HIGH SCHOOL SCIENCE DEMONSTRATION CLASSROOM

New Construction

I. PROGRAM PHILOSOPHY

Effective science learning enables our students to connect and apply science concepts and processes to everyday events. Students will actively learn science through the following ways: qualitative and quantitative observations; collect and organize data, investigate thoughtful questions, make logical predictions and offer reasonable explanations; explore possible conclusions; communicate their understanding. Our goal is that all students graduate having developed the tools of inquiry.

II. PROGRAM GOALS

During science, students will be taught a set of scientific concepts in a style compatible with their interests and abilities that will provide scientific knowledge necessary for successful involvement in life and future scientific studies. Students will learn to use the scientific laboratory apparatus in all science courses. Students will be able to speak and write in scientific terms and use basic vocabulary of science in today's society. Students will be challenged to participate in rigorous and or accelerated coursework to increase career or college readiness.

III. ORGANIZATIONAL NOMENCLATURE

Teacher - Student Ratio:	1:25
Student Capacity per Period:	Varies 1:25 Maximum
Total Number of Teachers:	1.4 per period Science Demonstration Classroom
Total Number of Aides:	None
Grade Levels or Age Levels for Which Program is intended:	9, 10 11, and 12
Hours per Day Space Will Be Used:	6 Minimum

IV. INNOVATIONS, EXPERIMENTAL IDEAS, OTHER PLANNED USES

It is possible that these facilities will be used at night, on weekends or in the summer for enrichment, field trips, or summer camps. Security of the building should be considered to prevent the loss of expensive laboratory equipment, yet flexibility for the instructors to gain access during non-school hours should be maintained.

Each of the Demonstration Classrooms should access a preparation/storage room. Although prep/storage rooms may be combined, they should include a minimum of 150 sq. ft. per Demonstration Classroom serviced.

V. SQUARE FOOTAGE CHANGES EXPLANATION THAT VARIES FROM APPROVED FACILITIES LIST

None

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VI. PROGRAM FURNITURE AND EQUIPMENT REQUEST FORM
*Shown on drawings
#purchased and installed by contractor

Space or Area	Number of Items	Description of Furniture/Equipment Needed
DEMONSTRATION CLASSROOM		
	*13	Tables, 24" x 54" Kemresin Top, 30" high, 4" x 4" hardwood legs
	25	Standard Student Chairs
	2	Wastebaskets
	1	Four-Drawer File Cabinet, Lockable
	*#4	Paper Towel Dispenser - owner provided, general contractor installed
	*#4	Soap Dispenser – owner provided, general contractor installed
	1	Teacher Chair
	1	Sound enhancement equipment system including amplifiers, speakers and microphones
MATERIAL STORAGE ROOM		
	*3	Lockable Storage Units, 3 ft. x 18 inches x 6 ft.

In addition to the above, demonstration desks, prep sinks, wash-up sinks, counters, etc. are needed and described in Section IX, 17A, B, C and D.

VII. SPECIAL CONSIDERATIONS

- Heating/Cooling/Ventilation

  In Prep-Storage Room, provide the following:

  Instructor switchable exhaust system capable of running during times when A.C. not in operation. Heating/A.C. with no air return to classrooms or other occupied spaces.

  In Science Demonstration Classroom, provide the following:

  NOTE: Because of the nature of science activities, special attention must be given to providing a heating/air conditioning system capable of greater than normal air flow, fresh air return, humidity control, removal of fumes and odors, and with reduced noise. Please contact the science supervisor and School Board Architect's Office for discussion.

  Instructor-switchable forced air exhaust system capable of exhausting the entire room in three (3) minutes. Special consideration should be given to placement of exhaust vents, and with provision of makeup air to maximize the effectiveness of the exhaust system.

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VII. SPECIAL CONSIDERATIONS (continued)

- Acoustics

  Acoustically treated walls and ceilings shall provide maximum noise control in individual Science Demonstration classrooms so that the educational process will not be affected.

- Lighting

  Some incandescent in each demonstration classroom with rheostat control.

  Two (2) high intensity "can lights" over each demonstration table, provided with switch.

  Provide light switches at all points of entry into labs, storage and teacher preparation areas.

- Doors

  Classroom, teacher preparation and storage room doors to be solid, lockable, with small glass panel.

  Doors opening into classroom shall be recessed.

- Plumbing

  Each room must have a master shut-off valve for water, easily accessible by the instructor.

  Sinks in classrooms to have cold water only; prep/storage rooms to have hot and cold water supply. Prefer using vandal-resistant fixtures in all student-occupied spaces.

  Demonstration Classroom: Four (4) deep modified epoxy resin utility sinks per room located at the ends or corners of perimeter counters. One modified epoxy resin sink in each demonstration table.

  Provide Dousing Station with eyewash and floor drain.

  Preparation/Storage Rooms: One (1) large modified epoxy resin sink in counter with gooseneck faucet for preparing solutions and for washing glassware. One large deep modified epoxy resin utility sink (such as Kewaunee KD323) at end of counter or on wall.

  All drinking fountains inside buildings shall be electric water-coolers providing chilled water.

- Communications

  Provide one-inch conduit with pull sting from a two-gang metal box with single-gang cover plate at teaching wall up to future projector location with extra 10 feet of cable coiled up in ceiling to allow for future ceiling-mounted projector or other visual image projection device.

  Two- way intercom in each classroom and office, connected to school P.A. System. Provisions for computer cabling to each room.

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VII. SPECIAL CONSIDERATIONS (continued)

- Electrical

  Provide master cut-off switch for electricity in each room.

  Demonstration Classroom: Sixteen (16) duplex GFI outlets (above counter). One (1) duplex outlet in demonstration desk. Three (3) duplex wall outlets in the front of room and one (1) duplex outlet for the U.V. Sanitizer. Provide other wall outlets around room as required.

  Preparation/Storage Rooms: Four (4) duplex outlets per room (above counter). Six (6) duplex wall outlets spaced around room.

- Gas and Air

  Gas in demonstration classroom must have a master shut-off valve.

  Demonstration Classroom: Ten (10) double gas jets per room (above counter), plus one jet on demonstration desk.

  Preparation/Storage Room: One (1) double gas outlet (above counter).

VII. SPECIAL CONSIDERATIONS (continued)

- Safety

  In each classroom:

  1. Provide master control valves or switches for gas, water and electricity in each room. The master control valves and switches shall be clearly labeled and located in a non-lockable space strategically placed no more than 15 feet from the instructor's work station to allow for emergency cutoff of services and shall be in addition to the regular main gas supply cut-off. Valves shall be completely shut off with a one-quarter (1/4) turn. The main supply cut-off shall shut down upon activation of the fire alarm system.
  2. Provide safety dousing shower with floor drain and emergency eye wash station.
  3. Provide fire extinguisher.
  4. Provide fire blanket on shelf or in cabinet so that the top of the fire blanket is five (5) feet or less above finished floor.
  5. Provide vented flammable storage cabinet in each prep/storage room.
  6. Provide wall-mounted U.V. Goggle Sanitizing Cabinet in each classroom (such as Fisher Scientific S47608).
  7. Provide one acid-resistant base storage cabinet in prep/storage room.

  The electric stove shall have a safety cutoff switch and an operation/shut off timer, readily accessible to staff.

  Rescue/Refuge Areas shall be provided at all appropriate second floor areas.

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VII. SPECIAL CONSIDERATIONS (continued)

- Built-in Cabinetry

A. Built-in work counter

Each Demonstration Classroom – to include 75 lineal feet of counter against three walls. Counters to be 36" high, 24" deep with backsplash and modified epoxy resin tops. Below counters are large double door, deep drawer arrangement; all provided with locks (such as Kewaunee 1K167 and 1K219 alternating). At 5' height along one wall above counter in each room, provide 2 Kemsheild adjustable shelves (such as Kewaunee KM-0038-AD, AS-4812-WS).

At 5' height, along one wall above counter, provide 4 wall mounted storage cases, 46.75" long, 30" high, 12" deep (such as Kewaunee 1K614 and 1K642 alternating). Over counter on remaining wall, provide a picture moulding near ceiling, and tackboard. Provide picture moulding near ceiling along wall in front of classroom, and continue around other walls where not obstructed by windows or other built-ins. Over each utility sink (4 in classroom, and 1 in prep room), provide a pegboard drying rack (such as Kewaunee KD906).

Each Demonstration Classroom – to include one 8' science demonstration desk (modified epoxy resin top) with instructor's table (such as Kewaunee KTS-108 and KTS-106).

Prep/Storage – Provide 20 lineal feet of counter top, 24" deep, 36" high, modified epoxy resin top (electric outlets and gas over this counter). Beneath counters are to have large double-door and drawer arrangement (such as Kewaunee 1K168 and 1K220 alternating). Provide one large, deep modified epoxy resin sink with base cabinet (such as Kewaunee KD365). Over counters, provide adjustable Kemresin shelves, such as those described above.

B. Built-in cabinets/shelving

Each Demonstration Classroom – to have one storage unit, 2' deep x 4' wide x 7' tall, solid front, lockable doors.

Prep/Storage – Provide two lockable storage cabinets, 4' wide x 24" deep x 7' tall. As extensively as possible along remaining walls, provide sturdy, wooden, adjustable island shelving, 18" deep, 72-84" high, six levels, with backs. These shelves should have no metal parts (chemical corrosion), and approximately one-third should be provided with a lip on their fronts.

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VII. SPECIAL CONSIDERATIONS (continued)

C. Built-in Instructional Aids

Each prep/storage room should have 4 x 4 markerboard and 4 x 6 of tackboard.

Science Demonstration (Each)
One 4 ft. x 16 ft. magnetic white markerboard, two 4 ft. x 8 ft. tackboards. Standard markerboard to have eraser tray, flag holder and demountable map railing. Install an interactive projector in the center of markerboards.

Provide wheeled cabinet with doors for sound enhancement equipment and amplifier. Cabinet and equipment shall be located at, or adjacent to, the major teaching wall with tethered wiring and harnesses. Equipment purchased with Furniture, Fixtures, Equipment & Technology (FFE&T) funds.

The back of the cabinet must allow connections of white speaker wire for the four speakers used with sound enhancement equipment, a network connection, connection to interactive projector and power.