BELMONT DAY SCHOOL
PROPOSED BARN AND ENTRY DRIVE PROJECT

INTRODUCTION

Belmont Day School is proposing to construct a new athletic and academic facility, and install an additional entrance driveway to their 12.4-acre campus located at 55 Day School Lane, south of Concord Avenue and west of Day School Lane, a private way (Locus ref). In order to diversify their school community over the next five years, they propose to increase enrollment in the Middle School grades by a total of 45 students with ten faculty and staff members added to support this growth.

BDS has been a presence in the town since 1927. The school was founded by a group of parents committed to providing children with a strong academic foundation and many opportunities for creative expression. In 2001 the school expanded to add 7th and 8th grades and today serves 270 students in grades pre-K to 8 with a faculty and staff of 73.

The school strives to be an integral part of the community and to foster respect for the neighborhood in which they exist. BDS provides use of the existing athletic facilities (gym, tennis courts and sports fields) to local community groups in the evenings and on weekends and the site is used as a camp outside of the school year. As part of the proposed project students are involved in the planting of trees and plan to work cooperatively with the Land Management Committee of Lone Tree Hill in maintaining the existing trails on BDS property that are part of the larger trail network. Belmont residents frequently park at the school to enjoy walking the paths on the adjacent Lone Tree Hill property.

Project Description

General

Belmont Day School is proposing to construct a new facility that includes new classrooms to support their STEAM related curriculum and a new multi-purpose athletic gym space. The scope of work includes a newly constructed building referenced as "the Barn" and a new entry driveway. The Barn program includes 5 classrooms, administrative support spaces, and a multi-purpose gym space that totals 25,817 SF of new construction. The gym is located to the south of the classroom wing and is a two-story height space. The two-story classroom wing faces the parking area and is consistent with the scale of buildings on the rest of the campus.

This new facility will provide upgraded facilities for the campus, as well as providing opportunity for growth of the middle school. It is projected that student enrollment will

grow from 270 to 315 over the next 4-5 years, and proposed faculty and staff will grow from 73 FTE to 83 FTE as the student population grows.

The proposed project conforms with the Town of Belmont Zoning By-Law and General By-Law requirements and the Planning Board Design Review Guidelines. The building has been designed in compliance with the Town's Sustainable Building Design Policy.

Site Plan

The new Barn building is located at the northwestern corner of the site in a wooded area that borders Lone Tree Hill - Belmont Conservation Land to the south and Conservation Land and Highland Meadow Cemetery to the west, with existing tennis courts to the east and an existing parking lot to the north.

The new Barn is screened from abutting open space areas to the south and west by the wooded area. Additional screen plantings consisting of native deciduous and evergreen plant materials that will be installed on the south and west sides of the building to enhance the visual character of this wooded area.

An entry plaza is proposed at the building's main entrance and new walkways will connect pedestrian access from all building egress doors to the existing campus pedestrian circulation system and parking lots. A proposed paved fire lane runs along the eastern face of the building to the main entry and along the northern face of the building. An existing dumpster and recycling area adjacent to the parking lot will be relocated on the northwest corner of the building at the terminus of the fire lane. The dumpster area will be enclosed with a 7' tall wood screen fence and gates. New ground-mounted mechanical equipment is sited adjacent to the west side of the building within a 9'-6" fenced enclosure.

New Entry Drive

In addition to the building construction, a new 20' wide paved vehicular entry drive is proposed to improve vehicular circulation, provide an additional means of access to the site, and provide additional parking spaces. This new driveway will be accessed via Concord Avenue at a location approximately 550' to the west of the Day School Lane/Concord Avenue intersection, adjacent to the Highland Meadows Cemetery.

The current vehicular circulation pattern requires all vehicles to enter and exit school grounds from Concord Avenue via Day School Lane. Circulation to three drop-off locations requires a circuitous path through campus and often causes queuing-induced backups on Day School Lane, which block driveway access for abutting residential properties despite BDS' efforts to minimize these impacts through communications with members of the BDS Community. The new entry drive will provide a clear vehicular circulation pattern and accommodate queues within the campus

interior. In addition, emergency vehicle access to campus via a single access point (Day School Lane) has been blocked in the past, and life safety concerns were a primary factor in proposing this new access drive. This past year, a tree fell across Day School Lane during the school day, isolating the school from emergency access and required students to be walked across the cemetery to the Belmont Hill Club for parent pick-up.

The Traffic Impact and Analysis report (attached in Appendix B) illustrates that the proposed entry drive (one-way in) meets all required site distance criteria on Concord Avenue.

Parking

The access drive provides additional space for (17) new parking spaces. These spaces will be located on a 7'-6" strip of gravel adjacent to the asphalt driveway. The new building location impacts a portion of the existing parking lot and necessitates minor modifications to parking lot layout, resulting in a loss of 13 parking spaces. Two new accessible parking spaces are proposed to provide handicap access to the new building.

The parking summary chart on the site plans, attached herewith, documents the existing parking inventory, and proposed parking numbers post construction. As noted, there will be a total fixed parking count of 131, an increase of 4 from existing conditions. Please reference parking information contained in the Traffic Impact and Analysis report provided in Appendix B.

Traffic

A comprehensive Traffic Impact and Analysis Study was performed for the proposed project and is submitted as part of this application package. The study concludes that relative to roadway capacity, traffic safety, and traffic impacts upon the surrounding roadway network, the proposed project will meet safety standards and have a minimal impact on existing traffic conditions and will eliminate queuing-induced back-ups on Day School Lane.

Landscape

The proposed planting is designed to reinforce the existing bucolic campus character with native shade trees, shrubs, and perennial plantings. Evergreen and shade trees are proposed along the west and south building faces and western edge of the new entry drive to provide screening from adjacent properties and to blend into the existing wooded area. Reclaimed boulders are incorporated within planted areas in a naturalistic fashion to blend with the historic character of the site. The proposed planting conforms to all requirements of the Town of Belmont Zoning By-Law.

Lighting

The proposed lighting plan provides the minimum required lighting for safety and wayfinding. The new access drive will be lit with 12' tall pole lights 100' on-center that will provide adequate light coverage for safety and wayfinding, but will not provide excessive lighting and will be contained within the campus property. The new walkway from the main campus and parking lot will be lit by bollard lights 20' ± on center. Building mounted lights are proposed at the main entry canopy, at emergency exits, at the rear mechanical pad, and along the east walkway. Included with this application please find a lighting plan, photometric and lighting cut sheets that will confirm that this project complies with Town of Belmont zoning requirements regarding lighting.

Building Materials and Color Palette

The material palette consists of corrugated metal siding and flat panels. The colors include two warm gray tones and one accent color. The accent color is a muted marigold color that is derivative of the school's logo. It is the intent to use the school's primary color (blue) for smaller accents such as building signage and interior details.

The design of the façade includes groupings of windows to create horizontal bands on the two-story building. These horizontal bands organize and simplify the facades and are appropriately scaled to compositionally work with the larger gym structure.

The project proposes to have the horizontal "frame" and intermediate panels rendered in the accent color. The window frames will be painted a dark charcoal gray color and the metal siding will blend in with the color palette of the rest of the existing buildings.

The roof materials are proposed to be a standing seam metal.

Noise

The project conforms to the Town of Belmont Noise By-Law. The primary noise generator is the proposed ground-mounted HVAC equipment on the west side of the proposed building. An acoustical study was performed to confirm that the proposed equipment does not exceed the allowable decibel limits at the property line as noted in the by-law (Noise Zone 1, 55 dBA (daytime), 45 dBA (nighttime)).

Signs

The existing entry sign at Day School Lane will be relocated to the proposed entry drive location. The sign conforms to the Town of Belmont Sign By-Law (less than 18 sf). In addition, two proposed traffic-related sign are proposed on Concord Ave "Belmont Day School 500 ft", one at each approach to the new drive. The proponent would also like to propose a new sign in the island at the Intersection of Concord Avenue and Mill

Street. This sign will support traffic flow on Concord Avenue by enhancing wayfinding for visitors to the school.

Solar - Photovoltaic Array

It is the intent of the project to include a photovoltaic array on the eastern roof of the barn. The extent of the array is still being determined, however any array will be in full compliance with Belmont's Solar Energy Systems By-Laws:

a. The Photovoltaics array will supply power used exclusively by Belmont Day School.

b. The Photovoltaics array will be attached to the roof of the Barn.

c. The array will face toward the school campus and panels will have anti-reflective coatings on glass to prevent glare.

d. The array will be set back 1 foot or more from all roof edges

e. All additional equipment necessary will be contained within the footprint of the building with the exception of the Photovoltaic inverter, which will sit on a mechanical pad within the enclosed fence structure.

The array will not exceed the 12" height limit above the sloped roof on which it is mounted.

Utilities

The proposed project involves new utility connections. The proposed Barn requires new water, sewer, and electric connections and significant stormwater management upgrades. Utilities for the new buildings will be connected to the existing on-site services to the maximum extent practicable.

Sewer – Sewer for the existing Belmont Day School campus is provided near the northeast corner of the existing building along the eastern property line. There is an existing sewer manhole that directs the sewage to the Municipal sanitary sewer system in Pinehurst Road through an existing utility easement. Sewage from the new building will be directed to a subsurface station that will pump the

effluent via a 4" force main, then a 6" PVC gravity line, to the existing sewer manhole that discharges off-site, as previously noted.

Water – Water for the existing development is currently provided through a loop that connects from the system in Concord Avenue, through the drive aisles on campus, and back to Concord Avenue that connects through the proposed driveway location. Two new services for the proposed athletic barn will be provided from the main near the existing wood maintenance building that includes a 6" ductile iron fire protection line and a 2" copper domestic line. Fire hydrant testing was performed on 8/4/16 with the Town of Belmont's water department as a witness that suggested the line had sufficient capacity and pressure for the new water connections.

Drainage/ Stormwater – Existing on-site drainage consists of a network of catch basins, drywells, drain manholes, and subsurface infiltration systems and stormwater management ponds. The proposed project involves significant upgrades that will conform to the Town of Belmont Stormwater Management and Erosion Control Bylaw and the Massachusetts Stormwater Handbook, as detailed in the Stormwater Management & Erosion Control Report for this project as well as the Utility Plan.

Two new stormwater management systems are proposed for the new development. The first stormwater management system includes a roof drainage system that will capture the roof area from the new building and from portions of the new and reconfigured parking area in front of the building. Stormwater from these areas will be directed to 270 Cultec 100HD Chambers located to the southeast of the new driveway, within the existing athletic field. Any overflow from this system will be directed to the existing stormwater management pond located in the northern portion of the site.

The second stormwater management system captures stormwater from the new porous pavement driveway that connects the new building to Concord Avenue. This consists of 2' of stone beneath the porous pavement that recharges and infiltrates stormwater, and ultimately overflows to the existing municipal system in Concord Avenue.

Compliance with Town of Belmont Design and Site Review Criteria

1) The dimensions of the Barn, lot and lot coverage complies with the requirements provided in table form per Section 4 of the Belmont By-Laws,

   Dimensional compliance is illustrated on Sheet L1.00, Site Plan.

2) Section 5.1 of the By-laws:

The arrangement of parking and loading spaces, internal traffic circulation and traffic controls in relation to the proposed uses of the building(s) and adjacent uses comply with Section 5.1 of the By-Laws.

Section 5.1.1 Number of Spaces and Section 5.1.2 Schedule of Requirements

Section 5.1 does not specify the number of spaces required for a school use. In order to determine the number of parking spaces required, parking counts were taken over 3 days at the school and the number of spaces under the growth condition was calculated. Proposed parking is as noted above and details are provided in the traffic report.

Section 5.1.3 Parking and Loading Area Location and Design

b. Parking and loading area and design is specified at section 5.1.3. As required in a residential district, no parking is proposed in the front yard.

c. Configuration and dimensions of new parking spaces meets the rules and regulations for the Belmont Planning Board.

d. Construction of parking spaces requires that areas with 6 or more spaces be surfaced with at least 2" of bituminous paving or comparable material unless the Planning Board approval an alternative surface. We request that the 17 spaces proposed along the entrance driveway be surfaced with gravel, since these spaces are proposed primarily as overflow parking. We believe this surface will adequately prevent dust, erosion, water accumulation, and unsightly conditions. It also promotes drainage infiltration.

e. Lighting must comply with Section 5.4.3 Light and Glare
A photometric analysis is provided in the Site Plans and a cut sheet for the poles is included in on the plan. Pole mounted LED lights (12 foot poles) are proposed at 100 foot intervals and are full cut off fixtures. The lights are Type 3 fixtures on a 12 foot pole and meet the requirements in the table in the By-law. The maximum off-site overspill 0.2 foot candles, less than the allowed 0.5 foot candles per Section 5.4.3.

3) Section 5.2 Signs

Proposed signs are intended to assist in locating the school. They have been sited in order to:

a) prevent hazards to vehicular and pedestrian traffic,

b) prevent conditions which have a blighting influence and contribute to declining property values, and

c) provide for easy recognition and legibility of all permitted signs and other uses in the immediate vicinity,

d) preserve the amenities and visual quality of the Town and curb the deterioration of the community environment, and

e) conserve energy.

The existing sign will be relocated from Day School Lane to the new entry drive location and is 15 square feet in area, less than the allowed 18 square feet in area. The sign will be lit by a "white, steady, stationary light shielded and directed solely at the sign" and will not be lit between 10:00 PM and 6:00 AM per the By-Law.

4) Section 5.3 Landscaping

Proposed landscaping complies with Section 5.3 of the ByLaws. 5.3.2 Plantings. The plantings include both deciduous and evergreen trees and shrubs. A planting schedule is provided on sheet L4.02, Planting Plan. Trees and shrubs meet the following requirements:

a. 40 trees are proposed. They are at least 2.5 inches caliper four feet above grade, are of a species common in the area (red oak, red maple, paper birch, magnolia, blue spruce, austrian pine and white pine), and will reach an ultimate height of at least 30 feet.

b. Shrubs will be of a deciduous and evergreen species common in the area, and be at least 36 inches in height at the time of building occupancy, and reach an ultimate height of at least five feet. 75 shrubs are proposed. Layout of plantings is shown on the Planting plan and is consistent with the By-law.

Section 5.3.4 Screening

Screening is provided to supplement existing vegetation along the new entrance driveway and adjacent to the dumpster to reduce visibility from the Cemetery and the walking trails. As required in the By-law, the screening consists of plantings as specified above, supplemented by an opaque fence or wall at least five feet high. A 6' fence is proposed east of the entrance drive to screen residential property. A 7' fence is proposed at the dumpster location. There is also a 9'-6" solid wood fence on the west side of the building that encloses the ground-mounted mechanical equipment.

Section 5.3.7 Maintenance

All plant materials required by this By-Law shall be maintained in a healthful condition. Dead limbs shall be promptly removed, and dead plants shall be replaced at the earliest appropriate season. Fences required for screening shall be properly maintained.

5) Section 5.4 Environmental Controls

Noise - The requirement of the Belmont Noise By-Law (560 Article 6 of the General Bylaws) shall be met.

Exterior Noise Standards - Noise associated with the ground-mounted HVAC system has been evaluated and maximum exterior noise at the property line is predicted to not exceed 55dBA in the daytime and 45 dBA in the nighttime.

Construction Noise Standards - Construction activities will be structured for compliance with the Noise By-Law and work will generally be from 7:00AM to 5:00 PM, but no later than 8:00 PM on weekdays and (if necessary) on Saturdays. The noise will meet the requirements for non-impact and impact devices as specified. At this time, no exterior construction is proposed for Sunday.