features encountered. The redoximorphic features were isolated to the western portion of the site, TP-E and TP-F.



PSC: The overall site consists of Barnstable Sandy Loam and Carver Loamy Sand soils. Where the 2 soil conditions become independent within the lot has not been determined by current soil evaluations. Field observations have recognized this change to be somewhere between TP-F and TP-C. A single deep observation hole within Field #1 soil absorption system's footprint does not confirm redoximorphic features are isolated to the western portion of the site. The redoximorphic features are supported by a layer of silt loam with seepage observed at 116" (TP-E) and redoximorphic features observed above the layer of silt loam at 48" (TP-F) alluding to a possible seasonal perched water table. Until the required number of deep observation holes and percolation tests are performed and accepted by the Board of Health witness one cannot be certain that the system is located within soils represented by TP-C.

45. The plan does not provide a 100% reserve area.

HWG: The revised leaching trench system design will provide 100% reserve area.

PSC: Overall system design is revised.

46. The plan does not provide deep observation holes and percolation tests verifying a suitable location for the reserve area.

HWG: Additional soil testing acceptable to the Bourne Health Department will be provided for the revised leaching system trench design if necessary.

PSC: The original comment was intended for the Presby system design that has been abandoned by the design engineer. Also see new Comment 64.

47. The mound height is stated but calculations are not provided for groundwater mounding as required for systems over 2,000 gpd.

HWG: Groundwater mounding calculations are included on sheet C-14 the revised leaching system trench design. Depth to groundwater is estimated at elevation 10, over 40-feet below grade. HW does not believe mounding will affect the leaching trench system design.

PSC: Resolved. Note: The silt loam layer has not been officially omitted from Field #1 soil absorption system's footprint. A perched water table is considered a design variable

48. No information provided for the high groundwater elevations provided.



HWG: Regional groundwater contour data indicates a groundwater elevation of 10-ft, which is approximately 40-feet below grade at the site. No standing water was observed during soil testing. See image below from plan titled "Altitude of Water Table in Plymouth-Carver Area, Southeastern Massachusetts, November 30 – December 2, 1984, prepared by Bruce Hansen and Wayne Lapham, 1992".

PSC: The silt loam layer has not been officially omitted from Field #1 soil absorption system's footprint. A perched water table is considered a design variable.

Comments 49 through 53: These comments are specific to the Presby system which is no longer proposed. These comments are no longer applicable

54. No calculations provided for the pump chamber daily dose (6 doses daily minimum), emergency storage volume, and pressure line backflow volume.

HWG: The revised design includes detailed pressure dose calculations for the leaching trenches including head loss, required pump rate, float elevations and dosing volumes.

PSC: Resolved.

55. No pump specifications, inside dimensions for the pump chamber, actual dynamic head, pump performance curve (total dynamic head versus flow rate), and manufactured stated flow rate for the actual dynamic head calculated.

HWG: The revised design includes detailed pressure dose calculations for the leaching trenches including head loss, required pump rate, float elevations and dosing volumes.

PSC: Resolved.

Comments 56 through 58: These comments are specific to the Presby system which is no longer proposed. These comments are no longer applicable

59. No weep hole provided in the pressure line for backflow return to pump chamber.

HWG: The revised design includes a weep hole to allow backflow from the multizone valve to the pump chamber. HW is not proposing to drain the entire forcemain back to the pump chamber.

PSC: See new Comment 71.

60. Final grade provided above the pressure line length does not provide proper cover to provide protection from freezing. If buried deep the line will have a bow preventing



backflow to pump chamber due to both ends of the pressure line are at the same elevation.

HWG: HW will ensure that the forcemain is buried a minimum 4-feet below grade to protect from freezing. The dosing calculations for the revised pressure dosed leaching trenches incorporate the volume of the forcemain to ensure that the required dose volume is provided to the leaching trenches. HW is not aware of a requirement for the entire forcemain to drain back to the pump chamber with each pump dose. Distribution laterals in the proposed leaching trenches will be sloped to drain.

PSC: The original comment was directed to the Presby system design as presented. Also see new comments 69, 70 and 78.

Comments 61 and 62: These comments are specific to the Presby system which is no longer proposed. These comments are no longer applicable

ADDITIONAL SEPTIC COMMENTS BASED ON THE REVISED CONVENTIONAL DESIGN

63. Sheet C-11. Soil test data does not have a Board of Health witness identified. State and local regulations require a witness representative.

64. Sheet C-11. Sheet C-11. Percolation test results were added to section "Soil Test Pit Data" for TP-B and TP-6. Both tests were performed outside soil absorption system Field #1 and soil absorption system Field #2 footprints. Typically, percolation tests are required to be performed within the footprint. The minimum number of percolation tests for a soil absorption system sized for over 2,000 gallons per day has not been established as required by the state design requirements; Title 5, 310 CMR 15.000. State and local regulations require a Board of Health witness representative.

65. Sheet C-12. Soil Absorption System (SAS) is represented by two deep observation holes determined by the design engineer. Title 5 allows the Board of Health witness to determine if the minimum number of deep observations holes performed represent soils supporting the design. This decision also includes the number of percolation tests to represent soils supporting the design. For a SAS that discharges over 2,000 gallons per day, Title 5 requires additional percolation tests in addition to the required 2 percolation tests, spaced evenly over the proposed SAS. Both proposed fields exceed 2,000 gallons per day discharge and would be governed by this requirement.



66. Sheet C-13. Inner diameter (ID) measurements are not provided for the pump chamber to verify emergency storage volume and dose volume. Calculations for the emergency storage and dose volume is typically provided by the design engineer.
67. Sheet C-13. Septic tank, pump chamber, valve vault, and multizone valve manhole outer diameter measurements not provided. The schematic drawings are useful to verify final grade cover over components, force main lines, etc.
68. Sheet C-13. Multizone valve manhole detail. The pressured force mains dedicated to SAS field #1 and SAS field #2 should be reversed to be consistent with Sheet C-11. Sheet C-11 design supports left-side pipe exiting to serve field #2 and the right-side pipe exiting to serve field #1. Manhole detail is inconsistent with Sheet C-11.
69. Sheet C-13. Multizone valve manhole detail. Left-side piping is noted to provide a "45 elbow down" to provide freeze protection. Recommend adding a note to include the entire force main to be below 4' of cover prior to SAS field #2's manifold connection. The topography changes throughout the property. This note will provide installation guidance to protection the force main from freezing. The manifold is noted to be 4' minimum below final grade (Sheet C-14).
70. Sheet C-13. Multizone valve manhole detail. Right-side piping is noted to "slope away from multizone valve". No installation guidance to protect the force main pipe from freezing as it runs from the multizone valve manhole to the buried manifold set at a minimum 4' under final grade. Provide a similar 45-degree pipe requirement as required for the left-side including a continuous 4' cover that would provide protection for the pressured force main.
71. Sheet C-13. Wastewater system schedule of elevations. The valve vault's 4" drainpipe's elevation invert is not provided. The valve vault's 4" drainpipe elevation invert for the pump chamber is not provided. No specifications or manufacture provided for noted "swing check valve".
72. Sheet C-14. Vent system for the SAS is limited in detail. No schematics provided for the 4" PVC vent pipe lateral connection to the 4" PVC manifold. No information provided for type of 4" PVC piping required i.e., perforated 4" pipe for laterals and solid 4" PVC pipe for manifold.



73. Sheet C-14. No details are provided for vent pipe stack i.e., height above grade. No details for vent manifold i.e., negative pitch to allow sewer gas to escape.
74. Sheet C-14. No details are provided for reducing the 4" manifold pipe diameter to 1/8" diameter lateral. No details provided for force main connecting to the 4" manifold pipe diameter.
75. Sheet C-14. No perforated lateral details are provided for Field #1. The number of perforations in Field #1 laterals alternate from 14 holes to 13 holes for every other lateral. Offset spacing measurement from end of lateral is not provided for the 14 perforated lateral(s).
76. Sheet C-14. Field 1 - pressure distribution calculations. The length of manifold used (128') in calculation is inconsistent with the manifold length shown in Leaching Field 1's site plan.
77. Sheet C-14. No perforated lateral details, Field #2. The number of perforations in Field #2 laterals alternate from 13 holes to 12 holes for every other lateral. Offset spacing measurement from end of lateral is not provided for the 13 perforated lateral(s).
78. Sheet C-14. No detail provided for the lateral clean out. No drain hole provided to allow complete drainage of the 0.5 percent sloped lateral(s). Current perforations positioned at 5 and 7 o'clock will allow for some effluent to remain in piping. The depth of laterals is less than 4' with possible freezing due to liquid remaining and no 6 o'clock drain hole(s) provided.
79. There is a stamp on the plans stating, "permitting set only not for construction."
Describe the schedule for working drawings and provisions for review by the Town.

COMMENTS FROM THE TIA PEER REVIEW

Our review of the TIA for Cape View Way, gave rise to recommended site plan modifications. We restate these issues to ensure they are addressed in revised site plans. Revised site plans should address the following:

- Any sidewalk obstructions (signs, hydrants, etc.) to be placed to reserve a 48-inch-wide accessible path.



HWG: The Applicant has placed all obstructions outside the sidewalks, which are 60 inches wide.

PSC: Resolved.

- For walkways at the head of perpendicular parking space, widen the sidewalk to 7½-ft., provide parking bumper blocks, or providing a loam strip to maintain a minimum accessible route.

HWG: Handicapped parking spaces are not provided in this parking lot and to keep impervious cover to a minimum we believe the 5' dimensions is sufficient for this sidewalk and consistent with standard parking lot design.

PSC: We believe that a 5-ft. wide sidewalk at the head of perpendicular parking spaces cannot be relied upon to maintain an accessible route. The sidewalk can be widened or alternatively a grass strip or parking blocks can be provided to maintain the accessible route.

- Provide an outdoor bicycle rack be provided for visitors.

HWG: The Applicant has added a bicycle rack near the drop off area that will fit up to eight bicycles.

PSC: Resolved.

- For the 4 compact perpendicular parking spaces that are accessed from the pavement within the turnaround at the building entrance, provide an overall width of this parking bay (aisle plus parking space) of 42-ft. to ensure proper vehicle maneuvering.

HWG: The Applicant has updated the parking spaces to 60-degree angled parking. The width of the aisle behind these spaces is 17 feet, which exceeds the Bourne parking regulations requirement of 16 feet clear behind a 60-degree angled parking space.

PSC: Resolved.

- The turnaround with center island at the end of Cape View Way that has been adapted to serve as a drop-off at the building entrance. Modify the inner radius of the turnaround to accommodate a fire truck or the largest vehicle expected to regularly access the site.

HWG: The emergency vehicle turning radius template has been submitted along with a letter from Assistant Fire Chief Pelonzi to demonstrate the Bourne fire truck dimensions provided is able to use the turnaround.

PSC: Resolved.



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- Provide signs prohibiting parking along Cape View Way.
HWG: Based upon property management experience at other POAH facilities and to avoid sign clutter, the applicant prefers to not add the signs at this time. We suggest a condition be added to the approval that signs will be installed if illegal parking along the access drive becomes an issue.
PSC: Installation of “No Parking” signs (MUTCD R8-3) can be deferred; however, we recommend inclusion of a Condition of Approval in any favorable Decision requiring the property manager to write a letter to the Building Inspector one year after occupancy describing their efforts to monitoring parking demand.