March 19, 2022

Pembroke Planning Board
Town Hall
100 Center Street
Pembroke, MA 02359

ATTN: Matthew Heins, Planning Board Assistant

RE: Response to Peer Review
Site Plan – 631 Washington Street
Pembroke, Massachusetts
Applicant: Nike Construction Services, LLC

Merrill
Engineers and Land Surveyors

Cavanaro Consulting

HANOVER OFFICE:
427 Columbia Road
Hanover, MA 02339
781-826-9200

NORWELL OFFICE:
687 Main Street
Norwell, MA 02061
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40 Court Street, Ste 2A
Plymouth, MA 02360
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MARINE DIVISION:
26 Union Street
Plymouth, MA 02360
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merrillinc.com

Dear Matthew and Board Members:

Attached please find 3 sets of revised plans and a revised Stormwater Management Report for the above referenced project. Since the revisions did not change any watershed boundaries, no revised Watershed Plans are being submitted.

The revisions have been made in response to the Planning Board Public Hearings and the peer review comments from Thomas C. Houston, P.E., AICP, Consulting Engineer, dated March 7, 2022. Our responses to the review comments are presented below and follow the format of the peer review report. The original review comments are presented in *italic* text and our responses are presented in ***bold italic text.***

ZONING BYLAWS

Section IV Use and Dimensional Regulations

Special Permit. As provided in the Zoning Bylaws, Town of Pembroke, Massachusetts (ZBL), the Project Site is located in the Residential – Commercial District where multiple unit dwellings are permitted by Special Permit with the Planning Board serving as Special Permit Granting Authority (SPGA).

Density. Within the District, the Zoning Bylaws provide that multi-dwelling structures, are not to exceed a density of four dwelling units per acre…" (1 Unit / 10,890 sq.-ft.) (ZBL SECTION IV. 3. B.). The proposed density of 1 Unit / 11,763 sq.-ft. complies with the requirements of Paragraph B. Further, "All multiple unit dwellings are limited to no more than one dwelling unit per 10,000 square feet of lot area…" excluding from the lot area calculation "all easements, cranberry bogs, wetlands, floodplains and watershed areas (ZBL SECTION IV. 3. D.). As no easements, cranberry bogs, wetlands, floodplains or watershed areas are shown within the Project Site, the proposed density of 1 unit/11,763 sq.-ft. also complies with Paragraph D.

No Comment

Determination of Front and Rear Yards. The boundary of the Project Site includes segments of the west sideline of the right-of-way of Washington St. and the east sideline of the right-of-way line of Old Washington St. The Zoning Bylaws define a "Way Line" as the "property line which abuts the way along which the lot gains its frontage and its access" (ZBL SECTION II). The sole proposed site drive gains its access

from Old Washington Street. Therefore, we concur with the analysis provided by Merrill that considers Old Washington St. to be the lot frontage and considers the west sideline of the right-of-way line of Washington St. right-of-way to be the rear property line. Other lot lines are sidelines.

No Comment

Nonresidential Abutter. The submitted zoning analysis considers the abutting property at 625 Washington St. occupied by Maximum Impact Marketing to be a nonresidential use; however, the building retains residential characteristics. The Board may wish to obtain information concerning the use of this property.

It is our understanding that there is no Residential Use on the adjacent property currently.

Dimensional Regulations. The Proposed Project complies with certain dimensional requirements of the Zoning Bylaws as follows: front setback (100-ft. min. required, 100.9-ft. provided), front setback to paved area (100-ft. min. required, 100.4±-ft. provided)side setback from residential lots (100-ft. min. required, 100-ft. provided), rear setback (50-ft. min. required, 52.1-ft. provided), sideline buffer (16-ft. min. required, 16-ft. provided), rear buffer (16-ft. min. required, 16-ft. provided), building height (2.5 stories max. permitted, two stories provided), lot perimeter ratio (greater than 55 required, 76.2 provided), lot coverage (less than 60% max. permitted, 15.9% provided), lot width (170-ft. min. required, 209.8-ft. provided), building height (2½ stories max. permitted, 2 stories provided), and building floor area (less than 35% max. required, 10.2% provided) (ZBL SECTION IV. 2. D.).

1. *Correct the zoning table and dimension labels on sheet 4 to show a required rear yard setback of 50-ft., not 40-ft. (ZBL SECTION IV 2.d.6), noting that the setback provided of 52.1-ft. complies.*

The Zoning Table has been updated

Relief. Recognizing that the Proposed Project does not comply with certain dimensional requirements of the Zoning Bylaws, the Applicant petitioned the Zoning Board of Appeals and relief was granted under Case number 11-21 dated January 20, 2022. The Zoning Board of Appeals granted: a variance of minimum side setback requirements (40-ft. min. required, 31±-ft. allowed), a variance of minimum lot area requirements (120,000 sq.-ft. min. required, 105,563 allowed), and a variance of curb type requirements on certain segments of the drive and parking area (bituminous berm not permitted, bituminous berm allowed) (ZBL SECTION IV. 2. D.). Review of the January 10, 2022 Zoning Board of Appeals meeting minutes shows the motion to grant the requested variances was granted by unanimous vote with the "stipulation that the outbuildings are torn down and there is no other access to the site post-construction from any street other than Old Washington Street." The submitted site plans comply with this stipulation.

No Comment

Section V Special Provisions, Standards and Procedures

Signs. No project signage is shown (ZBL SECTION V. 1.B.).

2. *Provide information on project signage if proposed.*

A proposed engraved boulder sign with downward facing dark sky compliant lighting has been proposed and a detail has been added to sheet 9 of 9.

Off street Parking. In the Residential Commercial District for multiunit dwellings, two parking spaces are required per dwelling unit. Eighteen parking spaces are required, nineteen parking spaces are provided of which one is an accessible parking space (ZBL SECTION V. 4. A.)

No Comment

Impact Standards. During construction, noise will impact nearby residences. Following project completion, noise, vibration, flashing, smoke, cinders, dust, fumes, gasses odors, and electromagnetic interference created by the residential use are not expected to cause significant impacts on abutting properties (ZBL SECTION IV. 6.).

3. *Add a note to the plans limiting construction activity including engine warmup and site deliveries to the hours of 7:00 AM to 7:00 PM on weekdays and no work on Saturdays, Sundays, and legal holidays.*

A note has been added to the Grading and Utility Sheet as required.

Site Plan Approval. The Proposed Project is comprised of Multiunit structures and all structures other than single family and two-family structures are subject to requirements for site plan approval (ZBL SECTION V. 7.).

Erosion, Dust, Siltation Control, and Demolition – The plan for erosion, dust, and siltation control should be revised as follows (ZBL SECTION V. 7.D 11):

4. *Specify mulch fill for the erosion sock.*

A note has been added to the Silt Sock Detail as requested.

5. *Specify that erosion controls are to be inspected by the Planning Board staff or agent prior to any other sitework. Alternatively, specify that the engineer of record shall submit a letter to the Planning Board stating that the erosion controls have been inspected.*

A note has been added to the Erosion Control Plan under "Construction Sequence" as requested.

6. *The construction phase O&M Plan specifies two different limits for bare earth stabilization, 10 days and 14 days. This should be standardized specifying that no bare earth condition will remain for more than 10 days prior to stabilization.*

This has been updated as requested

7. *Specify that Old Washington Street shall be swept immediately whenever accumulated sediment if visible.*

   This is already noted in the "Stabilized Construction Entrance" detail, note #7 on the Erosion Control and Demo Plan.

8. *Specify that dust control shall consist of the application of clean water.*

   A note #18 has been added to the Demolition Notes on the Erosion Control and Demo Plan.

9. *Specify that on-site burial of stumps, demolition debris, construction waste, or other deleterious materials is prohibited.*

   This is already noted in the "Removals" note #5 on the Erosion Control and Demo Plan.

10. *Specify that the building must be inspected for lead paint and remediated by a licensed contractor if required.*

    A note #7 has been added in the "Removals" notes on the Erosion Control and Demo Plan.

11. *If on-site refueling is to be permitted, revise the plans to retain the existing paving behind the house and enclose it with a bituminous berm and add a note requiring all refueling to take place on this impervious surface.*

    This has been added to the Erosion Control and Demo Plan as requested.

12. *Modify the Stabilized Construction Entrance Detail showing a shallow depression in the center to better contain sediment.*

    The detail has been updated as requested.

13. *Include Board of Health requirements for septic system or cesspool abandonment.*

    A note #8 has been added in the "Removals" notes on the Erosion Control and Demo Plan.

14. *Extend the temporary construction fence around the proposed infiltration basin until construction of the basin begins to prevent compaction of soil in this area.*

    The construction entrance has been moved to the south and a temporary construction fence has been added to the Erosion Control and Demo Plan.

15. *Prevent silt laden runoff from entering the permanent infiltration basin until the site is fully stabilized by providing a plan for temporary diversion to a temporary stormwater basin or other means.*

    A note has been added to the Erosion Control and Demo Plan.

Recording Requirements in the Plymouth County Registry of Deeds – The approved site plan must be recorded with the Plymouth County Registry of Deeds within 30 days following expiration of the 20-day appeal period (ZBL SECTION V. 7.F 9). Each plan to be recorded must meet recording requirements. The engineer of record should consult with the Planning Board office to establish which plan sheets must be recorded. Excerpts from Registry requirements are provided hereinafter. Detailed plan recording requirements are stated in the "Plymouth County Registry of Deeds, "Indexing Standards," January 1, 2018.

16. *Submit original reproducible plans: 1) bearing original signatures and seals of the Massachusetts Professional Engineer and the Massachusetts Professional Land Surveyor, 2) maximum sheet size 24-in by 36-in., 3) ¾-inch borders, 4) media linen or mylar (single matte, 3 mils thick), 5) durable ink, 6) $^{1}/_{10}{}^{th}$ inch lettering minimum, 7) graphic scale, 8) 3½-in. Registry Square, and 9) Certification Clause stating that the perparer conformed with the rules and regulations of the Registers of Deeds in preparing the plans.*

    The applicant requests that this be a condition of approval.

RULES AND REGULATIONS GOVERNING SITE PLAN APPROVAL

The site plan submission is governed by the Planning Board Rules and Regulations Governing the Issuance of Site Plan Approval (RRSPA).

Waiver of Strict Compliance

The applicant has petitioned for waiver of strict compliance with the following provisions of the Planning Board Rules and Regulations Governing the Issuance of Site Plan Approval.

- *Waiver of Section IV 4.7 Requirement for a Landscaping Plan stamped by a Registered Landscape Architect.*

    Due to relatively small nature of the proposed project and the layout of the access driveway from the Old Washington Street, the project would appear similar to a small subdivision when driving by. Subdivision roadways do not require a landscape architect to prepare the planting plans so there would be no impact to the public interest in waiving this requirement, and this would be in keeping with other projects of this size which have been approved by the Board.

- *Waiver of Section IV 4.22 Requirement for a Traffic Impact Study*

    With 9 residential units proposed, the impacts on traffic would be minimal and would be consistent with other similar projects where this requirement has been waived in the past.

- *Waiver of Section V 5.3.2.1 Requirement for a 25' buffer screen between infiltration basin and roadway/adjacent parking area*

    This waiver allows the stormwater basin to be located as far away from the abutting residential properties as possible while providing enough basin

capacity to minimize the runoff from the basin during larger storm events. In order to meet this requirement, the basin would have to be located on the southerly side of the driveway, reducing the buffer to the residential properties to the south.

— *Waiver of Section V 5.6.2 Requirement that curbing not be bituminous concrete.*

The waiver of vertical concrete curbing will make access to all side of the buildings easier for emergency vehicles. Additionally, future maintenance of the stormwater basin and septic system will be easier by allowing vehicle access to those areas.

— *Waiver of Section VI 6.0 Requirement for a Development Impact Statement*

As allowable under Section VI 6.02, the Planning Board may waive the requirements for a Development Impact Statement. With the proposed project being limited to 9 units and not located near any wetland resource areas or critical areas environmental areas, along with the fact that ultimately it will have a Title V compliant septic system installed to handle the septic flows, there will not be any degradation of the environmental health of the community or the Town's resources.

— *Waiver of Section IV 6.7 Requirement for a Traffic Impact Assessment*

Since the proposed development is only comprised of 9 units and would be considered a fairly low intensity use. It would be expected that this use would result in a total of approximately 52 trips per day from the site (26 ea. entering & exiting the site) which is a negligible increase relative to the capacity of Old Washington Street.

17. *State why each waiver is in the public interest.* ***(See Above responses)***

<u>*Section II – Application*</u>

2.4. One (1) copy of all local, including variances and special permits, state, and federal approvals, shall be obtained, "<u>prior to site plan submission</u>" (emphasis added).

18. *Obtain the following permits prior to proceeding with Site Plan Review or seek waiver of the requirement to obtain approval prior to site plan submission (RRSPA Section II, 2.4). Obtain the following permits.*
    a. *Special Permit for Multiunit development from the Planning Board (being processed concurrently with site plan submission, not prior to).* ***This has been requested as part of this application.***
    b. *Access Permit from MassDOT.* ***No access to the State Highway Layout is required and as such no Access Permit is necessary for this project.***
    c. *Land Disturbance Permit from the Pembroke Board of Commissioners of the Department of Public Works.* ***The Applicants request that this be a condition of approval, after the Special Permit and Site Plan review approvals have been issued.***
    d. *NPDES Construction Phase NOI.*

The Applicants request that this be a condition of approval, after the Special Permit and Site Plan review approvals have been issued.

<u>*Section IV Site Plan Content*</u>

19. *Show the location and name of all streets, any and all driveways, and curb-cuts within three hundred (300) of the site (RRSPA Section IV, 4.2).*

    The location of all streets, driveways and curb cuts within 300' of the site are shown on the Vicinity Map consistent with other projects that have been approved in the past.

20. *Extend the depiction of other features (topographic) to all additional areas within 200-ft. of the site (RRSPA Section IV, 4.4).*

    The Applicant requests a waiver to this requirement; some of this information is shown on the Vicinity Map.

21. *Show contours extending for 50 ft. off-site (RRSPA Section IV, 4.6).*

    The Applicant requests a waiver to this requirement as the surrounding areas are very flat and any impacts to abutting roadways or properties would be minimal.

22. *Provide information on the capacity of abutting utilities: specifically provide a fire flow test (RRSPA Section IV, 4.8). See Comment 30.*

    After checking with Acting Fire Chief James Shea, he has indicated that the Fire Department will not be requiring a fire flow test. (Per email dated 3/15/22; he also confirmed the location shown on the plans for the proposed hydrant was fine for Fire Department purpose's)

23. *Show the layout, structures, inverts, and drainline (sizes, materials, slopes) of the municipal storm drain system if any direct or indirect overland flow connection is proposed (RRSPA Section IV, 4.8).*

    The approximate layout of the drainage system has been shown on the plans, the Applicant requests that the requirement to show the slope of the main drainage trunk line be waived for safety purposes of obtaining the inverts from the drain manholes in the middle of Old Washington Street.

24. *Submit documentation and samples of building façade and roof materials, finishes, and colors (RRSPA Section IV, 4.10).*

    Information and specifications of the windows, siding and roofing materials have been attached to this letter.

25. *Add the percent of paved (impervious) area to the tabulation on sheet 4 (RRSPA Section IV, 4.12).*

    The percentage of paved impervious area has been added to the Zoning Requirements table as requested.

26. *Provide the total square footage of both buildings (RRSPA Section IV, 4.18).*

    The square footage of each building is shown in plan view on the Layout, Zoning and Landscape Plan.

27. *Show the existing septic system location and specify Board of Health procedures for abandoning the system including removal of saturated or contaminated soil (RRSPA Section IV, 4.19).*

    The existing septic system is already shown on the Existing Conditions Plan (sheet 2); abandonment and removal notes will be included on the Septic Design Plans and Details as required by the Board of Health but have been added to the Erosion Control and Demo Plan as requested.

28. *Provide both a trash dumpster and a recycling dumpster (RRSPA Section IV, 4.19).*

    The dumpster area has been increased to provide for a rollout recycling dumpster as requested.

29. *State water consumption and wastewater generation (RRSPA Section IV, 4.19).*

    The water consumption and wastewater generation have been added to the Layout Zoning and Landscape Plan.

30. *Determine available water pressure and flow (RRSPA Section IV, 4.19):*
    a. *Provide a fire flow test. Show compliance of deliverable flow with NFPA and Fire Department requirements.*

       See response to comment #22

    b. *Confer with the Fire Department and determine if an on-site fire hydrant is required. A hydrant detail is provided on the detail sheets but not shown in plan view.*

       See response to comment #22

31. *Determine if the proposed buildings require a fire sprinkler system by NFPA or State code or by local Fire Department requirements (RRSPA Section IV, 4.19). If a fire sprinkler system is needed:*
    a. *Revise the plans to show the fire protection services for the buildings if required.*

       After discussing with the Acting Fire Chief, a sprinkler room has been added to the easterly side of the 5-unit building.

    b. *Determine if the Fire Department requires a PIV valve on the sprinkler service line.*

       A PIV Valve will be installed, if necessary, the Applicant requests that this be a condition of approval.

32. *Establish Water Department connection requirements (RRSPA Section IV, 4.19).*
    a. *Determine if the Water Department requires a three-way connection and provide valve boxes adjusted to grade.*
    b. *Alternatively, determine if a tapping sleeve and valve is permitted and provide a valve box adjusted to grade.*

    A tapping sleeve and valve have been used on similar projects and as such, a detail is already on sheet 8 of the planset.

33. *Label the proposed 6-in. diameter water line as CLDIP Class 52.*

    The water line label is shown on the Grading and Utility sheet.

34. *Provide information on any project signs that are proposed (RRSPA Section IV, 4.19).*
    a. *Show the height, size, and location.*

    A Boulder Wall Sign Detail has been added to sheet 9 of the planset.

    b. *Applicant is encouraged to include photographs and /or sketches.*

    See previous response.

    c. *Downlighting that is compatible with "dark skies" design should be provided.*

    See previous response.

35. *Profile views are not provided; however, we note that site grades are flat and would not show well in profile views (RRSPA Section IV, 4.24).*

    No Comment

Section V – Requirements

5.1 Site Landscaping

36. *Trees to be preserved should be labeled on Sheet 4 (Section V. 5.1.1).*

    A note has been added to the Layout, Zoning and Landscape Plan as requested.

37. *Provide a tree protection detail showing construction fencing or other physical barrier located at the dripline (Section V. 5.1.1).*

    A detail has been added to sheet 9.

5.1.4 Twenty five percent open space is required. The tabulation on sheet 4 states that 15.9% open space is proposed. However, we believe that the proposed undeveloped area south of the development footprint should be counted as open space. Therefore, we conclude that the landscaped area provided complies.

The Zoning Requirements table provides a percentage for "Lot Coverage" which is shown as 15.7%; then in parenthesis below, the Open Space is shown as being 84.3%. The Landscape Requirements have been updated as requested.

38. *The Bradford Pear trees (Pyrus calleryana 'Bradford') that are provided contiguous to the parking area are specified as 2 to 3-in. caliper. Replace these trees specifying a 4-in. caliper minimum (Section V. 5.1.5)*

    The applicant requests a waiver to this requirement, and requests the Board allow 2"-3" caliper trees to be used within the project area.

39. *Provide one additional shade tree that is contiguous to the parking area specified as 4-in. caliper minimum (four 4-in. caliper trees required for 19 parking spaces). The Kousa dogwood trees and the clump birch trees would be costly and potentially difficult to obtain if 4-in. caliper is specified (Section V. 5.1.5).*

    See previous response.

5.2 Site Lighting

The submitted lighting plan generally complies with requirements (Section V. 5.2) . Fixtures are "shoe box type" (shielded) incorporating "dark skies" design. Flood lights are not proposed. Pole heights are 16 ft. and wall pack mounting heights are 12 ft. The parking area averages 1.5-foot-candles which is appropriate for a residential property. Fixture lenses do not project below the enclosure not creating point sources of light visible from offsite and should be "only visible from below (Section V. 5.2.1)." Illumination levels are reduced to zero at the lot lines to abutting properties (Section V. 5.2.2). Lighting pole height complies (20 ft. max permitted, 16 ft. provided) (Section V. 5.2.3). Wall-pack building mounted fixtures are shielded and incorporate "dark skies" design (Section V. 5.2.4). Pole mounted and wall-pack fixtures provide illumination levels of less than 8-foot-candles immediately below the fixture (Section V. 5.1.5).

No Comment.

5.3 Drainage

The site stormwater management system is evaluated for compliance with the Massachusetts Stormwater Handbook and Section 5.3 of the Planning Board Rules & Regulations Governing the Issuance of Site Plan Approval (Reference C).

Our evaluation of the design's compliance with the Stormwater Standards is summarized as follows:

Standard 1: No New Untreated Discharges or Erosion in Wetlands. "No new stormwater conveyances (e.g., outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth."

There is no direct discharge to wetlands. Design of the pretreatment BMP must be revised in order to provide proper stormwater treatment.

The vegetated filter strip has been removed and a second sediment forebay has been added.

Standard 2: Peak Rate Attenuation. "Stormwater management systems shall be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. This Standard may be waived for discharges to land subject to coastal storm flowage as defined in 310 CMR 10.04."

The stormwater report tentatively shows that the post development peak flow to all three design points is less than the predevelopment peak flows. However, a supplemental soil test, stormwater basin redesign, and a revised mounding analysis are required to confirm the basis for the initial statement of compliance with Standard 2.

The soils on site appear to be consistent and the basin as proposed does not take up a lot of area. With this in mind the Applicant requests that the requirement for the third testpit be waived by the Planning Board.

(See response to comment #49 below regarding the mounding analysis)

Standard 3: Annual Recharge to Groundwater. "Loss of 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 best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This 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 report states compliance, however, a supplemental soil test, stormwater basin redesign, and a revised mounding analysis are required to confirm the basis for the statement of compliance with Standard 3.

See previous response.

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)."

The pretreatment BMP must be redesigned and must provide 44% minimum TSS removal prior to discharge to the infiltration BMP due to rapidly permeable soil.

Although it is our opinion that the 50' vegetated filter strip has been designed in accordance the Stormwater Handbook and will provide a far superior level of treatment, it has been eliminated and replaced with a second sediment forebay as requested. An updated Pretreatment TSS calculation has been provided.

Standard 5: Land Uses with Higher Potential Pollutant Loads (LUHPPLs). This standard does not apply to the Site.

No Comment

Standard 6: Critical Areas. The Project Site does not fall within a Critical Area as defined by the SWH and accordingly this standard does not apply to the site.

No Comment

Standard 7: Redevelopment Project. The Applicant's Stormwater Management Report states: "The proposed project is considered a mix of New Development and Redevelopment." The portion of the site accommodating the expanded parking area complies with standards for new development.

Although the site was partially developed, the submitted stormwater design incorporates the standards for new development.

No Comment

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Controls: "A plan to control construction-related impacts including erosion, sedimentation and other pollutant sources during construction and land disturbance activities (construction period erosion, sedimentation, and pollution prevention plan) shall be developed and implemented."

An Erosion and Sediment Control Plan has been submitted as part of the Stormwater Report, and this is generally sufficient. However, refer to Comments 4 through 15.

See responses to Comments 4 through 15.

Standard 9: Operation and Maintenance Plan. "A long-term operation and maintenance plan shall be developed and implemented to ensure that stormwater management systems function as designed."

An Operation and Maintenance Plan (O&M plan) for the Stormwater Management System has been submitted as part of the Stormwater Report, and this is generally sufficient. However, refer to Comments 53 to 58.

See responses to Comments 53 through 58.

Standard 10: Prohibition of Illicit Discharges. "All illicit discharges to the stormwater management system are prohibited."

An Illicit Discharge Compliance Statement signed by the engineer of record has been submitted.

No Comment

<u>Pretreatment BMP –</u> The Stormwater Handbook (SWH) requires Total Suspended Solids (TSS) removal prior to discharge to an infiltration Best Management Practice (BMP). The submitted plans show a Drainage System Component labeled as a vegetated filter strip. However, the Drainage System Component (as submitted) does not comply with required design criteria for a Vegetated Filter Strip. The Stormwater

Handbook establishes required design criteria for a Vegetated Filter Strip as follows (note bold italic font added by PSC). Vegetated Filter Strips typically treat sheet flow or small concentrated flows that can be distributed along the width of the strip using a level spreader (SWHB V. 2: C. 2: P. 17) . Vegetated Filter Strips are used to pretreat sheet flow from roads, highways, and small parking lots (SWHB V. 2: C. 2: P. 19) . To receive TSS removal credit, make the filter strip at least 25 feet long and generally as wide as the area draining to the strip (emphasis added).

The picture to the left which is copied from the Stormwater Handbook shows a typical Vegetated Filter Strip which treats sheet flow and extends for the entire width of the parking area. The Drainage System Component shown on the submitted plans does not treat sheet flow; it treats a concentrated flow that has been conveyed to a single point. The Drainage System Component (as submitted) is not as wide as the area draining to the strip. The area draining to the Drainage System Component (as submitted) is approximately 190 ft. wide (perpendicular to Old Washington Street) and the Drainage System Component (as submitted) is as narrow as 4-ft.

As the soil beneath the infiltration basin is rapidly permeable, 44% TSS removal is required prior to discharge to the infiltration BMP.

40. *Replace the BMP labeled as a Vegetated Filter Strip with a BMPs capable of removing 44% TSS (minimum) and that comply with the Stormwater Handbook such as sequential sediment forebays.*

    See above response to Standard #4 comment.

<u>Infiltration BMP</u> – The proposed infiltration basin is an exfiltration basin with peak primary discharge. The infiltration basin does not receive proper pretreatment (See Comment 40). Additionally, a minimum of three borings or test pits are required and two are provided (SWHB V. 2: C. 2: P. 90). However, the basin area is relatively small, and the soils are consistent, and the Board may allow the third test pit to be omitted. The design infiltration rate is greater than 2.4-inches per hour triggering requirements for 44% TSS removal prior to discharge to the infiltration basin. A 15-ft. wide access berm is recommended around the entire basin. Fencing the basin would enhance safety given its direct accessibility to children living in the Proposed Project.

41. *Provide an additional test pit within the basin footprint or review this requirement with the Board.*

    See above response to Standard #2 comment.

42. *Modify the basin design to provide an access berm.*

    The basin is fairly small and the areas requiring the most frequent maintenance would be the sediment forebays which have been located along to access driveways. This will provide excellent visibility so that any necessary maintenance required will not go undetected and easy access to the sediment forebays will make the maintenance easy to perform and less expensive.

    The less frequent maintenance to repair the basin itself will also have convenient access over the mountable cape cod berm along the driveway or the 8' wide berm to the north of the basin. This Berm meets the minimum access requirements recommended by ASCE for stormwater basins and would be more appropriate for the shallow basin which has been proposed.

43. *Provide a non-climbable fence with gate.*

    The basin as design is approximately 2.5' deep; a "non-climbable fence" would be unnecessary from a safety standpoint for a basin this shallow and an eyesore to both the residents of the project and Old Washington Street.

<u>Discharge to the Municipal Drain System</u> – The infiltration basin outlet channelizes the basin discharge toward a municipal catchbasin in Old Washington St. This discharge is regulated as a discharge to the Municipal Separate Storm Sewer System (MS4). Generally municipal stormdrain systems in older public ways tend to be undersized in comparison to current design standards. Therefore, the existing street drainage plus the proposed discharge is likely to overburden the municipal stormdrain system. No information is provided on the use to capacity ratio of the municipal stormdrain system downgradient of the point of connection. If the existing municipal stormdrain system consists of 12-inch diameter pipes which are commonly used and the pipe is sloped to provide a self-cleaning velocity of 3 fps, the overflow from the proposed on-site basin alone is 0.9 cfs for the 10 year and is 1.89 cfs for the 25-year frequency storm event. In addition, using a catchbasin to collect this cholerized flow is likely to flush the catchbasin resuspending contaminants stored in the catchbasin sump adding contaminants to the municipal system. The submitted design has no discharge under the 2-year frequency storm event which does mitigate the impact. Nonetheless, we believe that substantial discharges to the municipal stormdrain system should be avoided where practical.

Further, any discharge to the MS4 should comply with the USEPA's "General Permits for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems in Massachusetts." Pollution abatement standards under NPDES are more stringent than DEP's Stormwater Standards. Stormwater management systems on new development sites shall be designed to "remove 90% of the average annual load of Total Suspended Solids (TSS) generated from the total post-construction impervious area on the site and 60% of the average annual load of Total Phosphorus (TP) generated from the total post-construction impervious surface area on the site."

44. *Eliminate the discharge to the municipal drain system.*

    As required by the Stormwater Handbook, the stormwater management system has been designed so that the post-development peak discharge rates do not exceed the pre-development peak discharge rates for all design storms. This approach is consistent with similar projects that have been previously approved with stormwater system discharges that direct stormwater overland towards the existing street drainage system.

Alternatively,

45. *Calculate the use to capacity ratio of the stormdrain system downgradient of the point of connection.*

    See above response; since the post development peak discharge rates are reduced from the pre-development rates, there will be no impact on the existing storm drain system.

46. *If the use to capacity ratio shows sufficient excess capacity to accommodate the discharge from the Project Site and if the Planning Board will allow the overflow to the municipal stormdrain system, confer with the Town Department of Public Works and obtain authorization to discharge to the municipal drain system.*

    We have reached out to Eugene Fulmine, Director of Public Works, but as mentioned above, this approach is consistent with other projects in Town, including the "Jefferson Square" development which is located at the intersection of Old Washington Street and Washington Street.

47. *If a connection is allowed, provide a direct connection to the municipal storm drain system bypassing the catchbasin to avoid dissipation of contaminants in the catchbasin sump.*

    This has not been required by the DPW on similar projects in the past; the Applicant requests that confirmation from the DPW Director (if not received prior to the hearing) be a condition of approval.

48. *Remove 90% of the average annual TSS load and 60% of the average annual Total Phosphorus (TP) load from the total post-construction impervious surfaces on the site.*

    Not Applicable; as documented above by Mr. Houston, *"Stormwater management systems on new development sites shall be designed to "remove 90% of the average annual load of Total Suspended Solids (TSS) generated from the total post-construction impervious area on the site and 60% of the average annual load of Total Phosphorus (TP) generated from the total post-construction impervious surface area on the site.";* ***although the site is being designed to meet the requirements of new construction, it is actually the re-development of a an existing developed site, with no stormwater management system and untreated stormwater discharges. It is our understanding that this requirement is not applicable in this instance.***

Mounding Analysis – The deepest test pit extends to elevation 55.0. This establishes the minimum initial thickness of the saturated zone beneath the basin to be 10 ft. On-site rock outcrops indicate that bedrock may be shallow. A search of Well Completion Reports in the Mass DEP well database confirms that bedrock is likely to be shallow. Well ID 661642 for a well at 590 Washington St. that encountered bedrock at 22 feet below the surface and Well ID 654441 for a well at 697 Washington St. that encountered bedrock at 8 feet below the surface. The submitted Hantush spreadsheet uses an initial thickness of the saturated zone of 507-ft. which is inconsistent with other data indicating that bedrock is shallow.

49. *Recalculate the mound height using a depth of aquifer of elevation 55 or provide a soil boring or other evidence allowing actual measurement of the depth of aquifer.*

    The mounding analysis using the available information does not appear to provide accurate results as it calculates a "top of "mound" at elevation 71.7± which is approximately 4.7 feet above existing grade where the proposed basin is situated. In accordance with the DEP Stormwater Handbook, a mounding analysis is required when a detention basin is designed to account for exfiltration to attenuate the 10-year or greater storm, when estimated seasonal high groundwater is less 4 feet from the bottom of the basin.

    The purpose of the mounding analysis is to confirm that the mound under the basin during larger storm events won't breach the bottom of the basin which could impact the ability of the basin to infiltrate runoff and thus impact the calculations of the peak rates of runoff discharged by the basin. Alternatively, if the mounding analysis is not providing accurate results or if the mound is found to exceed the bottom of the basin, the system can be analyzed without accounting for the basin providing any exfiltration. If the peak rates are controlled and do not result in an increase over the pre-development conditions when analyzing the system without counting the exfiltration component, the system is assumed to meet the requirements of Standard 2. An additional Hydrocad Report has been included showing that the post-development peak rates of discharge are less than the pre-development conditions, with no exfiltration

    This additional analysis with "No Exfiltration" has been added to the Stormwater Report.

Retention basin must provide 150% of the volume of the 100-year frequency storm event (Section V. 5.3.2.8).

50. *Revise the design of the retention basin to provide 150% of the volume of the 100-year frequency storm event.*

    Not Applicable; the infiltration basin has not been designed to contain the entire volume of all storm events. Instead, the basin will contain and infiltrate the smaller storm events while controlling the discharge of larger

storm events and releasing the runoff at lower peak rates than the pre-development discharge rates, while providing stormwater treatment for both water quality and quantity.

<u>Other Stormwater Issues</u> – The outlet control structure shows an 8-ft. wide sharp crested rectangular weir with an invert of 66.25. The HydroCAD reports show both an 8-ft. wide sharp crested rectangular weir with an invert of 66.25 plus a 2.0 ft. wide sharp crested rectangular weir with an invert of 65.75.

The water quality volume in an area with a rapid infiltration rate should be calculated using 1.0-inch of runoff times the impervious area. While the water quality volume should be recalculated for to clarify the record, the volume provided will remain sufficient.

51. *Revise the drawing detail of the outlet control structure or the HydroCAD calculations to be consistent.*

    The outlet control structure has been revised.

52. *Recalculate the water quality volume using 1-in. of runoff.*

    The water quality volume has been recalculated using 1-inch of runoff.

<u>Long Term Source Control/Pollution Prevention and O&M Plan</u>. The "Long Term Source Control/Pollution Prevention and Operation and Maintenance Plan" should be revised for compliance with the Stormwater Handbook as follows:

53. *The title of the Plan should be revised to state, "Post Construction."*

    The title has been revised as requested.

54. *Provide a plan showing the location of all stormwater BMPs and the means for access for maintenance.*

    The maintenance berm access locations are shown on the Grading and Utility Plan.

55. *Provide an estimated annual operation and maintenance budget.*

    Information on the annual budget for maintenance has been added to the Long-Term Source Control/Pollution Prevention and Operation and Maintenance Plan.

56. *Provide an Operation and Maintenance Log Form.*

    A Maintenance Log form has been included in the Stormwater Report as requested.

57. *Perform infiltration basin maintenance least twice a year which shall include the following: 1) mow the buffer area, side slopes, and bottom of the infiltration basin, 2) remove grass clippings and accumulated organic matter to prevent an impervious organic mat from forming, 3) remove trash and debris,*

and use deep tilling to break up clogged surfaces accompanied by immediate revegetation.

This information has been added to the O&M Plan as requested.

58. *Specify the threshold of sediment accumulation in the bottom of the infiltration basin triggering sediment removal and specify the maximum time period allowed before sediment removal is required.*

    This has been added to the Stormwater Infiltration Basin section of the Long-Term Source Control/Pollution Prevention and Operation and Maintenance Plan.

5.4 Parking Area

59. *Show snow storage areas.*

    A snow storage area has been added to the layout sheet.

60. *Compute the depth of snowfall which can be stored in these designated areas.*

    The snow storage area is approximately 180' long and 24' deep. The parking area is approximately 11,222± s.f.; assuming a 1:1 slope of the snow pile, that would provide approximately 25,920± c.f. of snow storage. If the assumption is made, as suggested, that the plowing of the snow will result in 50% compaction, this area would be able to accommodate 4.5 ft of snowfall.

Service Facilities

61. *Show the swept path of an AASHTO "SU" design vehicle servicing the dumpsters.*

    A truck turning exhibit will be provided.

62. *If required by the Fire Department, show the swept path of the Fire Department's design vehicle (an AASHTO BUS 40 can be used to emulate a fire truck if the Department has not selected a design vehicle.).*

    A truck turning exhibit will be provided.

5.7 Access Connections

63. *Design the access drive leveling area to pitch away from the street for a distance of 40 ft. or seek relief (Section V. 5.7.6).*

    The driveway has been designed to have a high point at the property line which slopes back to a low point at the break in the curbing which is the inlet to the first sediment forebay. In order to provide adequate separation to groundwater and increase basin capacity, the low point has been kept closer to the high point at the front property line.

    The Applicant requests a waiver to the requirement that the access drive slopes away from the street for 40 feet.

64. *Provide transition curbs at the ends of the driveway vertical granite curb roundings.*

    Transition curbing has been added as requested.

65. *Revise the pavement marking on the center of the access drive providing a double yellow centerline (DYCL) per the Manual on Uniform Traffic Control Devices (MUTCD).*

    The pavement markings have been revised.

66. *Show minimum sight distance triangles on both sides of the access drive at the edge of pavement on Old Washington St.*

    Sight triangles have been added to the Layout Plan, set at a distance of 15' back from the edge of pavement on Old Washington Street.

67. *Compute the required dimensions of the sight distance triangles using AASHTO procedures.*

    The required sights distance calculation has been added to the layout Sheet.

68. *As a minimum the sight distance triangles should measure 15 ft. back from the edge of pavement at the site drive and tapering to zero at the north and south property lines.*

    See response to comment #67.

69. *Add a note stating that these areas to be kept clear of shrubs, fences, or other obstructions (existing trees in this area were observed to have minimal low branches).*

    A note has been added to the Layout Plan.

70. *Review the plans relocating the proposed planting of "CP" False Cypress outside the minimum sight distance triangle.*

    The landscaping has been adjusted accordingly.

5.9 Architectural/Building Design.

For proposed buildings, "long horizontal facades should be avoided by incorporating recesses and projections of a minimum of two feet in depth (Section V. 5.9.6).

71. *For the five-unit building, provide two-foot minimum recesses and projections on the façade to comply with the requirements of paragraph 5.9.6 or review this matter with the Board.*

    The requisite recesses will be shown on the final architectural plans when developed. The Applicant requests that this be a condition of approval to provide final Architectural Plans prior to construction. Photographs have been attached showing what the final plans will look like.

Mitigation

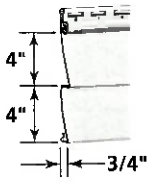
Future residents of the Proposed Project will be subjected to vehicle noise and headlight impacts from Washington St.

72. *Install a 6-ft. high opaque wood board fence along the north and east property lines in order to mitigate vehicular noise and headlight impacts on future project residents.*

    The Applicant has provided evergreen plantings along the north and east property lines which will both dampen the sound of the roadway and block headlights from shing directly on the new structures.

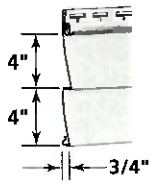
Monogram®

DOUBLE 4" CLAPBOARD SOLID COLORS



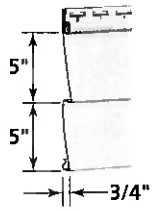
Product Code: 33110
Finish: Rough Cedar
Length: 12' 6"
Thickness: .046"
Exposure: 8"
Projection: 3/4"
Panels/Ctn.: 24
Squares./Ctn.: 2
Cartons/Pallet: 12/16*
lbs./Ctn.: ≤110

DOUBLE 4" CLAPBOARD BLEND COLORS



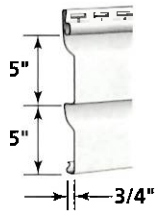
Product Code: 33101
Finish: Rough Cedar
Length: 12' 6"
Thickness: .046"
Exposure: 8"
Projection: 3/4"
Panels/Ctn.: 24
Squares./Ctn.: 2
Cartons/Pallet: 12
lbs./Ctn.: ≤110

DOUBLE 5" CLAPBOARD SOLID COLORS



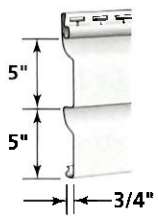
Product Code: 33122
Finish: Rough Cedar
Length: 12'
Thickness: .046"
Exposure: 10"
Projection: 3/4"
Panels/Ctn.: 20
Squares./Ctn.: 2
Cartons/Pallet: 8/14**
lbs./Ctn.: ≤102

DOUBLE 5" DUTCHLAP SOLID COLORS



Product Code: 33125
Finish: Rough Cedar
Length: 12'
Thickness: .046"
Exposure: 10"
Projection: 3/4"
Panels/Ctn.: 20
Squares./Ctn.: 2
Cartons/Pallet: 10
lbs./Ctn.: ≤105

DOUBLE 5" DUTCHLAP BLEND COLORS



Product Code: 33103
Finish: Rough Cedar
Length: 12'
Thickness: .046"
Exposure: 10"
Projection: 3/4"
Panels/Ctn.: 20
Squares./Ctn.: 2
Cartons/Pallet: 10
lbs./Ctn.: ≤105

Product Code		33110 Double 4" Clapboard Solid Colors (Rough Cedar)	33101 Double 4" Clapboard Blend Colors (Rough Cedar)	33122 Double 5" Clapboard Solid Colors (Rough Cedar)	33125 Double 5" Dutchlap Solid Colors (Rough Cedar)	33103 Double 5" Dutchlap Blend Colors (Rough Cedar)
COLOR	Autumn Yellow (10)	●				
	Buckskin (41)	●		●	●	
	Castle Stone (37)	●		●	●	
	Colonial White (01)	●		●	●	
	Cypress (42)	●		●	●	
	Desert Tan (07)	●		●	●	
	Granite Gray (34)	●		●	●	
	Heritage Cream (11)	●		●	●	
	Herringbone (04)	●		●	●	
	Light Maple (55)	●		●	●	
	Natural Clay (60)	●		●	●	
	Oxford Blue (32)	●		●	●	
	Sandstone Beige (15)	●		●	●	
	Savannah Wicker (59)	●		●	●	
	Seagrass (30)	●		●	●	
	Sterling Gray (33)	●		●	●	
	Wedgewood Blue (89)	●		●	●	
	Weathered Wood (90)	●		●	●	
DELUXE	Autumn Red (23)	●		●	●	
	Brownstone (40)	●		●	●	
	Charcoal Gray (46)	●		●	●	
	Espresso (43)	●		●	●	
	Flagstone (97)	●		●	●	
	Forest (47)	●		●	●	
	Hearthstone (19)	●		●	●	
	Melrose (39)	●		●	●	
	Midnight Blue (45)	●		●	●	
	Mountain Cedar (17)	●				
	Pacific Blue (27)	●		●	●	
	Sable Brown (29)	●		●	●	
	Slate (44)	●		●	●	
	Spruce (16)	●		●	●	
PREMIUM	Arbor Blend (57)		●			●
	Cedar Blend (79)		●			●
	Driftwood Blend (80)		●			●
	Frontier Blend (51)		●			●
	Natural Blend (78)		●			●
	Rustic Blend (82)		●			●
	Weathered Blend (53)		●			●

* 12 Cartons/Pallet: Autumn Red, Brownstone, Charcoal Gray, Espresso, Flagstone, Forest, Hearthstone, Melrose, Midnight Blue, Mountain Cedar, Pacific Blue, Sable Brown, Slate and Spruce. 16 Cartons/Pallet: All other colors.

** 8 Cartons/Pallet: Autumn Red, Brownstone, Charcoal Gray, Espresso, Flagstone, Forest, Hearthstone, Melrose, Midnight Blue, Pacific Blue, Sable Brown, Slate and Spruce. 14 Cartons/Pallet: All other colors.

≤ Heaviest weight listed – varies by color.

HARVEY
WINDOWS + DOORS

CLASSIC

Double Hung

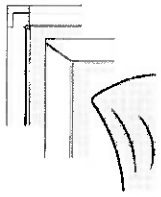
LIFETIME WARRANTY

Options

GLASS

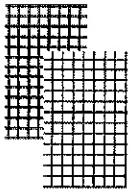
SunGain HSHG
ThermaGuard
ThermaLock

SCREEN FRAME



Rollform
Aluminum
FlexScreen

SCREEN MESH



Fiberglass
VIEWS

EXTERIOR COLORS

White Vinyl (Standard)

Almond Vinyl

EXTERIOR PAINT AVAILABLE

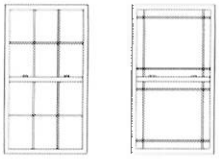
GRID TYPE

GBG

Exterior Applied

SDL

GRID STYLE



Colonial

Prairie

HARDWARE COLORS

White (Standard)

Almond

Oil Rubbed Bronze

Brushed Nickel

Features

Wet Glazed Sash for improved performance and even better Air Infiltration ratings

DP40 standard on all sizes; DP50 upgrade on sizes up to 42" x 77"

Sill Interlock feature on sizes over 42"

Additional weepholes in frame and sash improve overall drainage

Double locks are standard on widths of ≥ 30"

PRO GUIDE

METAL CAM LOCK

WINDOW STYLE	MIN (W)	MIN (H)	MAX (W)	MAX (H)	MAX UI
Double Hung	10-1/4"	24"	47-3/4"	84"	124"

REPLACEMENT

3-1/4" jamb depth

Adjustable vinyl sill extender and head expander included

NEW CONSTRUCTION

Extension jambs available for 4-9/16" and 6-9/16" wall depths

Integral L or J fin available

OTHER OPTIONS

Grids come in 5/8" and 1" sizes

Custom grid configurations plus oriel & cottage sash options

Full and half size screens

Exterior Factory Applied Casing: Flat & 908 Brickmould, with or without sill nose

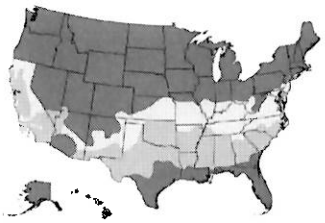
Interior Trim Kits

STRUCTURAL DATA

Unit Size W x H	Configuration	Air Infiltration cfm/ft²	Water Resistance psf	Structural Test Pressure psf	DP Rating	Structural Rating
48" x 84"	Single	0.01	6.06	60.15	DP40	H-LC40
42" x 77"	Single	0.03	7.52	75.24	DP50	H-LC50
72" x 72"	2-Wide CJ	0.14	6.90	67.70	DP45	H-LC45
110" x 72"	DH-PW-DH CJ	0.03	5.43	52.63	DP35	H-LC35
110" x 72"	3-Wide CJ	0.17	5.43	52.63	DP35	H-LC35

THERMAL DATA

Glazing Description	NO GRIDS Thermal Performance U	SHGc	VT	WITH GRIDS Thermal Performance U	SHGc	VT	ENERGY STAR® Zone Compliance			
ThermaLock DG 2X Low-E	0.27	0.29	0.49	0.27	0.28	0.44	N	NC		
SunGain High Solar Heat Gain Package	0.30	0.50	0.60	0.30	0.45	0.54	N30			
ThermaGuard Low-E	0.28	0.31	0.55	0.29	0.28	0.49		NC		
Low-E	0.32	0.31	0.55	0.32	0.28	0.49				
Clear	0.45	0.59	0.62	0.45	0.53	0.55				



US Climate Zones		U-Factor	SHGc
Northern		<= 0.27	ANY
ESP	N25	= 0.28	>= 0.32
ESP	N29	= 0.29	>= 0.37
ESP	N30	= 0.30	>= 0.42
North-Central		<= 0.30	<= 0.40
South-Central		<= 0.30	<= 0.25
Southern		<= 0.40	<= 0.25

Chart represents thermal values for replacement/integral J frame windows with Krypton or Argon gas fill for most glass packages. Gas fill not available with clear glass. U-factor in accordance with NFRC-100 and based on whole window values. Performance values shown are for "Single Strength" glass, unless otherwise noted. Performance with "Double Strength" glass, different reinforcement levels, may vary. Performance with 1" grids may vary. Select glass types shown — others are available subject to special inquiry.

PRO GUIDE

File# 20-024

Timberline HDZ® Specs

SPECIFICATIONS (ALL DIMENSIONS ARE NOMINAL)

AWARDS & RECOGNITION	Good Housekeeping Rated
$ - $$$$	$$
DURABILITY & TOUGHNESS	Advanced Protection Shingle with GAF Dura Grip Adhesive
EXPOSURE	5.625" (144 mm)
EXTREME WEATHER IMPACT RATED	No
FIRE RATING	Highest Rating - Class A
MATERIAL	Fiberglass Asphalt Construction
WIND WARRANTY	130 mph
WIND RATING	130 mph
SHINGLE STYLE	Wood-Shake Look
SHINGLE TYPE	Architectural Shingles
APPROX. NAILS/SQ	256

AWARDS & RECOGNITION: Good Housekeeping Rated

$ - $$$$: $$

DURABILITY & TOUGHNESS: Advanced Protection Shingle with GAF Dura Grip Adhesive

EXPOSURE: 5.625" (144 mm)

EXTREME WEATHER IMPACT RATED: No

FIRE RATING: Highest Rating - Class A

MATERIAL: Fiberglass Asphalt Construction

WIND WARRANTY: 130 mph

WIND RATING: 130 mph

SHINGLE STYLE: Wood-Shake Look

SPECIFICATIONS (ALL DIMENSIONS ARE NOMINAL)

SHINGLE TYPE: Architectural Shingles

APPROX. NAILS/SQ: 256

CODES

FBC	State of Florida Approved
ICC	ESR-1475
ICC AC438	ESR-3267
MIAMI-DADE COUNTY	Miami-Dade County Product Control Approved
TDI	Meets requirements of the Texas Department of Insurance

FBC: State of Florida Approved

ICC : ESR-1475

ICC AC438: ESR-3267

MIAMI-DADE COUNTY: Miami-Dade County Product Control Approved

TDI: Meets requirements of the Texas Department of Insurance

TESTING METHODS & APPLICABLE STANDARDS

TAS 100-95	Yes

TAS 100-95: Yes

ENERGY RATING

COOL ROOF RATINGS COUNCIL (CRRC)	CRRC-rated (White only)
MIAMI 21 (FLORIDA BUILDING CODE)	Yes (White only)
TITLE 24 (CALIFORNIA ENERGY COMMISSION)	Yes (White only)

COOL ROOF RATINGS COUNCIL (CRRC): CRRC-rated (White only)

MIAMI 21 (FLORIDA BUILDING CODE): Yes (White only)

TITLE 24 (CALIFORNIA ENERGY COMMISSION): Yes (White only)

SHIPPING AND PACKAGING

APPROX. PIECES/SQ	64
APPROX. BUNDLES/SQ	3

SHIPPING AND PACKAGING

APPROX. PIECES/SQ: 64

APPROX. BUNDLES/SQ: 3