Regional School District 12

Bridgewater, Roxbury and Washington, Connecticut

Revised and Updated Education Specifications

For

Shepaug Valley Regional
Agriscience STEM Academy

Regional School District 12

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Educational Specifications for
Shepaug Valley Regional Agriscience STEM Academy

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Executive Summary of Revised and Updated Education Specifications

As the plans for our project evolved through the process of DAS Review and right sizing the project, and the review and incorporation of the latest Connecticut Department of Education (CDOE) frameworks in our design, our education specifications have also evolved. What follows are our Revised and Updated Education Specifications.

The principal changes are as follows:

- ***Separate Shops.*** The requirements of the educational frameworks related to wood, welding and small engine shops, and the concomitant need for additional wall space to contain the equipment necessary for the required classes, as well as the need for safe operating space for our students, resulted in the separation of these three program areas into separate shops. This, combined with the need, e.g., exhaust systems for air exchange that have their own power, safety and environmental requirements, resulted in a small increase in the area required for these program elements.
- ***Multi-function Spaces.*** Making more efficient use of the space allowed a computer laboratory and combined four classrooms, one for each laboratory, into a single multi-function space with a moveable room divider which can serve as two classrooms, or a single classroom and a computer lab, or as a mini-lecture hall for among other things, visits and lectures by academic and industry guests.
- ***Animal Health Requirements.*** Revising animal housing spaces to comply with animal health requirements to keep the animals comfortable while in the presence of multiple students.
- ***Consolidating Greenhouse Operations.*** Revising the layout to eliminate the second greenhouse and relocate the recycling system for the aquaponics curriculum from the reduced greenhouse footprint to the headhouse.
- ***Combining Three Buildings into One.*** Revising the specs to reflect the combination of the former equine, garage and animal facilities into a single structure reducing the overall area by sharing demonstration spaces all to achieve efficiency while meeting educational requirements.
- ***Multi-use Retail Space.*** Made retail space near the greenhouse double for plant science work, classroom and lab space.

The total area of the AgSTEM project is now 52,525 net square feet (NSF) including both new construction and renovation of the existing structure. We had originally hoped to hold the program to the 50,298 NSF reflected on the July 12, 2017 Schematic Design Review Checklist, however, our consultants' subsequent work in applying the latest CDOE frameworks and the required safety margins for our students to our design, required a small increase in area to the now 52,525 NSF which is still significantly (13,955 NSF) less than the 66,480 NSF reflected on the 2017 priority list and 3,780 NSF less than the 56,305 NSF reflected on the last set of plans (December 7, 2016) provided to DAS on December 8, 2016.

INTRODUCTION

Project Background:

Region 14's Ellis Clark Regional Agriscience and Technology Program, located at Nonnewaug High School in Woodbury, turns away 50% of their qualified out-of-district eighth grade student applicants each year due to a lack of available seats. When the state's 40+ vocational agriculture programs were consolidated into fewer regional agriscience programs in the late 1950's, Woodbury was the only school district of the 23 towns who volunteered to become the regional program for this area. Thus, all 23 towns surrounding Woodbury became the sending towns for the Region 14 program. Because of this, the program quickly grew over the years to become one of the largest and most successful programs in the state. More than 230 students are currently enrolled in the program from the 23 sending towns. However, due to Nonnewaug High School's limited capacity, a large number of qualified applicants have been wait-listed. Over the past 15 years, the wait list has grown to the point where roughly one half of the qualified 8th grade applicants are denied admission to Nonnewaug. With 23 sending districts that feed into Nonnewaug's regional program, the catchment area is simply too large for one regional agriscience program to accommodate all of the qualified applicants. As a result, approximately half of the students with a demonstrated interest in agriscience and technology are turned away.

Meanwhile, the Connecticut Agricultural Industry has grown into a $3.6 billion industry and is a major contributor to the state's economy and quality of life for its residents. Because of the size and scope of the industry, hundreds of jobs available in the Connecticut Agricultural industry go unfilled each year due to the shortage of employees trained to enter those rewarding and important careers in Connecticut. By creating Shepaug Valley Regional Agriscience STEM Academy as the state's 20th regional agriscience program, the documented interest for students in the area to pursue a high school agriscience education will be satisfied while helping to produce more graduates ready to enter those agriscience-related careers that await them. The Census Bureau recently released a report that identified Agriscience careers as the fifth highest wage earners in the United States, with an average starting salary of more than $51,000.00 Those who work their way up to management positions earn approximately $800,000 more over a lifetime than the typical college graduate

Shepaug Valley School, located at 159 South Street in Washington, Connecticut, houses grades six through twelve and serves the communities of Washington, Roxbury, and Bridgewater. The building capacity is 800 students, and 409 students are currently enrolled, according to the October 2016 enrollment report. The campus is comprised of 80 acres, and an additional 30 undeveloped acres are available to the Region. The area has a long, rich history of agriculture and is surrounded by hundreds of successful and thriving agriscience-related businesses. For all of these reasons, Shepaug Valley School is an ideal setting for Connecticut's 20th regional agriscience program, with its available

space in the existing facility, its large amount of land base for building a state-of the art agriscience facility, and its large supportive agriscience-related businesses and history of agriculture.

The addition of an agriscience STEM center would benefit all Region 12 students. As the student population of Region 12 declines, the addition of 30 to 40 motivated students in each grade (9-12) will provide sufficient enrollment for a wide range of programs and services, and needed competition in our core classrooms, musicians, artists, and engineers in our elective classrooms, and student-athletes with a strong link to Shepaug to complete our athletic teams and student activities. Senior projects will be enhanced by the addition of the agriscience program at Shepaug. In the current school year, a Shepaug senior is cultivating and exploring plant science for her senior project. It is not far-fetched to imagine how her efforts would be supported by a plant science teacher as her Technical Advisor, a greenhouse to house her efforts, and a hydroponic garden to further expand her studies. This is just one of many potential benefits of an agriscience center.

Supporting Data:

- Westernmost communities currently served by Region 14 include: Washington, Roxbury, Bridgewater, Sherman, New Milford, Newtown, Brookfield, New Fairfield, Bethel, and Danbury. These are the communities that are proposed for Region 12's Shepaug Valley Regional Agriscience STEM Academy. All have agreed to send their students to Region 12 with the exception of Bethel. Nonnewaug would also continue to serve the eastern region of their catchment area: Woodbury, Bethlehem, Ansonia, Naugatuck, Oxford, Region 5 (Bethany, Woodbridge), Region 15 (Southbury and Middlebury), Region 16 (Prospect, Beacon Falls), Seymour, and Watertown.
- The division of the Region 14 catchment area into an eastern and western division will not have a negative impact on their current program due to the fact that as many as half of the annual applicants are turned away annually. The creation of a western division would allow more students to explore agriscience.
- Danbury implemented Westside Middle School Academy this year, focused on a STEM-based model of education. These high-caliber students are a natural fit for the Shepaug Valley Regional Agriscience STEM Academy in the future. Many of them are currently attending the Nonnewaug Open House, demonstrating their interest in agriscience for their high school careers.

Project Overview:

Regional School District 12 is proposing construction of the new Shepaug Valley Regional Agriescience STEM Academy located on existing Region 12 property at 159 South Street, Washington, CT that presently serves as the site for its Shepaug Valley School, a middle high School. The AgSTEM facility will house a projected enrollment of approximately 139 students in grades nine through twelve. The facility will encompass approximately 52,525square feet including classrooms, laboratories, storage areas, outbuildings, greenhouses, animal growing rooms, offices, meeting rooms and riding, demonstration areas. Approximately 30% of the total proposed space will utilize space in the existing school building and will be renovated to accommodate this new purpose. Below please find information regarding space sizes. This information is estimated and may be revised as the project progresses through the various stages of drawings, etc.

The newly constructed spaces will be:

- Fire prevention sprinkler systems where required by code;
- Compliance with all federal, state and local codes;
- Current and anticipated future technologies;
- The most energy efficient materials and technologies available;
- Maximize the use of natural lighting;
- Handicap accessibility;
- Highly flexible areas to promote multi-functional use.

PURPOSE OF EDUCATIONAL SPECIFICATIONS

The National Council of Educational Planners (2006) has stated:

> *Educational specifications or program requirements are the means by which educators describe the educational activities and spaces which need to be incorporated in proposed new or renovated facilities. They are written statements that serve as a vehicle of communication between educators and community and, ultimately, educators and the architect.*

Educational specification spell out the type of activity, the number persons, and the space requirements needed in order to meet the educational goals and objectives of the program housed in the facility. Educational specifications do not represent architectural solutions but, rather, they inform architectural decisions and provide a framework within which design solutions are formulated.

Educational specifications are the cornerstone of successful school building programs. Good educational specifications provide a comprehensive overview of the program of instruction to be housed, the activities to be encouraged and the facilities necessary to carry out the goals and objectives of the school system.

The Connecticut State Department of Education defines educational specifications as a description of the general nature and purposes of the proposed school building project, including the applicant's long-range educational plan and relationship of the proposed project to such plan; enrollment data and proposed project capacity; the nature and organization of the educational program; support facilities; space needs; specialized equipment; environmental controls; and site needs.

The specific purposes for educational specifications as part of the construction grant approval process are as follows:

1. For the educational agency to justify the need for the proposed school building project.
2. For the educational agency to describe the educational activities that a proposed school building project is to support and the types of spaces which will best accommodate program requirements.
3. For the State Department of Education to determine the nature, scope, feasibility and funding level for the proposed school building project.
4. For the partial fulfillment of the requirements of Section 10-287c11(a) of the Administrative Regulations for a building grant application.

LONG RANGE PLANS

Regional School District 12 plans to continue operating a PK-12 school system as it is currently organized. The plan will not impact the current charter of Region 12 communities.

The Board currently maintains long-term leases for the elementary school facilities from the towns of Bridgewater, Roxbury, and Washington (the three towns have retained ownership in these facilities). The towns charge an annual lease fee with the payment made to a restricted fund to maintain these elementary schools. Annually repairs are identified in consultation with the towns and facility committee of the board for final approval of the scope of work by the Regional School Board.

Due to declining enrollment throughout the Regional School District 12 system and the lack of additional Vocational Agricultural facilities in the region, the BOE has voted to pursue the addition of an agriscience program to its existing Shepaug Valley School facility.

CAPACITY AND ENROLLMENT DATA

Shepaug Valley Regional Agriscience STEM Academy:

This proposal for an addition and renovation to the Shepaug Valley School will become the newest agriscience regional center serving regional school students as well as seven additional school districts currently sending students to the Nonnewaug Agriscience program which has been experiencing a capacity problem for these students and has agreed to the splitting of their catchment area in order to service the students currently being turned away. This proposal uses a conservative projected AgSTEM enrollment of 139 students, although the administration is confident more students will attend when the Agriscience STEM program is complete and an aggressive recruiting campaign begins. With the expansion and needed renovation of existing Shepaug areas, which will be dedicated for the program, there will be sufficient capacity to support the projected enrollment in the program.

CATEGORY PRIORITY

This is a category One (1) Project in accordance with the requirements of Section 10-283 (a-6) of the Regulations of Connecticut State Agencies, which states that category One Projects are primarily required to do the following:

> Create new facilities or alter existing facilities to provide for mandatory instructional programs pursuant to Title 10 of the general Statutes, including, but not limited to special education; the arts; career education; consumer education; health and safety; language arts, including reading, writing, grammar, speaking, spelling, and library media centers; mathematics; physical education; science, including laboratories; and at the secondary level one or more foreign languages and vocational education including shops; or for physical education facilities in compliance with Title IX of the US Elementary and Secondary Education Act of 1972 where such programs or such compliance cannot be provided within existing facilities.

EDUCATION PROGRAM

Organization and Design of the School:

The Shepaug Valley Regional Agriscience STEM Academy program will be developed to provide interested students (both out-of-district students and Region 12 students who also choose to enroll) a comprehensive agriscience and technology education, preparing them for college and career goals in high-end fields of study. Students will enjoy an exploratory freshman and sophomore curricula as they are exposed to all areas of agriscience and technology. During their junior and senior years, students will major in one of the major areas of study for rigorous, experiential learning. The curriculum will provide them with a strong base from which to either continue their agriscience or STEM education in college or go directly into the workforce upon graduation. Freshmen in the agriscience program will have one period of agriscience class while sophomores, juniors and seniors will have extended periods of time necessary for agriscience laboratory activities. These students will then spend the rest of their day with all Shepaug students enrolled in the core classes required for graduation.

Labs and Shops Needed:

Agriculture Wood Shop	**N = 1** (approx. 1,820 square feet)
Tool Crib	**N = 1 (**approx. 245 square feet)
Finish Room	**N = 1** (approx.. 235 square feet)
Storage Rm.ag/mech	**N = 1 (**approx. 195 square feet)
Agriculture Welding Shop	**N = 1** (approx. 1,800 square feet)
Agriculture Mech/Small Eng.	**N = 1** (appox. 1,860 square feet)
AgSTEM Computer Lab	**N = 1** (approx. 915 square feet)
Veterinary Science/STEM Lab	**N = 1** (approx. 1,290 square feet)

AgSTEM Multi-Purp. Class Rm.	**N = 1** (approx. 785 square feet)
Food Science Lab	**N = 1 (**approx. 2,100 square feet)
Plant Science/Bio-Technology Lab	**N = 1 (**approx. 985 square feet)
Small Animal/Reptile/Amphib.	**N = 1** (approx. 1,675 square feet)

General Support Areas

Restrooms	**N = 1** (approx. 525 square feet)
Custodial Room	**N = 1 (**approx. 250 square feet)
Storage	**N = 1 (**approx. 325square feet)
Electrical Room	**N = 1** (approx. 200 square feet)
Sales and support area	**N = 1** (approx. 1,140 square feet)

Administration/Reception Offices

Vocational Agriculture Offices	**N = 1 (**approx. 155 square feet)
Reception	**N = 1** (approx. 180 square feet)

OUT BUILDINGS:

Equine Facility, including Garage and Large animal spaces

Indoor riding/demonstration area	**N = 1** (approx. 12,225 square feet)
Stalls	**N = 1** (approx. 1,000 square feet)
Restrooms	**N = 1** (approx. 300 square feet)
Observational Instruction Area	**N = 1** (approx. 520 square feet)
Livestock Housing	**N = 1** (approx. 2,440 square feet)
Feed/Grain/Hay/Shavings	**N = 1** (approx. 1,095 square feet)
Custodial	**N = 1** (approx.. 80 square feet)
Mechanical/Sprinkler	**N = 1 (**approx. 300 square feet)
Dog Grooming/Kennels	**N = 1** (approx.1,130 square feet)
Equipment Storage Garage	**N = 1** (approx. 2,270 square feet)
Tool Rm/Tack Rm/Laundry	**N = 1** (approx. 730 square feet

Greenhouses

Greenhouses	**N = 1** (approx. 2,545 square feet)
Headhouse/Strg.	**N = 1** (approx. 765 square feet)

SPACE SPECIFICATIONS SUMMARY

Specifications for Space:

New school construction does not have the restrictions imposed by an existing structure. Design professionals will have more latitude in their configuration of space for a new Shepaug Valley Regional Agriscience STEM Academy. The following space specifications are desired outcomes of the project. Compromise may be required because of

site limitations and construction budget constraints. The classroom and laboratory square footage are listed as approximations in order to enable freedom of design for the renovated areas as well as the new buildings. It is expected that design professionals will work with school administration, teachers and support staff in order to provide the best layout of the space to enable the program to operate efficiently.

All classrooms, laboratory rooms and shop spaces shall have counters with enclosed storage cabinets above and below, lockable closets along the perimeter, rubberized flooring in all general areas, specialty flooring where necessary, room darkening shades, access to media distribution system for full voice communications, data, video capability, student/teacher computer workstations, access to wireless devices, furniture for students and teachers, electrical outlets placed accordingly to code and where necessary for specific purposes, computer requirements and equipment requirements, clock, flag, pencil sharpener and appropriate ventilation, heating and cooling necessary to maintain a stable temperature and humidity of the environment.

Laboratories
Food Science Laboratory @ 2,100 s.f.
AgSTEM Computer Lab @ 915 s.f.
Plant Science/Biotech. Lab @985 s.f.
Small Animal/Reptile/Amphibian Lab @ 1,675 s.f.
Veterinary Science/STEM Lab @ 1,290 s.f.
AgSTEM Multi-Purpose Class Rm. @ 785 s.f.

All laboratories must have access to a classroom learning space that shall be flexible and adaptable to different future uses in addition to the laboratory space within them. The large pieces of laboratory equipment shall be fixed in place at stations with impermeable tops that have sinks, propane gas, and electrical access within them. Cabinetry and other storage within the room shall be fixed along the perimeter. A fume hood is required and shall also be fixed in the room. Floor space should be maximized to enable the teacher to reconfigure furniture in the classroom learning area within the laboratory to suit various learning situations and instructional needs.

White boards, SMART Boards, areas to display student work, projection screens and computer workstations for students and teachers need to be carefully designed and strategically placed in order to facilitate teaching within the classroom learning area. A wireless network capacity will provide flexibility for student workstations. All laboratories shall be equipped with phone systems allowing for internal as well as external communications.

The Food Science Laboratory requires lockable storage cabinets (for isolating chemicals and hand supplies), sinks, refrigeration, freezer, student work stations, stoves, cooking ovens, stainless steel counters, cabinets, ventilation, drains and non-skid flooring. A separate secured pantry storage area is required for ingredients and supplies.

The Small Animal/Reptile/Amphibian Lab area requires two separate spaces for housing small companion animals and reptiles/amphibians due to animal health requirements. Each area should be of an open construction (large room) that will allow for the installation of various commercially available animal pens, enclosures and cages. Working surfaces will be constructed of stainless steel to facilitate sanitation. A common working area between the two spaces will allow for storage and other lab activities.

Shops Spaces and related Storage

Agricultural Woodshop @ 1,820 s.f.
Tool Crib @ 245 s.f.
Ag Mech Storage Room @195 s.f.
Finishing Room @ 235 s.f.
Agriculture Welding Shop @ 1,800s.f.
Agriculture Mech/Small Engine Shop @ 1,860 s.f.

The Agricultural Woodshop is generally an open area designed to provide students with exposure to a wide range of woodworking skills associated with small scale construction. The floor plan would include the permanent placement of equipment such as a table saw, jointer, radial arm saw, and planer with the required clearance for their safe operation. Perimeter placement of other pieces of equipment such as a downdraft table, drill press, portable dust collection unit and tool storage cupboards will maximize available floor space. A small, ventilated finishing room is required for fiberglass applications, woodworking finishes, and painted finishes. Properly vented and grounded flammable cabinets will require for the storage of finishing materials. A large shop door is required to permit the completion of small scale construction projects within the lab space year-roundThe Welding Shop should allow for maximum use of available floor space, and access to the outside via a large shop door for work on large projects. The space needs to be divided into task areas to maximize the useable square footage, placing welding booths along the perimeter. Metal work benches with vices will be placed centrally to facilitate students working on individual projects. Racks and cupboards to store the required personal protective equipment (PPE) such as welding helmets, face shields, jackets and gloves will be secured to the perimeter wall. A fume collection system will be necessary to maintain air quality.

The Small Engine Shop should be a highly flexible space, suited to accommodate a wide range of mechanical projects. Perimeter placement of equipment such as tool storage cabinets and a parts washer maximizes useable floor space. A tool storage room that allows for the storage of speciality tools, diesel engines on rolling stands and shelving for small

engines will allow the lab to transition from one instructional use to another, as the curriculum demands. Flammable cabinets for small quantities of diesel and gasoline, along with other small engine associated flammable materials are needed. A fume collection system is required to maintain air quality in the shop.

Overall, the rooms for the shop areas should be contiguous to each other. All shops are required to have hand washing facilities, safety glass storage, tools and equipment stored on racking and secured shelving for the various equipment and repair parts used in the program. The shops will require overhead doors to allow for tractors and other large equipment, as well as projects, to move freely in and out. An impervious flooring material is necessary to allow for ease of cleaning and wearability.

Greenhouses and Related
Production Greenhouse @ 2,545 s.f.
Plant Headhouse @ 765 s.f.

Plant sciences areas includes a greenhouse of approximately 3,310 total square feet of space, divided up into (2) distinct areas. The Production Greenhouse area of approximately 2,545 s.f. of space and the adjacent Headhouse approximately 765 s.f.

The greenhouse area will generate a great deal of visibility to the public and potential students. A high quality solid panel greenhouse system is required that allows for seasonal growing conditions. The environmental controls in these greenhouse areas must be of the latest technology allowing for energy efficiency and ease of operation during heating and cooling cycles. Water supplies in this area need to be distributed throughout to provide access to the entire space. Drains are required to be available and piped so as to collect and allow for waste waters to be treated if necessary. Lighting needs to be of a consistent level for working under all day and night conditions. Lighting needs to be protected from moisture that will be generated in the space.

The Headhouse area will serve as the location for the recycling system associated with the fish tanks for the aquaponics portion of the curriculum. Piping will allow for the transfer of water from the tanks into the hydroponic grow out in a portion of the production greenhouse space.

All of the areas will be equipped with appropriate cabinetry, electrical outlets, lighting, computer drops, counter spaces, non-skid flooring and proper drainage.

Support Areas
Restrooms @ 525 s.f.
Custodial Room @ 250 s.f.

Storage @ 325 s.f.
Sales and sales support @1,140
Electrical @ 200 s.f.

Restroom spaces will include tiled floors and walls. Sufficient ventilation and lighting are required. All plumbing fixtures will be wall hung units throughout the spaces.

Custodial spaces will include tiled floors and walls with sufficient ventilation and lighting. A built in slop sink is required in the floor with a wall mounted separate hot and cold water faucet to support the green chemical system that will be wall mounted and tied to the water supply. Separate supplies for the hot and cold water are to eliminate the potential for water cross connections.The Sales and its support area will be a public space that requires its own secured entrance and has the ability to be secured from the rest of the school facilities not allowing its occupants to gain entry into any contiguous space. It should have counter space to allow for students on one side while servicing customers on the other. It will have a walk in refrigerator for storing of floral products. There should be adequate counter space for putting together small floral displays and finished products.

The space should be designed to allow for students to participate in authentic retail sales experiences, while also providing additional demonstration and lab space for classes. Work spaces should be made of durable materials an should be flexible to allow for different configurations depending on the demands of the curriculum. Floor materials should be of an appropriate type to allow for frequent cleaning while providing slip protection to occupants and customers. Water sources and proper drainage should be readily available to accommodate the floral process.

Administration
Vocational Agriculture Office @ 155 s.f.
Reception @ 180 s.f.

Equine – Equipment Garage and Animal Facility (Includes Garage and Large animal areas)

Indoor riding area/demonstration space @ 12,225 s.f.
Stalls including Horse Groom @ 1,000 s.f.
Restrooms @ 300 s.f.
Observation area @ 520 s.f.
Large Animal housing @ 2,440 s.f.
Feed/Grain/Hay/Shavings @ 1,095 s.f.
Custodial @ 80 s.f.
Mechanical/Sprinkler @ 300 s.f.

Dog Grooming/Kennels @ 1,130 s.f.
Equipment Storage Garage @ 2,270 s.f.
Tool Rm/Tack Rm/Laundry @730 s.f.

The Equine/Garage/Animal Facility will generate a great deal of visibility to the public and potential students. It should be divided into six distinct learning spaces including an equine stable, livestock area, dog grooming shop, equipment garage, indoor demonstration arena and outside paddocks and pastures.

The equine area will provide short-term housing for horses. In close proximity to the horse stalls will be an indoor grooming stall, a tack room, and an equipment room. A bedding, grain and hay storage room in the stable area will allow for quick access to the materials needed for the daily care and management of the horses, and minimize the loss of instructional time due to travel.

The livestock area will be located within the Equine/Garage/Animal Facility and shall be designed as a flexible space that can accommodate different species of livestock at different times as the curriculum demands.. The large animal area shall contain built-in, as well as flexible, animal pens, to accommodate a variety of animals including sheep, goats, cattle, llamas, alpacas, and pigs. Commercially available grooming chutes and trimming stands appropriate for these types of animals will be provided. The indoor spaces shall be designed with appropriate ventilation, heating and cooling (when necessary) to maintain a stable environment. The use of non-skid floor finishes will be necessary throughout the spaces. Water, lighting, electricity and floor drains are required for the spaces accordingly. An adjacent outdoor lab space will be necessary to provide a secure, fenced in working area for students and animals that minimizes the possibility of animal escape.

The grooming portion of the program will allow for students to groom primarily dogs and cats as part of the animal science curriculum. The grooming lab should include a drop off/pickup area for pets that offers minimal disruption. The Dog Grooming area should include a kennel space to isolate animals from each other when they are not being groomed. Commercially available grooming stations and stands will be used to provide students with a work station when grooming animals. The surface materials in the lab and kennel should withstand the constant cleaning by water flushing and hand washing. Water sources are required for animal grooming and space cleaning. Floor drains should be provided to collect and control waste water from the cleaning/grooming processes.

An indoor ring/demonstration area with viewing stands shall be included. It is desireable that the indoor ring/demonstration area has a design that provides for maximum daylight infiltration. The indoor ring should be provided with a surface appropriate for the use of the space.

Outdoor open space is to be provided for daily animal exercise. A fencing system should be included to enclose the riding spaces, pens, and pastures.

The Equipment Storage Garage shall be isolated from the rest of the facility and will house the school's 28 passenger field trip bus, pick up truck, farm tractor, commercial-grade mower, lawn mowers, string trimmers, livestock/horse trailer, and other smaller misc. equipment. The garage will require enough height to accommodate the types of equipment stored within and include overhead doors to allow for the large equipment to move freely in and out. One bay of the garage will be utilized for the storage of bulk feed and bedding. An impervious flooring material is necessary to allow for ease of cleaning and wear ability. The space will require exhaust air units for the general area suitable for vehicle storage. Racking and shelving will be installed to store the various items needed to maintain the equipment used and stored in the space.

COMMUNITY PROGRAMS

The contemporary public school facility serves the educational interests of its student clientele as a primary function and it also embraces the needs of its community for an increasing range of activities that enhance the quality of life of townspeople. Therefore, areas of the buildings need to be accessible to the community after school hours for a variety of activities ranging from scouts to sports activities to adult education enrichment classes, gatherings of people for meetings, entertainment, recreation and the sales of products/services being offered by the new Shepaug Valley Regional Agriscience STEM Academy. It is the philosophy of the Region 12 Board of Education that the school buildings belong to the community and they should be used to the fullest extent practical, while maintaining the primary function of the building as its foremost consideration.

The building's design must accommodate public access, including handicapped citizens, to all public places including lavatories, telephones, water fountains and seating. The design should respect the need for security of both the core school facilities and public areas.

The historical and artistic significance of the Bridgewater, Roxbury, and Washington area is varied and substantial. It is highly desirable that these treasured resources become increasingly more integrated in school programs and visible throughout the school facilities. Areas of the main building should be designed for display of varied art works and historical artifacts.

SITE CONSIDERATIONS

The site should accommodate the needs of students in grades 9 - 12. Among the basic considerations for the site development are:

1. Bus loading and unloading should be separated from the parking area and should accommodate the full complement of busses servicing the school.
2. Parent/visitors parking and drop-off shall be separate from the bus loading and unloading areas.

3. Traffic flow should have adequate and safe site distances. Walking patterns should be designed to minimize crossing vehicular traffic as much as possible.
4. There shall be adequate parking to accommodate both the staff and guests who visit the school on a daily basis, as well as those who attend special functions. A minimum of 300 parking spaces for faculty, staff and daily visitors is desirable.
5. A loading platform shall accommodate food delivery for the food science program.
6. Adequate lighting should be provided for evening use of the building.
7. Access by physically challenged persons shall be provided as per ADA.
8. Consideration shall be made to provide ease of snowplowing and provisions made to accommodate snow piles.
9. The site shall accommodate the physical education program of the school as well as the recreational use of the site for students and community after school hours.
10. Lavatory facilities should be easily accessible.
11. Landscaping should be of low shrubbery and flowering bushes around the building to maintain sight lines for security purposes while enhancing the physical appearance of the building and its site.
12. Site signage should be strategically placed and lit for night use where appropriate to do so.

SYSTEMS CONSIDERATIONS

It is the intent of the Board of Education that the building design and its operating systems should be compliant with all applicable state and federal codes.

It would be desirable to consider the use of non-proprietary systems where possible in each of the below systems except where specifically noted.

Internal Communications and Security

Telephone – Intercom- Public Address System: Each classroom, lab, greenhouse, outbuilding in the school should be equipped with an integrated communication system that allows for receiving emergency and routine announcements, making local area calls and communicating with the main office and other classrooms, accessing voice mail service inside and outside the building, and directing emergency assistance calls to one or more designated areas.

Offices and other specific designated areas in the building should be equipped with the same integrated system as listed above with the additional services that: allow local and long distance calls, the ability to switch calls to specific telephones after hours with voice mail services, and back-up emergency power for telephone, voice mail, and intercom services. Adequate service for future expansion of telephones throughout the buildings should be included. The intercom system should also provide for exterior building speakers.

Clock and bell system: Each room should be equipped with a time display showing both hours and minutes. The display shall originate from a central electronic clock module that

shall also control chime or tone system circuits and other time-based functions. The system should be capable of being corrected or re-programmed from the master clock module.

Fire alarm and vandal alarm system: All buildings should be equipped with a fully code compliant smoke detection, and alarm. All equipment should be state of the art. Remote enunciator panels showing location of the source of the alarm shall be located near the administrative area and front door of the buildings and the custodial office. Upon activation of an alarm, an evacuation signal shall be transmitted to a central station monitoring service. The alarm shall signal until manually reset. Alarms should be easily heard throughout the building, outside the building and visual alarms should be provided as per code. All required fire extinguishers should be placed into recessed cabinets with the doors on audible local alarms.

To protect the building when it is unoccupied, each room shall be equipped to electronically monitor the normal "closed door" status. Interruption of the "closed door" status shall automatically initiate a silent alarm to the local police or other security agency. High value areas shall be equipped with additional sensing devices to detect the presence of an intruder.

Building Systems:

Code compliance: All construction associated with the Shepaug Valley Regional Agriscience STEM Academy shall be in compliance with all local and state building, fire, health, and handicapped codes and regulations.

Custodial storage: Custodial storage and slop sinks should be strategically located on each floor for convenience and efficiency of work.

HVAC System: The heating, ventilating, and air conditioning system (HVAC) shall be thoroughly studied so the most reliable, flexible, and energy efficient system is provided. All buildings and areas within should be air conditioned for warm weather use and heated for cold weather use. Natural gas is not available on the site. An alternate energy efficient source of hot water for domestic use shall be provided for summer operation so major boilers may be shut down during non-heating seasons. Oil tanks should be with the most permanent and reliable design, with spill containment and monitoring systems available.

The HVAC system will be controlled by a (DDC) direct digital control system located in the custodial office with access from outside the school. Connection to external emergency power sources should be provided to keep vital building components and areas functioning in an emergency.

The HVAC system should have the following characteristics:

- should be able to provide uniform temperature in all areas;
- should eliminate drafts and cold areas;
- should provide superior ventilation in all rooms and bathrooms;

- should eliminate noise in the classroom from the systems;
- should be able to provide for varying degrees of humidity control;
- should provide unquestioned reliability; and,
- should be of the latest energy-efficient technology,
- should utilize radiant floor heating capability in areas where it is considered the best source of heat.

Windows: All window frames and sash should be of a material that is maintenance free. The provision of glazing in the classroom is both an educational and psychological enhancement because it provides visual relief and outdoor observation opportunities. The provision of windows or glazing does, however, provide for heat loss or gain and a vulnerable point in security. The provision double-glazed windows with a solar block is desirable and should be considered in each room.

Physically challenged access: All buildings shall be in full compliance with state and federal handicapped codes and regulations. Elevators, if used, must be strategically located to ensure suitability to meet current code requirements.

Plumbing: All buildings should meet or exceed all minimum code requirements for the number of toilet fixtures, sinks and drinking fountains. All fixtures should be of the heaviest duty, vandal resistant design and include automatic source for water closets, urinals, and sinks in the student bathrooms. Adequate clean outs shall be provided and all restrooms should have floor drains. Piping should run in accessible pipe chases. Adequate valve placement should allow for shutting down sections of the facility to allow for local repairs without shutting down the entire system. Valves should be ball valves. Toilet partitions should be constructed of solid plastic with color all the way through the product, vandal resistant and equipped with heavy-duty hardware. Fixtures should be wall hung. All buildings should be divided into sections with isolation drain valves in each section.

Greenhouse, equine, small and large animal outbuildings shall have hot and cold water available throughout and shall also have recessed floor drains located throughout.

Electrical distribution. All buildings should exceed minimum code requirements for electrical service. Each normally occupied space shall be furnished with numerous electrical convenience outlets located throughout the space for maximum flexibility of room layout and eliminating a need for use of extension cords. Power in each classroom or lab area should come from two sources, one for exclusive use of computers and peripherals and the other for general use. There should be a separate service for the technology infrastructure. Each electrical panel should have 25% free space to add future circuits. Emergency lighting should be on individual wall packs. All three phase motors should have phase protection. All exit signs should be L.E.D. type with cast housings and polycarbonate lenses.

Exterior building structure: All windows should be low "e" insulated windows with screens.

Hardware: All hardware in the buildings should be heavy duty (commercial grade). All panic devices should be rim type with removable mullions rather than vertical rod type. All doors such as stairwell doors, corridor-smoke doors, etc. should be held open with magnetic devices connected to the fire alarm system.

Security: The main entrance to any building should be built to consider minimizing intrusion by force. The entrance should be visible to the reception area in the main office and have the capability of isolating visitors from the main building through use of a vestibule that will allow for remote observation of visitors as needed. Outside doors will be locked at the start of the school day and admittance will be gained by electronic lock release controlled from the reception area. Buzzer signals will alert school personnel in the reception area of a person seeking admittance to the building. This system should be controlled by school administrators to enable flexible application of security modes.

Keying should be mastered with restricted key blanks, swipe cards or number pads. The key system shall automatically disallow entrance to any building with regular keys (swipe cards or number pad codes) after a specific time of day, when only the master key or authorized key holders will be admitted.

CCTV: A fully functional closed-circuit television (CCTV) security camera system should be installed throughout the buildings highlighting all exterior door accesses, the main lobby reception area and parking areas. This system will be completely IP-networkable with network video recorders capable of holding a month's worth of data. The system should stand alone, but be connected to the school network to allow for multiple viewing locations. The district has chosen Avigilon as its desired manufacturer of software and hardware for such system.

APPENDICES

Appendix I. Region 12 Enrollment Projected by Grade to 2025: Grades PK-5

School Year	Birth Year	Births[1]	K	1	2	3	4	5	PK	Total PK-5
2005-06	2000	59	56	62	87	82	78	82	19	466
2006-07	2001	60	67	62	64	87	77	79	20	456
2007-08	2002	71	57	68	62	59	88	78	21	433
2008-09	2003	57	59	56	74	64	60	86	21	420
2009-10	2004	58	48	64	54	78	64	60	29	397
2010-11	2005	56	46	51	63	54	80	65	19	378
2011-12	2006	56	51	44	54	64	57	80	17	367
2012-13	2007	35	36	55	37	48	64	61	21	322
2013-14	2008	40	33	38	56	37	49	63	28	304
2014-15	2009	37	35	37	39	59	38	47	31	286
2015-16	2010	50	35	36	37	42	57	40	42	289
Projected										
2016-17	2011	41	38	38	36	39	43	59	42	295
2017-18	2012	28	25	41	38	38	40	44	42	268
2018-19	2013	32	28	28	41	40	39	41	42	259
2019-20	2014	37	32	30	28	43	41	40	42	256
2020-21	2015	42	37	35	30	29	44	43	42	260
2021-22	2016	39	34	40	35	32	30	46	42	259
2022-23	2017	39	34	37	40	37	33	31	42	254
2023-24	2018	39	34	37	37	42	38	34	42	264
2024-25	2019	39	34	37	37	39	43	39	42	271
2025-26	2020	39	34	37	37	39	40	44	42	273

Projection Growth Rates							
Annual Growth Rates							**Estimated Migration[4]**
2006	1.117	1.107	1.032	1.000	0.939	1.013	-1.64%
2007	0.803	1.015	1.000	0.922	1.011	1.013	0.66%
2008	1.035	0.982	1.088	1.032	1.017	0.977	1.33%
2009	0.828	1.085	0.964	1.054	1.000	1.000	1.80%
2010	0.821	1.063	0.984	1.000	1.026	1.016	0.47%
2011	0.911	0.957	1.059	1.016	1.056	1.000	1.21%
2012	1.029	1.078	0.841	0.889	1.000	1.070	-2.34%
2013	0.825	1.056	1.018	1.000	1.021	0.984	-0.28%
2014	0.946	1.121	1.026	1.054	1.027	0.959	-2.04%
2015	0.700	1.029	1.000	1.077	0.966	1.053	1.00%
3-Year Ave.	0.824	1.068	1.015	1.043	1.005	0.999	
Weighted 3-Year	0.803	1.064	1.012	1.056	0.996	1.010	
5-Year Ave.	0.882	1.048	0.989	1.007	1.014	1.013	
Weighted 5-year	0.848	1.061	0.993	1.026	1.004	1.013	

[1] Births 2000 to 2014 are from the State Department of Public Health. The 2013 and 2014 figures are preliminary.
Births in 2015 are my estimate from an analysis of in-state births through October.
Births in 2016-20 set to average of 2014 and 2015 births.

[2] Projection based on sum of projections by grade within town.

[3] Kindergarten based on 3-year weighted averages of estimated yield from births five- and six-years ago and retention by town.

[4] Estimated by comparing the enrollment in grades 3-8 one year with the enrollment in grades 2-7 the prior year with an adjustment for residents out to public schools.

Appendix I. Region 12 Enrollment Projected by Grade to 2025: Grades 6-12

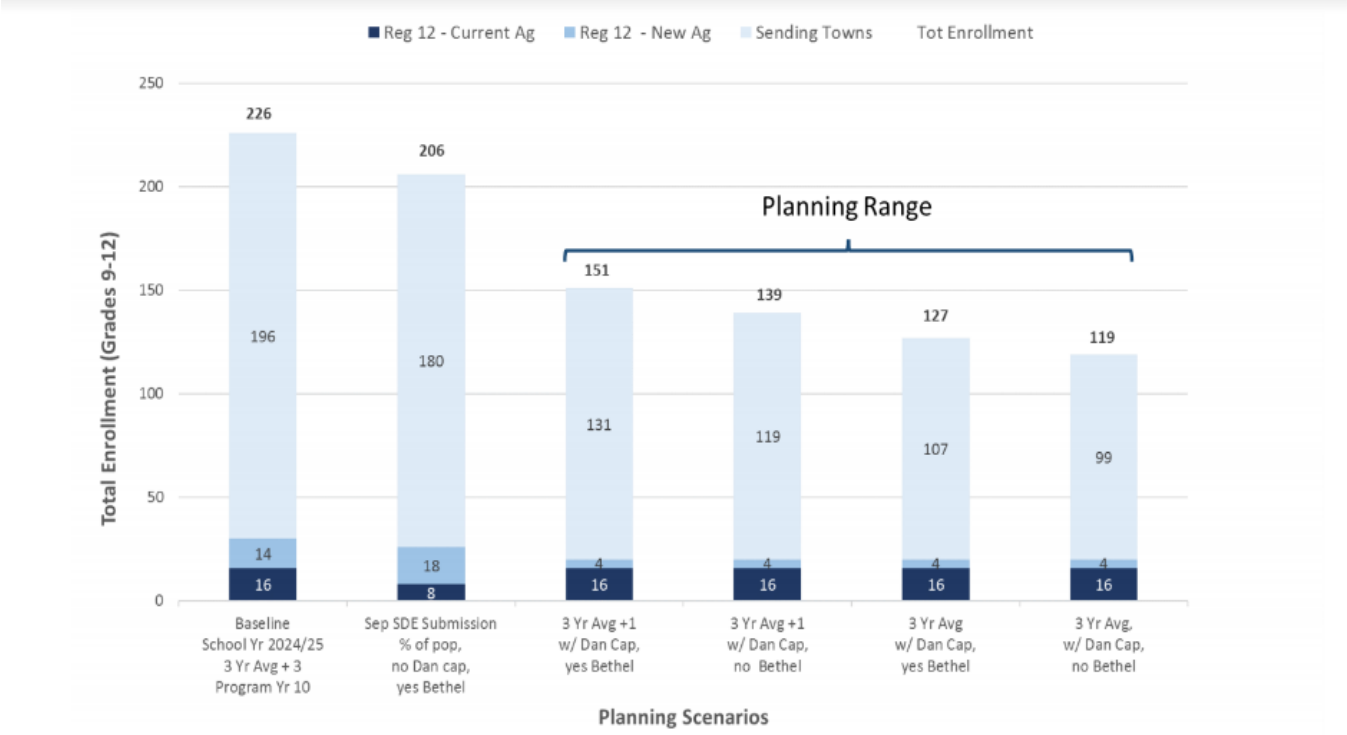
School Year	6	7	8	9	10	11	12	6-8 Total	9-12 Total	PK-12 Total
2005-06	68	89	88	106	100	99	108	245	413	1,124
2006-07	80	66	88	93	99	104	96	234	392	1,082
2007-08	80	81	71	96	93	103	101	232	393	1,058
2008-09	77	82	85	73	91	83	100	244	347	1,011
2009-10	90	78	80	87	70	88	78	248	323	968
2010-11	59	89	79	87	92	67	80	227	326	931
2011-12	64	61	88	76	77	84	69	213	306	886
2012-13	78	60	61	82	73	80	85	199	320	841
2013-14	63	75	62	59	76	77	80	200	292	796
2014-15	59	62	73	65	53	76	73	194	267	747
2015-16	50	63	64	66	67	51	78	177	262	728
Projected										
2016-17	39	50	64	61	63	67	51	153	242	690
2017-18	57	39	51	60	58	63	66	147	247	662
2018-19	43	57	40	51	57	58	62	140	228	627
2019-20	40	43	58	40	49	57	58	141	204	601
2020-21	39	40	44	57	38	49	57	123	201	584
2021-22	42	39	41	44	54	38	49	122	185	566
2022-23	45	42	40	40	42	54	38	127	174	555
2023-24	30	45	43	41	38	42	54	118	175	557
2024-25	33	30	46	43	39	38	42	109	162	542
2025-26	38	33	30	44	41	39	38	101	162	536
Projection Growth Rates[1]										
	0.972	0.999	1.013	0.898	0.952	1.006	0.991			
Annual Growth Rates[2]										**Migration[2]**
2006	0.976	0.971	0.989	0.886	0.934	1.040	0.970			-1.64%
2007	1.013	1.013	1.076	0.920	1.000	1.040	0.971			0.66%
2008	0.987	1.025	1.049	0.901	0.948	0.892	0.971			1.33%
2009	1.047	1.013	0.976	0.953	0.959	0.967	0.940			1.80%
2010	0.983	0.989	1.013	1.013	1.057	0.957	0.909			0.47%
2011	0.985	1.034	0.989	0.899	0.885	0.913	1.030			1.21%
2012	0.975	0.938	1.000	0.830	0.961	1.039	1.012			-2.34%
2013	1.016	0.962	1.033	0.951	0.927	1.055	1.000			-0.28%
2014	0.921	0.968	0.973	0.935	0.898	1.000	0.948			-2.04%
2015	0.979	1.069	1.033	0.808	1.031	0.962	1.026			1.00%
3-Year Ave.	**0.972**	**0.999**	**1.013**	**0.898**	**0.952**	**1.006**	**0.991**			
Weighted 3-Year	0.966	1.017	1.013	0.874	0.969	0.990	0.996			
5-Year Ave.	0.975	0.994	1.006	0.885	0.940	0.994	1.003			
Weighted 5-year	0.971	1.001	1.010	0.880	0.956	0.998	0.998			

[1] Grades 6-12 based on 3-year averages of annual growth rates.

[2] Grade 9 rates adjusted for residents only. Projected Sherman enrollment added to resident projection. Italicized growth rates Adjusted for enrollment of children of teachers and New Milford residents (in 2015).

[2] Estimated by comparing the enrollment in grades 3-8 one year with the enrollment in grades 2-7 the prior year with an adjustment for non-residents in and residents out to public schools

Appendix II: Region 12 Projected AgSTEM Enrollment



Planning range scenarios use most current 3 yr avgs based on Reg 14 data (2014-2016)
Danbury cap = 15 total enrollment
Sherman is a sending town and not included in Reg 12 numbers
Reg 12 New based on 15% of total population in 2024/25 per Dr. Prowda less current enrolled: [133x15%-16=4]

11/2/2016