HIGH SCHOOL SCIENCE LAB PLAN A (WITH CHEMICAL STORAGE IN SECURE CABINETS)

SCIENCE LAB GUIDELINES
NOTES:
1. THESE DIAGRAMS ARE EXAMPLES OF TABLE ARRANGEMENTS THAT CAN ACCOMMODATE A WIDE VARIETY OF ACTIVITIES, GROUPINGS, AND INSTRUCTIONAL CONFIGURATIONS THAT ARE TYPICAL OF LABORATORY WORK AND INSTRUCTION IN SMALL, MEDIUM, AND WHOLE-CLASS GROUPS. THE INTENT IS TO DESIGN SPACES WITH MAXIMUM FLEXIBILITY FOR VARIOUS ACTIVITIES WITHOUT EXTENSIVE RECONSTRUCTION.
2. THESE PLANS ARE TO BE CONSIDERED STANDARD TEMPLATE CONFIGURATIONS; SPECIFIC SCHOOL DESIGNS MAY VARY FROM THESE STANDARDS.
3. THE ITEMS DESCRIBED BELOW AS REQUIREMENTS ARE MANDATORY; OTHER ITEMS ARE MSBA RECOMMENDATIONS CONSIDERED 'BEST PRACTICES'.

REQUIREMENTS:
1. THE MSBA ALLOTMENT OF 1,440 NSF FOR EACH SCIENCE LAB IS BASED ON A 60 NSF PER STUDENT (24 STUDENTS). SMALLER SCIENCE CLASSROOMS MAY BE CONSIDERED IF THE CLASS SIZE IS SMALLER, WITH A MINIMUM OF 60 NSF PER STUDENT.
2. THE DISTRICT AND DESIGN TEAM SHOULD PROVIDE FOR A SCIENCE LAB LAYOUT THAT ALLOWS AS MUCH FLEXIBILITY AND UNIVERSALITY AS PRACTICAL, GIVEN THE DISTRICT’S SCIENCE DEPARTMENT EDUCATIONAL PLAN.
3. FIXTURES, WALL UNITS, AND CABINETS MOUNTED HIGH ON THE WALL ARE NOT RECOMMENDED. INSTRUMENT CABINETS SHOULD BE ACCESSIBLE FROM BOTH THE PREP ROOM AND THE CLASSROOM.
4. NO LAB RAISED UTILITIES, THAT MAY RESTRICT FLEXIBILITY, ARE TO BE PROVIDED IN THE CENTRAL FLOOR AREA OF THE SCIENCE LAB. A FEW SOMETIMES MANDATORY UTILITIES SUCH AS WATER SEDIMENTATION AND DRAINAGE, UP TO ONE SQUARE FOOT IN STRUCTURAL DEVICES OR CASEWORK MAY BE PROVIDED UNDER TABLES. UTILITIES SUSPENDED FROM THE CEILING MAY BE NEEDED FOR SOME DISCIPLINES, BUT ONLY IF THE PERIPHERAL UTILITIES CANNOT ACCOMMODATE THEM.
5. NO FIXED CASEWORK IS PERMITTED IN THE CENTRAL FLOOR AREA.
6. FOR THOSE PROJECTS IN WHICH THE DESIGN TEAM HAS DETERMINED THAT A SINGLE EXIT ACCESS DOORWAY FROM EACH SCIENCE LAB COMPLIES WITH THE REQUIREMENTS FOR EGRESS AS STATED IN THE ONE CHAPTER 10 MASSACHUSETTS STATE BUILDING CODE, THE DESIGNER SHALL PROVIDE, IN ADDITION TO THE REQUIRED EXIT ACCESS DOORWAY, A COMMUNICATING/CONVENIENCE DOOR FROM EACH LAB OR BETWEEN LABS, OR TO OTHER ADJACENT CLASSROOMS OR ACCESSIBLE SPACES THEREBY PROVIDING A SECOND MEANS TO ENTER AND EXIT EACH LAB. THIS SECOND DOOR SHOULD BE SEPARATED AS FAR FROM THE EXIT ACCESS DOORWAY AS PRACTICAL, AS DETERMINED BY THE DESIGN TEAM. DOORS USED FOR ACCESS TO STORAGE ROOMS, PREP ROOMS OR OTHER SPACES LOCKED OR OTHERWISE NOT TYPICALLY ACCESSED BY STUDENTS WILL NOT BE CONSIDERED TO MEET THIS REQUIREMENT. THE REQUIREMENT FOR THIS SECOND DOOR IS IN ADDITION TO, DOES NOT SUPERSEDE, AND THE DESIGN MUST NOT CONFLICT WITH, THE MINIMUM REQUIREMENTS OF 780 CMR, WHICH ARE THE RESPONSIBILITY OF THE DESIGN TEAM.

BEST PRACTICES:
1. STUDY/SITTING HEIGHT TWO-Student TABLES SHOULD MATCH THE HEIGHT OF PERIPIRAL COUNTERS SO THAT STUDENTS PERFORM LAB WORK, SITTING (PREPAREABLE) AND "SITTING WORK" ON STOCKS. TWO STUDENT TABLES (NOT LARGER) ARE RECOMMENDED FOR THEY CAN BE MOVED IN TOGETHER TO FORM A LONGER TABLE OR APART TO FORM SMALLER TABLES.
2. INSTRUMENT CABINETS SHOULD BE ACCESSIBLE FROM THE TOP, BOTTOM, AND BOTH SIDEWALLS IN ORDER TO ACCOMMODATE ORGANIZATIONAL AND STORAGE NEEDS.
3. SINKS SHOULD BE WIDE AND DEEP ENOUGH TO ACCOMMODATE BUCKETS AND OTHER LARGE CONTAINERS.
4. OPTIONAL FUME HOODS AND BIO-SAFETY CABINETS SHOULD BE ACCESSIBLE FROM BOTH THE PREP ROOM AND THE CLASSROOM.
5. PROVIDE MOBILE TEACHER DEMONSTRATION TABLES (NOT FIXED).
6. PROVIDE MOBILE TEACHER DEMONSTRATION TABLES (RECESSED).
7. EACH PREP ROOM SHOULD INCLUDE ONE REFRIGERATOR AND ONE WASHING MACHINE.
8. NOT USED.
9. PROVIDE VISUAL ACCESS BETWEEN LEAVES AND PREP ROOMS / PREP ROOM DOORS.
10. FIXTURES / LIGHTS CAN BE REARRANGED IN AREA, WITH WIRE AREAS REALIGN AS NEEDED.
11. PREP ROOMS CAN HAVE CHEMICAL STORAGE ON SHELVES IN SUCH A WAY TO PROVIDE LIMITED ACCESS. FOR REQUIRED PERSONNEL ONLY.
12. AT THE DISTRICT’S DISCRETION, CHEMICAL STORAGE CAN BE DIVIDED INTO SATELLITE STORAGE ROOMS, BUT CHEMICAL STORAGE IN PREP ROOMS IS DISCOURAGED.
13. PROVIDE VISUAL ACCESS BETWEEN LEAVES AND PREP ROOMS / PREP ROOM DOORS.
14. RATHER THAN GREEN HOUSES, CONSIDER DESIGNS THAT ALLOW PLANTS TO BE PLACED ON SHELVES OR MOVEABLE RACKS WITH ACCESS TO LIGHT FROM CLASSROOM WINDOWS.

FRONT FACING / LARGE GROUP INSTRUCTION TEAMS OF 2 CONFIGURATION
LAB CONFIGURATION

SCIENCE SINKS INCLUDE HOT & COLD WATER, SEE SHEET 2 OF 3

BASE CABINETS

SCIENCE LABS INCLUDE H&C WATER, SEE SHEET 2 OF 3

CASEWORK CONFIGURATION

OPTIONAL AIR OR VACUUM

FOR ALTERNATE

CASEWORK CONFIGURATION

OPTIONAL

FUME HOOD/ BIO-SAFETY CABINET

WHEELCHAIR ACCESSIBLE @ 36" HIGH

MOVABLE TABLES @ 34" HIGH W/ OPTIONAL BASE CABINETS

1,440 SF SCIENCE LAB

400 SF PREP ROOM

INSTRUCTOR’S TABLES @ 34" HIGH

SAFETY SHOWER & EYEWASH W/ FD

SAFETY GOGGLESTERLIZER UNIT

FIRE EXTINGUISHER

MASTER GAS SHUTOFF

4'-0"

2'-0"

49'-6"

13'-4"

49'-6"

49'-6"

1,440 SF SCIENCE LAB

400 SF PREP ROOM

INSTRUCTOR’S TABLES @ 34" HIGH

SAFETY SHOWER & EYEWASH W/ FD

SAFETY GOGGLESTERLIZER UNIT

FIRE EXTINGUISHER

MASTER GAS SHUTOFF

4'-0"

2'-0"

49'-6"

13'-4"

49'-6"
HIGH SCHOOL SCIENCE LAB PLAN B (WITH CHEMICAL STORAGE IN SECURE CABINETS)

RAMP / MOTION STUDIES CONFIGURATION

LAB CONFIGURATION

SCIENCE LAB GUIDELINES

NOTES:
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2. THE TABLES SHOWN HERE ARE CENTERED, NOT WINDOW/GAUGE, ARE NOT UNITIZED, AND ARE NOT FOR TWO-TO-TWO WORK SPACE. THEY REPRESENT A VARIETY OF ACTIVITIES THAT ARE TYPICAL OF LABORATORY WORK AND INSTRUCTION IN SMALL, MEDIUM, AND WHOLE-CLASS GROUPS.
3. THE ITEMS DESCRIBED BELOW AS REQUIREMENTS ARE MANDATORY, OTHER ITEMS ARE MSBA RECOMMENDATIONS CONSIDERED BEST PRACTICES.

REQUIREMENTS:
1. THE MSBA ALLOTMENT OF 1,440 NSF FOR EACH SCIENCE LAB IS BASED ON A 60 NSF PER STUDENT (24 STUDENTS). SMALLER SCIENCE CLASSROOMS MAY BE CONSIDERED IF THE CLASS SIZE IS SMALLER, WITH A MINIMUM OF 60 NSF PER STUDENT.
2. NO LAB RAISED UTILITIES, THAT MAY RESTRICT FLEXIBILITY, ARE TO BE PROVIDED IN THE CENTRAL FLOOR AREA OF THE SCIENCE LAB. MOST NEEDS SHOULD BE PROVIDED IN THE CENTRAL FLOOR AREA OR THE LAB. UTILITIES SUSPENDED FROM THE CEILING MAY BE NEEDED FOR SOME DISCIPLINES, BUT ONLY IF THE PERIPHERAL UTILITIES CANNOT ACCOMMODATE MOST NEEDS.
3. BOTH LAB AND LECTURE CONFIGURATIONS MUST BE ACCOMMODATED IN EVERY DESIGNATED SCIENCE LAB ROOM. SEPARATE LABS AND LECTURE ROOMS ARE NOT PERMITTED.

BEST PRACTICES:
1. STURDY, STANDING-HEIGHT TWO-STUDENT TABLES SHOULD MATCH THE HEIGHT OF PERIPHERAL COUNTERTOPS SO THAT STUDENTS PERFORM LAB WORK STANDING (PREFERABLE) AND "SEAT WORK" ON STOOLS. TWO-STUDENT TABLES (NOT LARGER) ARE RECOMMENDED SO THEY CAN BE MOVED INTO A VARIETY OF CONFIGURATIONS. AN OPTION FOR 34" TALL CASEWORK AND TABLES FOR OVERALL ACCESSIBILITY IS ALSO AVAILABLE. ADJUSTABLE-HEIGHT TABLES ARE NOT RECOMMENDED.
2. STUB UTILITIES WHERE NEEDED FOR POTENTIAL FUTURE CONFIGURATIONS.
3. SINKS SHOULD BE WIDE AND DEEP ENOUGH TO ACCOMMODATE BUCKETS AND OTHER LARGE CONTAINERS.
4. OPTIONAL FUME HOODS AND BIO-SAFETY CABINETS SHOULD BE ACCESSIBLE FROM BOTH THE PREP ROOM AND THE CLASSROOM.
5. PROVIDE MOBILE TEACHING DEMONSTRATION TABLES (BEST PRACTICE).
6. PROVIDE MOBILE TEACHING DEMONSTRATION TABLES (BEST PRACTICE).
7. EACH PREP ROOM SHOULD INCLUDE ONE REFRIGERATOR AND ONE DISHWASHER.
8. NOT USED.
9. PROVIDE VISUAL ACCESS BETWEEN LEAVES AND PREP ROOMS / PREP ROOM DOORS.
10. SHARED SPACES CAN BE REDUCED IN AREA, WITH SAVED AREAS REALLOCATED ELSEWHERE AS NEEDED.
11. PREP ROOMS CAN CHEMICAL STORAGE SHOULD BE KEYED IN SUCH A WAY TO PROVIDE LIMITED ACCESS, FOR REQUIRED PERSONNEL ONLY.
12. AT THE DISTRICTS DISCRETION, CHEMICAL STORAGE CAN BE DIVIDED INTO SATELLITE STORAGE ROOMS, BUT CHEMICAL STORAGE IN PREP ROOM IS DISCOURAGED.
SCIENCE LAB GUIDELINES

NOTES:
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2. THE ITEMS DESCRIBED BELOW AS 'REQUIREMENTS' ARE MANDATORY, OTHER ITEMS ARE MSBA RECOMMENDATIONS (BEST PRACTICES).
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REQUIREMENTS:
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2. THE DISTRICT AND DESIGN TEAM SHOULD PROVIDE FOR A SCIENCE LAB LAYOUT THAT ALLOWS AS MUCH FLEXIBILITY AND UNIVERSALITY AS PRACTICAL, GIVEN THE DISTRICT’S SCIENCE DEPARTMENT EDUCATIONAL PLAN.
3. BOTH LAB AND LECTURE CONFIGURATIONS MUST BE ACCOMMODATED IN ALL SCIENCE CLASSROOMS. BASE CABINETS AND LECTURE ROOMS ARE NOT PERMITTED IN MID-SIZED GROUP / ROBOTICS CONFIGURATIONS.
4. NO LAB RAISED UTILITIES, THAT MAY RESTRICT FLEXIBILITY, ARE TO BE PROVIDED IN THE CENTRAL FLOOR AREA OF THE SCIENCE LAB. UTILITIES PROVISIONED IN THE PERIPHERAL UTILITIES AREA ARE TO BE PROVIDED IN THE CENTRAL FLOOR AREA OF THE SCIENCE LAB. UTILITIES FROM CURB ARE NOT PERMITTED IN THE CENTRAL FLOOR AREA.
5. NO FIXED CASEWORK IS PERMITTED IN THE CENTRAL FLOOR AREA. FIXTURES MAY NOT BLOCK PIVOT DOORS.
6. FOR THOSE PROJECTS IN WHICH THE DESIGN TEAM HAS DETERMINED THAT A SINGLE EXIT ACCESS DOORWAY FROM EACH SCIENCE LAB COMPLIES WITH THE REQUIREMENTS FOR EGRESS AS STATED IN THE MAHATTAN STATE BUILDING CODE, THE DESIGNER SHALL PROVIDE, IN ADDITION TO THE REQUIRED EXIT ACCESS DOORWAY, A COMMUNICATING DOOR FROM EACH LAB OR BETWEEN LABS, OR TO OTHER ADJACENT CLASSROOMS OR ACCESSIBLE SPACES THEREBY PROVIDING A SECOND MEANS TO ENTER AND EXIT EACH LAB. THIS SECOND DOOR SHOULD BE SEPARATED AS FAR FROM THE EXIT ACCESS DOORWAY AS PRACTICAL, AS DETERMINED BY THE DESIGN TEAM.
7. THE REQUIREMENT FOR THIS SECOND DOOR IS IN ADDITION TO, DOES NOT SUPERSEDE, AND THE DESIGN MUST NOT CONFLICT WITH, THE MINIMUM REQUIREMENTS OF 780 CMR, WHICH ARE THE RESPONSIBILITY OF THE DESIGN TEAM.

BEST PRACTICES:
1. STURDY, STANDING-HEIGHT TWO-STUDENT TABLES SHOULD MATCH THE HEIGHT OF PERIPHERAL COUNTERTOPS SO THAT STUDENTS PERFORM LAB WORK STANDING (PREFERABLE) AND "SEAT WORK" ON STOOLS. TWO-STUDENT TABLES (NOT LARGER) ARE RECOMMENDED SO THEY CAN BE MOVED.
2. STUB UTILITIES WHERE NEEDED FOR POTENTIAL FUTURE CONFIGURATIONS.
3. SINKS SHOULD BE WIDE AND DEEP ENOUGH TO ACCOMMODATE BUCKETS AND OTHER LARGE CONTAINERS.
4. OPTIONAL FUME HOODS AND BIO-SAFETY CABINETS SHOULD BE ACCESSIBLE FROM BOTH THE PREP ROOM AND THE CLASSROOM.
5. PROVIDE MOBILE TEACHER DEMONSTRATION TABLES (NOT FIXED).
6. PROVIDE VISUAL ACCESS BETWEEN LEAVES AND PREP ROOMS / PREP ROOM DOORS.
7. SHARED SPACES CAN BE REDUCED IN AREA, WITH SAVED AREAS REALLOCATED ELSEWHERE AS NEEDED.
8. SAFETY EQUIPMENT AND INFORMATION SUCH AS FIRE BLANKETS, STERILE EYE-PROTECTION, AND MATERIAL SAFETY DATA SHEETS (MSDS) SHOULD BE LOCATED IN HIGH-VISIBLE AND EASILY ACCESSIBLE PLACES, PREFERABLY NEAR EXITS AND OTHER REQUIRED SAFETY EQUIPMENT.
9. RATHER THAN GREEN HOUSES, CONSIDER DESIGNS THAT ALLOW PLANTS TO BE PLACED ON SHELVES OR MOVEABLE RACKS WITH ACCESS TO LIGHT FROM CLASSROOM WINDOWS.