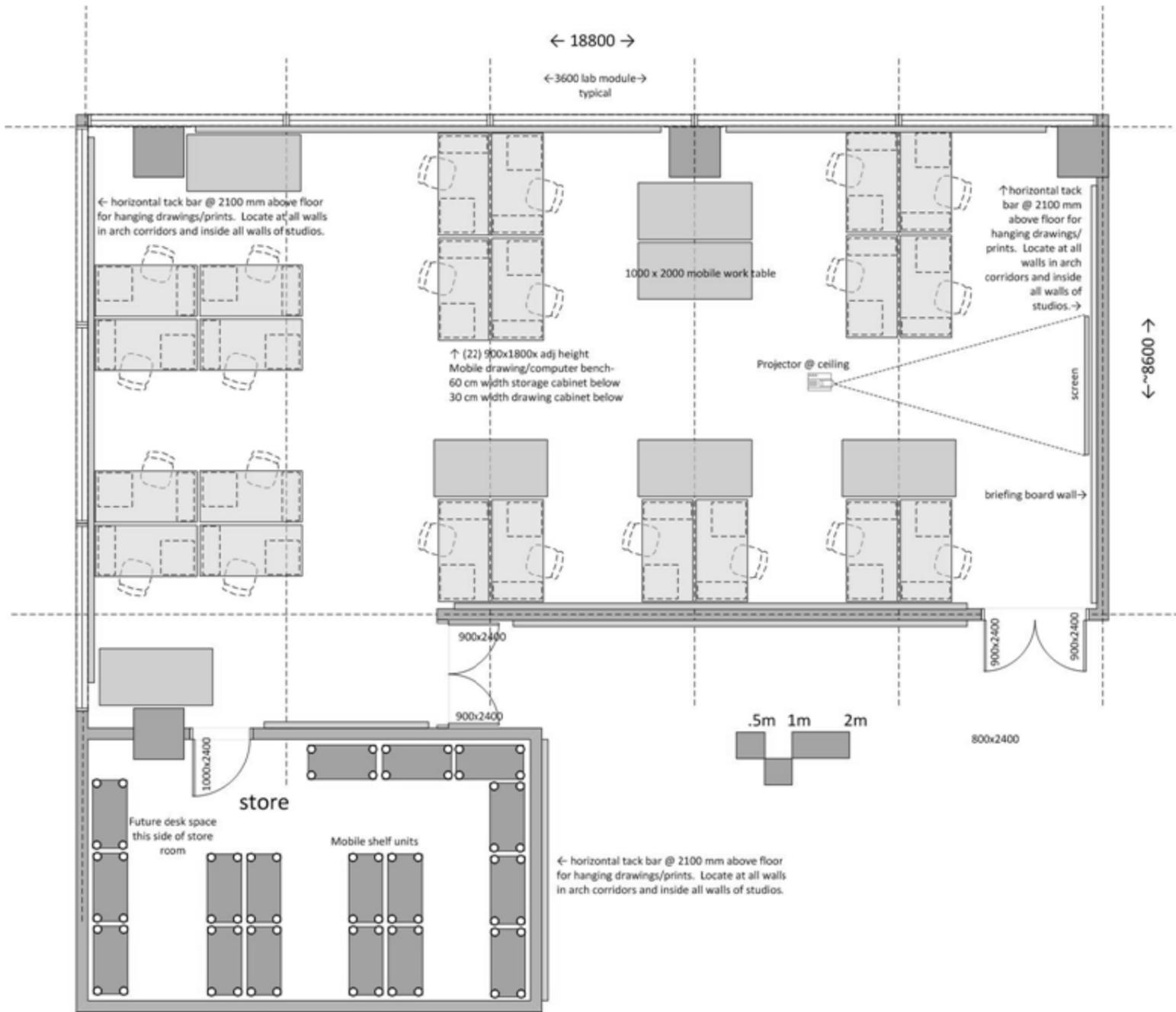


# ARCHITECTURE STUDIO DESIGN SKETCHBOOK

New College of Engineering  
Qatar University  
2012 Jul 11

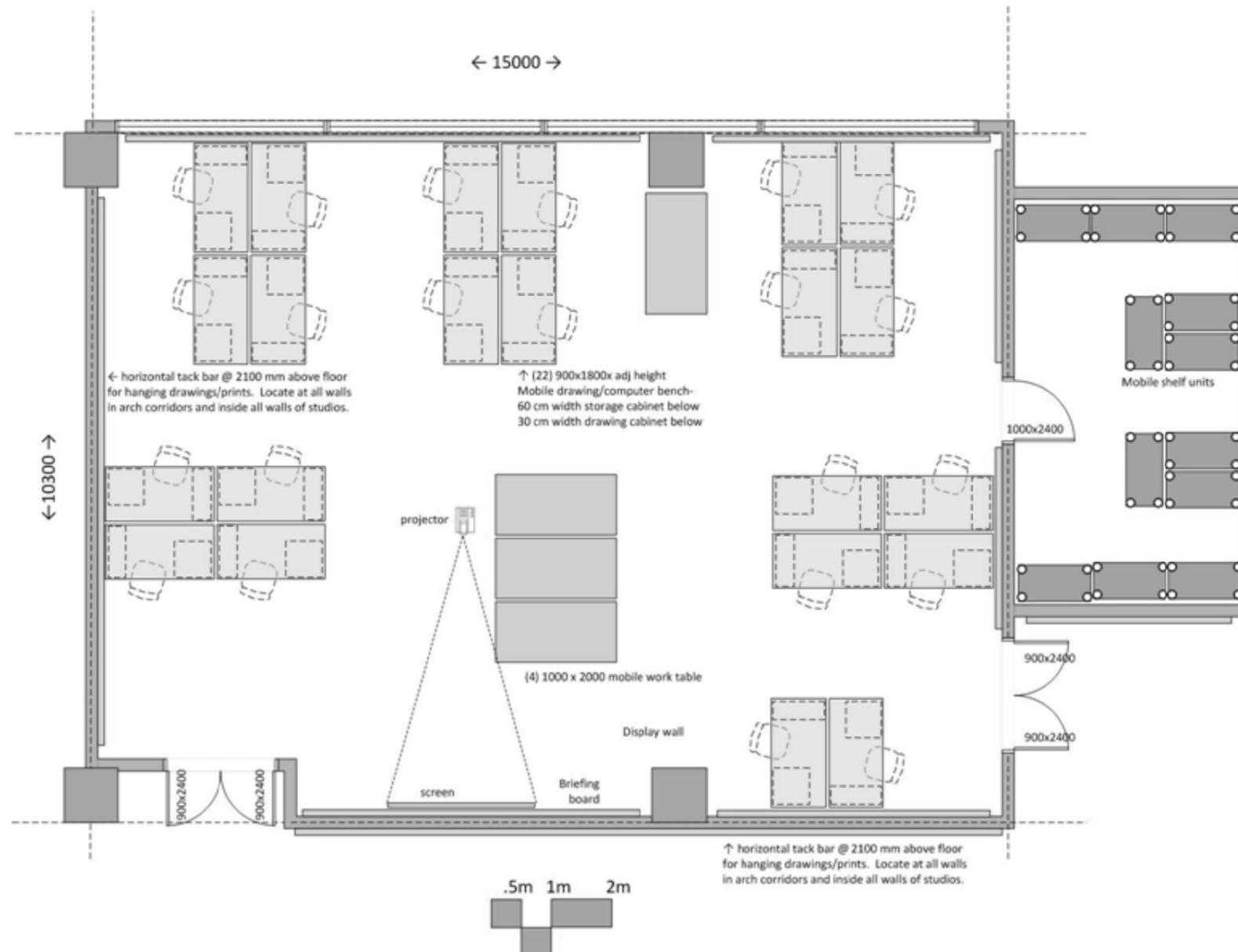


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- Architecture Studio Ground Floor . . . . . 7
- Building Science Lab . . . . . 9  
Formerly Arch Materials Lab
- Learning Resource Center . . . . . 11
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# SUMMARY



This second edition (revised) sketchbook comprises the studios and labs assigned to the Architecture Department. It includes basic plan diagrams with equipment and furnishings noted. It includes electrical and plumbing outlets and fittings. It also includes section details for typical casework conditions. This document provides the basis of design intent for the labs. It provides basic information to assist the design team in preparing construction documents and to provide information for lab casework manufacturers to provide shop drawing submittals.

Glen Berry, AIA  
 Laboratory Consultant to Mimar  
 glenberry@designforscience.com



# SYMBOL LEGEND

● HW/CW Hot/Cold water faucet with vacuum breaker

⊕ Dust collection vacuum port

⊕ 240v duplex electrical  
Dedicated circuit at equipment space  
Standby power at equipment space

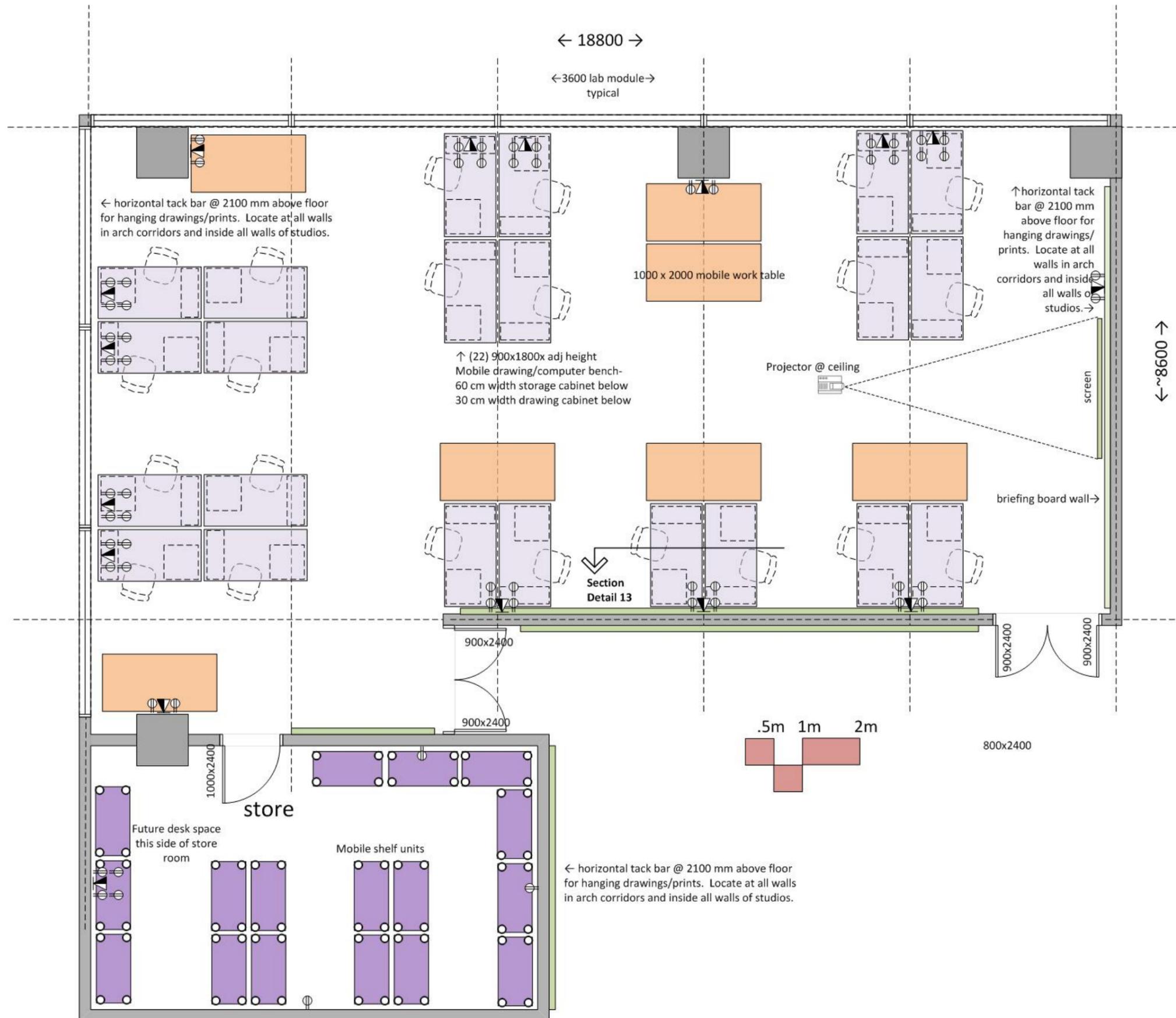
⚡ 415v 3phase 60 amp electrical  
With quick disconnect switch

⌚ Elec/data service column floor-to-ceiling  
Dedicated circuits for each 240v duplex

⌚ Data/phone box

# ARCHITECTURE STUDIO

FIRST FLOOR  
SIMILAR FOR (3) OTHER STUDIOS FIRST FLOOR



## ARCHITECTURAL

Floor: sheet vinyl  
Walls: cmu with plaster and paint  
provide horizontal tack bar @ 2100 mm above floor for hanging of drawings and prints at all walls inside arch studios and at corridors adjacent to arch studios  
Ceiling: acoustic tile at 3500 mm above floor  
Doors with vision panels  
Vibration attenuation: 50 micrometers/second or less  
Sound attenuation: NC 40 or less  
Light attenuation: at exterior windows with exterior sun shade

## MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
Recirculated air  
Equipment heat gain: 250-500 btuh/square meter  
Humidity: 30-50% relative  
Pressure: neutral

## PLUMBING

None

## ELECTRICAL

240v receptacles at floor and perimeter at ~300 mm on center  
Maximum of four outlets per circuit  
Data junction boxes at perimeter  
Wireless data connection  
Lighting: indirect fluorescent at 40 f.c.

## CONTRACTOR FURNISHED EQUIPMENT

Arch workstation tables  
mobile work tables  
Mobile shelf units  
projector and screen  
tack rail at walls  
marker board

## COLLEGE FURNISHED EQUIPMENT

Computers  
Printers  
Plotters

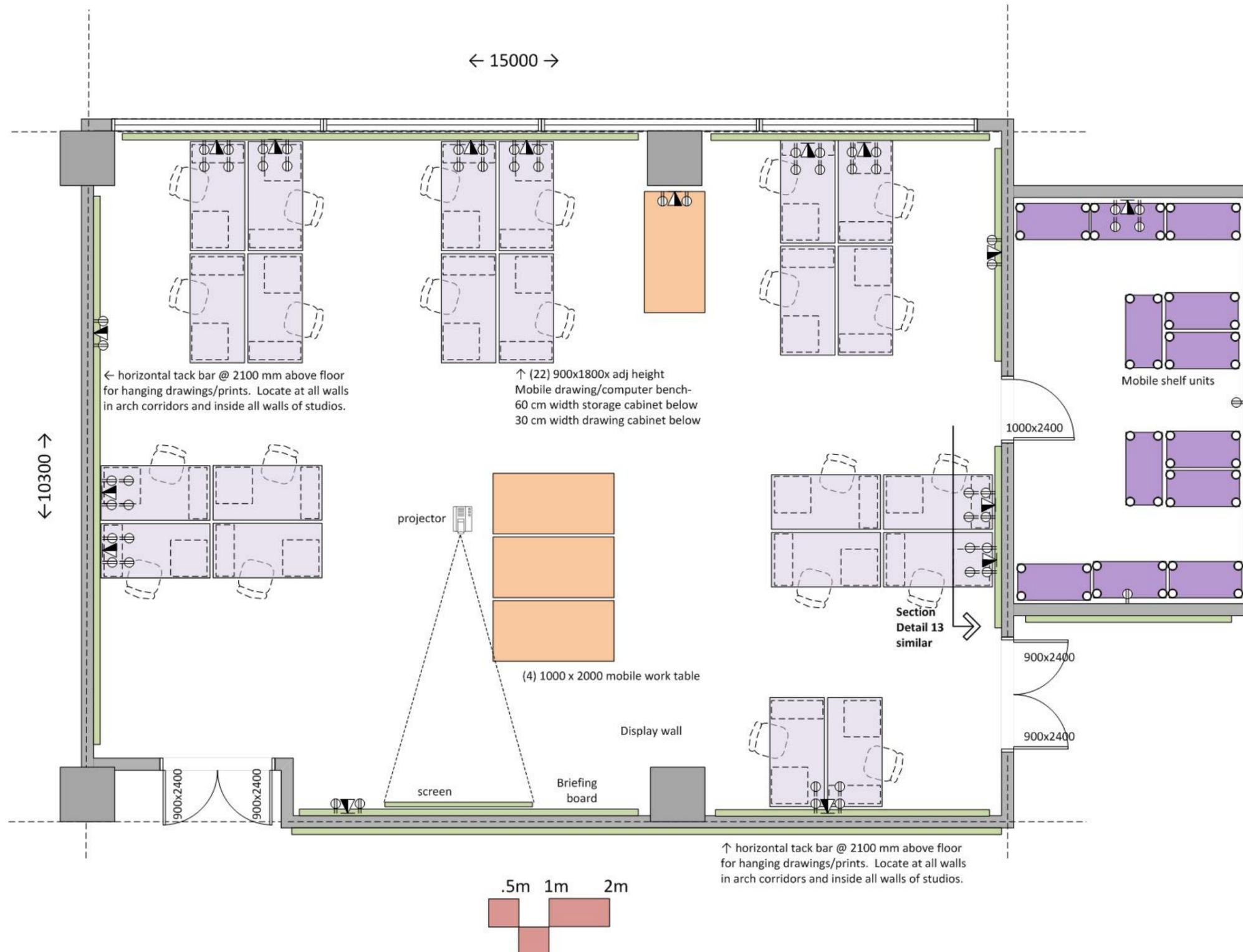
# ARCHITECTURE STUDIO

KEY PLAN- FIRST FLOOR



# ARCHITECTURE STUDIO

**GROUND FLOOR**  
SIMILAR FOR (4) OTHER STUDIOS GROUND FLOOR



## ARCHITECTURAL

Floor: sheet vinyl  
Walls: cmu with plaster and paint  
provide horizontal tack bar @ 2100 mm above floor for hanging of drawings and prints at all walls inside arch studios and at corridors adjacent to arch studios  
Ceiling: acoustic tile at 3500 mm above floor  
Doors with vision panels  
Vibration attenuation: 50 micrometers/second or less  
Sound attenuation: NC 40 or less  
Light attenuation: at exterior windows with exterior sun shade

## MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
Equipment heat gain: 250-500 btuh/square meter  
Humidity: 30-50% relative  
Pressure: neutral

## PLUMBING

None

## ELECTRICAL

240v receptacles- (2) duplex per student  
Maximum of four outlets per circuit  
Data junction boxes at perimeter  
Wireless data connection  
Lighting: indirect fluorescent at 40 f.c.

## CONTRACTOR FURNISHED EQUIPMENT

Arch workstation tables  
mobile work tables  
Mobile shelf units  
projector and screen  
tack rail at walls  
marker board

## COLLEGE FURNISHED EQUIPMENT

Computers  
Printers  
Plotters

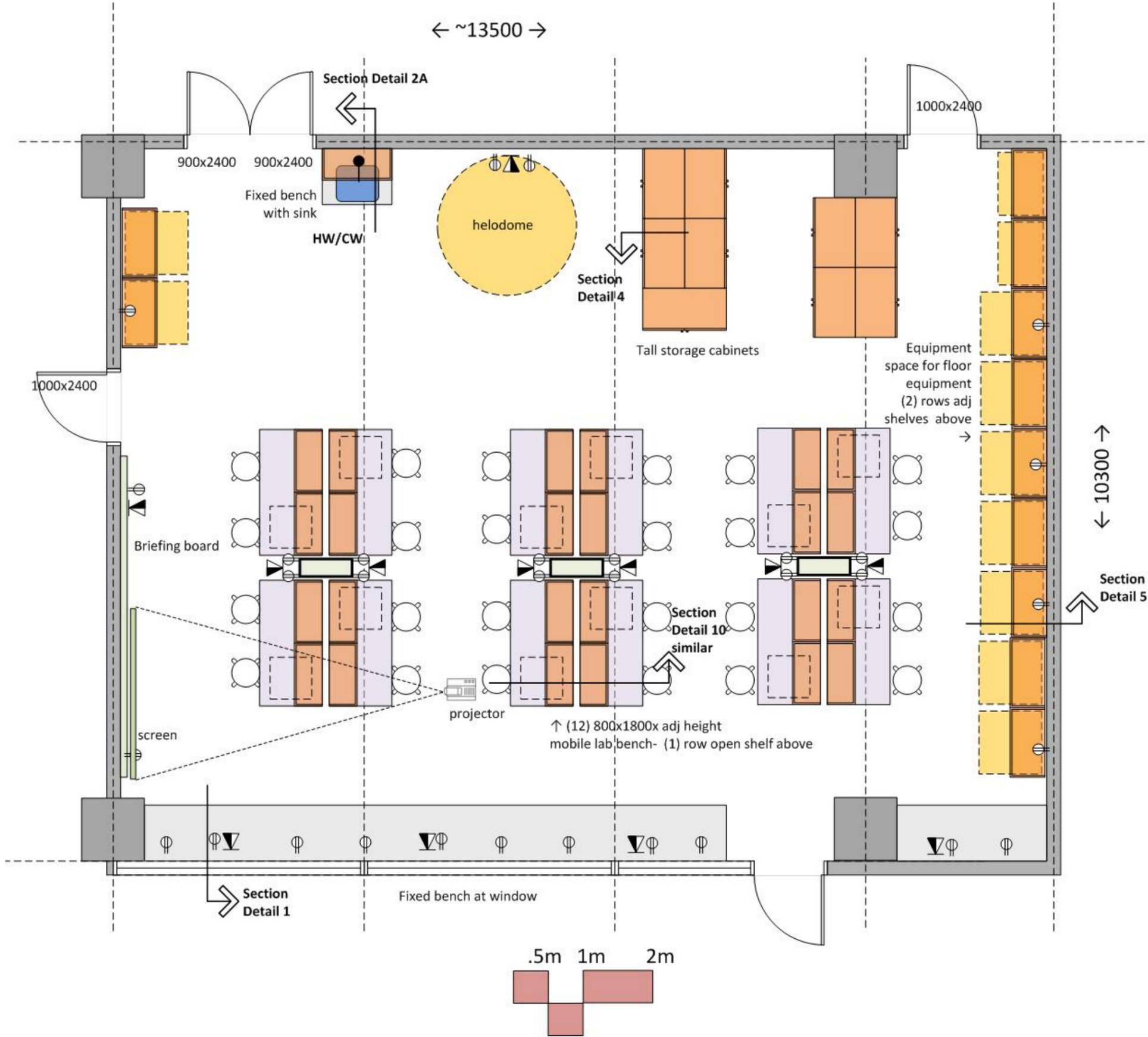
# ARCHITECTURE STUDIO

## KEY PLAN- GROUND FLOOR



# BUILDING SCIENCE LAB

## SECOND FLOOR



**ARCHITECTURAL**

Floor: sheet vinyl  
 Walls: cmu with plaster & paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 50 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

**MECHANICAL**

Temperature: 22 deg. C +/- 1 deg. C  
 recirculated air  
 Humidity: 30-50% relative  
 Pressure: negative

**PLUMBING**

Domestic hot/cold water at lab sink

**ELECTRICAL**

240v receptacles at benchtop and equipment  
 Dedicated circuits at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

**CONTRACTOR FURNISHED EQUIPMENT**

Lab casework, sinks, tops, fittings

**COLLEGE FURNISHED EQUIPMENT**

Benchtop equipment  
 Floor equipment  
 Refrigerator

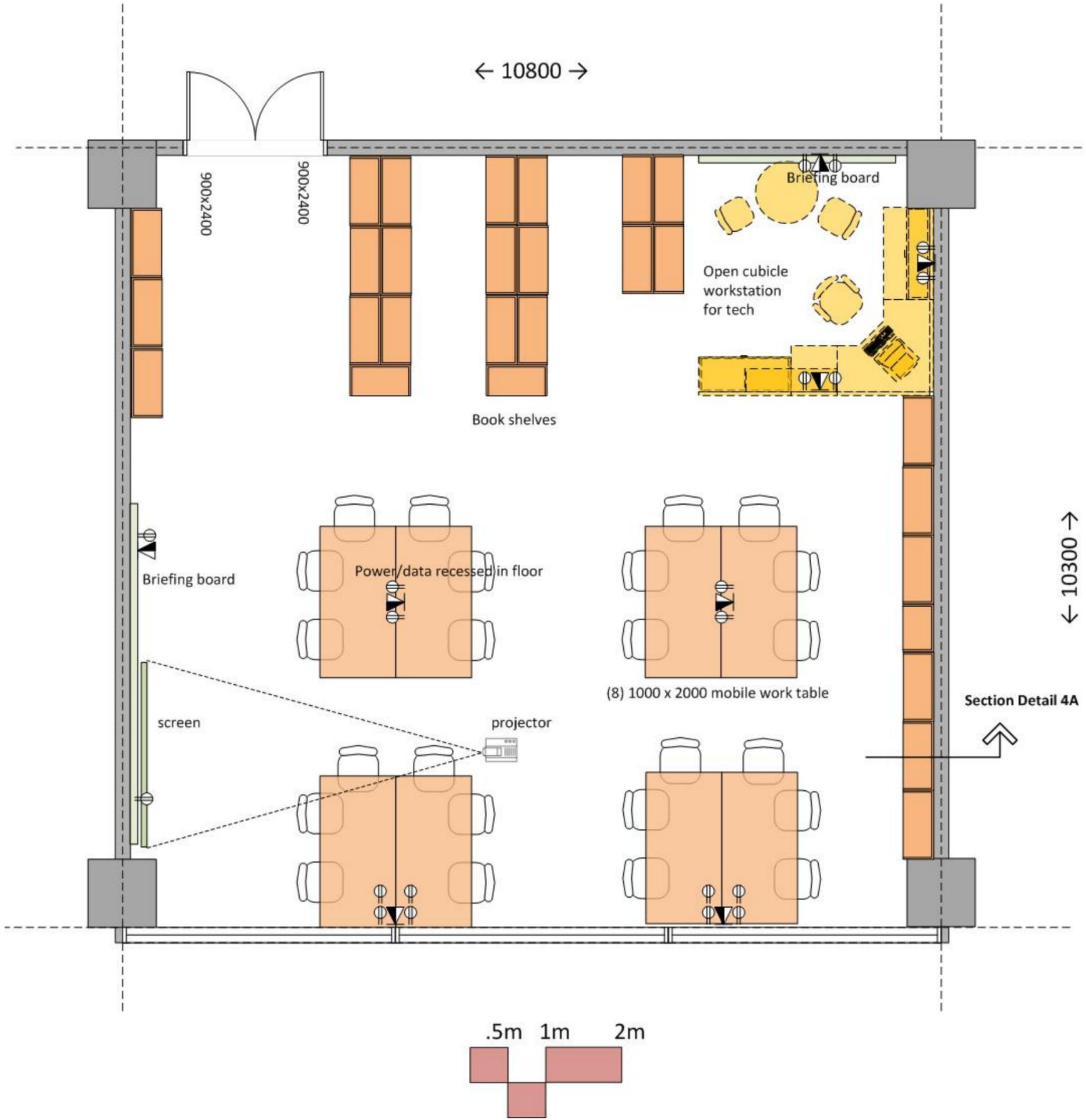
# BUILDING SCIENCE LAB

KEY PLAN- SECOND FLOOR



# LEARNING RESOURCE CENTER

## SECOND FLOOR



### ARCHITECTURAL

Floor: static free carpet tile  
 Walls: cmu with plaster & paint  
 Ceiling: acoustic tile at 4 m above floor  
 Doors with vision panels  
 Vibration attenuation: 50 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 recirculated air  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

None

### ELECTRICAL

240v receptacles at perimeter walls  
 Data junction boxes at perimeter  
 Wireless data connection  
 Lighting: indirect fluorescent at 50 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

furniture  
 tables

### COLLEGE FURNISHED EQUIPMENT

computers

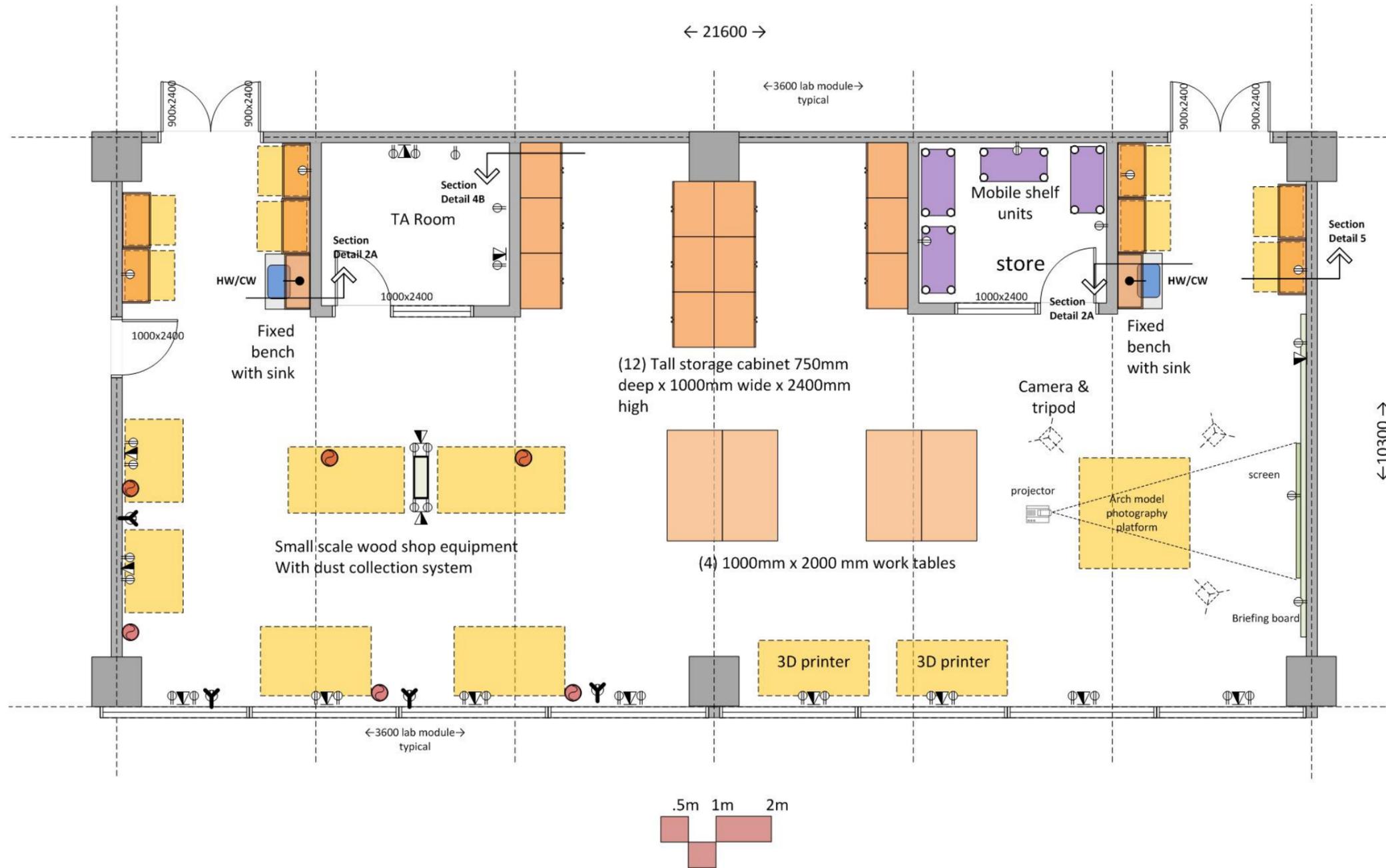
# LEARNING RESOURCE CENTER

KEY PLAN- SECOND FLOOR



# MODEL MAKING WORKSHOP

## SECOND FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster & paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 50 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust: 4 air changes per hour minimum occupied  
 2 air changes per hour unoccupied  
 (air change rate may be higher due to equipment heat gain)  
 Equipment heat gain: 250btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Domestic hot/cold water at lab sinks

### ELECTRICAL

240v receptacles at ~300 mm on center  
 415v3ph outlets at shop equipment  
 Dedicated circuits at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 mobile shelf units

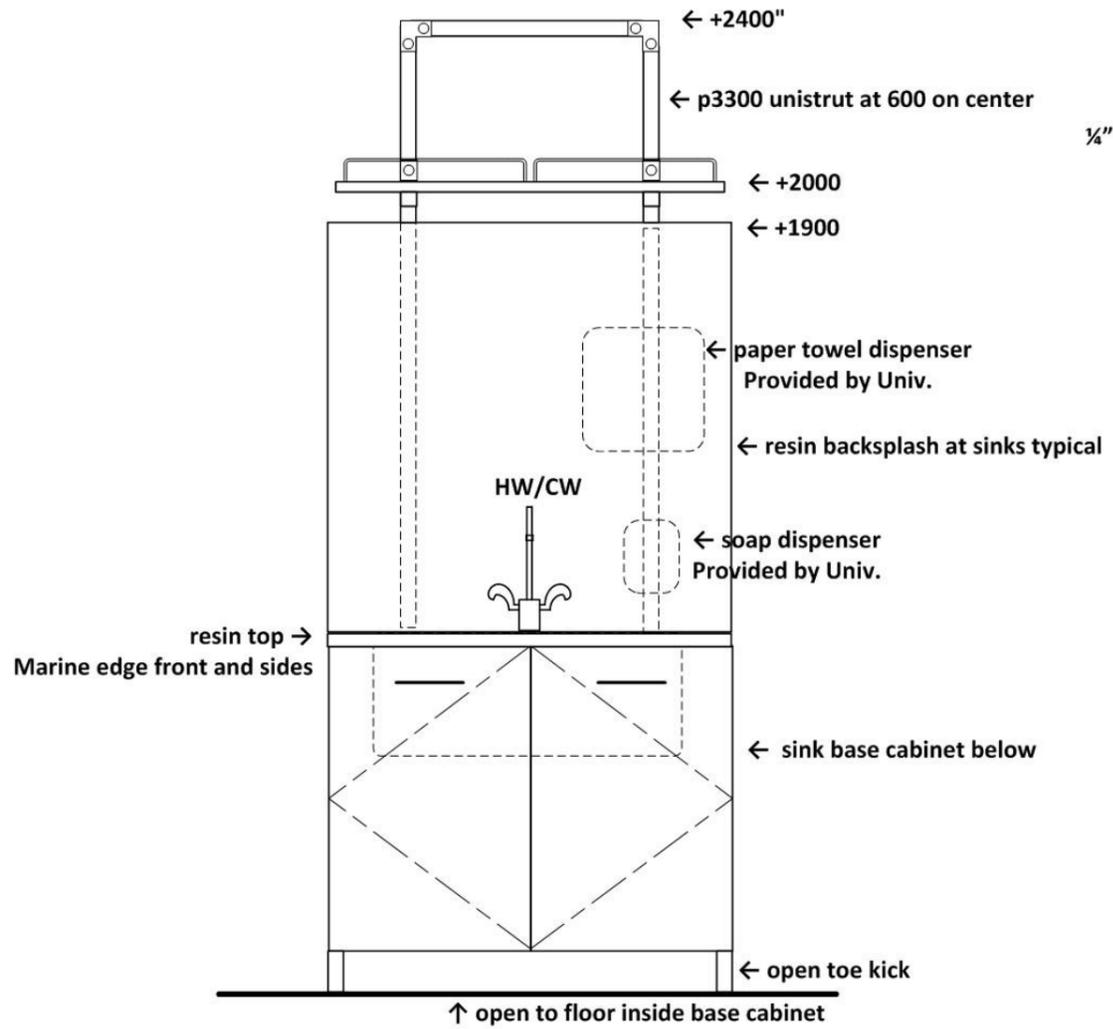
### COLLEGE FURNISHED EQUIPMENT

Shop equipment: saws, sanders, for small scale balsa wood models  
 Printers  
 Arch photography equipment



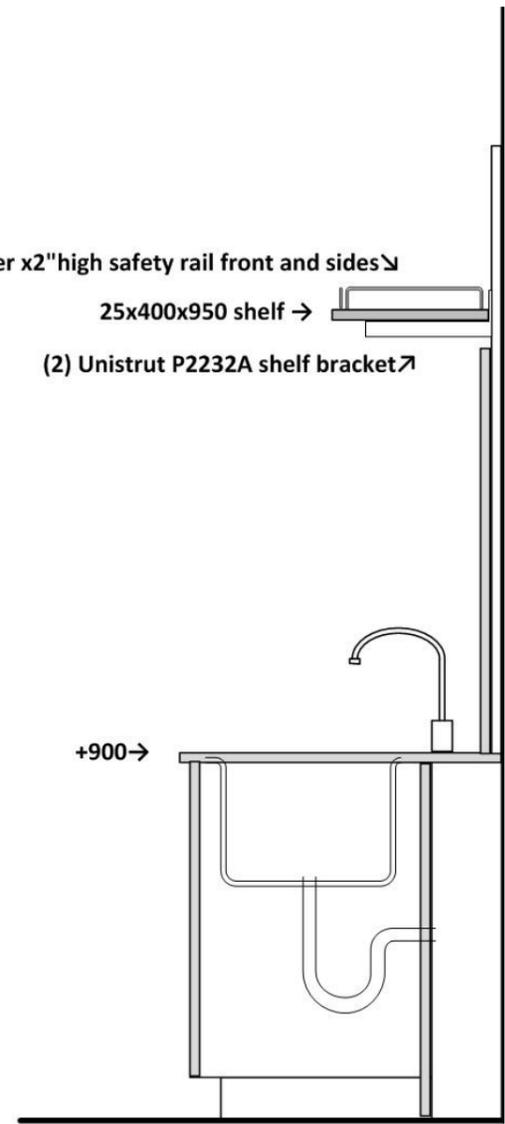
# SECTION DETAIL 2A

## SINK



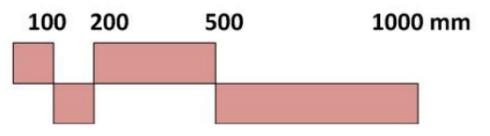
←1000→  
Sink base cabinet

**Elevation**

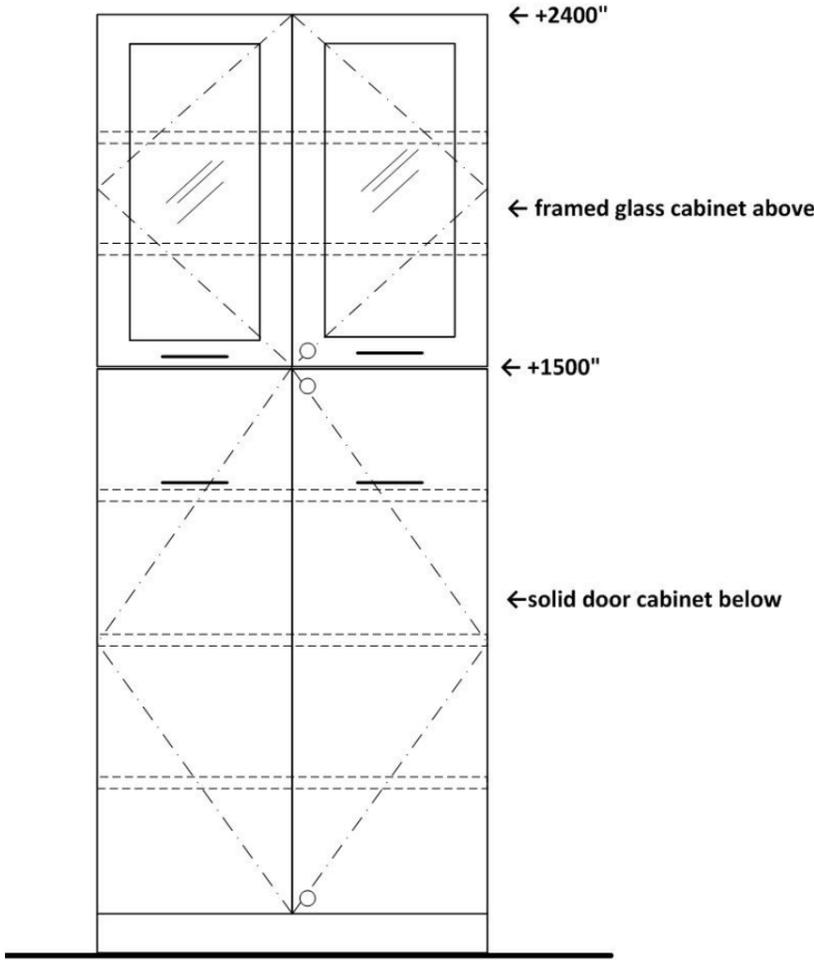


←800→

**Section**

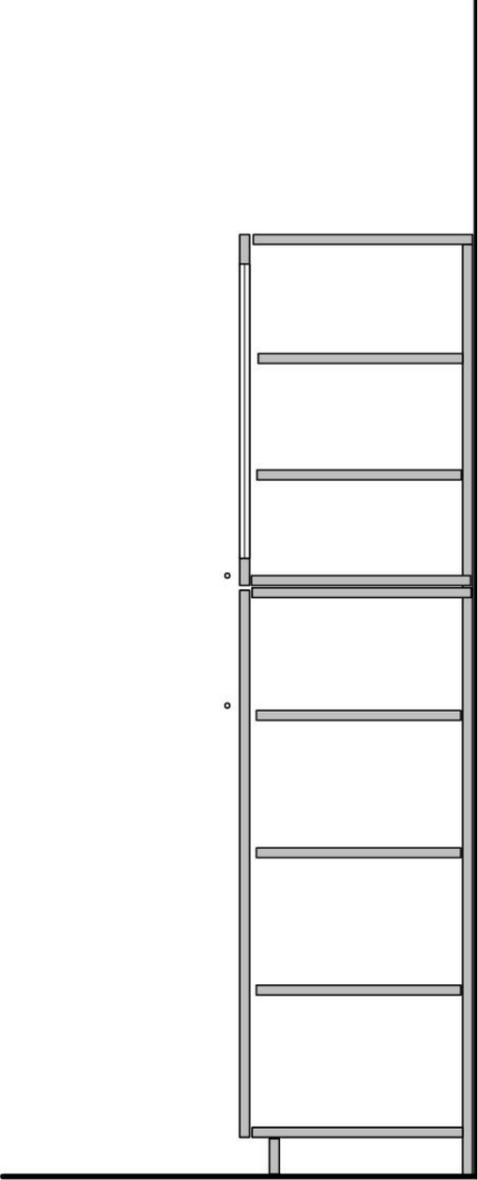


**SECTION DETAIL 4**  
**TALL STORAGE CABINET**

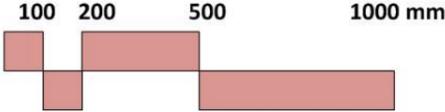


Tall Storage Cabinet  
With lockable doors

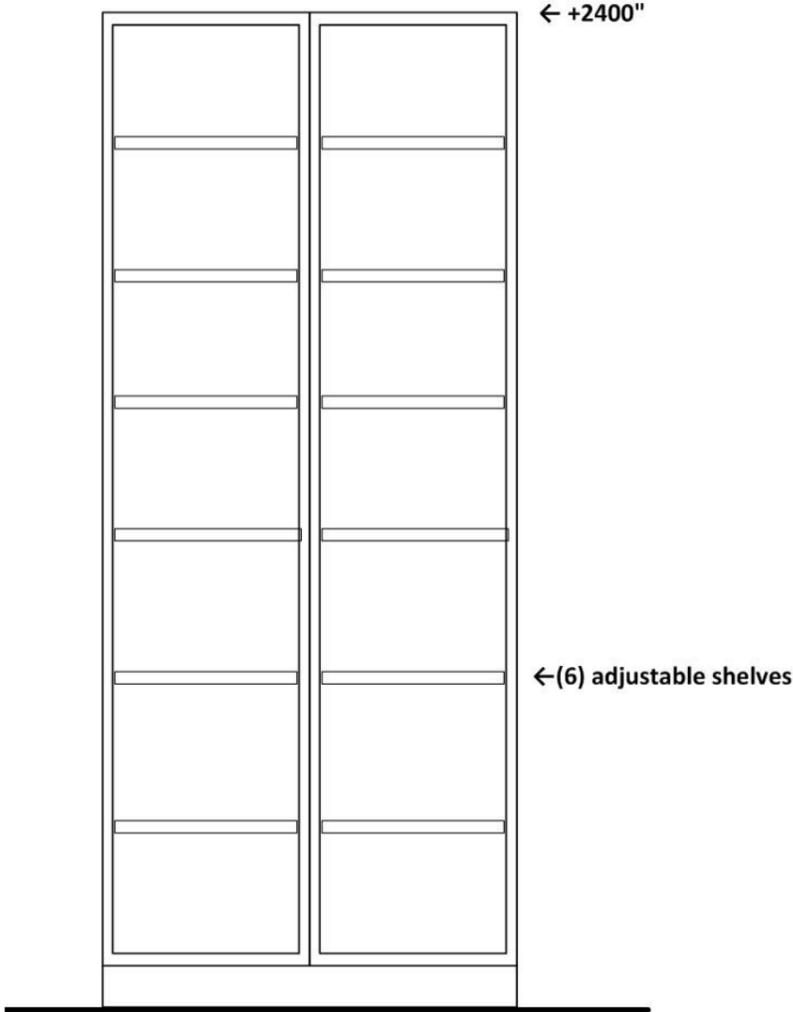
**Elevation**



**Section**

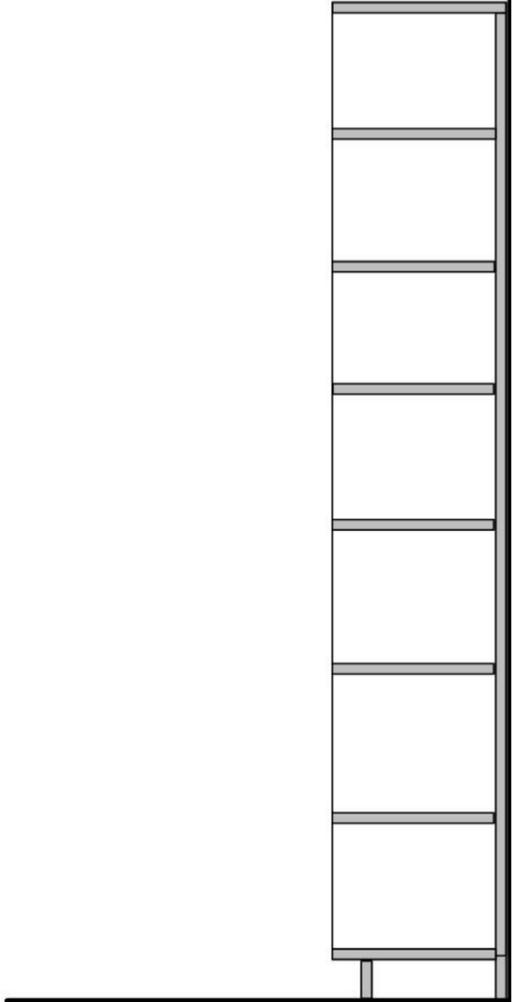


**SECTION DETAIL 4A**  
**TALL BOOK SHELF CABINET**

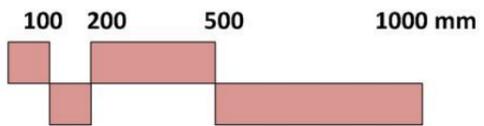


Tall book shelf cabinet

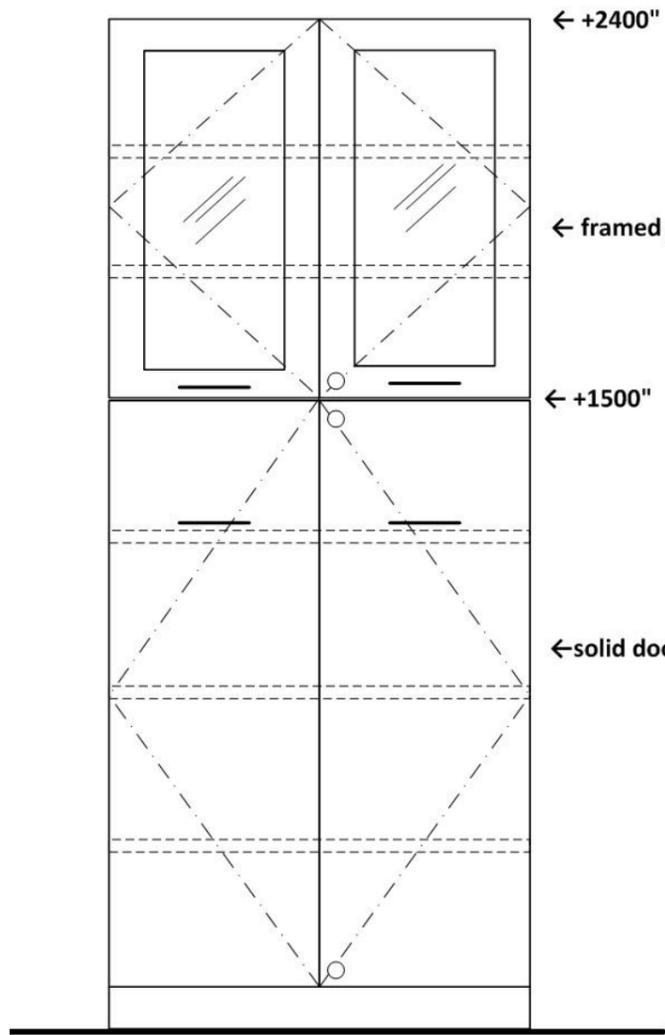
**Elevation**



**Section**



**SECTION DETAIL 4B**  
**TALL STORAGE CABINET DEEP**

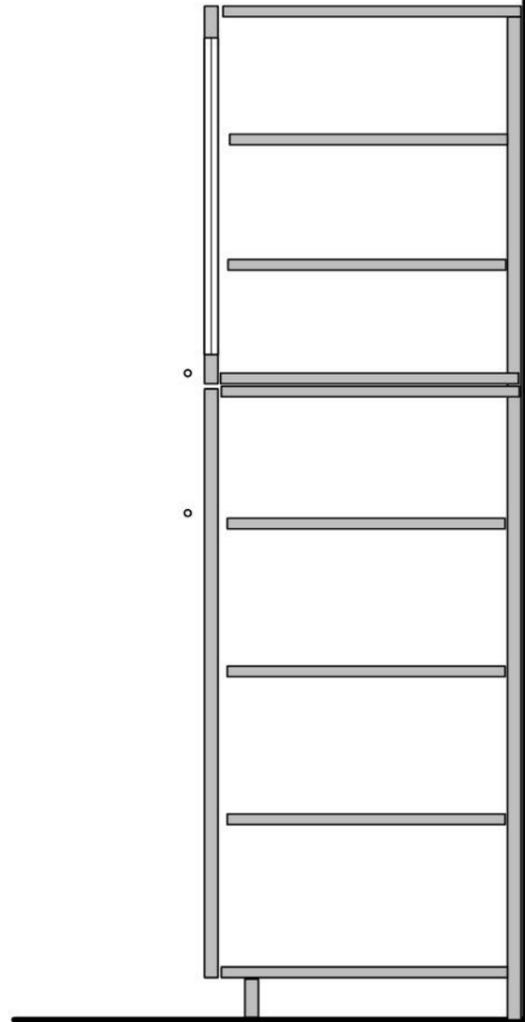


← +2400"  
 ← framed glass cabinet above  
 ← +1500"  
 ← solid door cabinet below

←1000 →

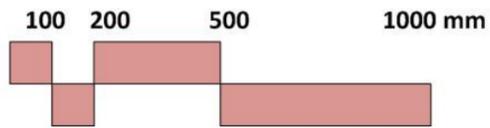
Tall Storage Cabinet  
 With lockable doors

**Elevation**



←750 →

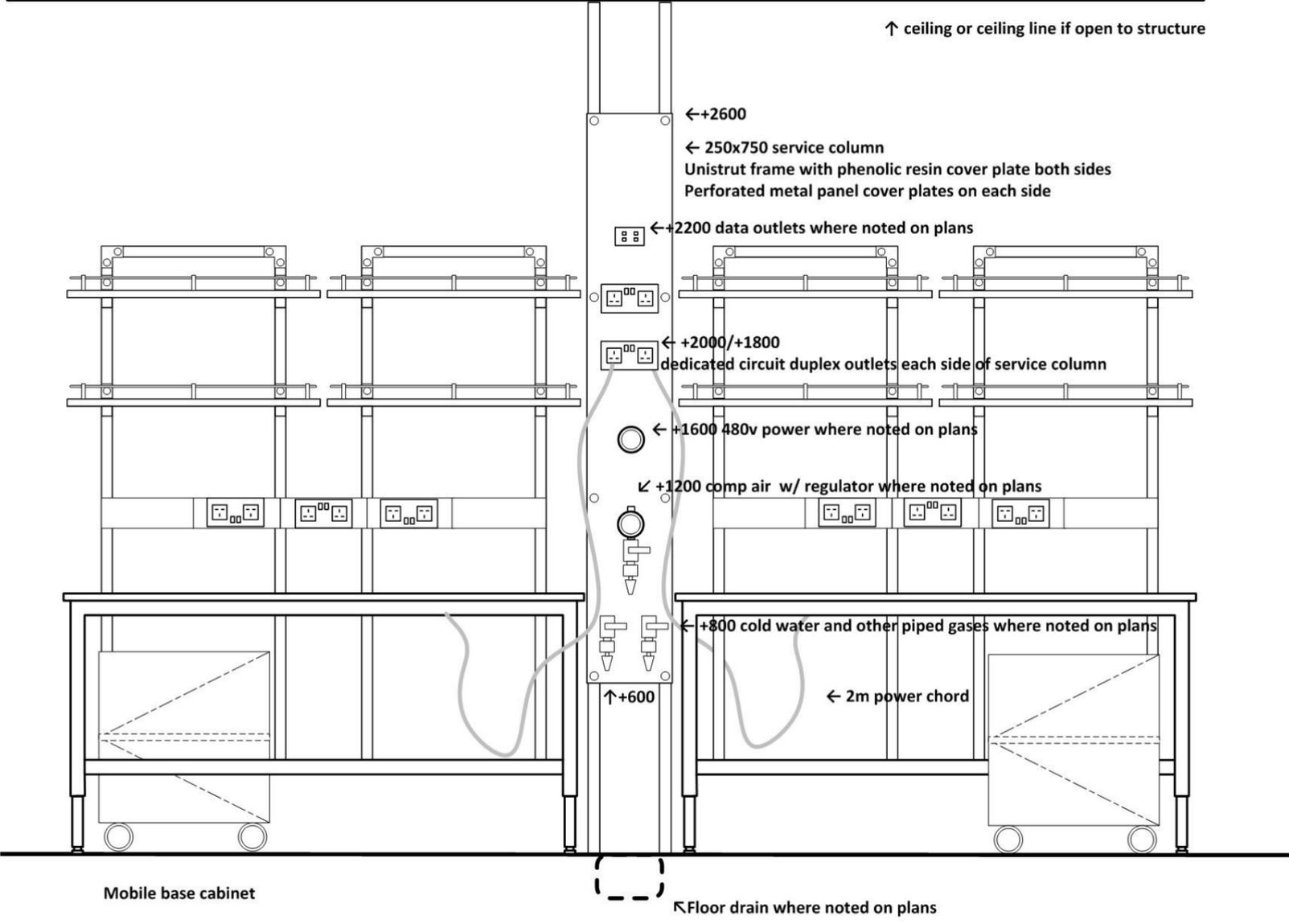
**Section**



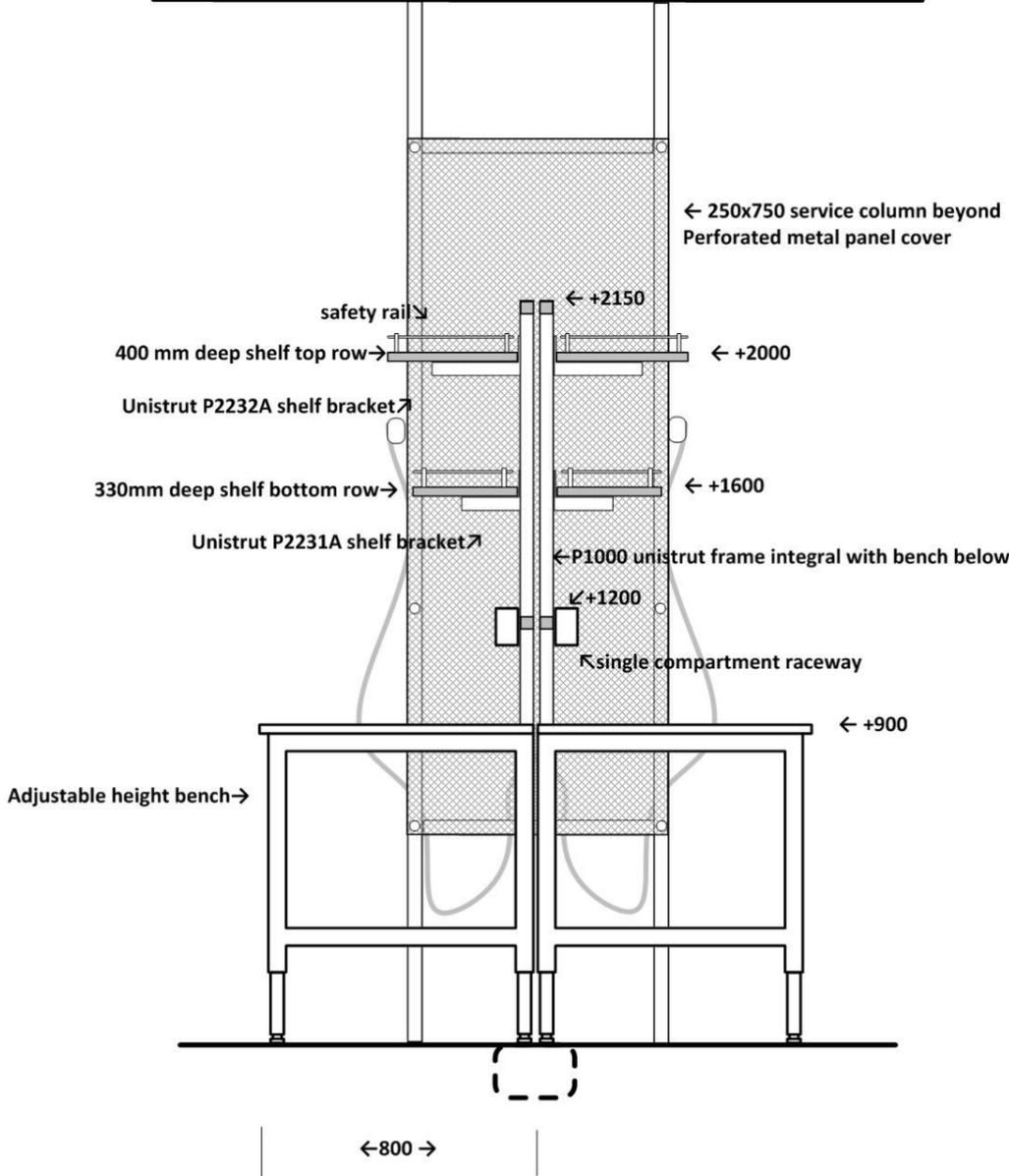
# SECTION DETAIL 10

## MOBILE BENCH

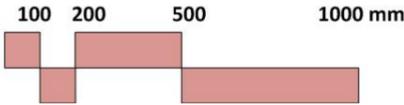
Note: Refer to Plan for specific Elec outlets- not all services shown on elevation occur on plan



Elevation

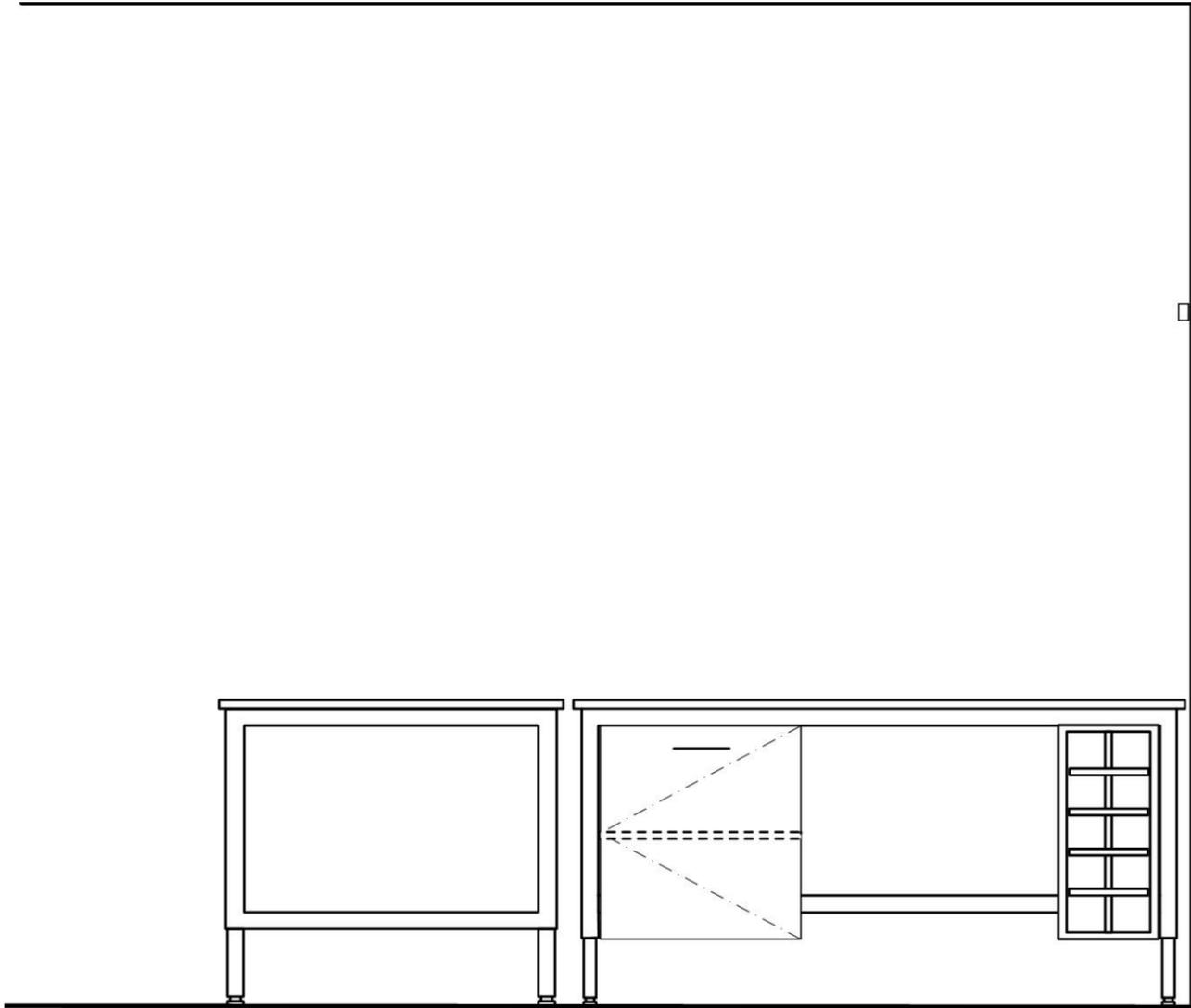


Section



# SECTION DETAIL 13

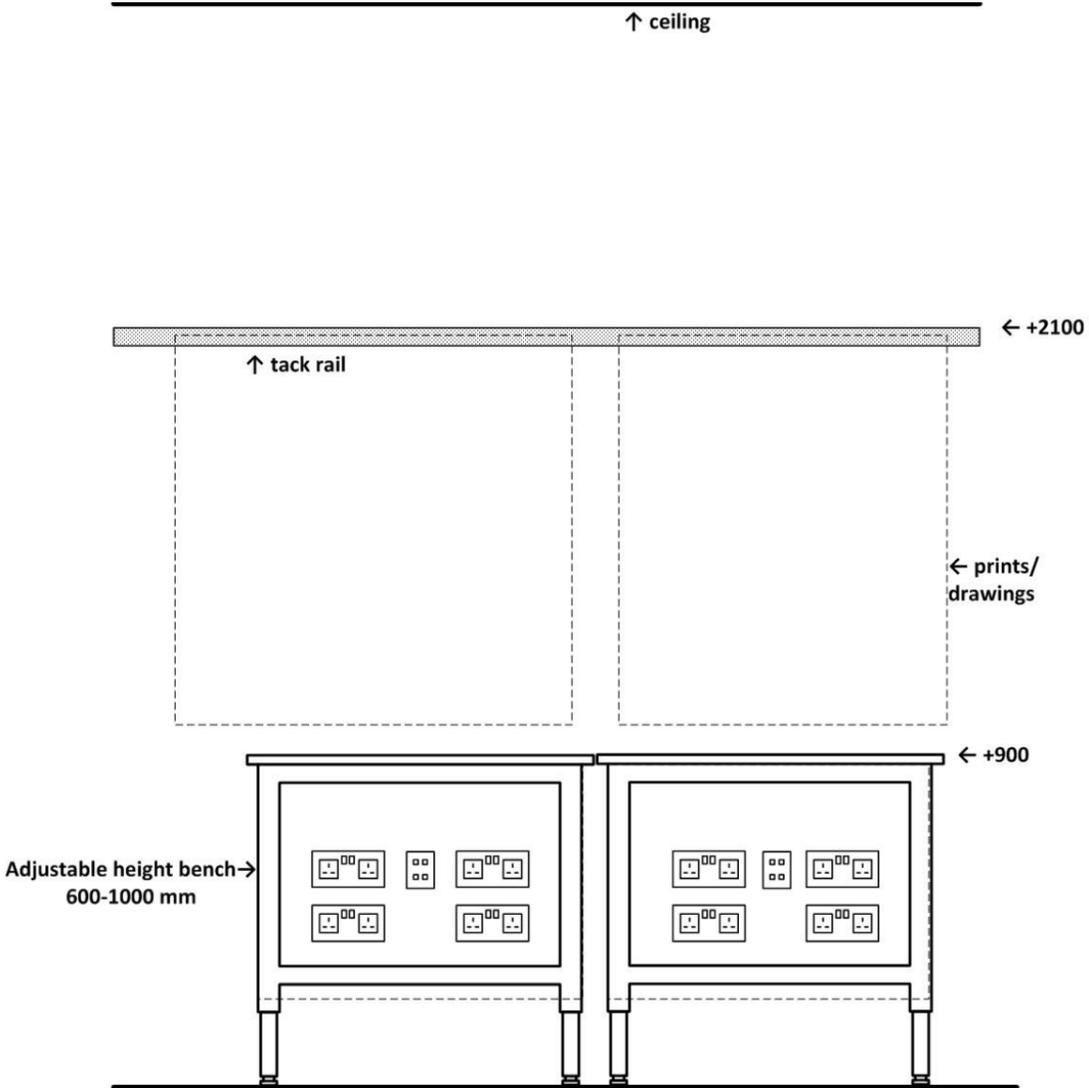
## ARCH WORKSTATION



Suspended base cabinet  
60 cm wide

Suspended drawing cabinet  
30 cm wide

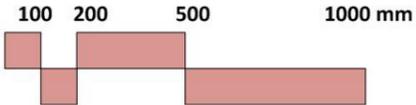
Elevation



Adjustable height bench →  
600-1000 mm

← 900 →

Section



# METRO SHELF UNIT CUT SHEET



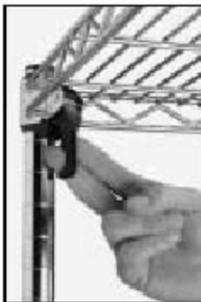
Item # \_\_\_\_\_

Job \_\_\_\_\_

## SUPER ADJUSTABLE SUPER ERECTA SHELF® WIRE SHELVING

Super Adjustable Super Erecta Wire Shelving is the most advanced and innovative wire storage system available. A unique Corner Release System and SiteSelect™ Posts make changing shelf levels fast and easy, without tools! And Super Adjustable Shelving works in conjunction with the entire Super Erecta System of shelves and accessories.

- Easily Adjustable:** Unique Corner Release and SiteSelect Posts create a total system that offers "Tool-Free," fast adjustment at 1" (25mm) intervals along the entire height of the posts.
- Easily Assembled:** The Corner Release System and SiteSelect Posts, combined with the original "bottom up" assembly process, creates a complete shelving system in minutes, without tools! SiteSelect Posts with the double-groove visual guide feature, have circular grooves at 1" (25mm) intervals and are numbered at 2" (50mm) intervals. Shelves simply seat into place using the Corner Release.
- Unique Shelf Design:** The open wire design of these heavy-gauge shelves minimizes dust accumulation and allows a free circulation of air, greater visibility of stored items and greater light penetration. Shelf ribs run front to back allowing you to slide items on and off easily. Shelves can be loaded and unloaded from all sides. This open construction allows use of maximum storage space of cube.
- Unique Post Design:** New SiteSelect post design provides a visual guide for positioning and adjusting shelves, saving considerable time during assembly and adjustment. An easy-to-identify double groove, every 8" (203mm), offers a quick way to align all shelves. Bolt leveler on post bottom compensates for uneven surfaces.
- Fast, Easy Reconfiguration:** Super Adjustable Super Erecta can change as quickly as your needs change. By using various accessories, hundreds of shelving configurations become possible.
- Choice of Finishes:** Super Adjustable Super Erecta Wire Shelving is available in a variety of finishes: Super Erecta Brite and chrome-plated for dry storage, Metroseal 3™ with antimicrobial product protection, and stainless steel for corrosive environments, and a large array of designer colors (see Catalog Sheet 10.14A).



Corner Release System



Dry Storage – Chrome or Super Erecta Brite™



Metroseal 3™ with \*Microban® Antimicrobial Product Protection.



**InterMetro Industries Corporation**  
 North Washington Street  
 Wilkes-Barre, PA 18705  
 www.metro.com



**METRO**  
 SUPER ADJUSTABLE SUPER ERECTA SHELF®  
**Adjustable Wire Shelving**

**10.01A**

**METRO**  
 SUPER ADJUSTABLE SUPER ERECTA SHELF®  
**Adjustable Wire Shelving**

**10.01A**



Job \_\_\_\_\_

## SUPER ADJUSTABLE SUPER ERECTA SHELF® WIRE SHELVING



### Dimensions

## METRO SHELF UNIT CUT SHEET

#### Super Adjustable Super Erecta Wire Shelving

| Shelf Width x Length (in.) | Shelf Width x Length (mm) | Approx. Pkd. Wt. (lbs.) | Approx. Pkd. Wt. (kg) | Cat. No. Super Erecta Brite | Cat. No. Chrome | Cat. No. Metroseal 3 | Cat. No. Stainless |
|----------------------------|---------------------------|-------------------------|-----------------------|-----------------------------|-----------------|----------------------|--------------------|
| 18x24                      | 457x610                   | 7                       | 3.2                   | A1824BR                     | A1824NC         | A1824NK3             | A1824NS            |
| 18x30                      | 457x760                   | 8                       | 3.6                   | A1830BR                     | A1830NC         | A1830NK3             | A1830NS            |
| 18x36                      | 457x914                   | 9 1/2                   | 4.3                   | A1836BR                     | A1836NC         | A1836NK3             | A1836NS            |
| 18x42                      | 457x1066                  | 11                      | 5.0                   | A1842BR                     | A1842NC         | A1842NK3             | A1842NS            |
| 18x48                      | 457x1219                  | 12                      | 5.4                   | A1848BR                     | A1848NC         | A1848NK3             | A1848NS            |
| 18x54                      | 457x1370                  | 14 1/2                  | 6.6                   | A1854BR                     | A1854NC         | A1854NK3             | A1854NS            |
| 18x60                      | 457x1524                  | 17                      | 7.7                   | A1860BR                     | A1860NC         | A1860NK3             | A1860NS            |
| 18x72                      | 457x1825                  | 20                      | 9.1                   | A1872BR                     | A1872NC         | A1872NK3             | A1872NS            |
| 21x24                      | 530x610                   | 8                       | 3.6                   | A2124BR                     | A2124NC         | A2124NK3             | A2124NS            |
| 21x30                      | 530x760                   | 9                       | 4.1                   | A2130BR                     | A2130NC         | A2130NK3             | A2130NS            |
| 21x36                      | 530x914                   | 11                      | 5.0                   | A2136BR                     | A2136NC         | A2136NK3             | A2136NS            |
| 21x42                      | 530x1066                  | 12                      | 5.4                   | A2142BR                     | A2142NC         | A2142NK3             | A2142NS            |
| 21x48                      | 530x1219                  | 14                      | 6.4                   | A2148BR                     | A2148NC         | A2148NK3             | A2148NS            |
| 21x54                      | 530x1370                  | 16                      | 7.3                   | A2154BR                     | A2154NC         | A2154NK3             | A2154NS            |
| 21x60                      | 530x1524                  | 18                      | 8.2                   | A2160BR                     | A2160NC         | A2160NK3             | A2160NS            |
| 21x72                      | 530x1825                  | 24                      | 10.9                  | A2172BR                     | A2172NC         | A2172NK3             | A2172NS            |
| 24x24                      | 610x610                   | 9                       | 4.1                   | A2424BR                     | A2424NC         | A2424NK3             | A2424NS            |
| 24x30                      | 610x760                   | 11                      | 5.0                   | A2430BR                     | A2430NC         | A2430NK3             | A2430NS            |
| 24x36                      | 610x914                   | 13                      | 5.9                   | A2436BR                     | A2436NC         | A2436NK3             | A2436NS            |
| 24x42                      | 610x1066                  | 15                      | 6.8                   | A2442BR                     | A2442NC         | A2442NK3             | A2442NS            |
| 24x48                      | 610x1219                  | 16                      | 7.3                   | A2448BR                     | A2448NC         | A2448NK3             | A2448NS            |
| 24x54                      | 610x1370                  | 18                      | 8.6                   | A2454BR                     | A2454NC         | A2454NK3             | A2454NS            |
| 24x60                      | 610x1524                  | 21                      | 9.5                   | A2460BR                     | A2460NC         | A2460NK3             | A2460NS            |
| 24x72                      | 610x1825                  | 26                      | 11.8                  | A2472BR                     | A2472NC         | A2472NK3             | A2472NS            |

NOTE: For Metroseal 3 shelving information see sheet # 10.10A.



#### Sleeves/Wedges

Package of 4 per shelf.  
 Cat. No. A9985

SiteSelect™ Posts are grooved at 1" (25mm) increments and numbered at 2" (50mm) increments. Posts are double-grooved every 8" (203mm) for easy identification. Wedge Windows™ allow sight of post number for easy visual identification.

\*MICROBAN® protects the Metroseal 3 coating from bacteria, mold, mildew and fungi that cause odors, stains and product degradation.

\*MICROBAN and the MICROBAN symbol are registered trademarks of the Microban Products Company, Huntersville, NC.

#### SiteSelect™ Posts

| Height (in.) | Height (mm) | Approx. Pkd. Wt. (lbs.) | Approx. Pkd. Wt. (kg) | Cat. No. Plated | Cat. No. Metroseal 3 | Cat. No. Stainless |
|--------------|-------------|-------------------------|-----------------------|-----------------|----------------------|--------------------|
| 7 1/2        | 191         | 1/2                     | 0.3                   | 7P              |                      |                    |
| 14 1/2       | 370         | 1                       | 0.5                   | 13P             | 13PK3                | 33PS               |
| 27 1/2       | 700         | 1 1/4                   | 0.75                  | 27P             |                      | 27PS               |
| 34 1/2       | 875         | 2                       | 0.9                   | 33P             | 33PK3                | 33PS               |
| 54 7/8       | 1385        | 3                       | 1.4                   | 54P             | 54PK3                | 54PS               |
| 62 7/8       | 1580        | 3 1/2                   | 1.6                   | 63P             | 63PK3                | 63PS               |
| 74 7/8       | 1895        | 4                       | 1.8                   | 74P             | 74PK3                | 74PS               |
| 86 7/8       | 2200        | 5                       | 2.3                   | 86P             | 86PK3                | 86PS               |
| 96 7/8       | 2454        | 5 1/2                   | 2.5                   | **96P           |                      |                    |

\*Height includes leveling bolt and cap.

\*\*96P should not be used in units less than 24" (610mm) deep. Consult Metro Engineering for alternate recommendations.

Post lengths to be specified as out to a round number, i.e. 74P out to 69" ... This will result in an overall post height with adjustment of 69" to 69 1/2".

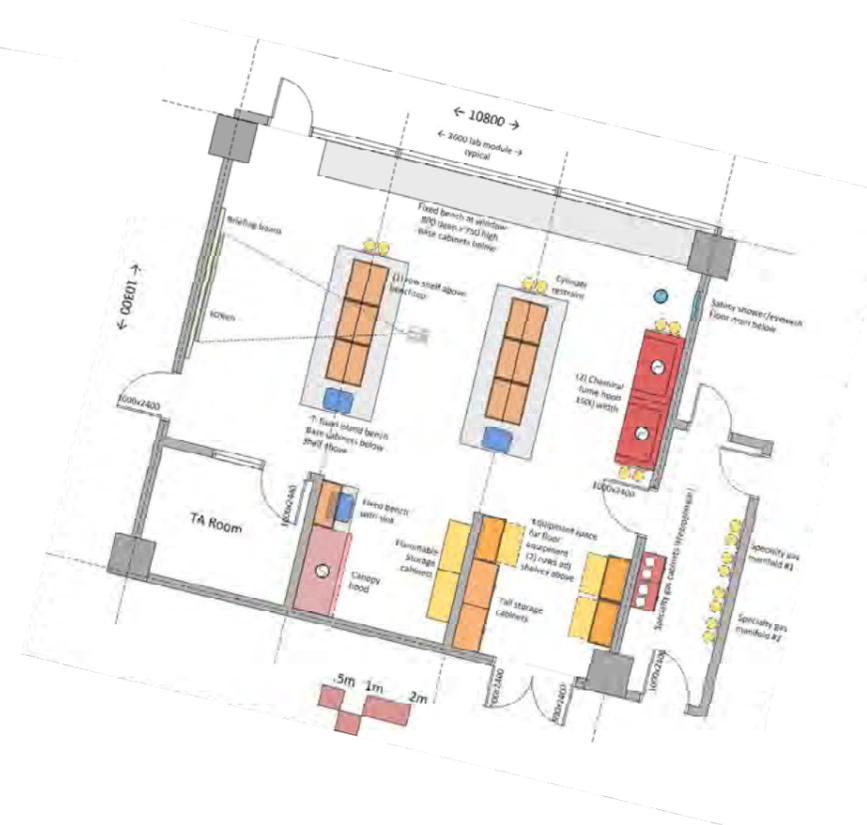
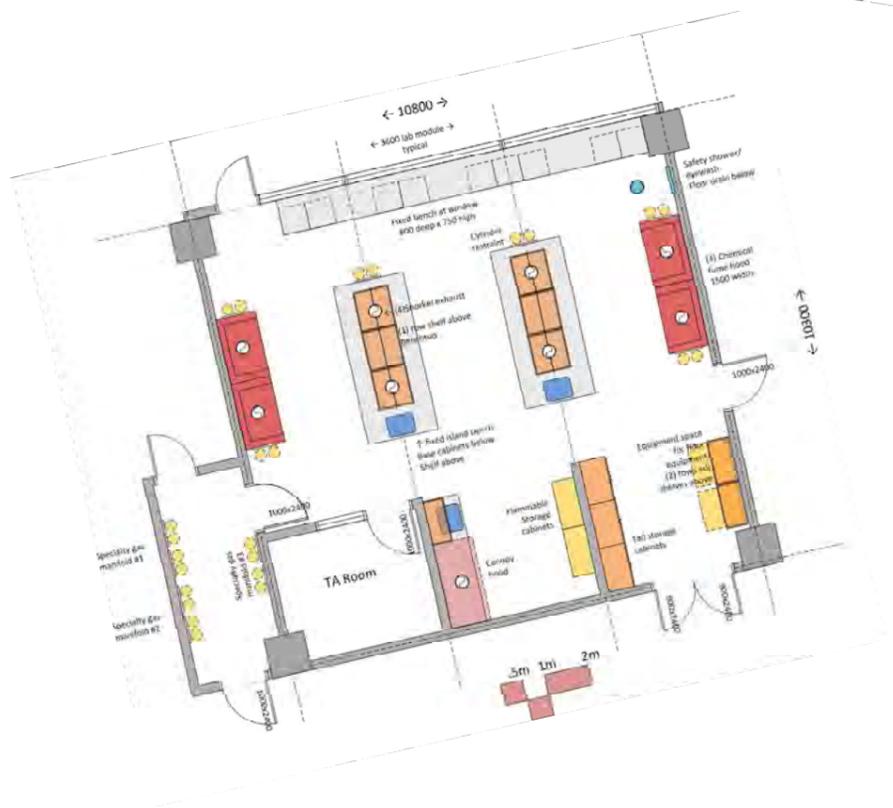
Important: When ordering by components remember that for maximum stability, units should be kept as wide and low as possible.

All Metro Catalog Sheets are available on our Web Site: [www.metro.com](http://www.metro.com)



**InterMetro Industries Corporation**  
 North Washington Street, Wilkes-Barre, PA 18705  
 Phone: 670-825-2741 • Fax: 670-825-2852  
 For Product Information Call: 1-800-433-2232

L02-006A  
 Printed in U.S.A. Rev. 1/03  
 Information and specifications are subject to change without notice. Please confirm at time of order.  
 Copyright © 2003 InterMetro Industries Corp.



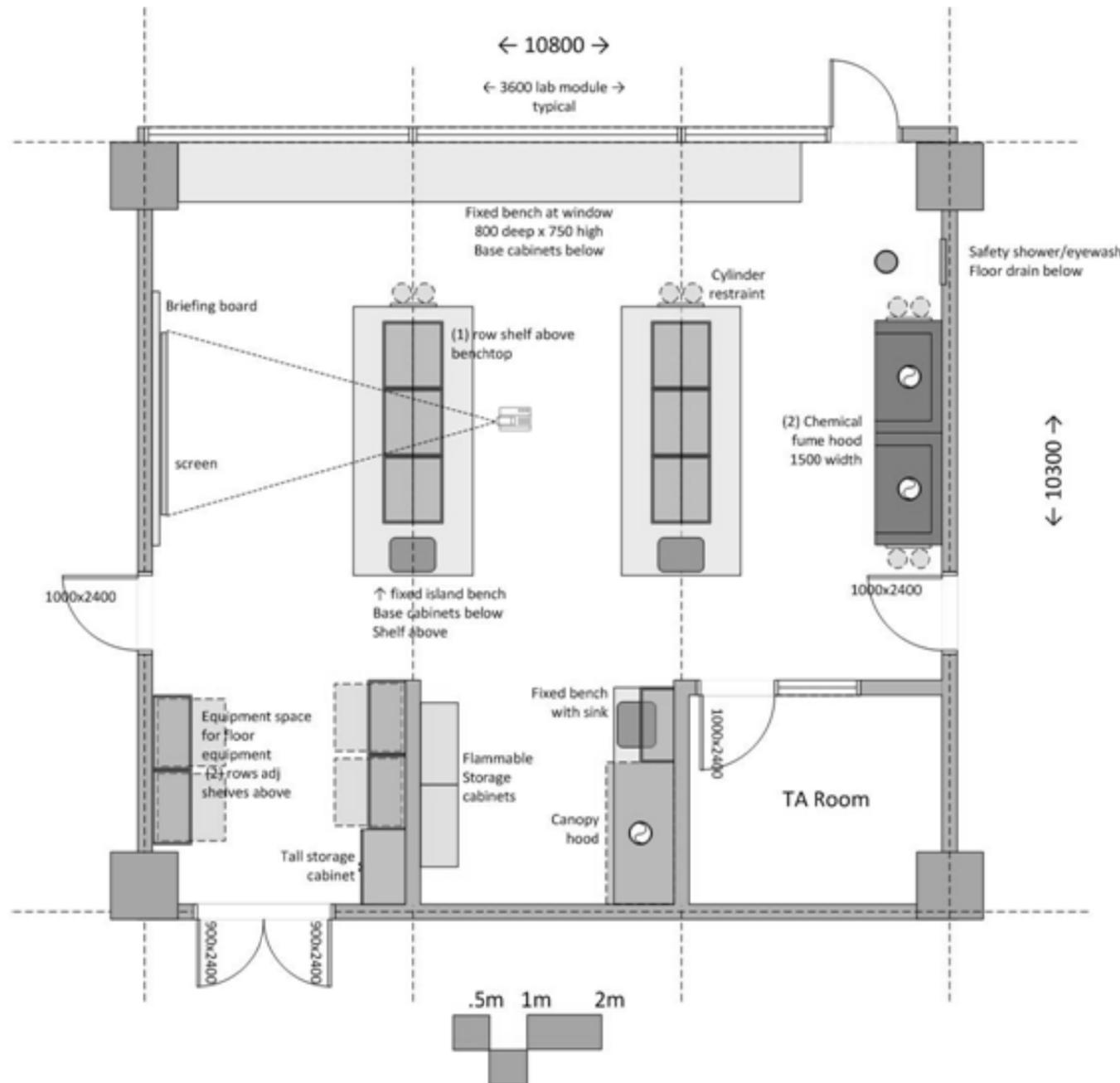
# CHEMICAL ENGINEERING LABORATORY DESIGN SKETCHBOOK

New College of Engineering  
Qatar University  
2012 Jul 10

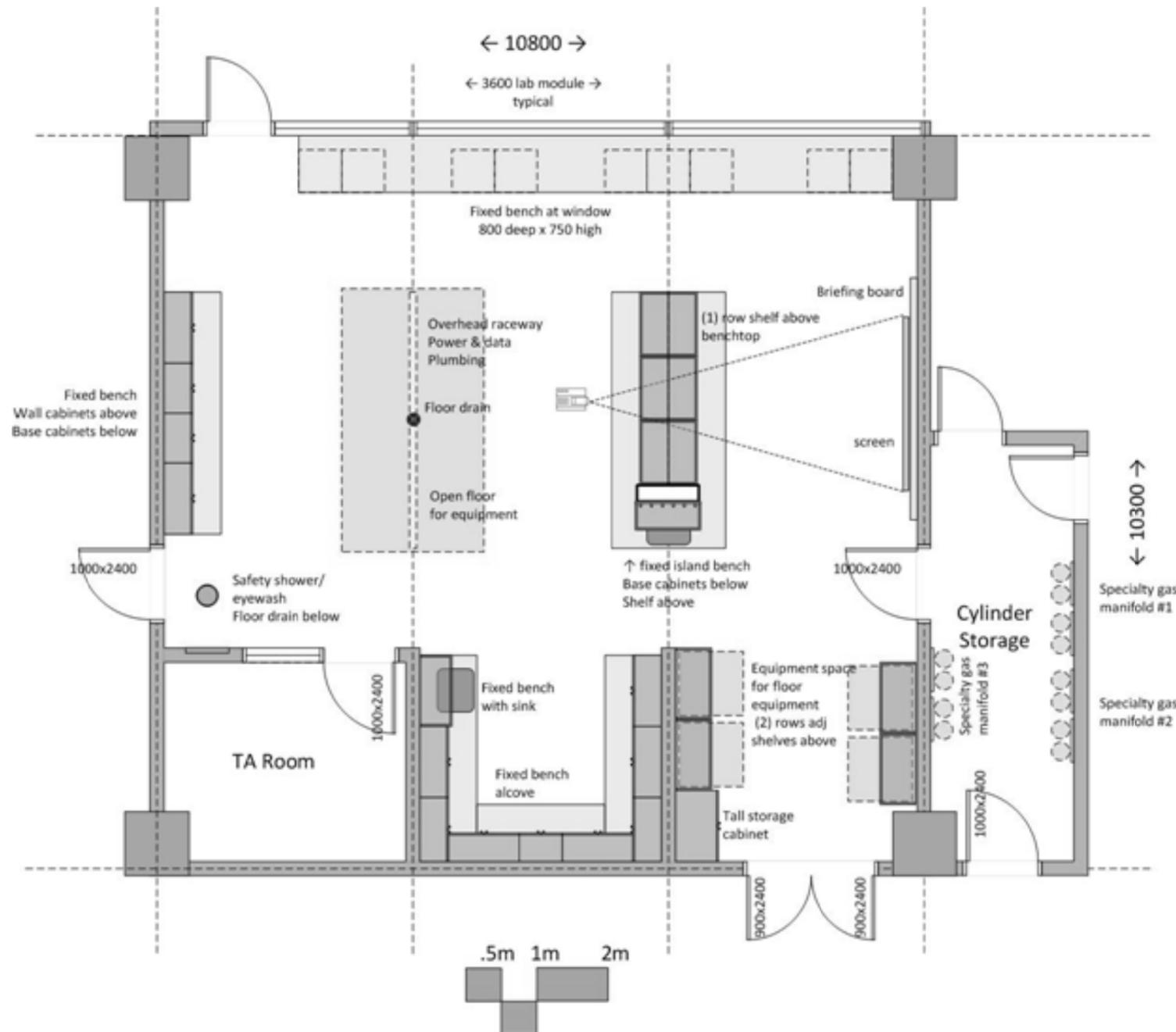


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# SUMMARY



This second edition (revised) sketchbook comprises the labs assigned to the Chemical Engineering Department. It includes basic plan diagrams with equipment and furnishings noted. It includes electrical and plumbing outlets and fittings. It also includes section details for typical casework conditions. This document provides the basis of design intent for the labs. It provides basic information to assist the design team in preparing construction documents and to provide information for lab casework manufacturers to provide shop drawing submittals.

  
 Glen Berry, AIA  
 Laboratory Consultant to Mimar  
 glenberry@designforscience.com



## SYMBOL LEGEND

### PLUMBING & ELECTRICAL SYMBOLS

N—●—N Nitrogen gas- double valve at benchtop

He—●—He Helium gas- double valve at benchtop

A—●—A Compressed air 30 psi- double valve at benchtop

●— HW/CW Hot/Cold water faucet with vacuum breaker

●— SW Soft water feed for water polisher at lab sink

●— CW Cold water at fume hood with vacuum breaker

●— N Nitrogen gas- single valve at fume hood or overhead service carrier  
Pipe from specialty gas manifold #1

●— He Helium gas- single valve at fume hood or overhead service carrier  
Pipe from specialty gas manifold #2

●— A Compressed air- 30-100 psi at overhead service carrier with regulator

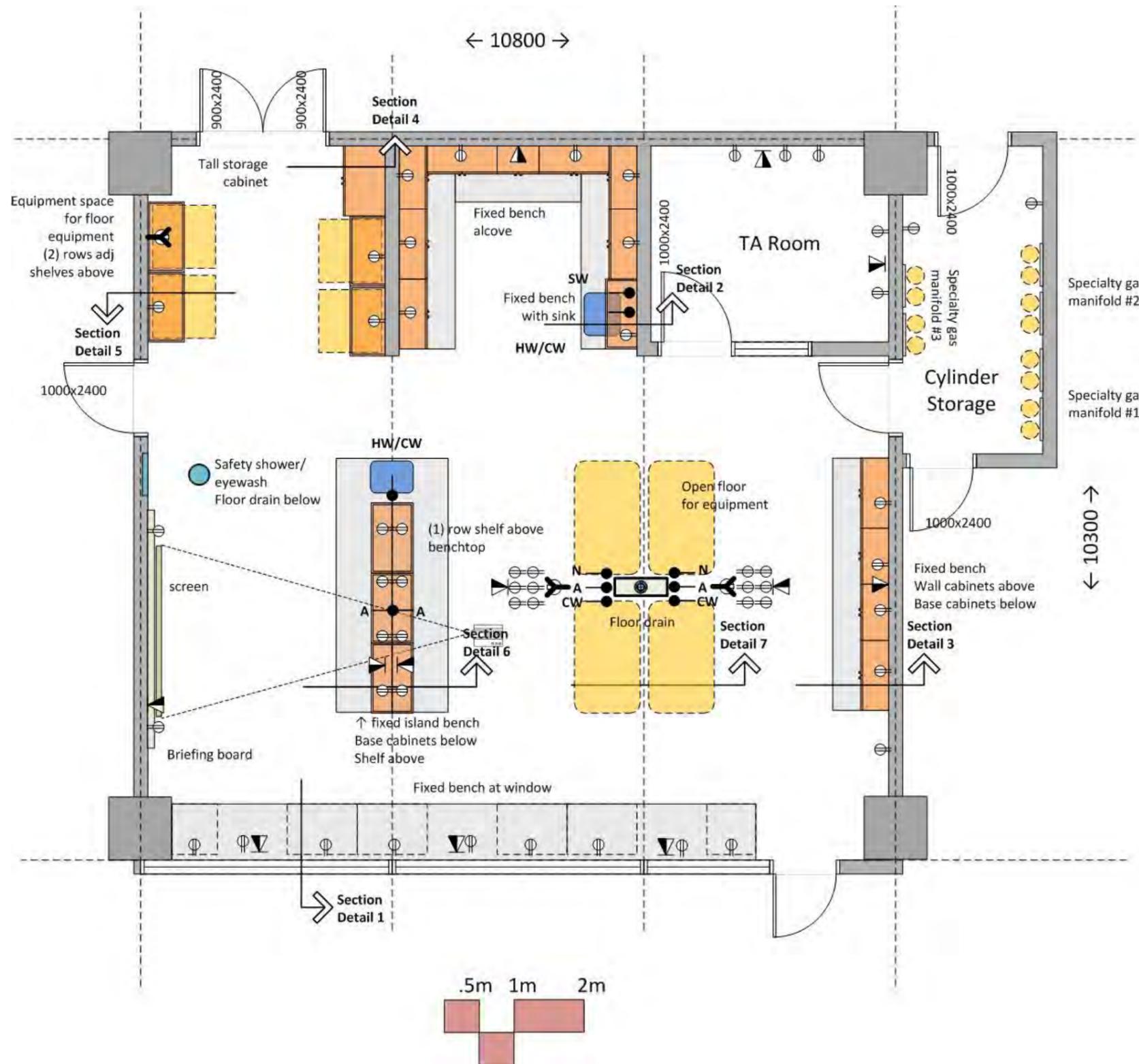
 240v duplex electrical  
Dedicated circuit at equipment space  
Standby power at equipment space

 415v 3phase electrical

 Data/phone box

# FLUID MECHANICS & HEAT TRANSFER LAB

## SECOND FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust: 6 air changes per hour minimum occupied  
 4 air changes per hour unoccupied  
 (air change rate may be higher due to equipment heat gain)  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 Cold water at equipment island  
 Compressed air at equipment island  
 Nitrogen gas at equipment island  
 Cylinder gases in adjacent Cylinder Storage Room- pipe to specialty gas locations in adjacent labs

### ELECTRICAL

240v receptacles at benchtop and equipment raceway  
 415v3ph power  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment

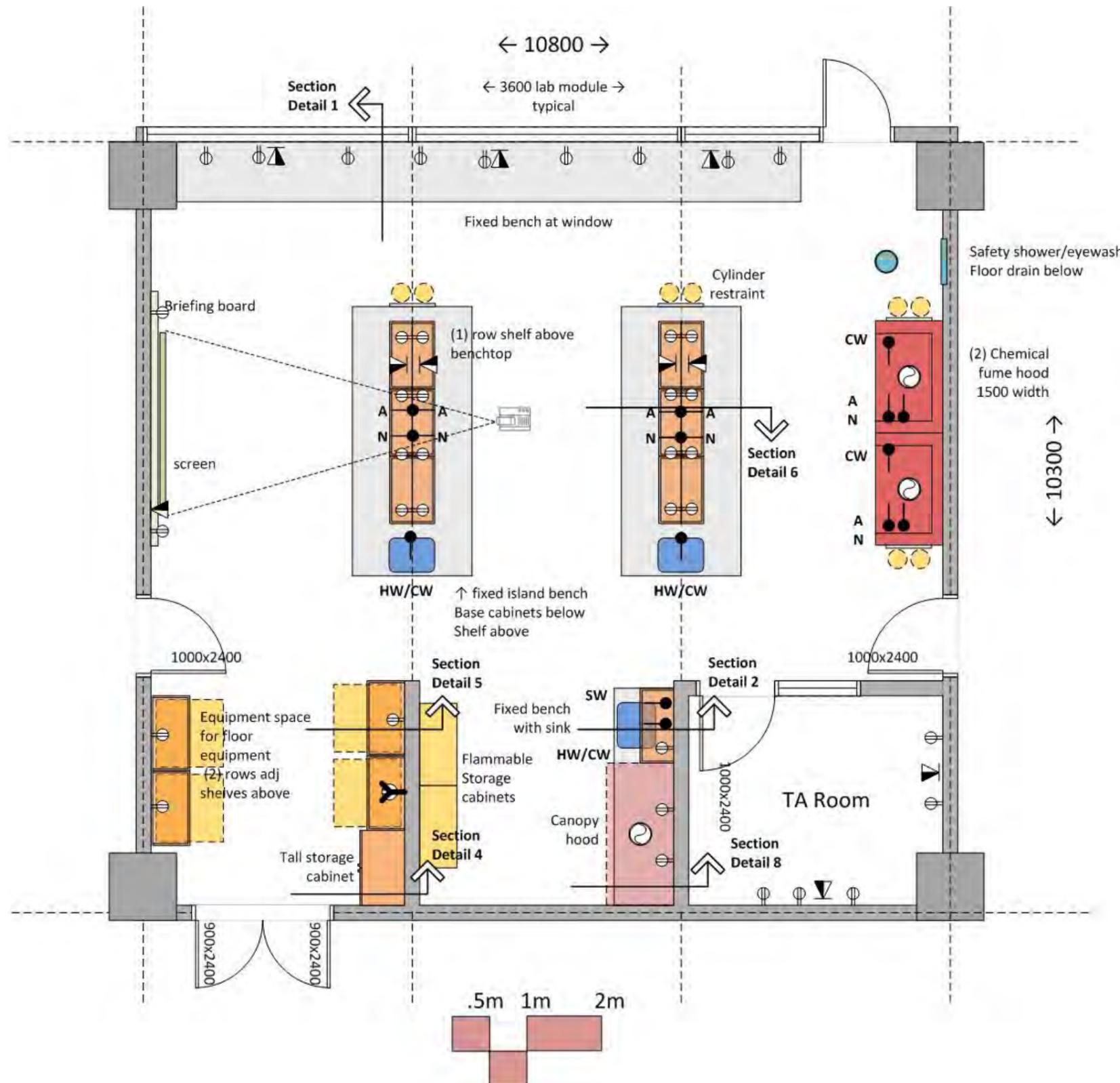
# FLUID MECHANICS & HEAT TRANSFER LAB

KEY PLAN- SECOND FLOOR



# REACTION ENGINEERING LAB

## SECOND FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust: 6 air changes per hour minimum occupied  
 4 air changes per hour unoccupied  
 (air change rate may be higher due to equipment heat gain)  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 Domestic cold water at safety shower/eyewash  
 Floor drain at safety shower  
 compressed air at islands  
 nitrogen gas at islands  
 cold water, compressed air and nitrogen at fume hoods  
 cylinder restraints at end of islands and fume hoods

### ELECTRICAL

240v receptacles at benchtop and equipment  
 415v3ph at equipment space  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 Chemical fume hoods- VAV 20 c.m.m.  
 Canopy exhaust for heat generating equipment  
 Flammable storage cabinets  
 Briefing board, screen, projector

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment



# PROCESS CONTROL LAB

## SECOND FLOOR

### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust: 6 air changes per hour minimum occupied  
 4 air changes per hour unoccupied  
 (air change rate may be higher due to equipment heat gain)  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 Domestic cold water at safety shower/eyewash  
 Floor drain at safety shower  
 compressed air at islands  
 nitrogen gas at islands  
 cold water, compressed air and nitrogen at fume hoods  
 cylinder restraints at end of islands and fume hoods

### ELECTRICAL

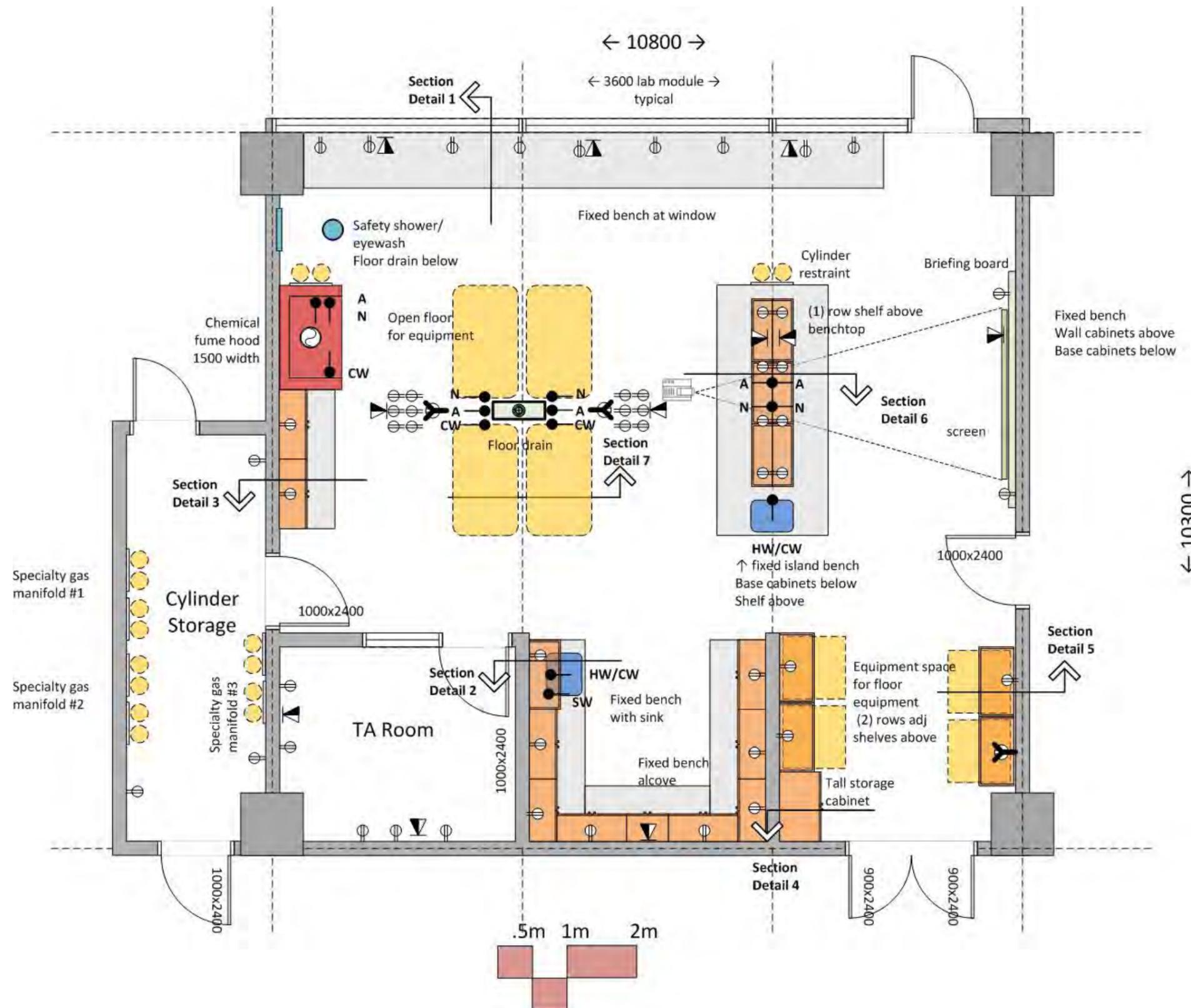
240v receptacles at benchtop and equipment  
 415v3ph at equipment space  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 Chemical fume hood- VAV 20 c.m.m.  
 Briefing board, screen, projector

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment



# PROCESS CONTROL LAB

KEY PLAN- SECOND FLOOR



# SENIOR PROJECTS LAB- MALE

## FIRST FLOOR

### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust: 6 air changes per hour minimum occupied  
 4 air changes per hour unoccupied  
 (air change rate may be higher due to equipment heat gain)  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 Domestic cold water at safety shower/eyewash  
 Floor drain at safety shower  
 compressed air at islands  
 nitrogen gas at islands  
 Cold water, Nitrogen and hydrogen gas at fume hoods  
 cylinder restraints at end of islands and fume hoods

### ELECTRICAL

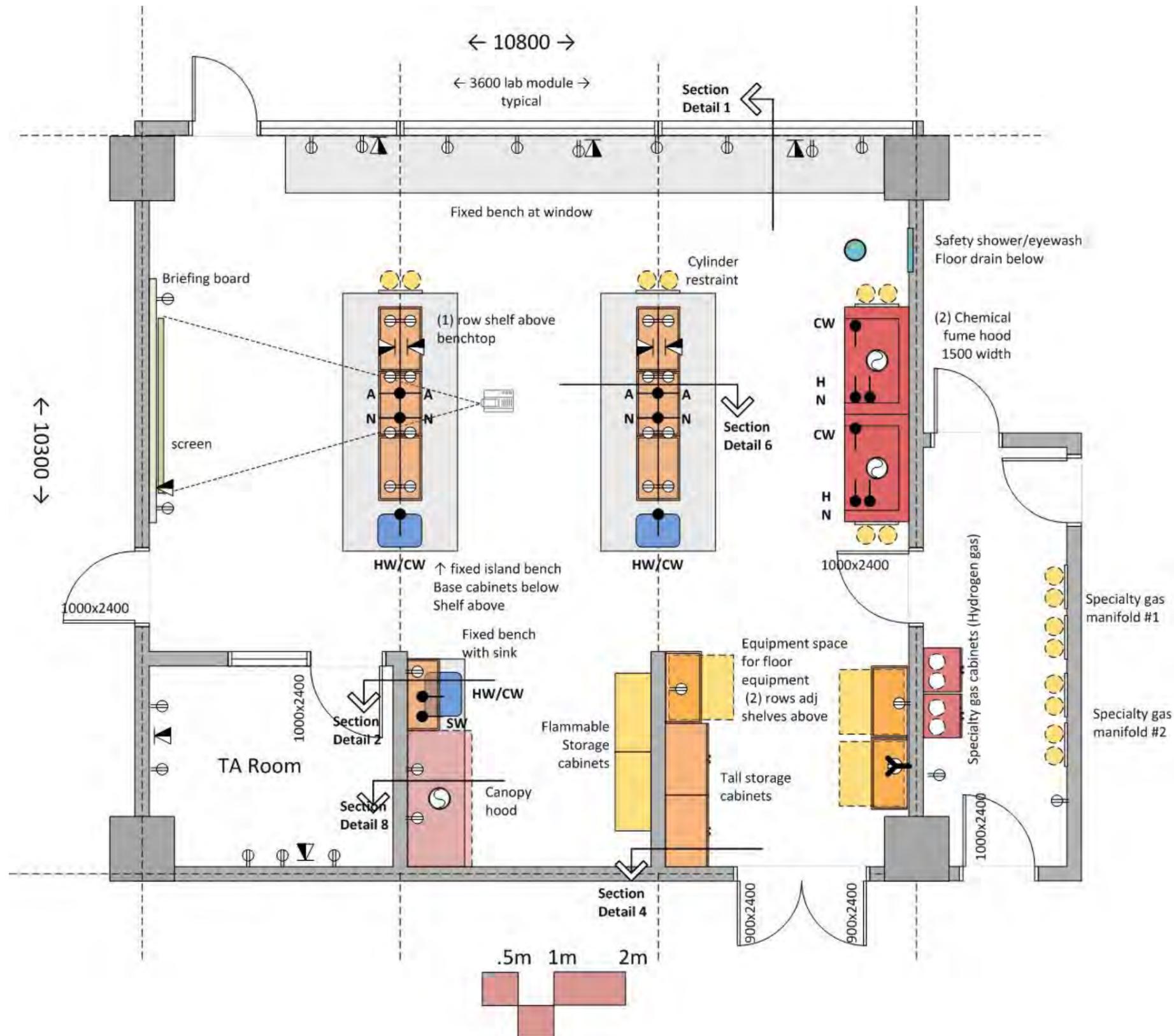
240v receptacles at benchtop and equipment  
 415v3ph at equipment space  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 Chemical fume hoods- VAV 20 c.m.m.  
 Canopy exhaust for heat generating equipment  
 Flammable storage cabinets  
 Cylinder gas cabinets  
 Briefing board, screen, projector

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment



# SENIOR PROJECTS LAB- MALE

KEY PLAN- FIRST FLOOR



# SENIOR PROJECTS LAB- FEMALE

## FIRST FLOOR

### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust: 6 air changes per hour minimum occupied  
 4 air changes per hour unoccupied  
 (air change rate may be higher due to equipment heat gain)  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 Domestic cold water at safety shower/eyewash  
 Floor drain at safety shower  
 compressed air at islands  
 nitrogen gas at islands  
 Cold water, Nitrogen and hydrogen gas at fume hoods  
 cylinder restraints at end of islands and fume hoods

### ELECTRICAL

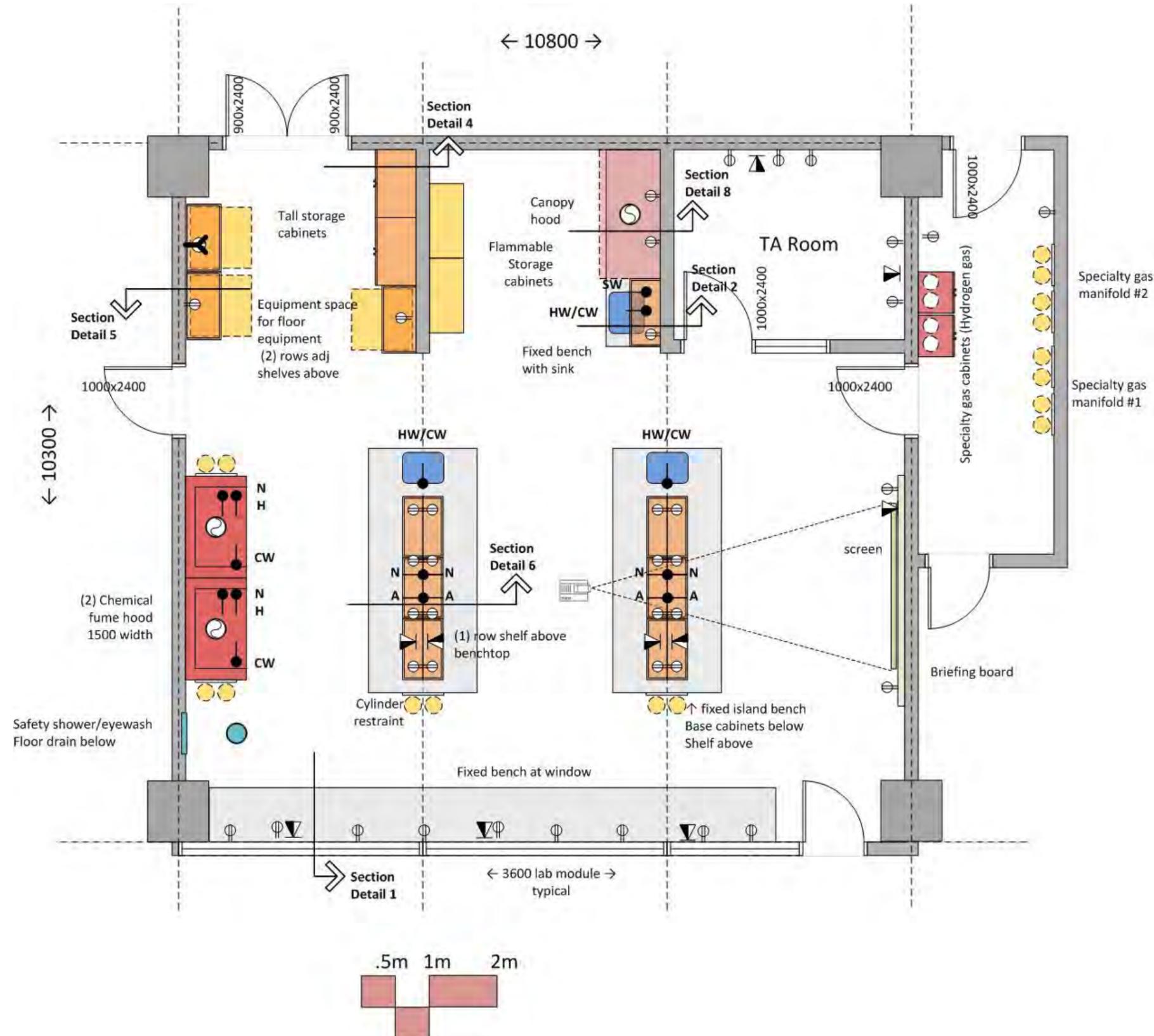
240v receptacles at benchtop and equipment  
 415v3ph at equipment space  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 Chemical fume hoods- VAV 20 c.m.m.  
 Canopy exhaust for heat generating equipment  
 Flammable storage cabinets  
 Cylinder gas cabinets  
 Briefing board, screen, projector

### COLLEGE FURNISHED EQUIPMENT

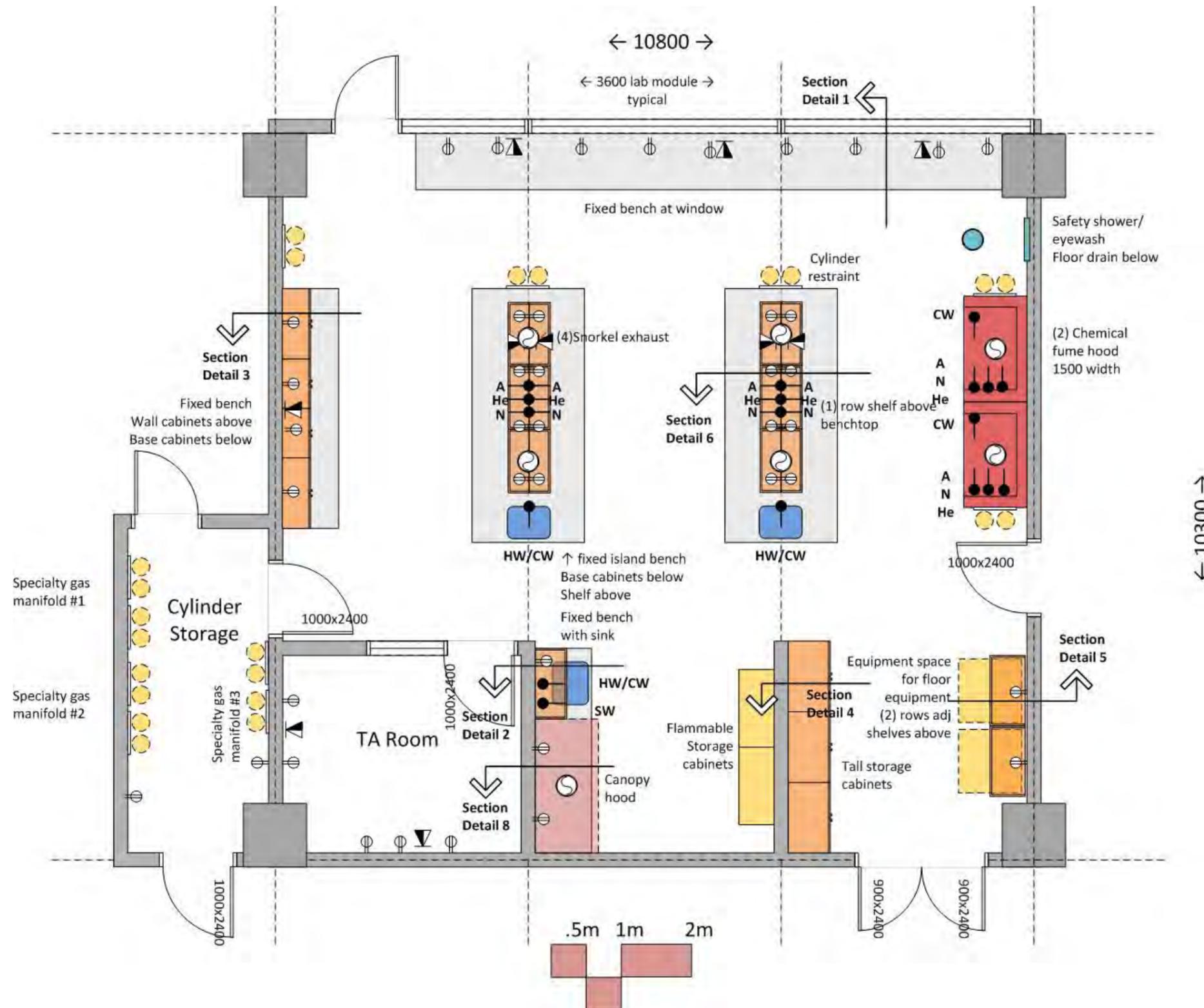
Scientific benchtop equipment  
 Floor equipment





# ANALYTICAL LAB 1

## FIRST FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust: 6 air changes per hour minimum occupied  
 4 air changes per hour unoccupied  
 (air change rate may be higher due to equipment heat gain)  
 Equipment heat gain: 750-1000 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 Cold water, compressed air, Helium, Nitrogen gas at islands  
 and fume hoods

### ELECTRICAL

240v receptacles at benchtop and equipment  
 415v3ph power at perimeter  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.  
 UPS power

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 Chemical Fume Hood: VAV 20 c.m.m.  
 Snorkel Exhaust: VAV 2.5 c.m.m

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment

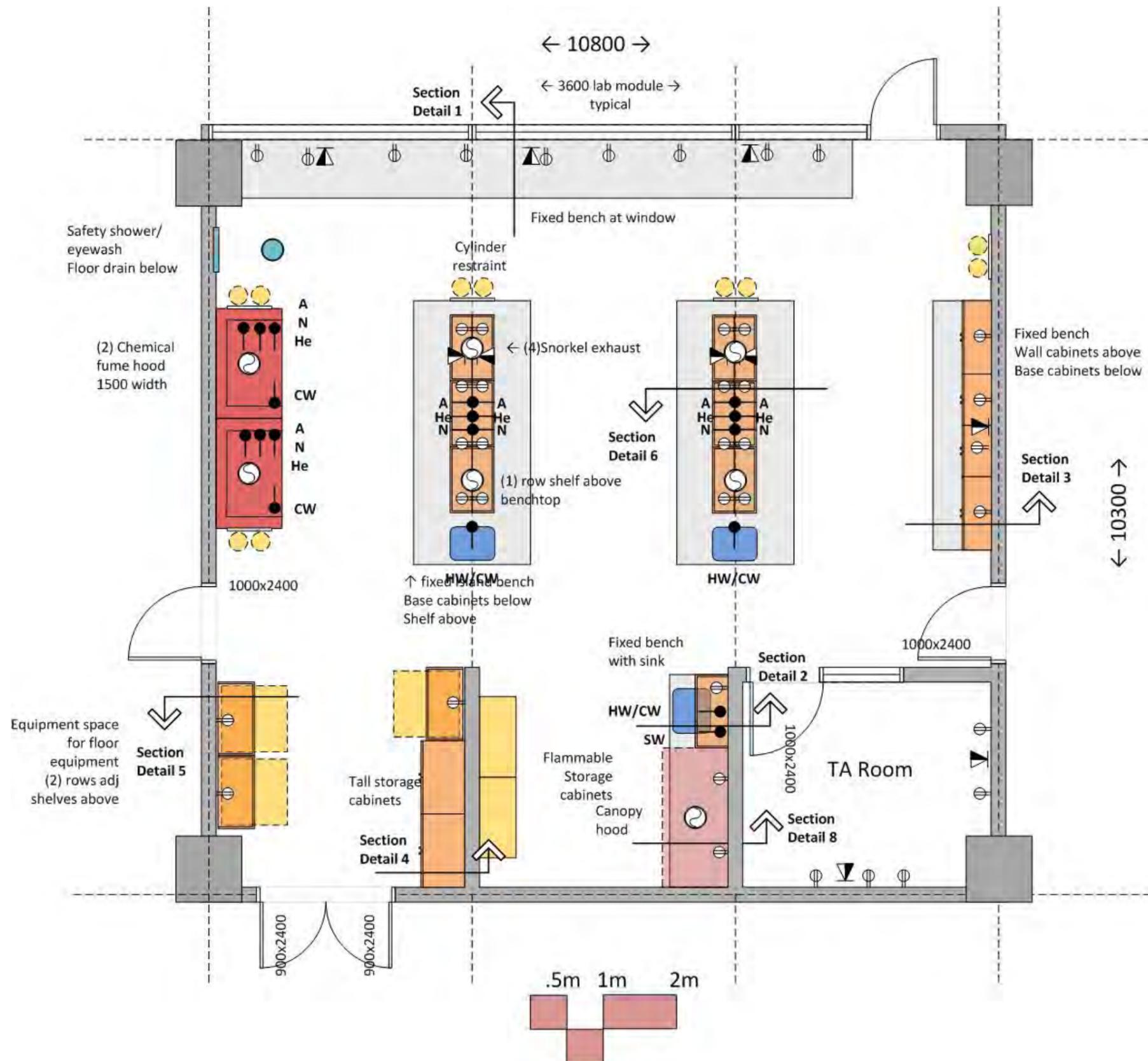
# ANALYTICAL LAB 1

KEY PLAN- FIRST FLOOR



# ANALYTICAL LAB 2

## FIRST FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust: 6 air changes per hour minimum occupied  
 4 air changes per hour unoccupied  
 (air change rate may be higher due to equipment heat gain)  
 Equipment heat gain: 750-1000 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 Cold water, compressed air, Helium, Nitrogen gas at islands and fume hoods

### ELECTRICAL

240v receptacles at benchtop and equipment  
 415v3ph power at perimeter  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.  
 UPS power

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 Chemical Fume Hood: VAV 20 c.m.m.  
 Snorkel Exhaust: VAV 2.5 c.m.m

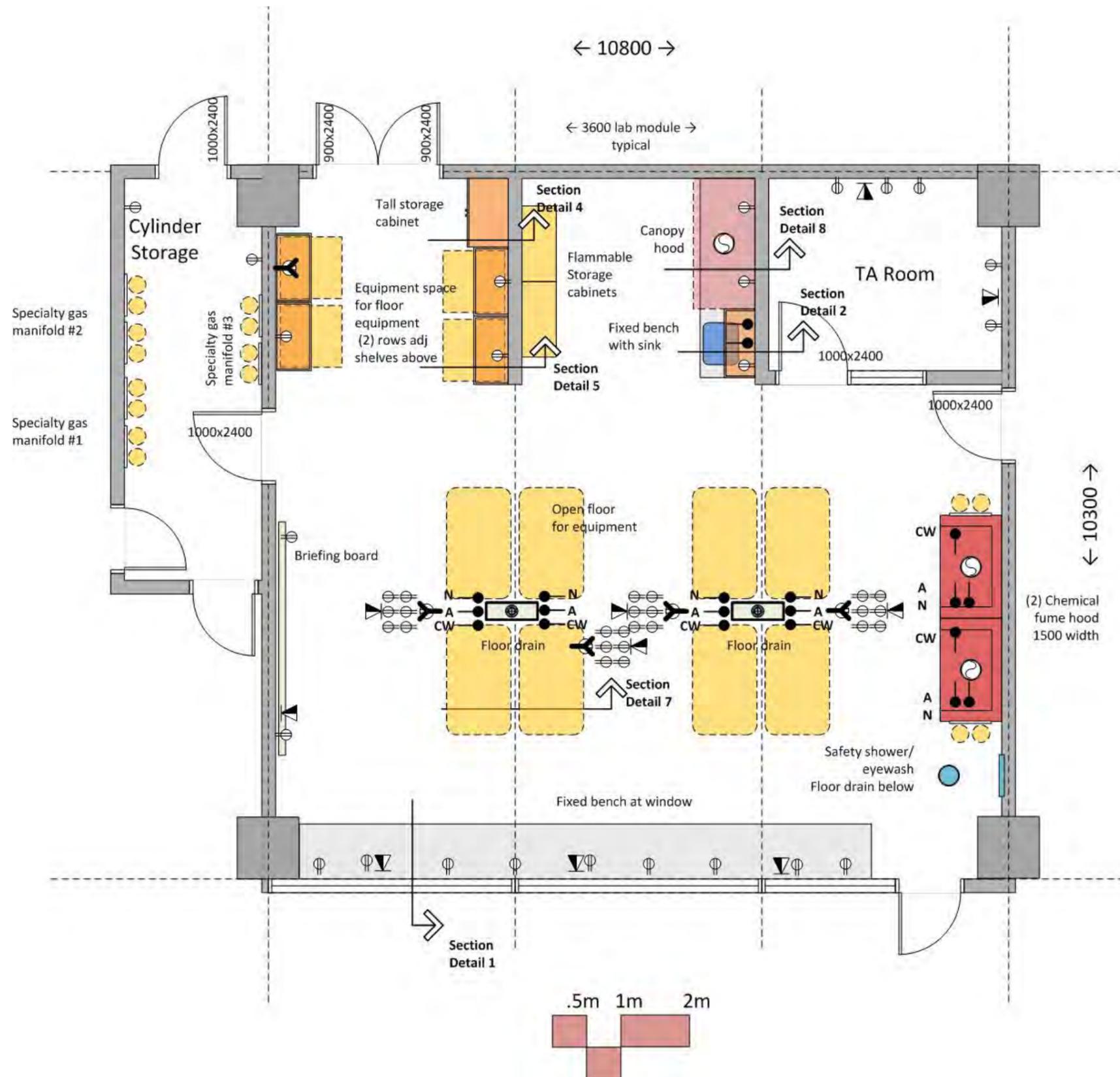
### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment



# UNIT OPERATIONS LAB

**FIRST FLOOR**  
SIMILAR FOR ONE (1) OTHER LAB FIRST FLOOR



## ARCHITECTURAL

Floor: sealed, ground concrete  
Walls: cmu with plaster, paint  
Ceiling: acoustic tile at 3 m  
Doors with vision panels  
Vibration attenuation: 25 micrometers/second or less  
Sound attenuation: NC 45 or less  
Light attenuation: at exterior windows with exterior sun shade

## MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
100% exhaust: 6 air changes per hour minimum occupied  
4 air changes per hour unoccupied  
(air change rate may be higher due to equipment heat gain)  
Equipment heat gain: 750-1000 btuh/square meter  
Humidity: 30-50% relative  
Pressure: negative

## PLUMBING

Industrial hot/cold water at lab sink  
Pure water at lab sink via point-of-use water polisher  
Cold water, compressed air, Nitrogen gas at islands and fume hoods

## ELECTRICAL

240v receptacles at benchtop and equipment  
415v3ph power at islands and perimeter  
Dedicated circuits at equipment spaces  
Standby power (emergency) at equipment spaces  
Data junction boxes at perimeter and islands  
Wireless data connection  
Lighting: indirect fluorescent at 60 f.c.

## CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
Chemical Fume Hoods: VAV 20 c.m.m.

## COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
Floor equipment

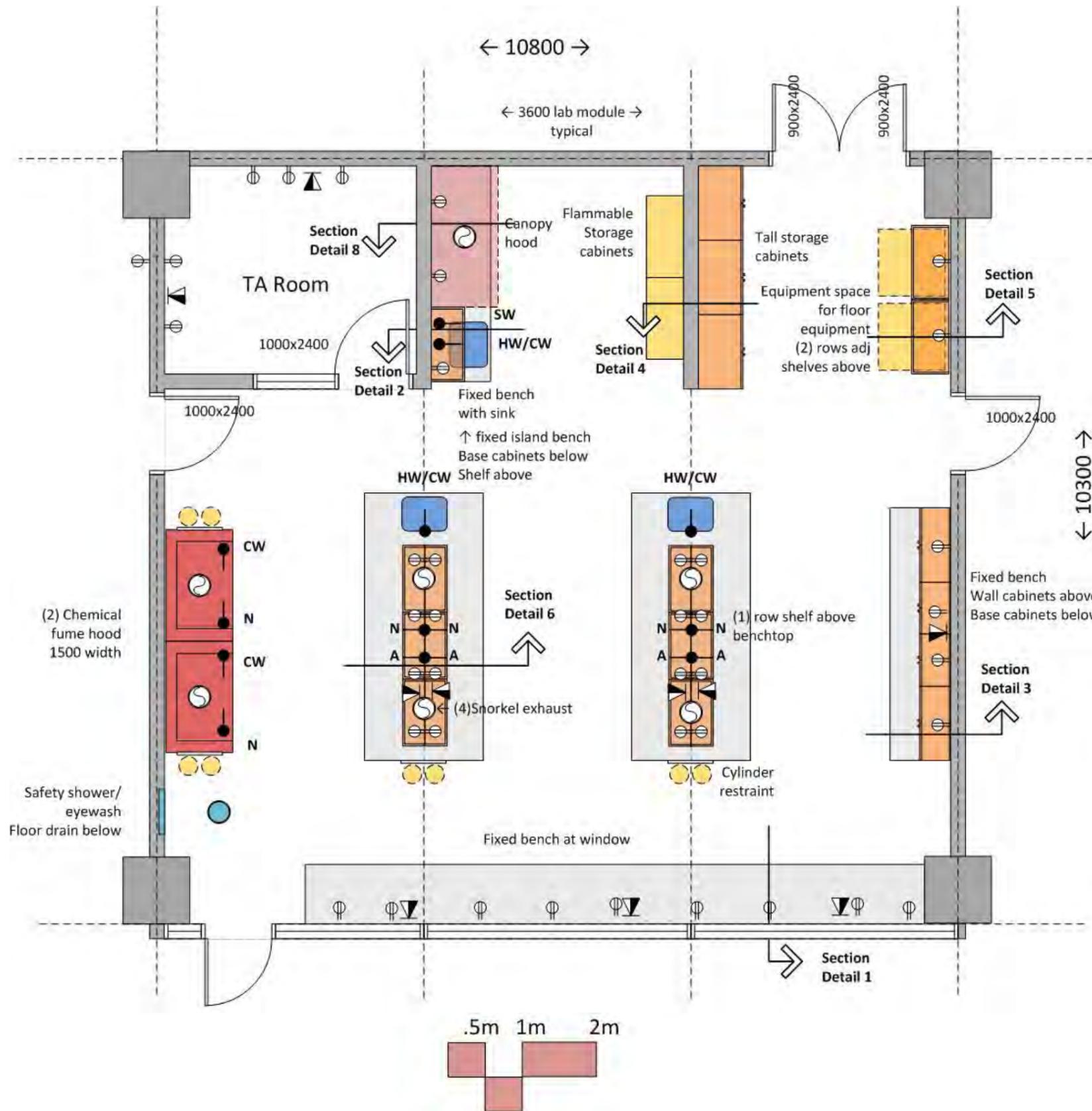
# UNIT OPERATIONS LAB

KEY PLAN- FIRST FLOOR  
SIMILAR FOR (1) OTHER LAB FIRST FLOOR



# CHEMISTRY RESEARCH LAB

**SECOND FLOOR**  
SIMILAR FOR THREE (3) OTHER LABS SECOND FLOOR



## ARCHITECTURAL

Floor: sealed, ground concrete  
Walls: cmu with plaster, paint  
Ceiling: acoustic tile at 3 m  
Doors with vision panels  
Vibration attenuation: 25 micrometers/second or less  
Sound attenuation: NC 45 or less  
Light attenuation: at exterior windows with exterior sun shade

## MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
100% exhaust: 6 air changes per hour minimum occupied  
4 air changes per hour unoccupied  
(air change rate may be higher due to equipment heat gain)  
Equipment heat gain: 750-1000 btuh/square meter  
Humidity: 30-50% relative  
Pressure: negative

## PLUMBING

Industrial hot/cold water at lab sink  
Pure water at lab sink via point-of-use water polisher  
Compressed air, Helium, Nitrogen gas at islands and fume hoods

## ELECTRICAL

240v receptacles at benchtop and equipment  
415v3ph power at perimeter  
Dedicated circuits at equipment spaces  
Standby power (emergency) at equipment spaces  
Data junction boxes at perimeter and islands  
Wireless data connection  
Lighting: indirect fluorescent at 60 f.c.

## CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
Chemical Fume Hood: VAV 20 c.m.m.  
Snorkel Exhaust: VAV 2.5 c.m.m.

## COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
Floor equipment

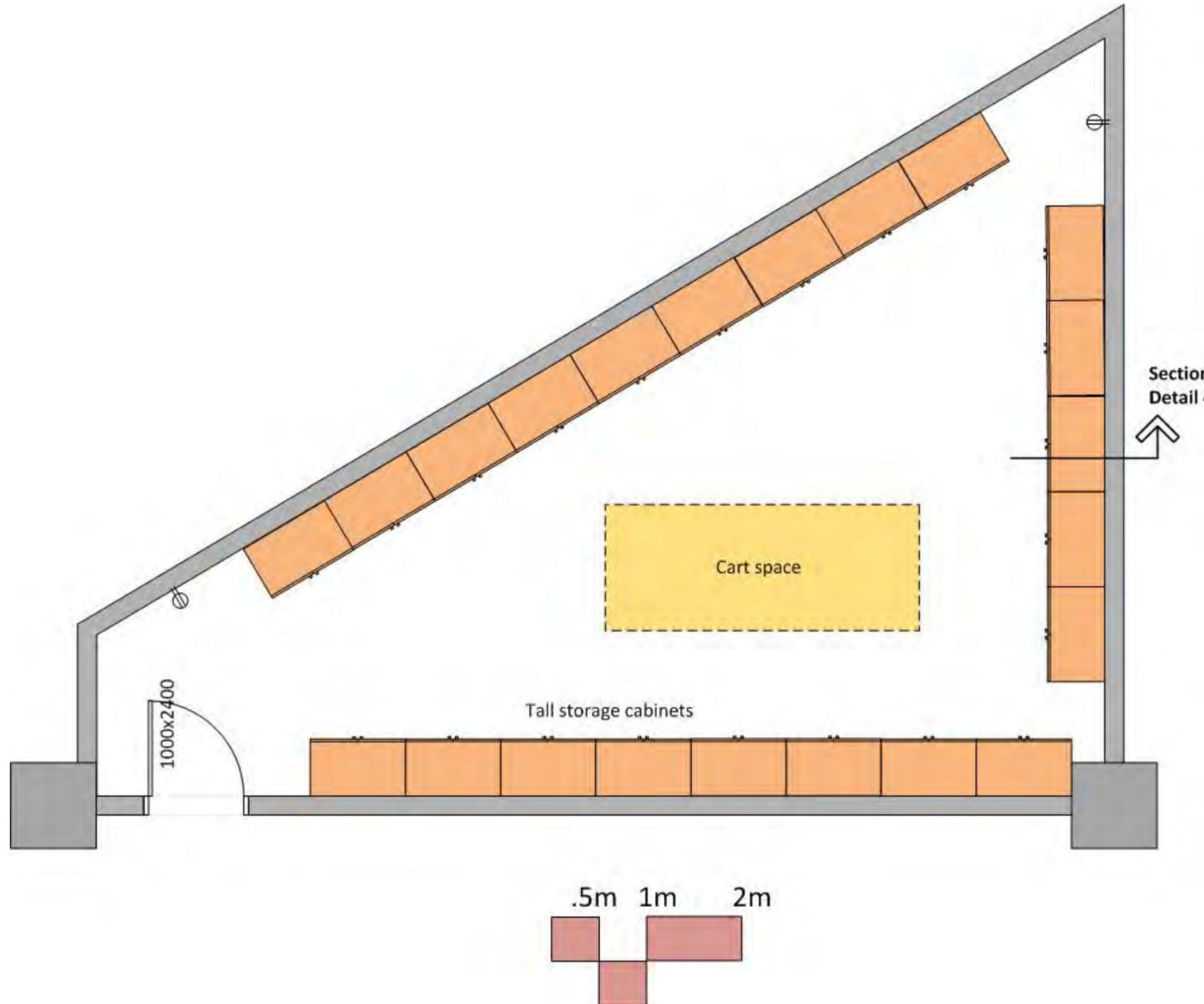
# CHEMISTRY RESEARCH LAB

KEY PLAN- SECOND FLOOR  
SIMILAR FOR (3) OTHER LABS SECOND FLOOR



# GLASSWARE STORE

## GROUND FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
Walls: cmu with plaster, paint  
Ceiling: acoustic tile at 3 m  
Doors with vision panels  
Vibration attenuation: 25 micrometers/second or less  
Sound attenuation: NC 45 or less  
Light attenuation: at exterior windows (if any) with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
Recirc air within lab zone- do not recirc to non-lab spaces such as offices, classrooms  
Humidity: 30-50% relative  
Pressure: positive

### PLUMBING

None

### ELECTRICAL

240v receptacles  
Wireless data connection  
Lighting: indirect fluorescent at 50 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

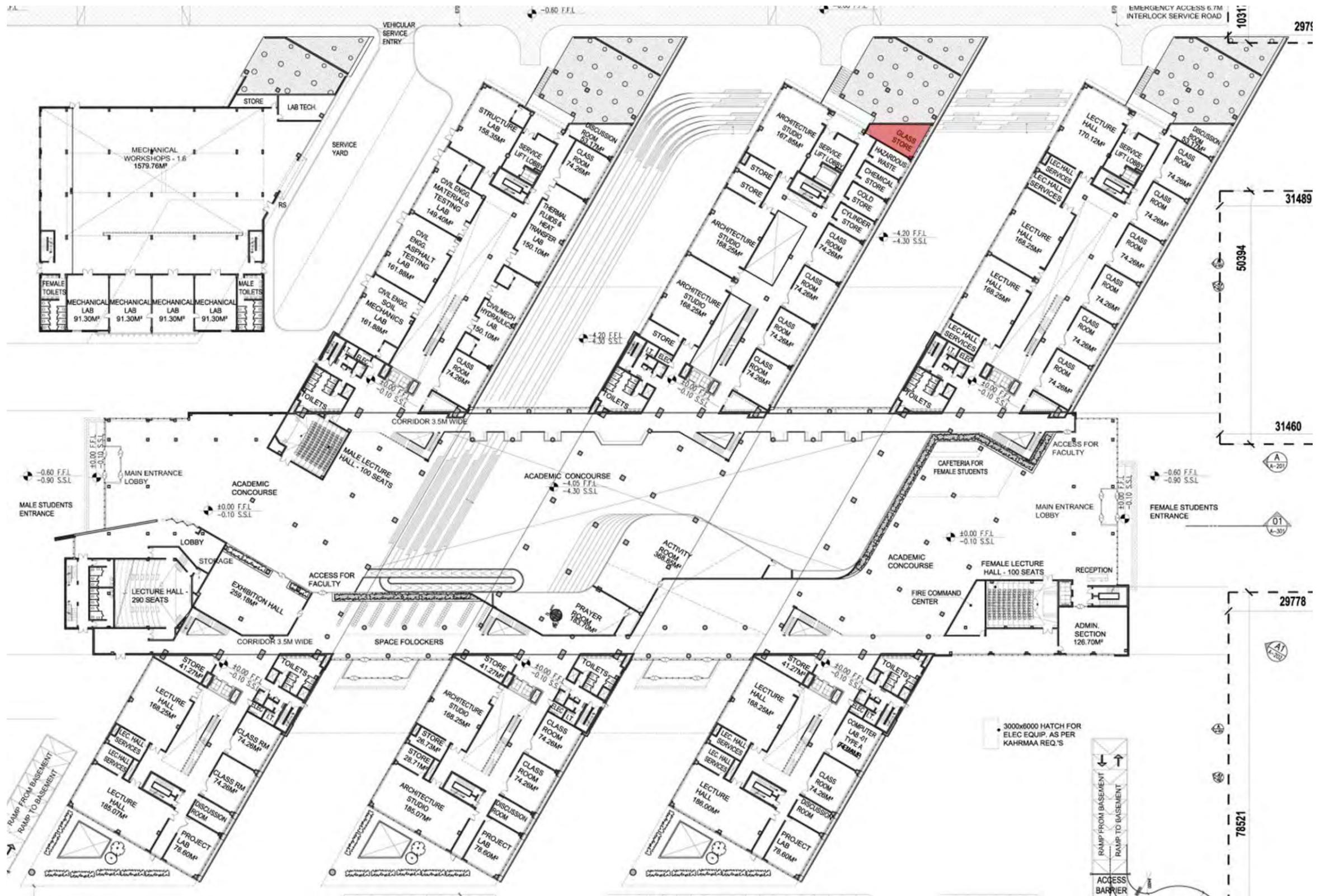
Lab casework

### COLLEGE FURNISHED EQUIPMENT

Glassware  
Lab supplies

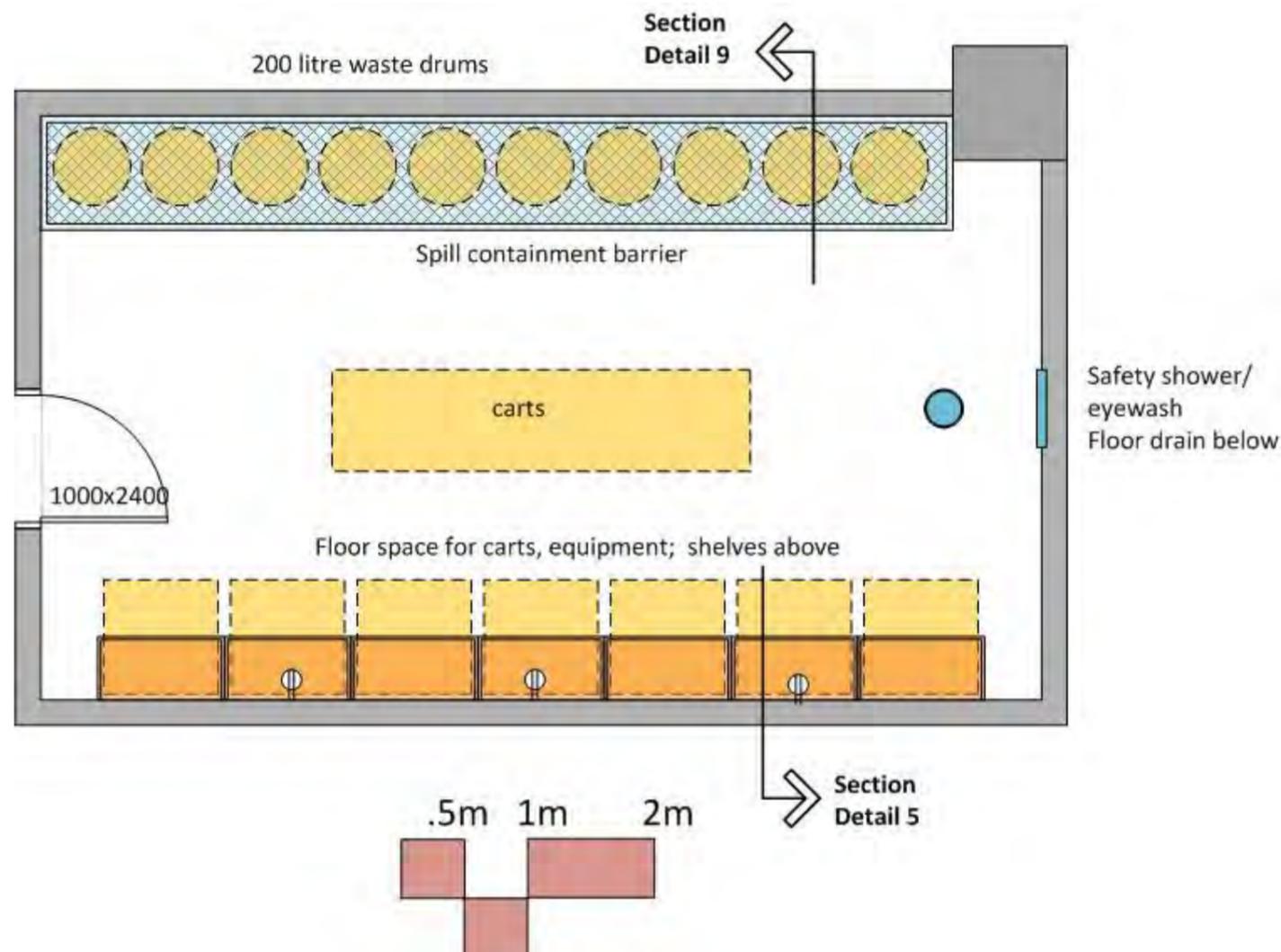
# GLASSWARE STORE

## KEY PLAN- GROUND FLOOR



# HAZARDOUS WASTE

## GROUND FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows (is any) with exterior sun shade

### MECHANICAL

Temperature: 20 deg. C +/- 1 deg. C  
 100% exhaust: 6 air changes per hour minimum  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

domestic cold water at safety shower/eyewash  
 Do not provide floor drain in room

### ELECTRICAL

240v receptacles at equipment  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter  
 Wireless data connection  
 Lighting: indirect fluorescent at 50 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

lab casework  
 spill containment barrier

### COLLEGE FURNISHED EQUIPMENT

waste drums  
 carts

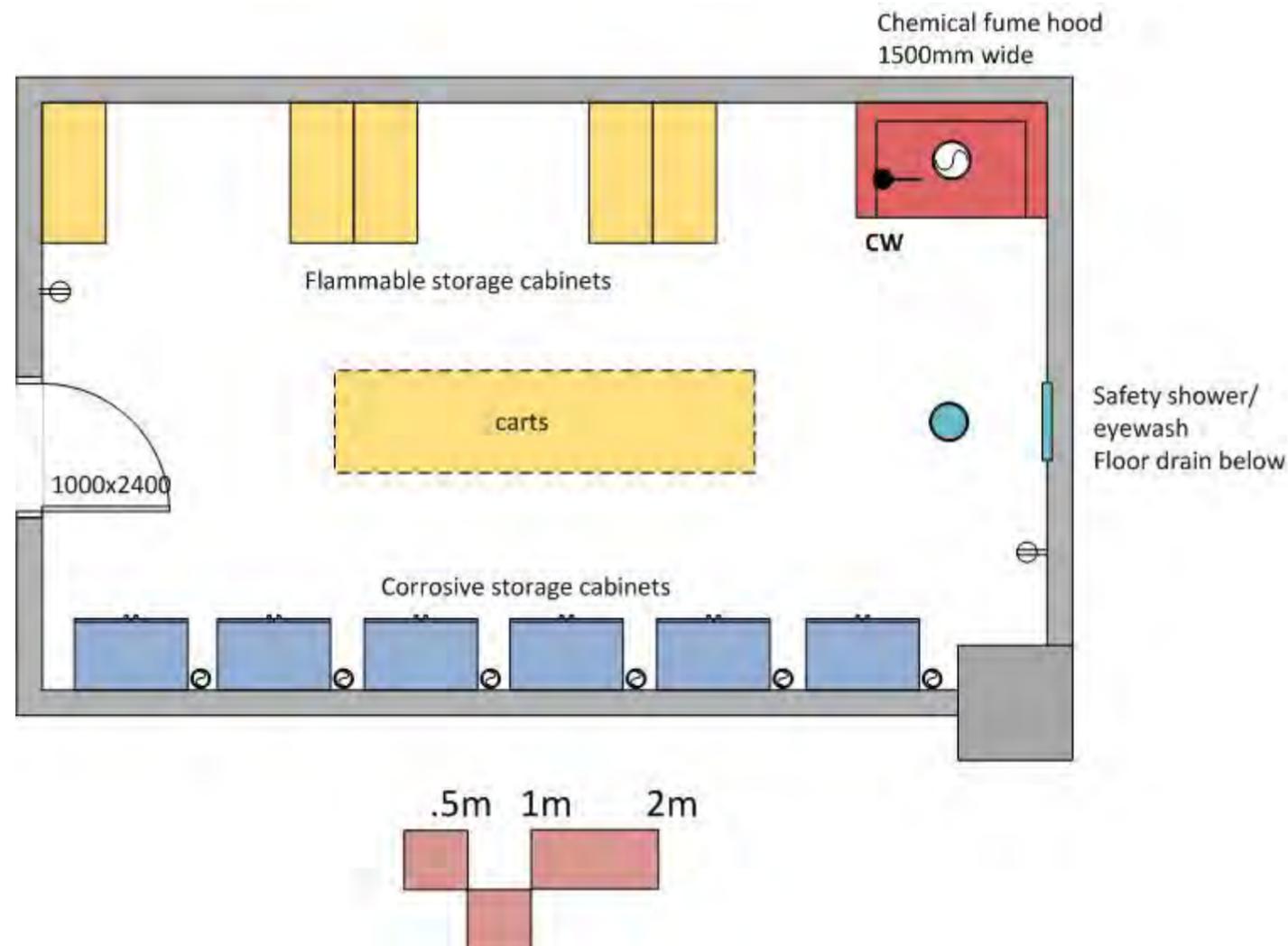
# HAZARDOUS WASTE

KEY PLAN- GROUND FLOOR



# CHEMICAL STORE

## GROUND FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
Walls: cmu with plaster, paint  
Ceiling: open to structure  
Doors with vision panels  
Vibration attenuation: 25 micrometers/second or less  
Sound attenuation: NC 45 or less  
Light attenuation: at exterior windows (if any) with exterior sun shade

### MECHANICAL

Temperature: 20 deg. C +/- 1 deg. C  
100% exhaust: 6 air changes per hour minimum  
Humidity: 30-50% relative  
Pressure: negative

### PLUMBING

domestic cold water at fume hood

### ELECTRICAL

240v receptacles at perimeter  
Wireless data connection  
Lighting: indirect fluorescent at 50 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

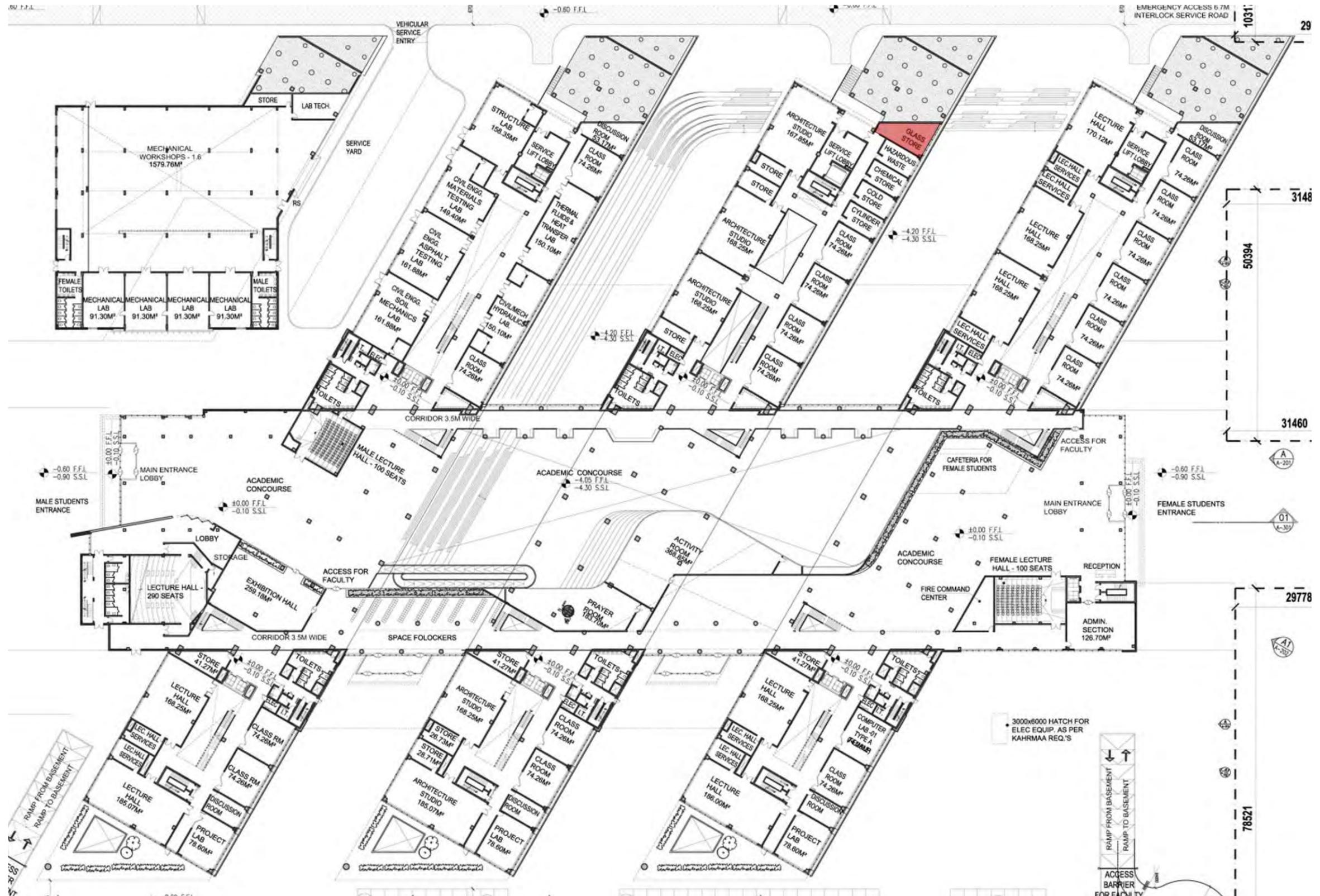
Chemical fume hood: VAV 20 c.m.m.  
chemical storage cabinets

### COLLEGE FURNISHED EQUIPMENT

carts  
chemicals

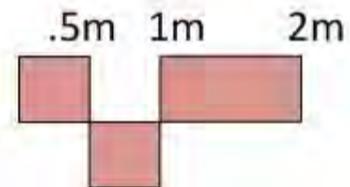
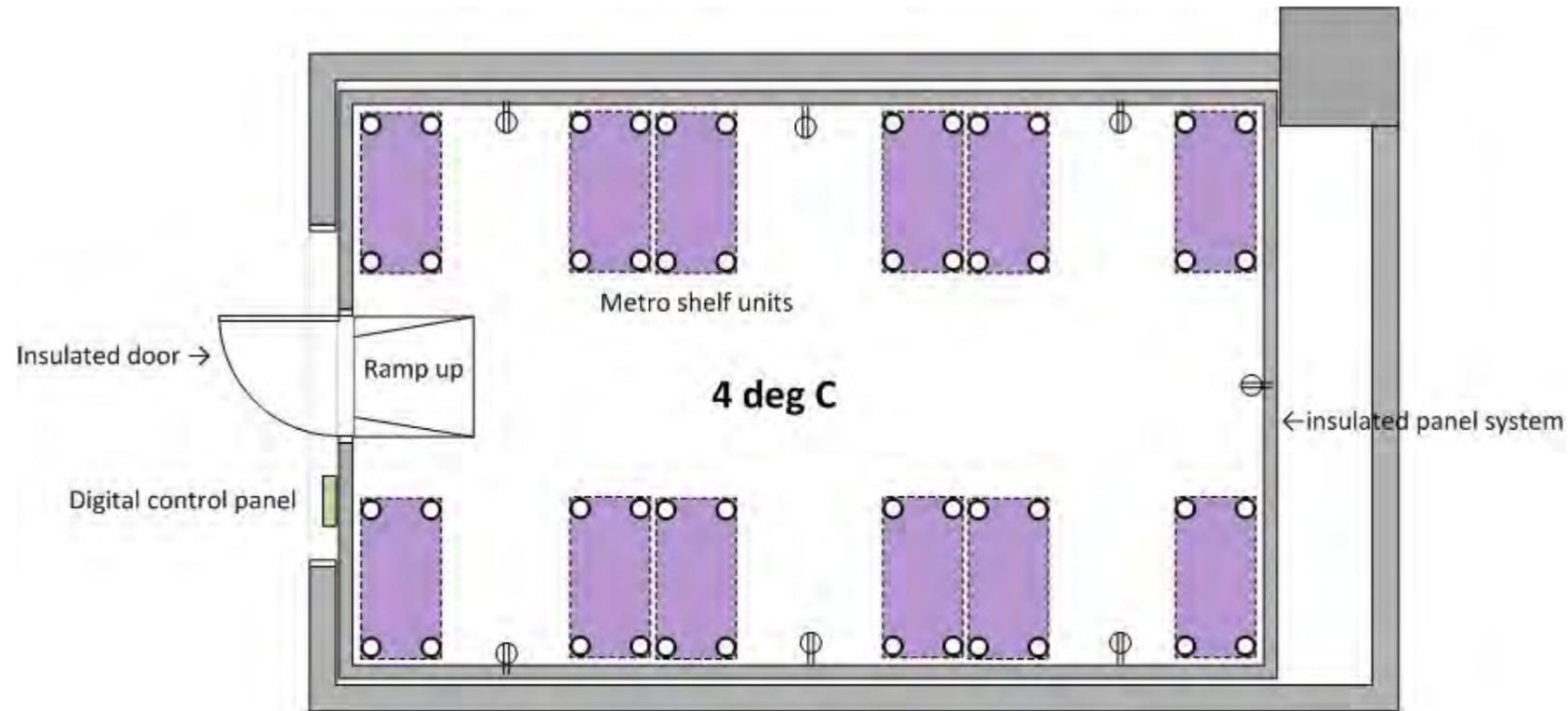
# CHEMICAL STORE

## KEY PLAN- GROUND FLOOR



# COLD STORE

## GROUND FLOOR



### ARCHITECTURAL

Floor: 2" insulated panel with diamond tread aluminum finish  
Walls: insulated wall panel system with stainless steel finish  
Ceiling: egg crate at 8'; insulated panel at 9'  
Door: insulated panel door with view window  
Vibration attenuation: 25 micrometers/second or less  
Sound attenuation: NC 45 or less

### MECHANICAL

Temperature: 4 deg. C. +/- 1 deg. C.  
Air supply: 1 c.m.m.  
Humidity: 30-50% relative  
Pressure: negative

### PLUMBING

None

### ELECTRICAL

240v receptacles at perimeter  
Standby power (emergency)  
Wireless data connection  
Lighting: indirect fluorescent at 50 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Metro shelf units

### COLLEGE FURNISHED EQUIPMENT

supplies

# COLD STORE

KEY PLAN- GROUND FLOOR



# CYLINDER STORE

## GROUND FLOOR

### ARCHITECTURAL

Floor: sealed, ground concrete

Walls: cmu with plaster, paint

Ceiling: open to structure

Doors with vision panels

Vibration attenuation: 25 micrometers/second or less

Sound attenuation: NC 45 or less

Light attenuation: at exterior windows (if any) with exterior sun shade

### MECHANICAL

Temperature: 20 deg. C +/- 1 deg. C

100% exhaust: 6 air changes per hour minimum

Humidity: 30-50% relative

Pressure: negative

### PLUMBING

None

### ELECTRICAL

240v receptacles at perimeter

Wireless data connection

Lighting: indirect fluorescent at 50 f.c.

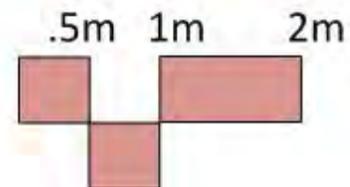
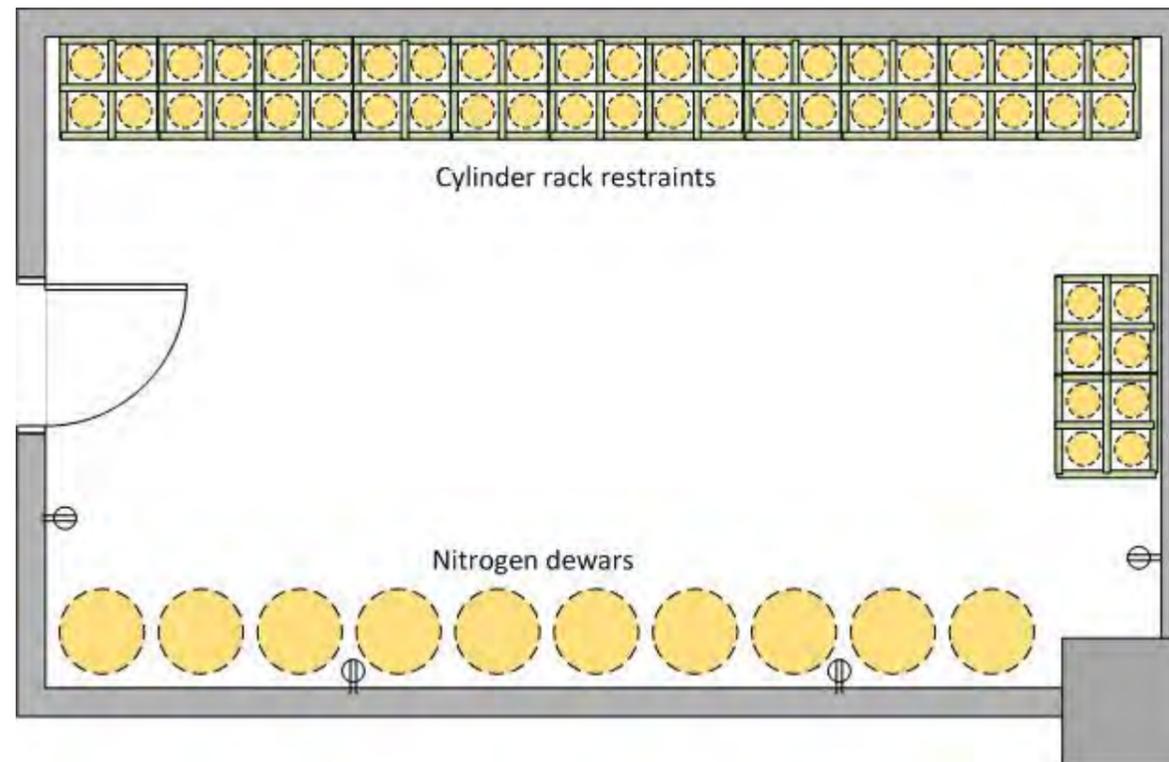
### CONTRACTOR FURNISHED EQUIPMENT

cylinder rack

### COLLEGE FURNISHED EQUIPMENT

cylinders

dewars



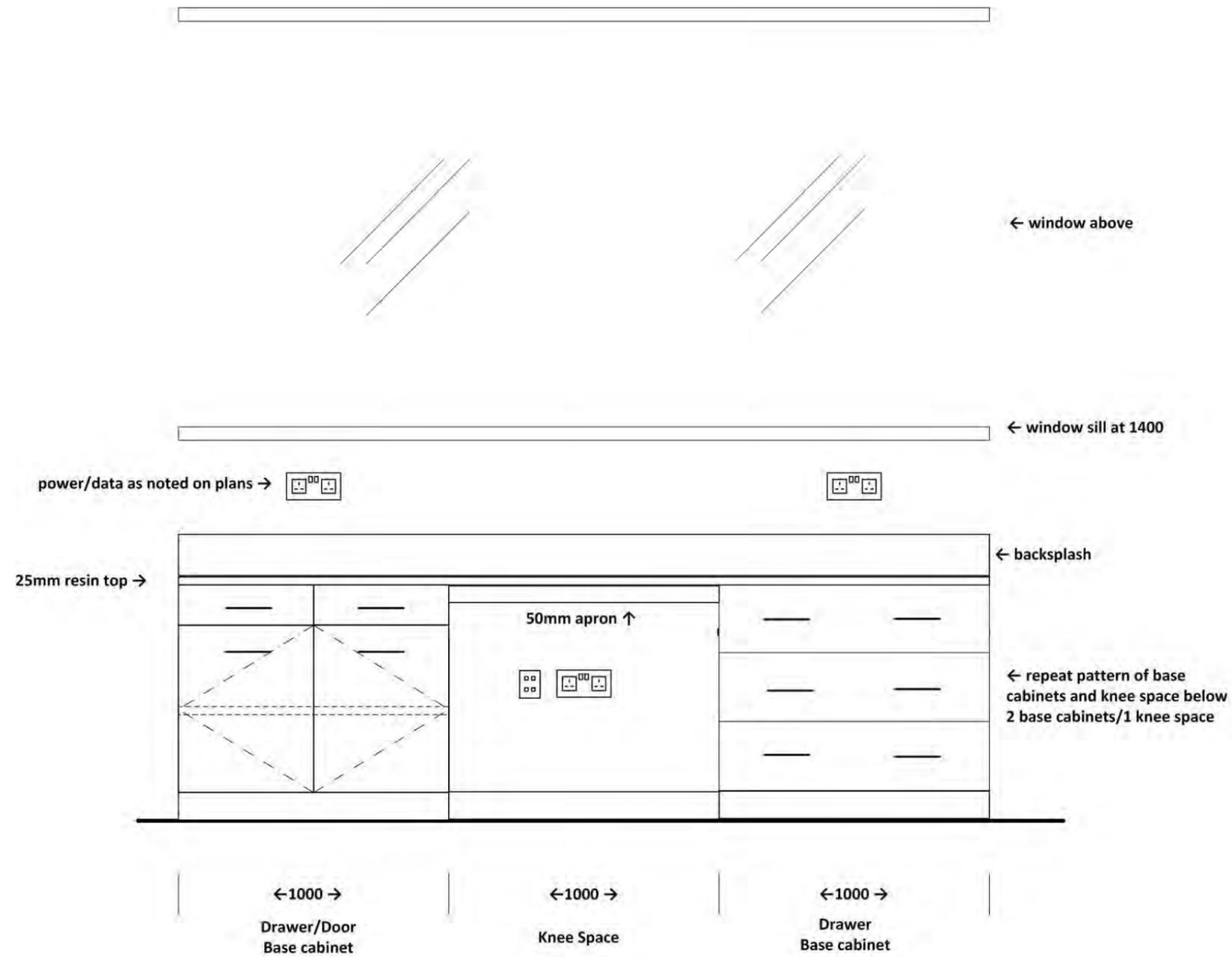
# CYLINDER STORE

KEY PLAN- GROUND FLOOR

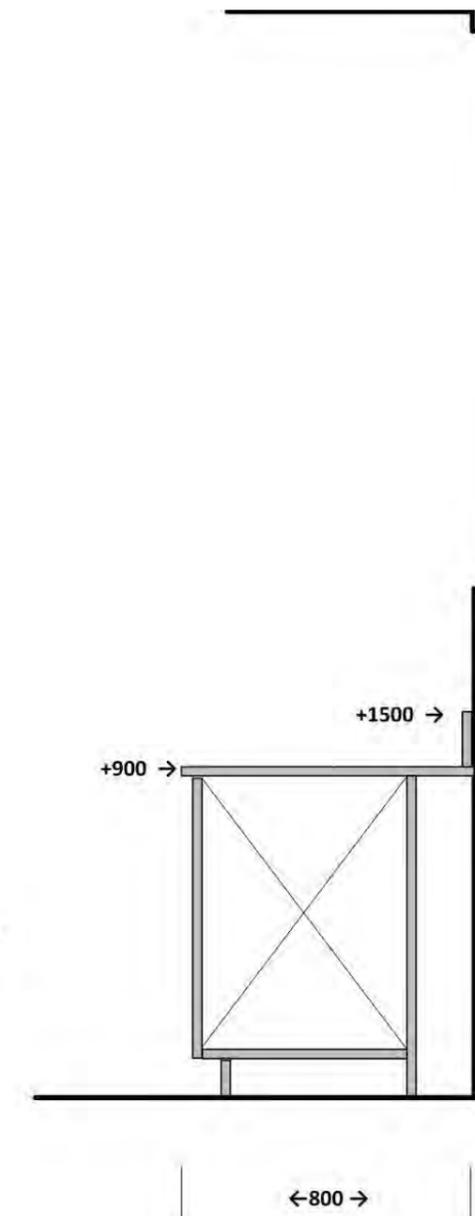


# SECTION DETAIL 1

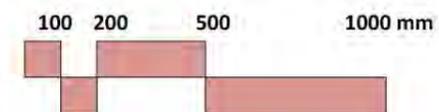
## WINDOW BENCH



**Elevation**

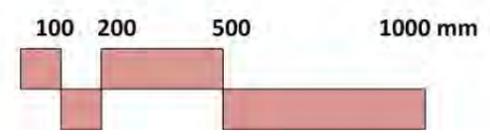
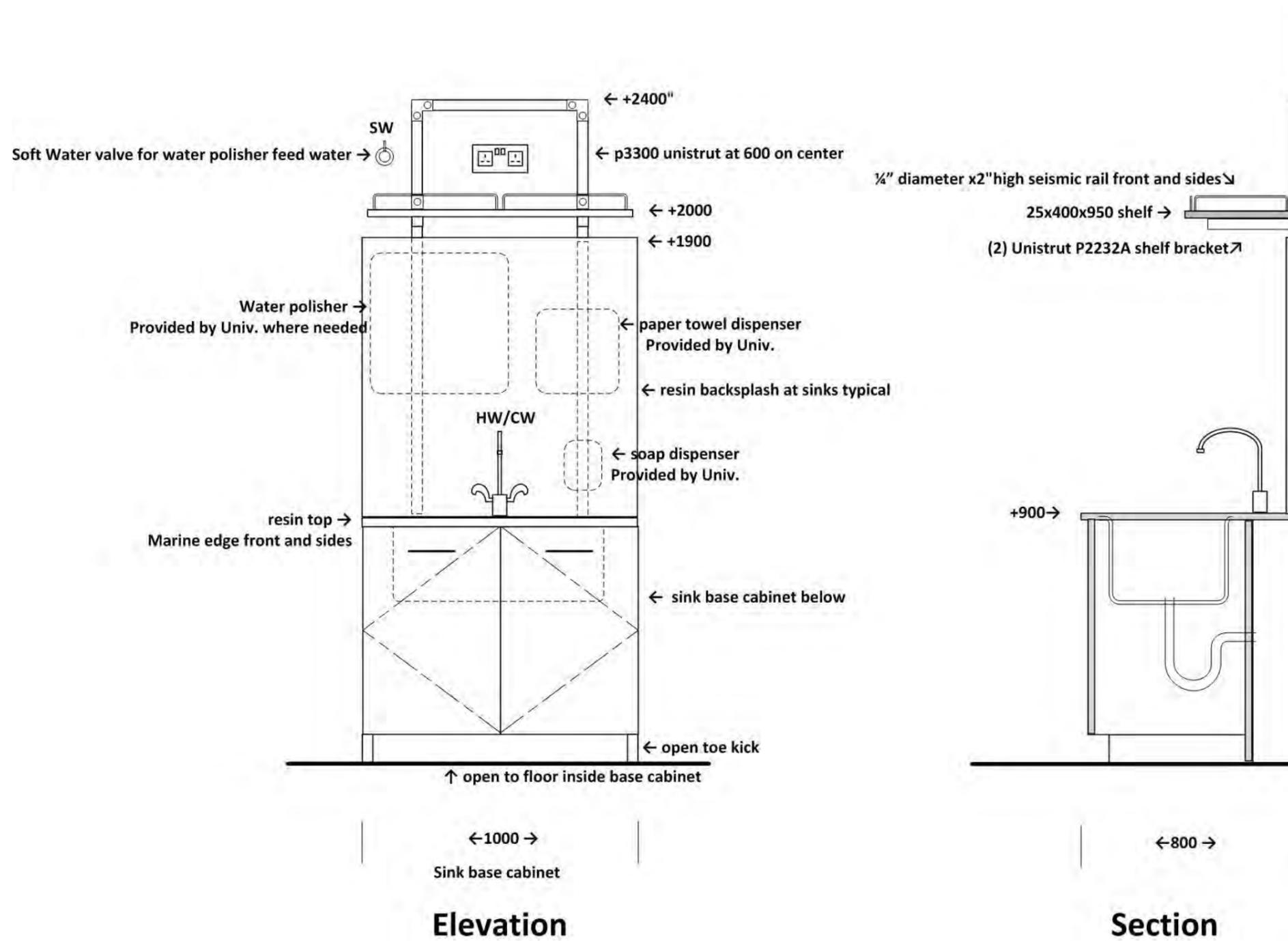


**Section**



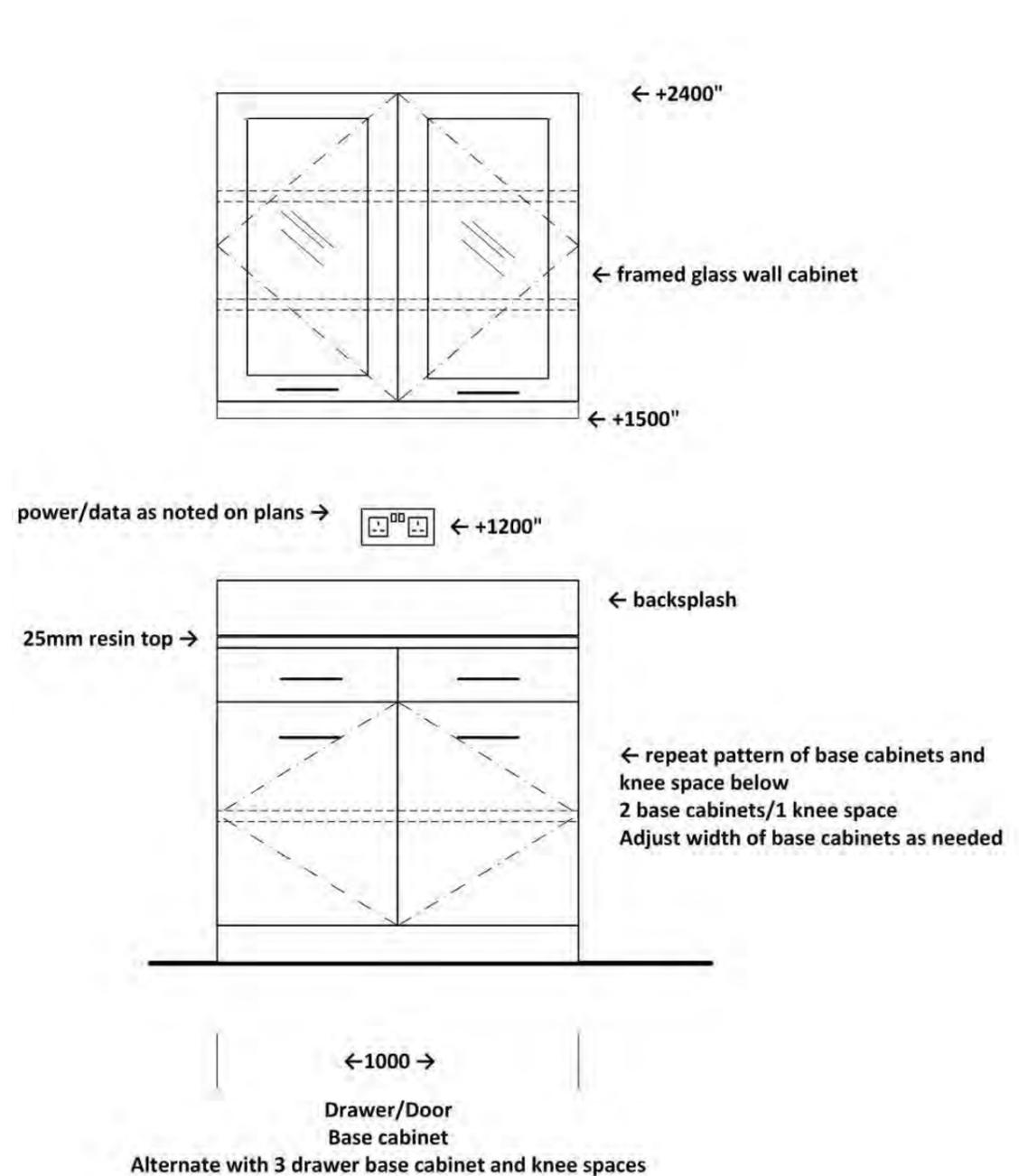
# SECTION DETAIL 2

## SINK WITH WATER POLISHER

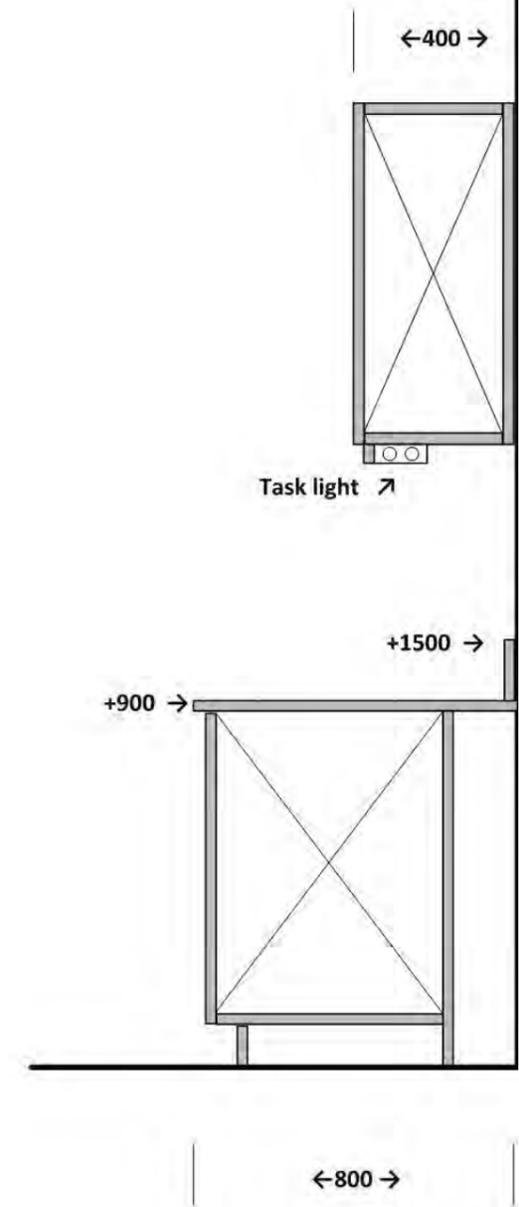


# SECTION DETAIL 3

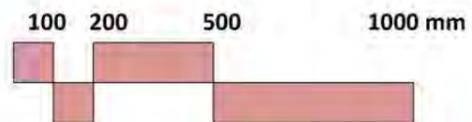
## WALL CABINET ABOVE BASE CABINET BELOW



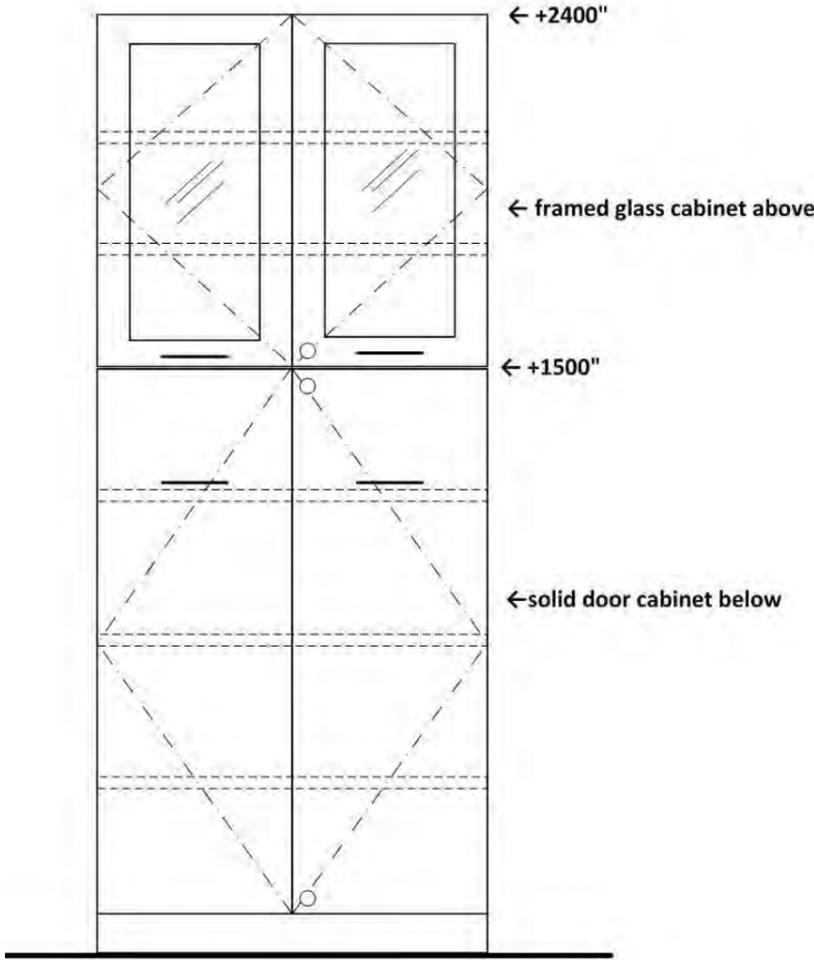
**Elevation**



**Section**



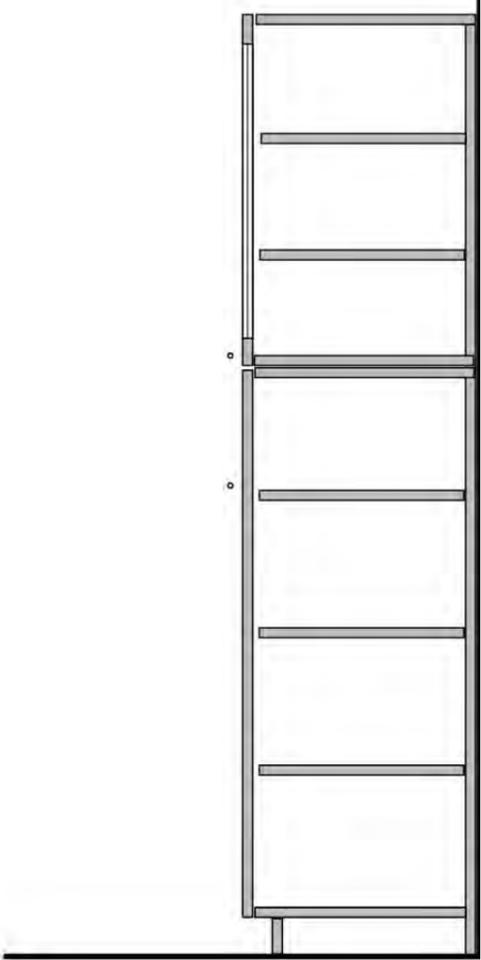
**SECTION DETAIL 4**  
**TALL STORAGE CABINET**



←1000→

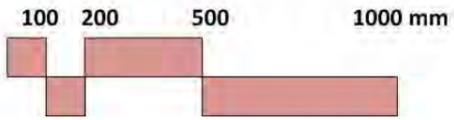
Tall Storage Cabinet  
With lockable doors

**Elevation**

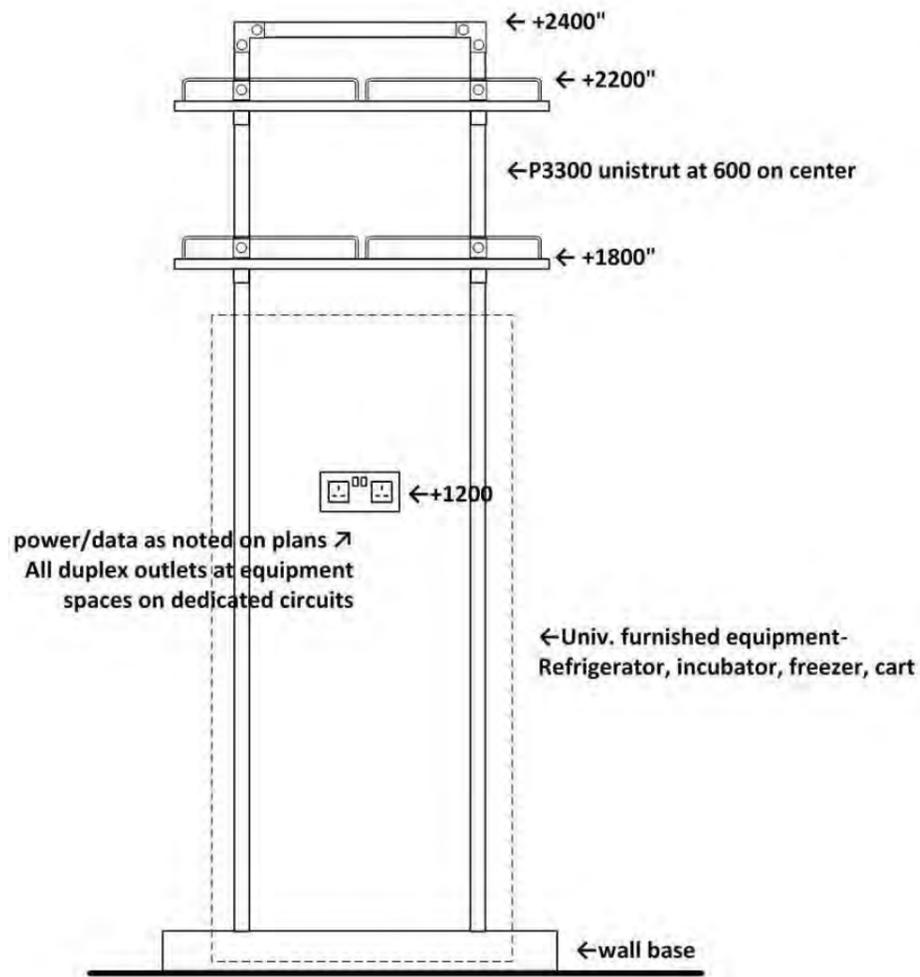


←600→

**Section**

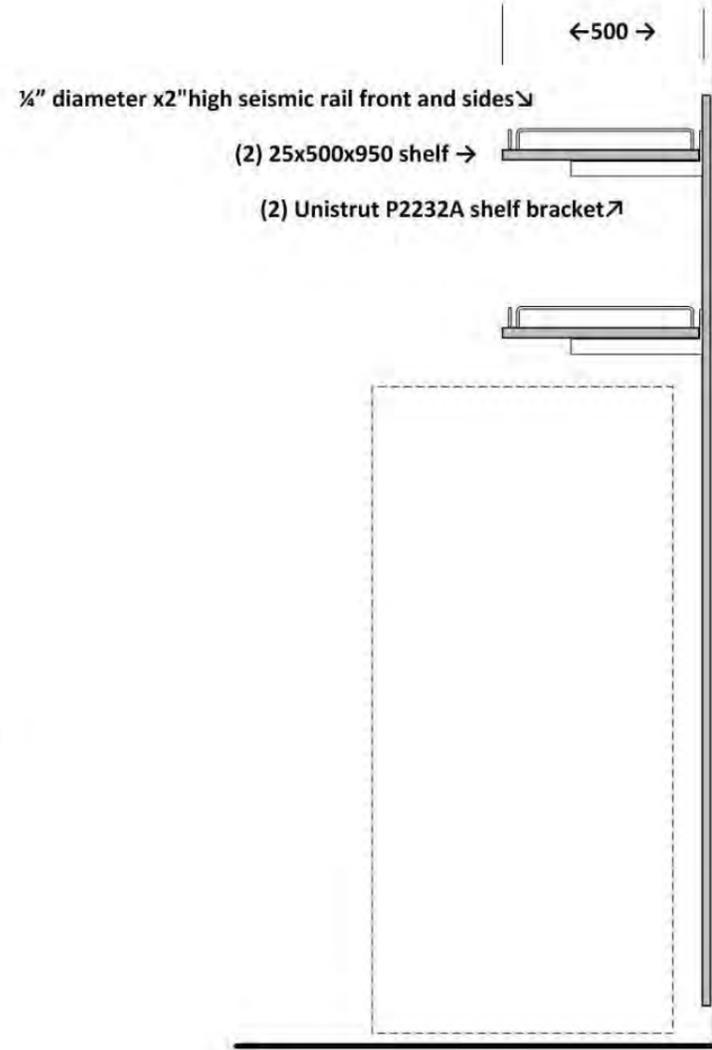


# SECTION DETAIL 5 EQUIPMENT SPACE

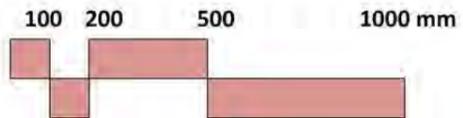


←1000 →  
 Drawer/Door  
 Base cabinet  
 Alternate with 3 drawer base cabinet and knee spaces

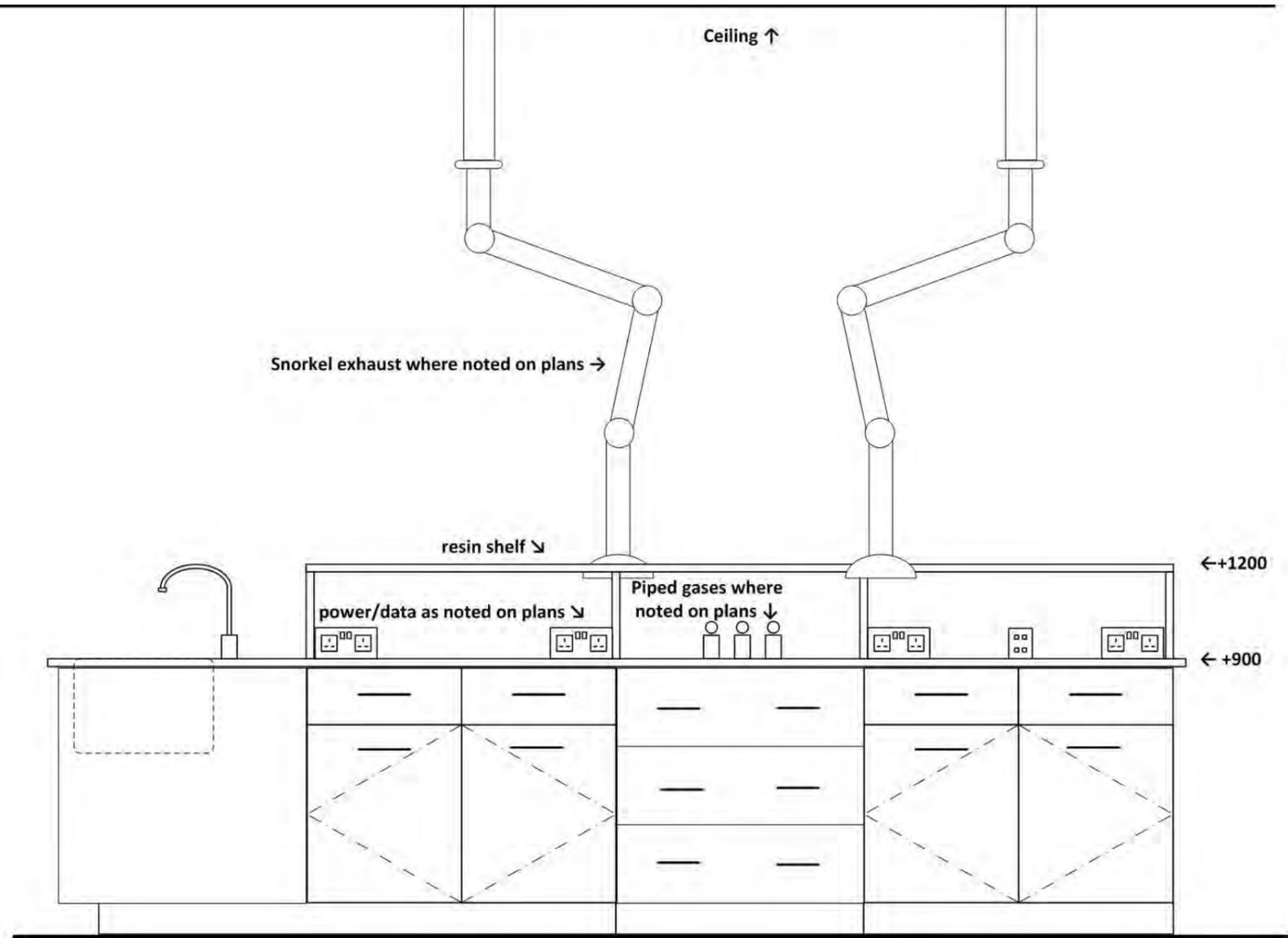
**Elevation**



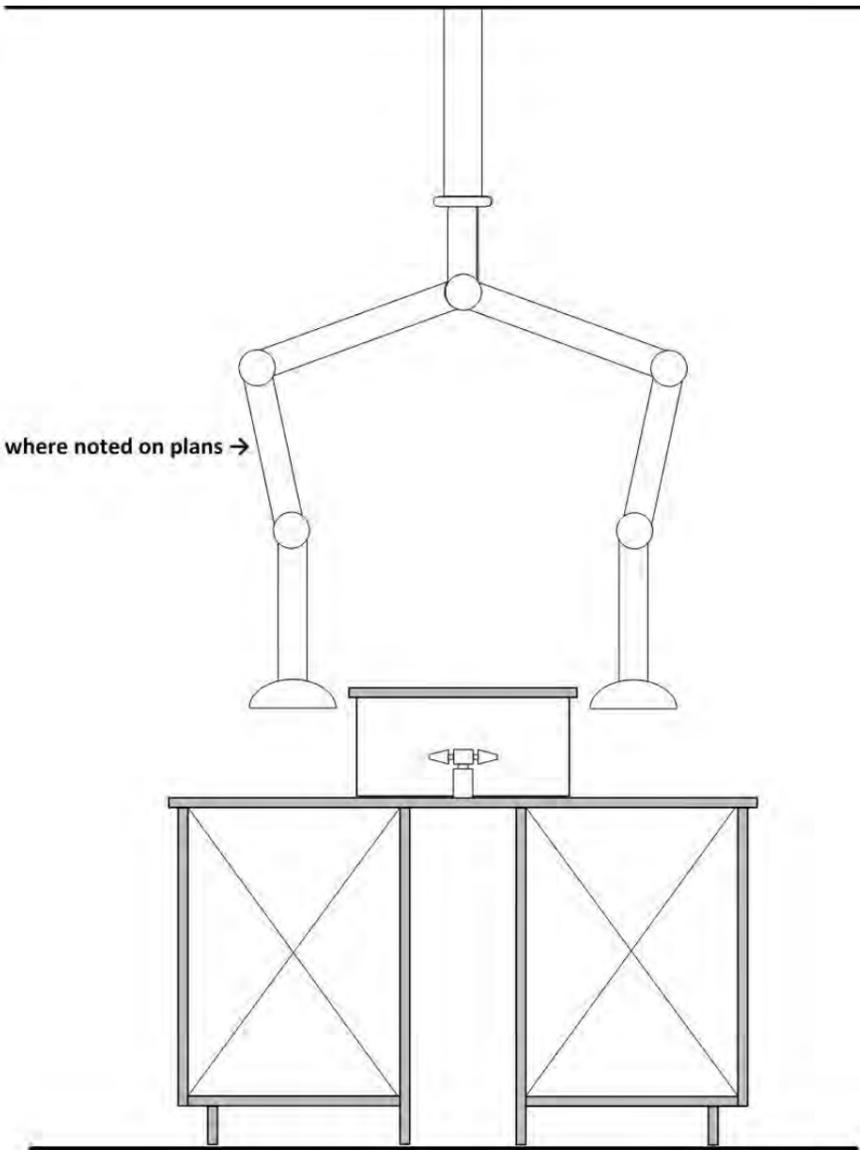
**Section**



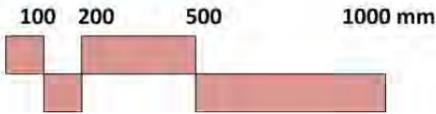
# SECTION DETAIL 6 CHEMISTRY ISLAND BENCH



**Elevation**

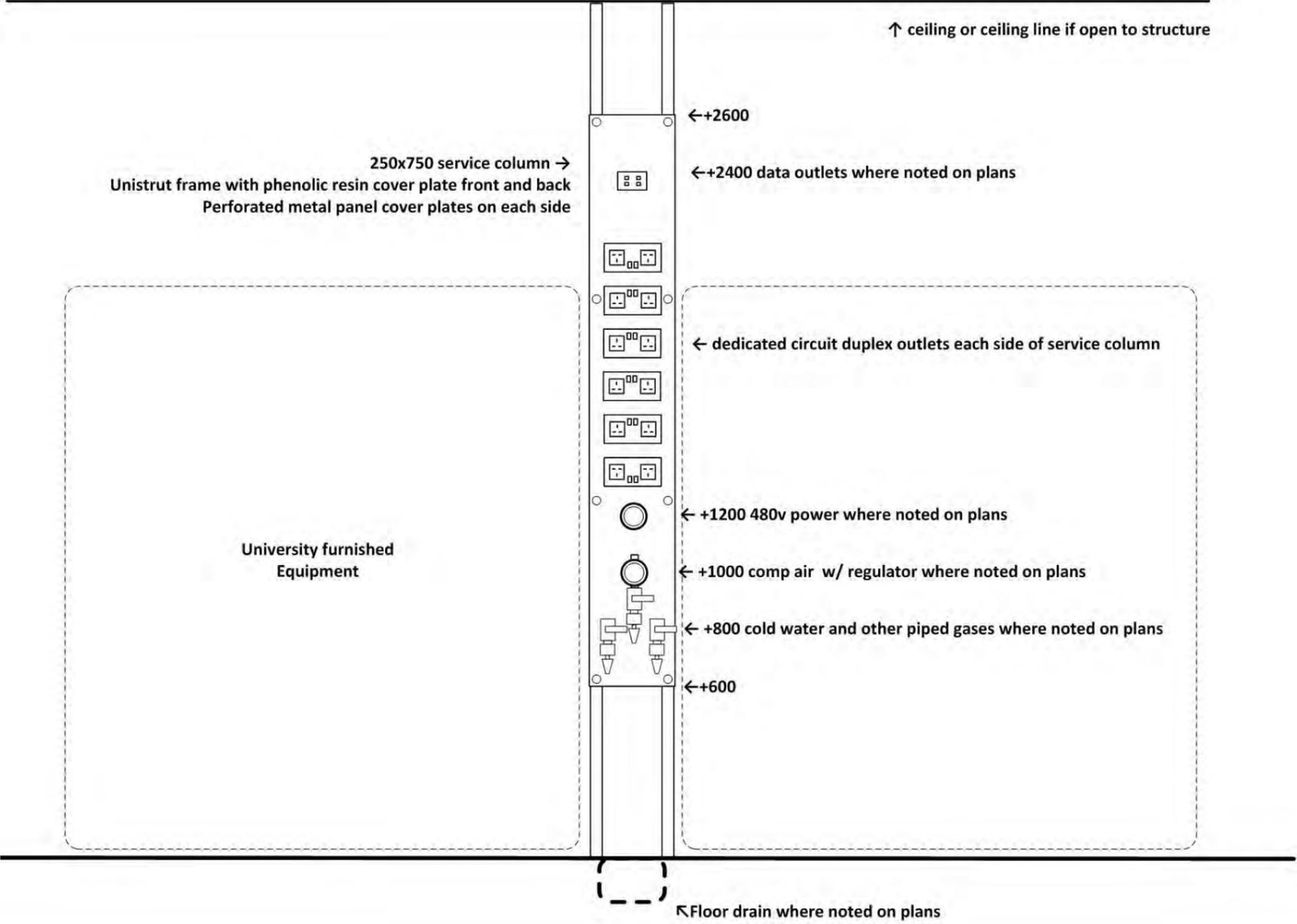


**Section**

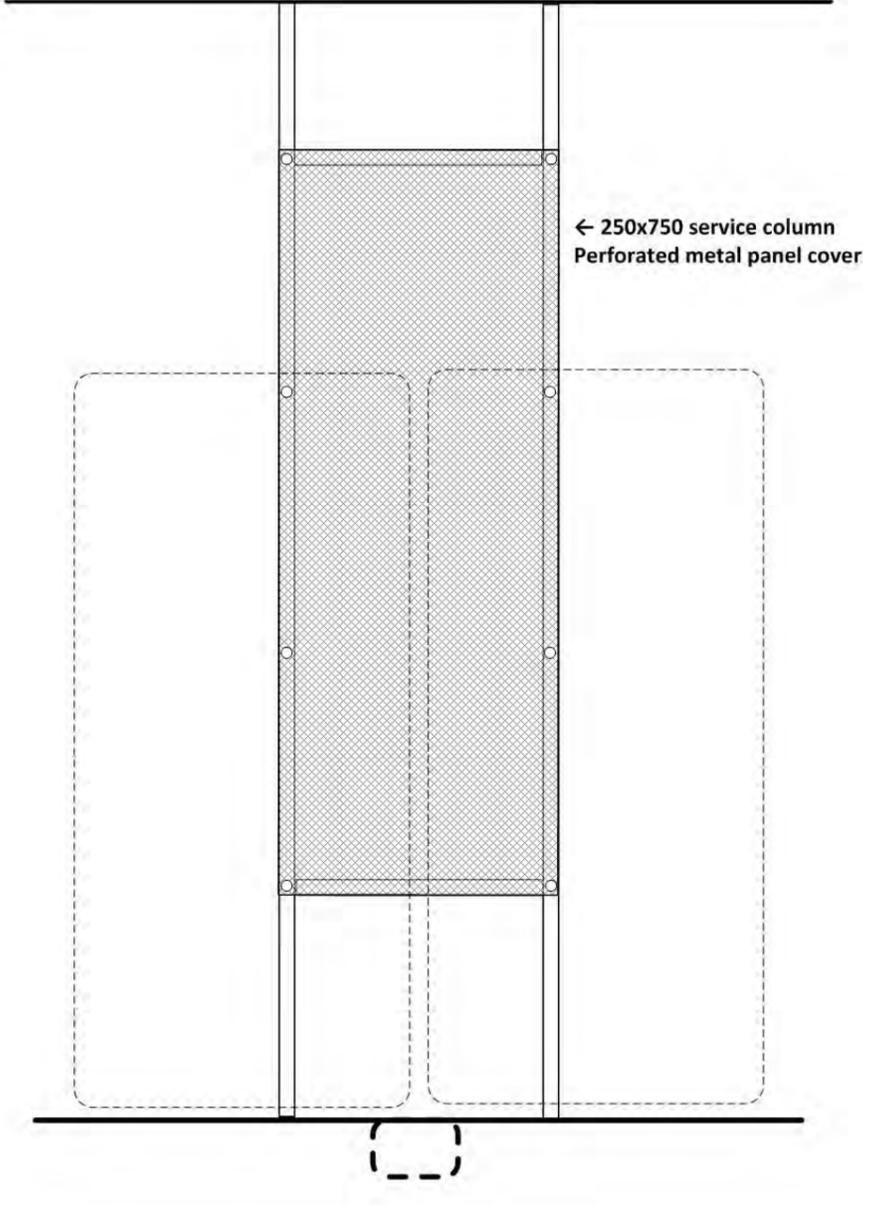


# SECTION DETAIL 7

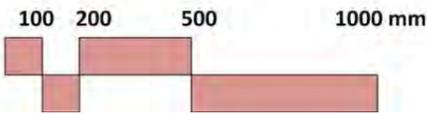
## CHEMISTRY EQUIPMENT ISLAND



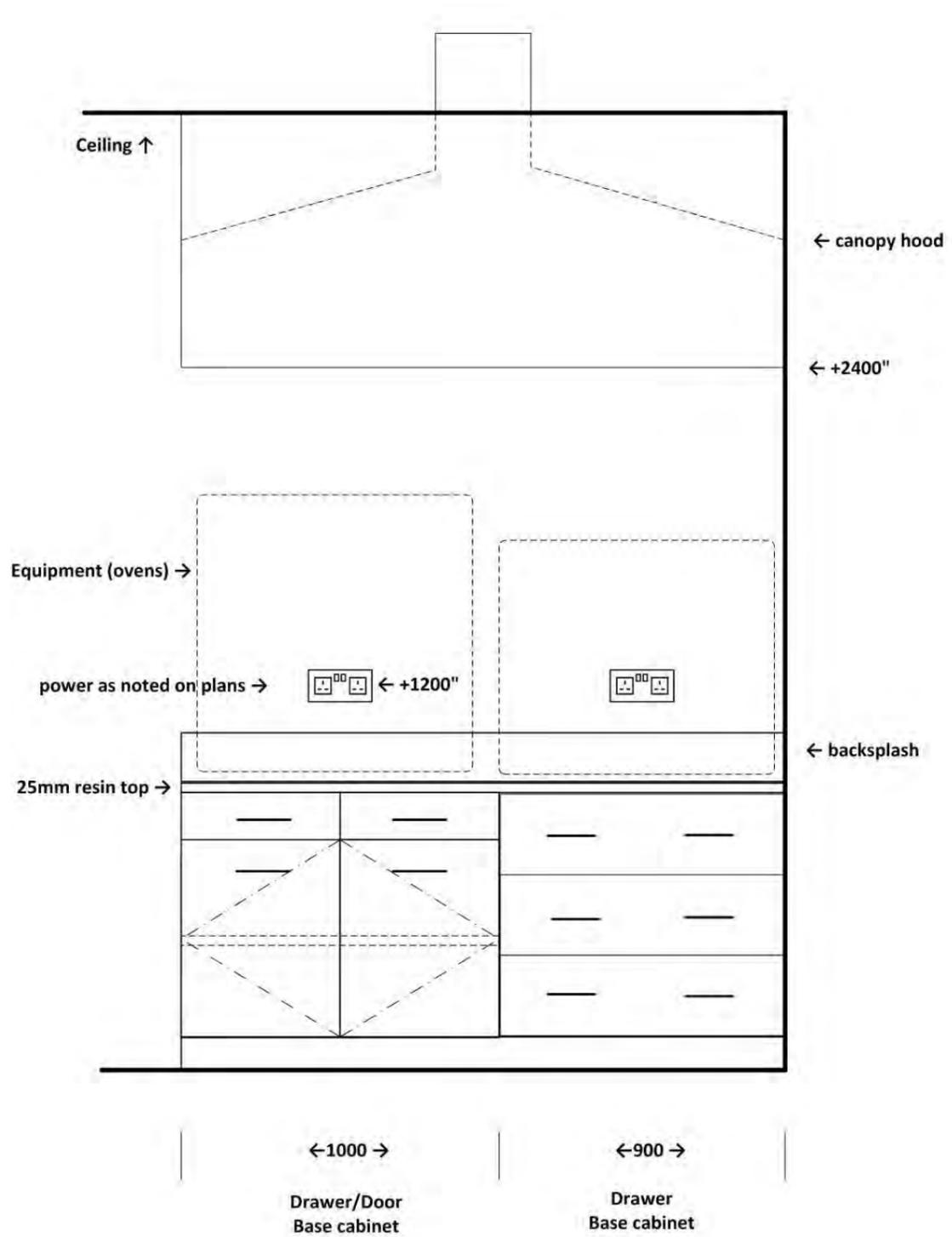
**Elevation**



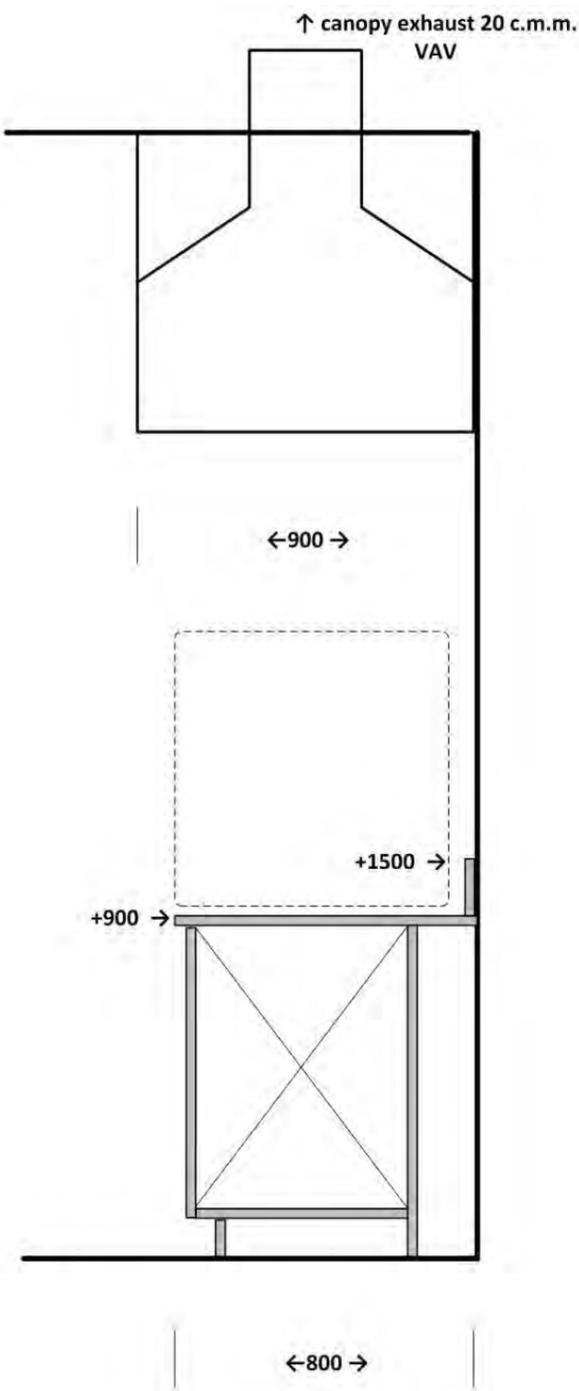
**Section**



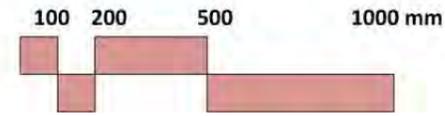
# SECTION DETAIL 8 CANOPY HOOD BENCH



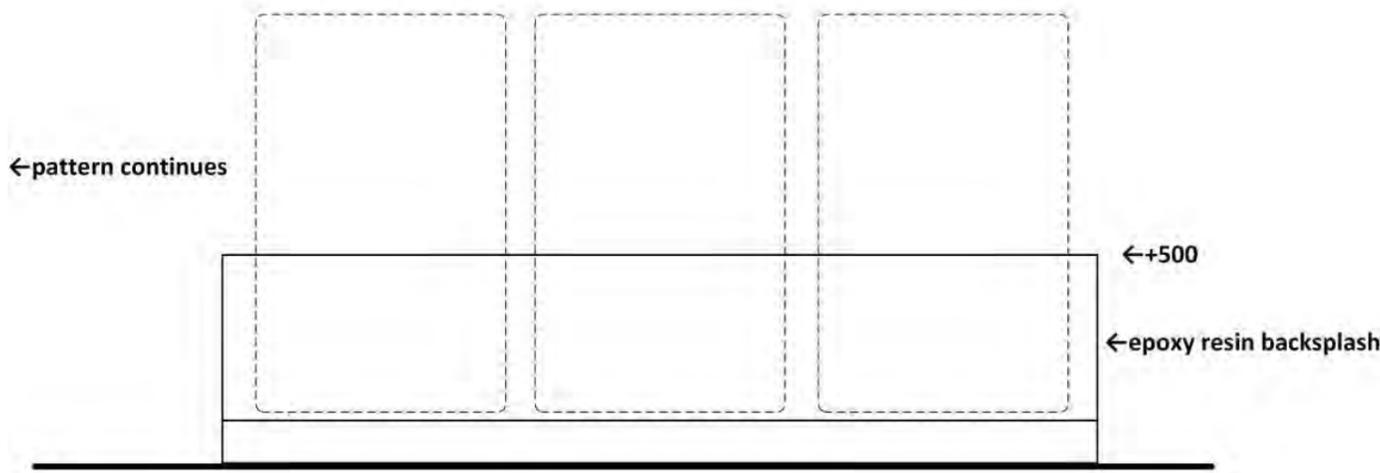
**Elevation**



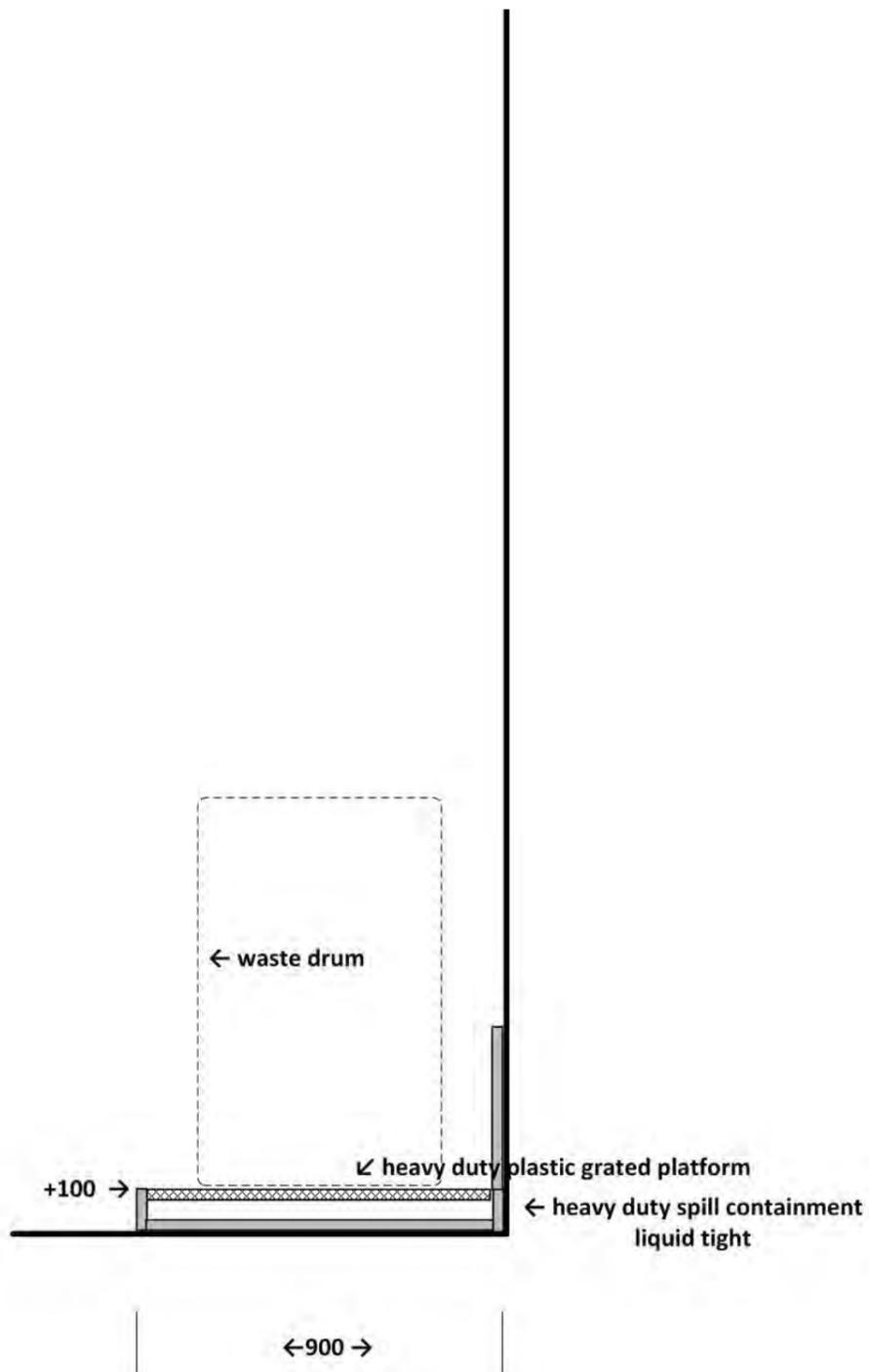
**Section**



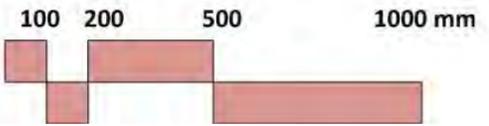
# SECTION DETAIL 9



Elevation



Section



## Protector® XStream® Laboratory Hoods



Protector XStream Laboratory Hood 9840600 is shown with Spill Stopper Work Surface 9849900, Protector Acid Storage Cabinet 9901100 and Protector Standard Storage Cabinet 9900100. Blower, ductwork, work surface and base cabinets must be ordered separately.

All models conform to the following regulations and standards:

- SEFA 1-2002
- NFPA 45-2000
- ASTM E84-01
- ASHRAE 110-95
- ANSI Z9.5-1993
- UL 3101-1/61010-1
- CAN/CSA C22.2 No. 1010.1
- UL 1805
- CE Conformity Marking (230 volt models)†

Fixture models feature:

- Two pre-plumbed service fixtures with forged brass valves, lower right side with brass tubing for gas and lower left side with copper tubing for cold water. Components for converting either or both fixtures to air and vacuum are provided. **Inlet tubing is not provided.**
- One pre-wired 115 volt, 20 amp electrical duplex receptacle on lower right side.

All models require (not included):

- **Remote Blower.** See back pocket.
- **Ductwork.** See back pocket.
- **Work Surface.** See pages 92-95.
- **Base Cabinet or Stand.** See pages 96-106.

Optional accessories for on-site installation include:

- **Service Fixture Kits.** See page 107.
- **Electrical Duplex Kits.** See page 108.
- **Guardian Jr. and Digital Airflow Monitor Kits.** See page 108.
- **Distillation Grid Kits.** See page 110.
- **Sash Stop Kits.** See page 108.
- **Snuffer Fire Extinguishers.** See page 110.
- **Ceiling Enclosure and Rear Finish Panel Kits.** See page 109.

\* U.S. Patent No. 6,991,232

† pending

‡ Heights of switches, electrical receptacle and service fixtures meet requirements of ADA.

■ Exclusive Feature

All models feature:

- Modified by-pass airflow design.
- Ergonomic air foil with aerodynamic Clean-Sweep® airflow openings.
- Upper Dilution Air Supply.\*
- Glacier white, dry powder epoxy-coated steel exterior.
- Chemical-resistant, fiberglass-reinforced, composite panel liner and pre-set Rear Downflow Dual Baffle System\* with flame spread less than 25 per ASTM E-84
- 3/16" thick tempered safety glass vertical-rising sash with epoxy-coated aluminum sash handle with large radius and perforations.\*

- Removable front and side panels and front and interior service access panels for access to plumbing and electrical wiring.
- Pre-wired T8 fluorescent lighting, ADA-compliant light and blower switches for 115 volt, 60 Hz operation.
- Sash stop located at 18" sash opening position.
- Epoxy-coated stainless steel, 12.81" ID exhaust connection(s).

Contact Labconco at **800-821-5525** or **816-333-8811** for ordering information on explosion-proof lighting and other sash configurations and for blower sizing assistance.

## Ordering Information

Protector® XStream® Laboratory Hoods

ASHRAE 110-95 tests show less than 0.05 ppm leak rate when tested at 4.0 fpm; at OSHA-approved 60, 80, and 100 fpm face velocity and sash positions of 18" and 28". To ensure performance at 60 fpm, Labconco engineers challenged the Protector XStream Hood at less

than ideal conditions such as 30 fpm cross drafts, modified ASHRAE test procedures and average face velocities lower than 60 fpm. Contact Labconco for a technical paper with complete ASHRAE test data.

Total Exhaust CFM and Static Pressure @ 18" Sash Opening (60% open)

| Nominal Width | 100 fpm |       | 80 fpm |       | 60 fpm |       | CFM Savings at 60 fpm vs. 100 fpm | Total Average Annual Dollar Savings at 60 fpm vs. 100 fpm* |
|---------------|---------|-------|--------|-------|--------|-------|-----------------------------------|--|
|               | s.p.    |       | s.p.   |       | s.p.   |       |                                   |  |
| 4 feet        | 470     | 0.11" | 380    | 0.07" | 280    | 0.04" | 190                               | \$780  |
| 5 feet        | 610     | 0.13" | 490    | 0.08" | 370    | 0.05" | 240                               | \$960  |
| 6 feet        | 750     | 0.15" | 600    | 0.10" | 450    | 0.06" | 300                               | \$1200   |
| 8 feet        | 1060    | 0.12" | 850    | 0.08" | 640    | 0.04" | 420                               | \$1680   |

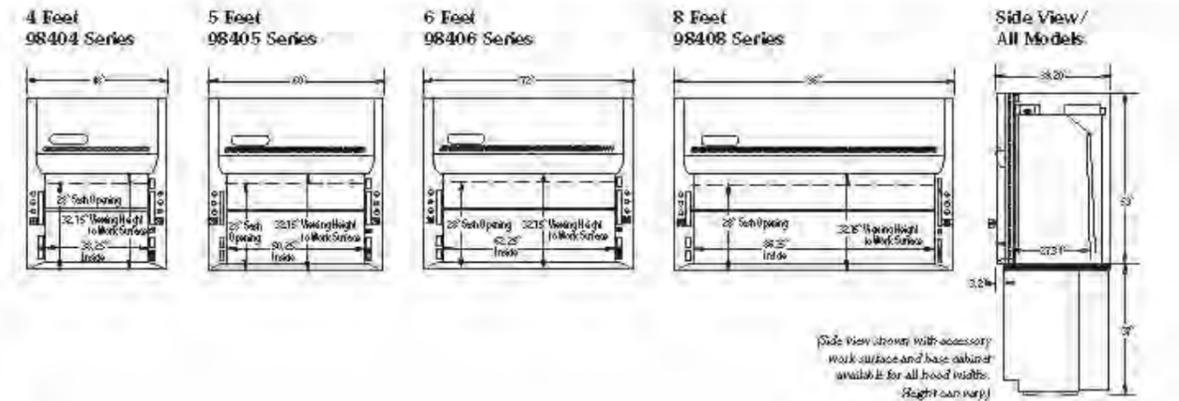
Total Exhaust CFM and Static Pressure @ 28" Sash Opening (100% open)

| Nominal Width | 100 fpm |       | 80 fpm |       | 60 fpm |       | CFM Savings at 60 fpm vs. 100 fpm | Total Average Annual Dollar Savings at 60 fpm vs. 100 fpm* |
|---------------|---------|-------|--------|-------|--------|-------|-----------------------------------|--|
|               | s.p.    |       | s.p.   |       | s.p.   |       |                                   |  |
| 4 feet        | 730     | 0.25" | 520    | 0.13" | 440    | 0.08" | 290                               | \$1160   |
| 5 feet        | 960     | 0.30" | 770    | 0.19" | 580    | 0.11" | 380                               | \$1520   |
| 6 feet        | 1180    | 0.36" | 940    | 0.23" | 710    | 0.13" | 470                               | \$1880   |
| 8 feet        | 1660    | 0.28" | 1330   | 0.18" | 1000   | 0.10" | 660                               | \$2640   |

\*Based on average annual dollar per CFM usage of \$4.00; fume hood operating 24 hours a day and 5 days per week (6240 hours per year).

| Catalog Number | Nominal Width | Electrical Requirements | Exterior Depth | Interior Working Depth | Fluorescent Lamps | Service Fixtures | Electrical Duplex | Exhaust Collar(s) | Shipping Wt. lbs./kg |
|----------------|---------------|-------------------------|----------------|------------------------|-------------------|------------------|-------------------|-------------------|----------------------|
| 9840400        | 4 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | None             | None              | 12.81" ID         | 400/181              |
| 9840401        | 4 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | 2                | 1                 | 12.81" ID         | 400/181              |
| 9840402**      | 4 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | None             | None              | 12.81" ID         | 400/181              |
| 9840403**      | 4 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | 2                | None              | 12.81" ID         | 400/181              |
| 9840500        | 5 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 460/209              |
| 9840501        | 5 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | 1                 | 12.81" ID         | 460/209              |
| 9840502**      | 5 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 460/209              |
| 9840503**      | 5 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | None              | 12.81" ID         | 460/209              |
| 9840600        | 6 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 520/236              |
| 9840601        | 6 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | 1                 | 12.81" ID         | 520/236              |
| 9840602**      | 6 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 520/236              |
| 9840603**      | 6 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | None              | 12.81" ID         | 520/236              |
| 9840800        | 8 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | None             | None              | (2) 12.81" ID     | 700/318              |
| 9840801        | 8 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | 2                | 1                 | (2) 12.81" ID     | 700/318              |
| 9840802**      | 8 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | None             | None              | (2) 12.81" ID     | 700/318              |
| 9840803**      | 8 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | 2                | None              | (2) 12.81" ID     | 700/318              |

\*\*International electrical configuration



Side View shown with accessory work surface and base cabinet available for all hood models. (Height can vary)

# LOCAL EXTRACTOR



# TERFU

**Local extractor with friction joint for worksites where great flexibility is important, in 2" and 3" diameter**

TERFU is a local extractor with friction joints designed for use in worksites where great flexibility is required, e.g. laboratories and the electronics industry.

The friction joints with ball bearings make positioning convenient and simple.

The TERFU is a very flexible local extractor that stays in position when adjusted, due to the easily adjustable joints, 360° swivel, brackets and support springs.

All necessary adjustments of joints etc. can easily be made with one hand. The smooth aluminum tubes and easily dismantled plastic joints facilitate cleaning the inside of the suction tubes. Should it be necessary, the complete extractor can easily be dismantled.

The standard TERFU is supplied with an air tight damper and delivered with white plastic joints & anodised aluminum tubes, for table, ceiling or wall mounting.

TERFU Ø3" diameter is available with recyclable polypropylene (PP) tubes. For the PP-design, all metal components that will be in contact with the air flow are made of stainless steel.

TERFU is also available in ESD design with ESD approval according to EN 100015-1.



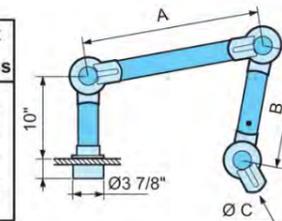
Movex also offers a range of fans, accessories and automatic control devices for our local extractors

**MOVEX**<sup>®</sup>  
EXTRACTORS

## TERFU for table mounting

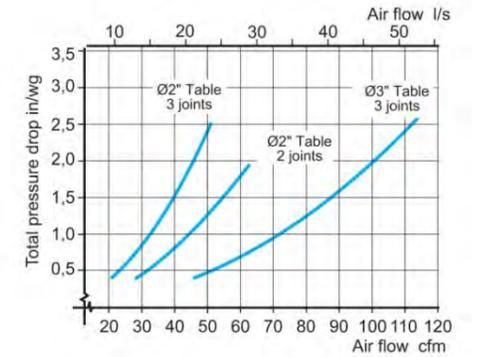
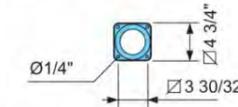
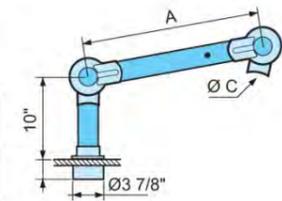
### 3 joints

| Part      | Standard | PP  | ESD | Measure inch | Max radius |     |
|-----------|----------|-----|-----|--------------|------------|-----|
|           |          |     |     | A B Ø C      |            |     |
| B 1000-50 | -        | ESD | 16" | 12"          | 2"         | 40" |
| B 1300-50 | -        | ESD | 22" | 18"          | 2"         | 51" |
| B 1500-50 | -        | ESD | 30" | 18"          | 2"         | 60" |
| B 1000-75 | PP       | ESD | 16" | 12"          | 3"         | 40" |
| B 1300-75 | PP       | ESD | 22" | 18"          | 3"         | 51" |
| B 1500-75 | PP       | ESD | 30" | 18"          | 3"         | 60" |



### 2 joints

| Part     | Standard | ESD | Measure inch | Max radius |
|----------|----------|-----|--------------|------------|
|          |          |     | A Ø C        |            |
| B 650-50 | ESD      | 12" | 2"           | 28"        |
| B 750-50 | ESD      | 18" | 2"           | 34"        |



### Delivery design

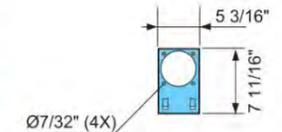
Assembled, with plate for table mounting, without hood or suction nozzle.

### Flexible table bracket BF

Flexible bracket for mounting on table-top or shelf. Sold as accessory. Suitable for Ø2" and Ø3". Delivered complete with two "C" clamps. Also available in ESD-design.

| Part | BF, BF-ESD |
|------|------------|
|------|------------|

**Other information**  
Material ..... Powder-coated sheet steel, white.  
Weight ..... 26 oz

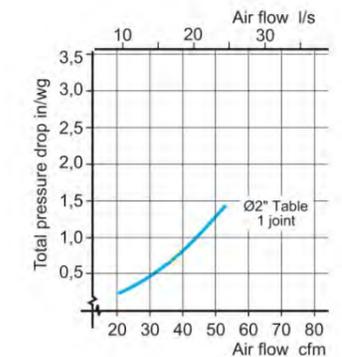
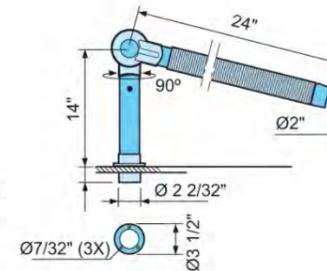


### 1 joint

| Part | BC 700-50 ESD |
|------|---------------|
|------|---------------|

### Delivery design

Assembled, complete with flexible pipe FR600-50 ESD and plate for table mounting. Swivel function 90° between aluminum pipe and plastic joint. Connection Ø2 2/32".

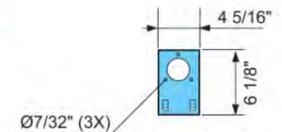


### Flexible table bracket BFC

Flexible bracket for local extractor BC 700-50 ESD with Ø2 2/32" connection. Sold as accessory. Suitable for mounting on table-top or shelf. Delivered complete with two "C" clamps. Only ESD design.

| Part | BFC |
|------|-----|
|------|-----|

**Other information**  
Material ..... Powder-coated sheet steel, white.  
Weight ..... 23 oz





# PRODUCT DIMENSIONS

DOMESTIC SIZES

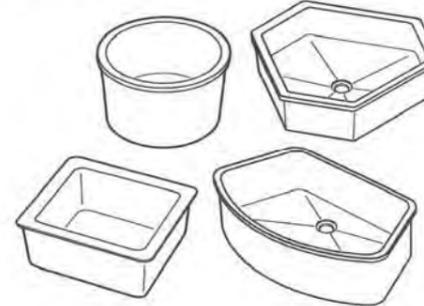
## SINK CUT SHEET

STANDARD LAB SINK:  
D52: ~600x450x280

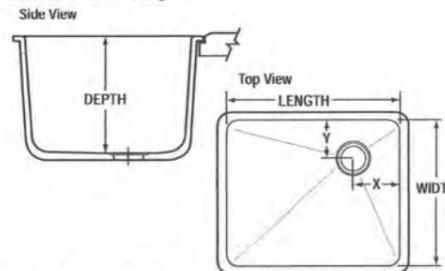
### Standard Dropln® Sinks

| Sink No. | Outlet | Wgt (lb) | Dimensions (in) |       |       |                 |        |
|----------|--------|----------|-----------------|-------|-------|-----------------|--------|
|          |        |          | Inside Bowl     |       |       | Outlet Location |        |
|          |        |          | Length          | Width | Depth | X               | Y      |
| D01C     | Center | 9        | 9.0             | 6.0   | 5.8   | 4.5             | 3.0    |
| D03C     | Center | 16       | 12.0            | 8.0   | 5.8   | 6.0             | 4.0    |
| A05      | Corner | 18       | 14.0            | 10.0  | 5.0   | 3.5             | 3.5    |
| D05      | Corner | 22       | 14.0            | 10.0  | 6.2   | 3.5             | 3.5    |
| D05C     | Center | 24       | 14.0            | 10.0  | 6.2   | 7.0             | 5.0    |
| D10      | End    | 20       | 16.0            | 8.0   | 6.8   | 4.5             | 4.0    |
| D10C     | Center | 22       | 16.0            | 8.0   | 6.8   | 8.0             | 4.0    |
| D15      | Corner | 30       | 16.0            | 12.0  | 8.0   | 3.5             | 3.5    |
| D15C     | Center | 31       | 16.0            | 12.0  | 8.0   | 8.0             | 6.0    |
| D19      | Corner | 42       | 16.0            | 16.0  | 9.6   | 3.5             | 3.5    |
| D20      | Corner | 32       | 16.0            | 16.0  | 7.5   | 3.5             | 3.5    |
| D22C     | Center | 30       | 18.0            | 6.5   | 6.8   | 9.0             | 3.3    |
| D24(C)   | Center | 30       | 18.0            | 14.0  | 10.5  | 9.0             | 6.8    |
| A25      | Corner | 35       | 18.0            | 15.0  | 5.0   | 3.5             | 3.5    |
| D25      | Corner | 39       | 18.0            | 15.0  | 7.9   | 3.5             | 3.5    |
| D30      | Corner | 53       | 18.0            | 15.0  | 11.0  | 3.5             | 3.5    |
| D30C     | Center | 50       | 18.0            | 15.0  | 10.8  | 9.0             | 7.5    |
| D33E     | End    | 59       | 21.0            | 17.0  | 9.8   | 4.5             | 8.5    |
| D45      | Corner | 64       | 21.5            | 15.5  | 11.0  | 3.5             | 3.5    |
| D50C     | Center | 48       | 24.0            | 16.0  | 8.0   | 12.0            | 8.0    |
| D52      | Corner | 77       | 24.0            | 18.0  | 11.0  | 3.5             | 3.5    |
| A55      | Corner | 47       | 25.0            | 15.0  | 4.8   | 3.5             | 3.5    |
| D55      | Corner | 61       | 25.0            | 15.0  | 10.0  | 3.5             | 3.5    |
| D59      | Corner | 61       | 28.0            | 15.0  | 11.8  | 3.5             | 3.5    |
| DRS12    | Center | 18       | 12.0            | Round | 7.8   | Center          | Center |

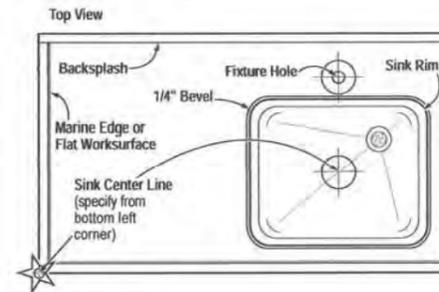
### Dropln® Sink Styles



### Dimensions Key



### Installation Detail



### Special Order Dropln® Sinks

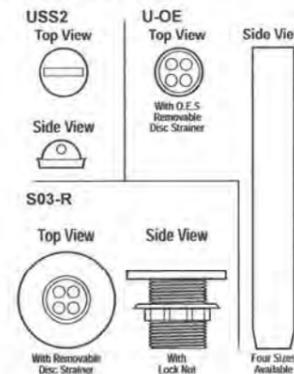
| Sink No. | Outlet | Wgt (lb) | Dimensions (in) |             |       |                 |        |
|----------|--------|----------|-----------------|-------------|-------|-----------------|--------|
|          |        |          | Inside Bowl     |             |       | Outlet Location |        |
|          |        |          | Length          | Width       | Depth | X               | Y      |
| D06*     | Center | 34       | 12.0            | 12.0        | 12.0  | 6.0             | 6.0    |
| A07*     | Corner | 24       | 14.0            | 14.0        | 5.0   | 3.5             | 3.5    |
| D08*     | Corner | 25       | 15.0            | 8.0         | 6.0   | 3.5             | 3.5    |
| D09*     | Corner | 25       | 15.0            | 8.0         | 10.8  | 3.5             | 3.5    |
| D21*     | Corner | 58       | 16.0            | 16.0        | 15.0  | 3.5             | 3.5    |
| A26*     | Corner | 39       | 18.0            | 15.0        | 5/11  | 4.5             | 5.5    |
| D32      | Corner | 49       | 18.0            | 15.0        | 15.8  | 3.5             | 3.5    |
| D51*     | Corner | 60       | 24.0            | 16.0        | 9.6   | 3.5             | 3.5    |
| D54*     | Corner | 45       | 25.0            | 15.0        | 8.0   | 3.5             | 3.5    |
| D57*     | Corner | 71       | 25.0            | 15.0        | 13.6  | 3.5             | 3.5    |
| D58*     | Corner | 79       | 25.0            | 15.0        | 17.8  | 3.5             | 3.5    |
| D61      | End    | 94       | 30.0            | 16.0        | 17.8  | 4.5             | 7.5    |
| D65C*    | Center | 98       | 35.5            | 19.5        | 9.8   | 17.8            | 9.8    |
| D68**    | End    | 70       | 30.0            | 16.0        | 10.0  | 4.75            | 8.0    |
| D70C*    | Center | 95       | 24.0            | 16.0        | 15.5  | 8.0             | 12.0   |
| D100**   | Center | 29       | 22.5            | Hexagon     | 5.0   | Center          | Center |
| D200**   | End    | 64       | 30.9            | Hexagon     | 7.0   | 15.5            | 8.0    |
| DRS10*   | Center | 14       | 10.0            | Round       | 7.8   | Center          | Center |
| DHC20*   | End    | 82       | 30.0            | Hexagon     | 7.0   | Center          | Center |
| D99*     | End    | 56       | 32.0            | Semi-Circle | 10.0  | 11.5            | 4.5    |

All sinks are available at both plants unless they are Special Order Sinks, available as noted:  
 \* Available only from Taylor, TX, plant (colors: Black Onyx, Gray, Graphite, Tan, Forest Green and Steel Blue).  
 \*\* Available only from Canton, MI, plant (colors: Black Onyx, Gray and Alpine White)

ADA compliant sinks are designated by this symbol.

All Dimensions are nominal. Exterior dimensions vary by MFG location. Cutsheets available upon request.

### Outlets & Accessories



WWW.DURCON.COM

206 Allison Drive • Taylor, TX 76574 • Phone: 512.595.8000 • Fax: 512.595.8400 • E-mail: sales@durcon.com

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Rev. 03/08

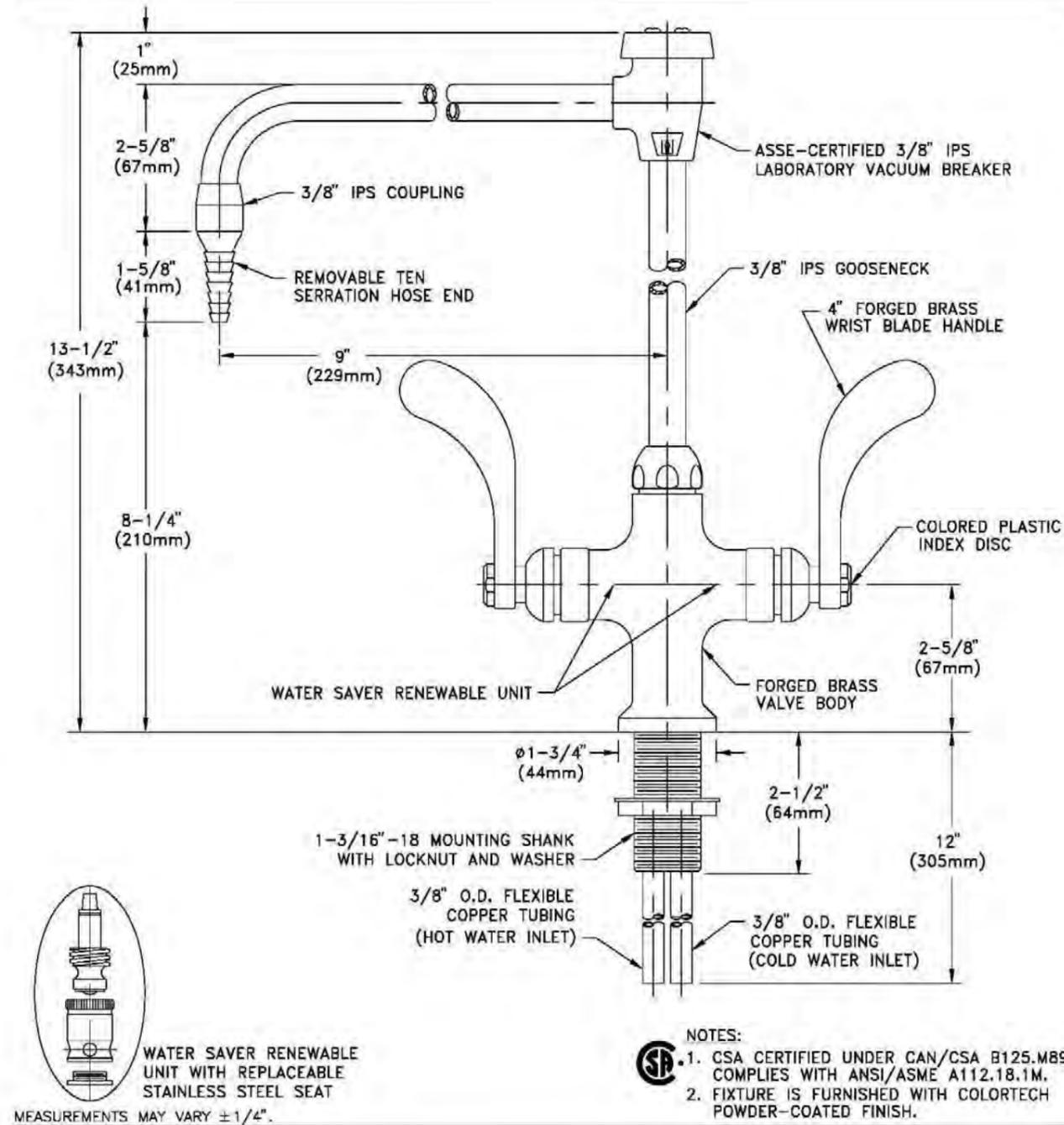
# HOT/COLD WATER FAUCET CUT SHEET

## COLORTECH

701 West Erie Street Phone 312 666 5500  
Chicago, Illinois 60610 Fax 312 666 8597

Laboratory Service Fixtures by  
WaterSaver Faucet Co.

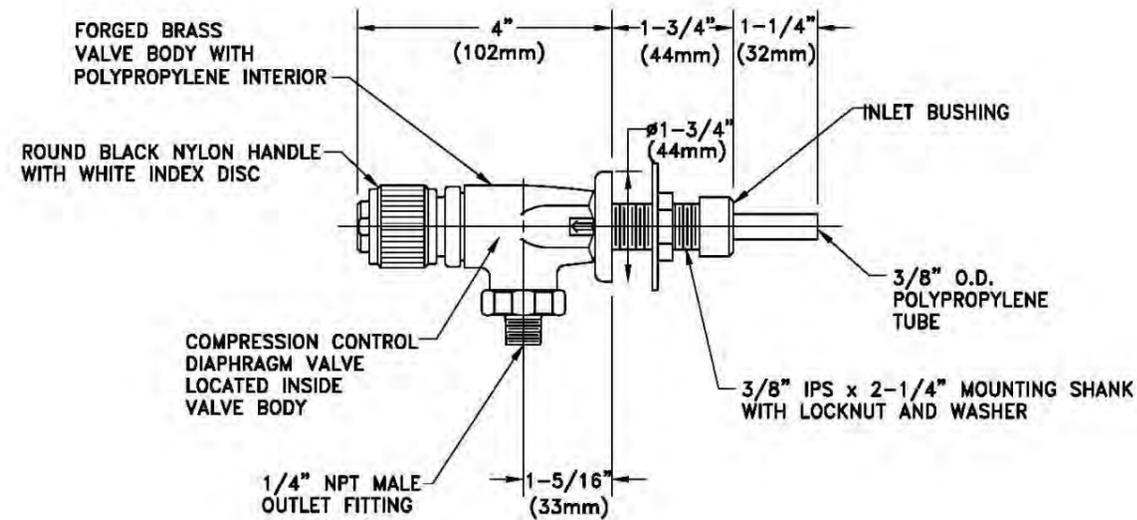
CT414-9VB-BH  
LABORATORY MIXING FAUCET, DECK MOUNTED, 9" RIGID/SWING VACUUM BREAKER GOOSENECK, WRIST  
BLADE HANDLES



Drawing Number: \_\_\_\_\_

Revision Number: 031803-KJS

**L7844-1/4**  
PANEL MOUNTED PURE WATER FIXTURE WITH ALL-POLYPROPYLENE INTERNAL CONSTRUCTION AND 1/4" NPT MALE OUTLET FITTING



**NOTES:**

1. MAXIMUM WORKING PRESSURE IS 50 PSI.
2. ALL COMPONENTS IN CONTACT WITH PURE WATER ARE POLYPROPYLENE.
3. FIXTURE INLET HAS 3/8" O.D. POLYPROPYLENE TUBE. IF REQUIRED, SPECIFY ADAPTER WHEN ORDERING.
4. PROVIDE 3/4" HOLE FOR MOUNTING.

MEASUREMENTS MAY VARY ±1/4".

Drawing Number: \_\_\_\_\_

Revision Number: 012204-DWC

# COLORTECH

701 West Erie Street Phone 312 666 5500  
Chicago, Illinois 60610 Fax 312 666 8597

## NEEDLE VALVE CUT SHEET AT BENCHTOP

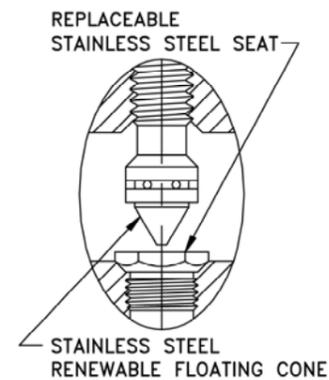
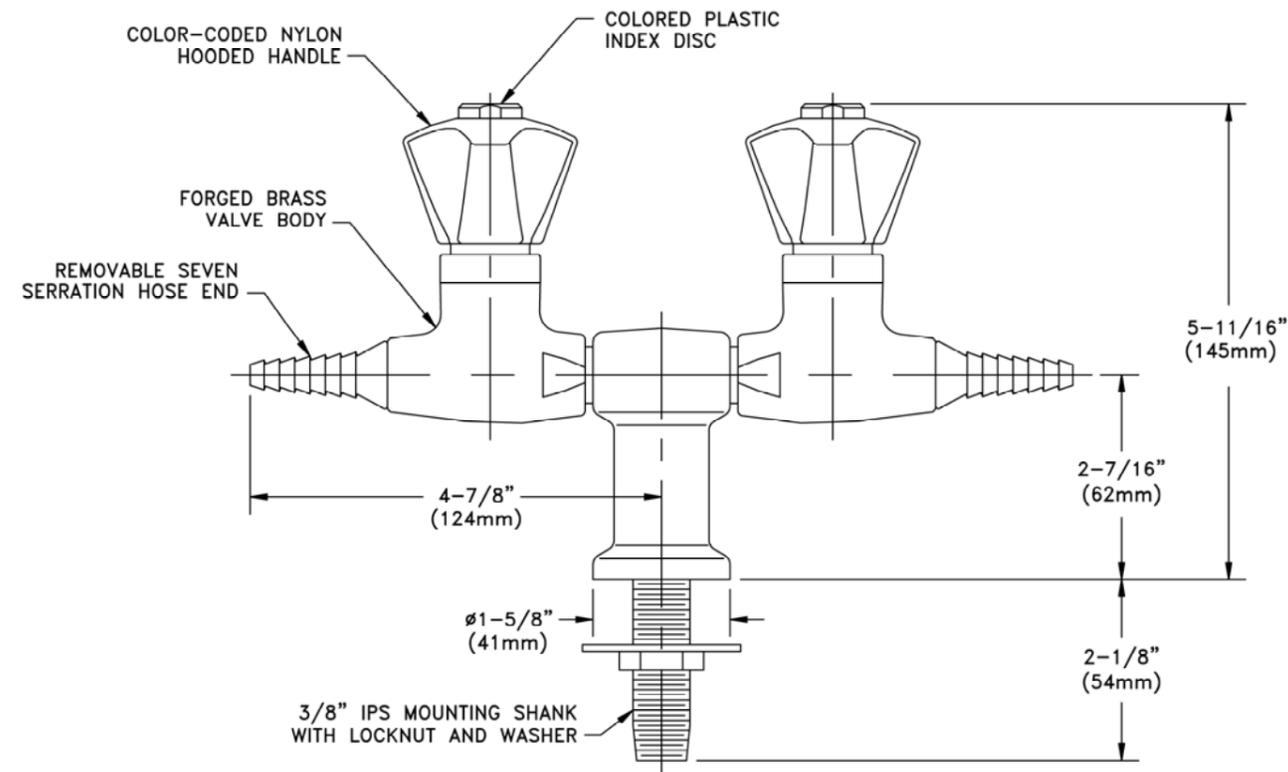
COMPRESSED AIR

NITROGEN GAS

Laboratory Service Fixtures by  
WaterSaver Faucet Co.

CT2880-232SWSA

DECK MOUNTED TURRET BASE WITH TWO STRAIGHT PATTERN LABORATORY NEEDLE VALVES AT 180°  
AND MOUNTING SHANK



MEASUREMENTS MAY VARY ±1/4".

### NOTES:

1. SPECIFY IF CLEANING FOR OXYGEN OR OTHER PURE GAS SERVICE IS REQUIRED.
2. VALVE IS FACTORY ASSEMBLED AND TESTED AT 225 PSI. MAXIMUM WORKING PRESSURE IS 150 PSI.
3. FIXTURE IS FURNISHED WITH COLORTECH POWDER-COATED FINISH.

Drawing Number: \_\_\_\_\_

Revision Number: 111306-SJP

# COLORTECH

701 West Erie Street Phone 312 666 5500  
Chicago, Illinois 60610 Fax 312 666 8597

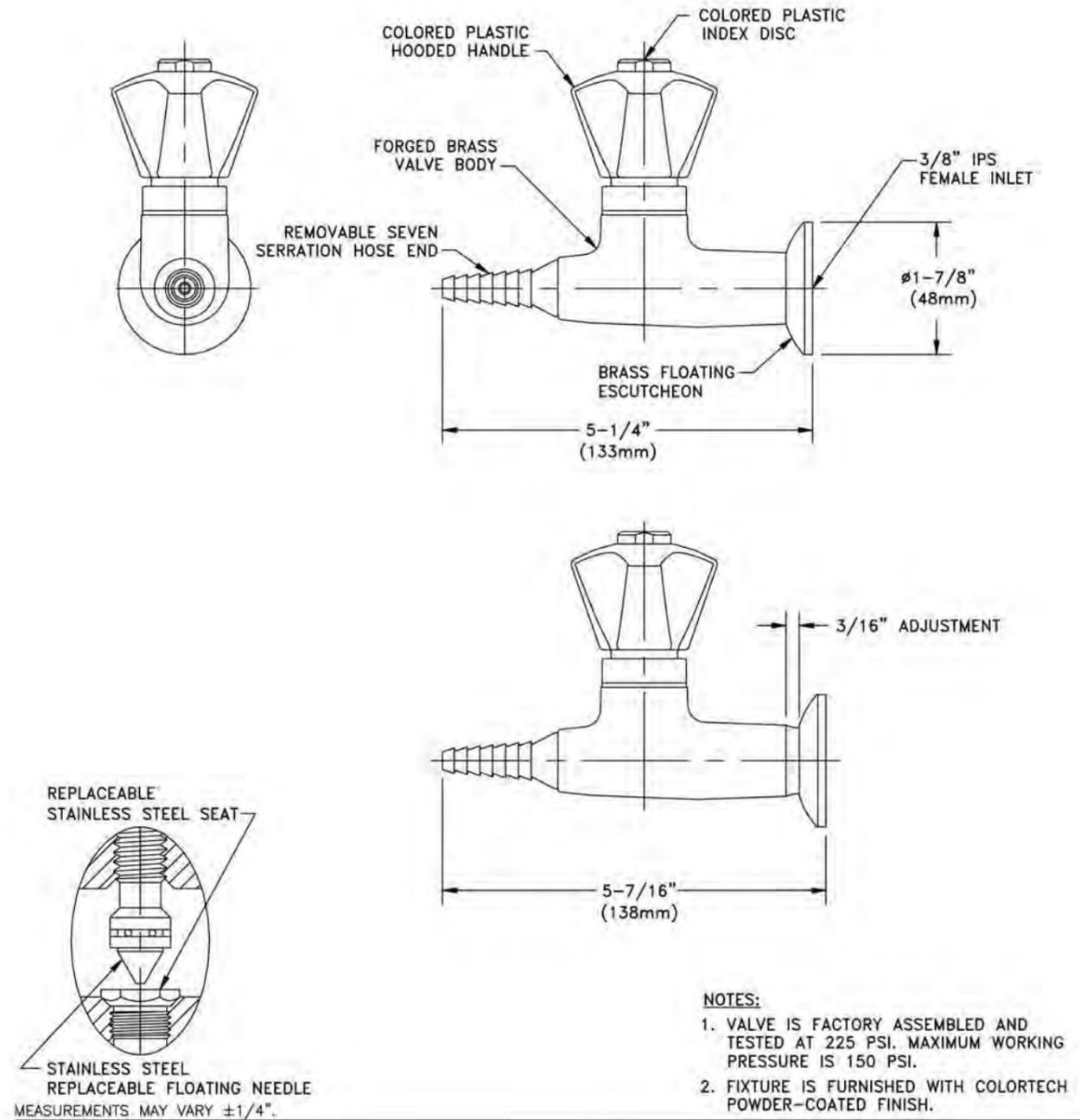
Laboratory Service Fixtures by  
WaterSaver Faucet Co.

**CT4880FT-325**  
LABORATORY NEEDLE VALVE ASSEMBLY, WALL MOUNTED, FLOATING ESCUTCHEON

## NEEDLE VALVE CUT SHEET AT SERVICE COLUMN

NITROGEN GAS

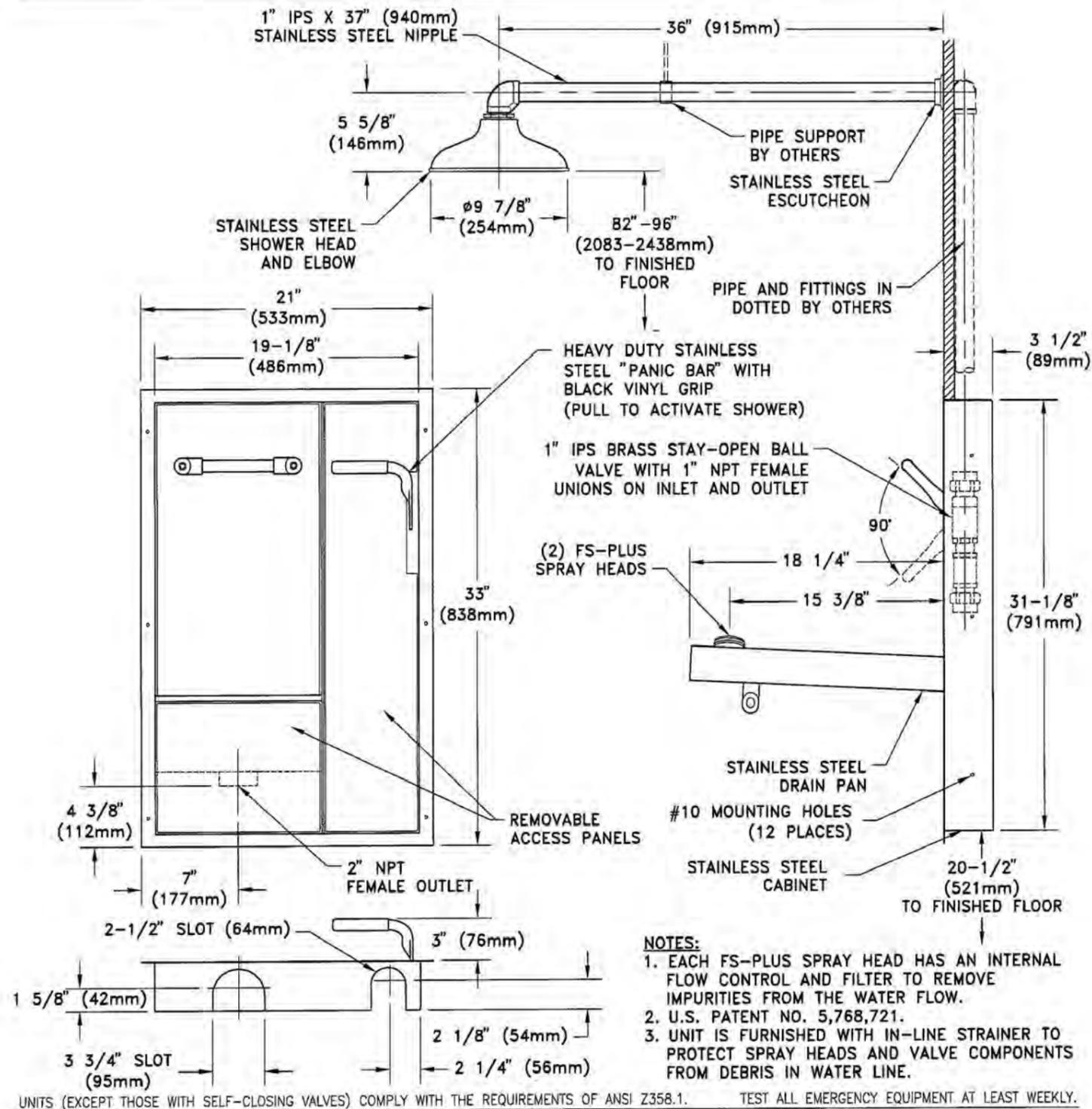
HELIUM GAS



Drawing Number: \_\_\_\_\_

Revision Number: 060807-SJP

**SSBF2170**  
 RECESSED SAFETY STATION WITH DRAIN PAN



NOT VENTED



## MODEL 4510 SAFETY CABINET

### EAGLE Model 4510 Safety Cabinet

Constructed of 18-gauge steel, sides, top, bottom, and doors are double-walled with a 1 1/2" air space between walls. Both vents, with 2" threaded fittings, have fire baffle and cap. Cabinets come in yellow high gloss powder finish with red warning, plus grounding attachment, 3-point key lock, and 2" raised, leakproof door sill. Each shelf is adjustable, supported by 4 brackets, and can support 350 pounds. Features 2 self-closing doors. FM approved.

#### SPECIFICATIONS

**CAPACITY:** 45 gallons

**SHELF DEPTH:** 14.75"

**SHELVES:** 2

**DIMENSIONS:** 43" x 18" x 65"

**WEIGHT:** 353 lbs.



**Model 4510 Safety Cabinet**

VENTED PER DIV 22



## POLY ACID-CORROSIVE SAFETY STORAGE CABINET



### EAGLE Poly Acid/Corrosive Safety Cabinet

Eagle's new non-metallic "Poly Acid Cabinets" are constructed of 100% polyethylene for excellent resistance to harmful acid vapors and spills, making these cabinets suitable for storing aggressive chemicals such as sulphuric, hydrochloric and nitric acids.

Independent upper and lower compartments allow for segregation of reactive chemicals. Includes two 3/8" threaded inserts on top sides for wall anchors. The base of the cabinet is flush to floor and sides. Bottom shelves remove for easy cleaning of sump areas. Available in blue, shown here, or [white](#).

CRAP-44 Poly Acid Safety Cabinet

| EAGLE Poly Acid/Corrosive Cabinet |          |                  |         |                 |          |
|-----------------------------------|----------|------------------|---------|-----------------|----------|
| Model                             | Capacity | Door Specs       | Shelves | Size (WxDxH)    | Weight   |
| CRA-P44                           | 44 gal.  | 4 Manual Closing | 8       | 35" x 22" x 65" | 130 lbs. |
| <a href="#">CRA-P44W</a>          | 44 gal.  | 4 Manual Closing | 8       | 35" x 22" x 65" | 130 lbs. |

[Home](#) • [About Us](#) • [C.L.A.W.S.](#) • [E-Mail](#)  
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Item # \_\_\_\_\_

Job \_\_\_\_\_

## SUPER ADJUSTABLE SUPER ERECTA SHELF® WIRE SHELVING

Super Adjustable Super Erecta Wire Shelving is the most advanced and innovative wire storage system available. A unique Corner Release System and SiteSelect™ Posts make changing shelf levels fast and easy, without tools! And Super Adjustable Shelving works in conjunction with the entire Super Erecta System of shelves and accessories.

- Easily Adjustable:** Unique Corner Release and SiteSelect Posts create a total system that offers "Tool-Free," fast adjustment at 1" (25mm) intervals along the entire height of the posts.
- Easily Assembled:** The Corner Release System and SiteSelect Posts, combined with the original "bottom up" assembly process, creates a complete shelving system in minutes, without tools! SiteSelect Posts with the double-groove visual guide feature, have circular grooves at 1" (25mm) intervals and are numbered at 2" (50mm) intervals. Shelves simply seat into place using the Corner Release.
- Unique Shelf Design:** The open wire design of these heavy-gauge shelves minimizes dust accumulation and allows a free circulation of air, greater visibility of stored items and greater light penetration. Shelf ribs run front to back allowing you to slide items on and off easily. Shelves can be loaded and unloaded from all sides. This open construction allows use of maximum storage space of cube.
- Unique Post Design:** New SiteSelect post design provides a visual guide for positioning and adjusting shelves, saving considerable time during assembly and adjustment. An easy-to-identify double groove, every 8" (203mm), offers a quick way to align all shelves. Bolt leveler on post bottom compensates for uneven surfaces.
- Fast, Easy Reconfiguration:** Super Adjustable Super Erecta can change as quickly as your needs change. By using various accessories, hundreds of shelving configurations become possible.
- Choice of Finishes:** Super Adjustable Super Erecta Wire Shelving is available in a variety of finishes: Super Erecta Brite and chrome-plated for dry storage, Metroseal 3™ with antimicrobial product protection, and stainless steel for corrosive environments, and a large array of designer colors (see Catalog Sheet 10.14A).



Corner Release System



Dry Storage – Chrome or Super Erecta Brite™



Metroseal 3™ with \*Microban® Antimicrobial Product Protection.

METRO SUPER ADJUSTABLE SUPER ERECTA SHELF® Adjustable Wire Shelving

10.01A



**InterMetro Industries Corporation**  
North Washington Street  
Wilkes-Barre, PA 18705  
www.metro.com



10.01A

SUPER ADJUSTABLE SUPER ERECTA SHELF® Adjustable Wire Shelving



Job \_\_\_\_\_



## SUPER ADJUSTABLE SUPER ERECTA SHELF® WIRE SHELVING

### Dimensions

#### Super Adjustable Super Erecta Wire Shelving

| Shelf Width (in.) | Shelf Length (mm) | Approx. Pkd. Wt. (lbs.) | Approx. Pkd. Wt. (kg) | Cat. No. Super Erecta Brite | Cat. No. Chrome | Cat. No. Metroseal 3 | Cat. No. Stainless |
|-------------------|-------------------|-------------------------|-----------------------|-----------------------------|-----------------|----------------------|--------------------|
| 18x24             | 457x610           | 7                       | 3.2                   | A1824BR                     | A1824NC         | A1824NK3             | A1824NS            |
| 18x30             | 457x760           | 8                       | 3.6                   | A1830BR                     | A1830NC         | A1830NK3             | A1830NS            |
| 18x36             | 457x914           | 9 1/2                   | 4.3                   | A1836BR                     | A1836NC         | A1836NK3             | A1836NS            |
| 18x42             | 457x1066          | 11                      | 5.0                   | A1842BR                     | A1842NC         | A1842NK3             | A1842NS            |
| 18x48             | 457x1219          | 12                      | 5.4                   | A1848BR                     | A1848NC         | A1848NK3             | A1848NS            |
| 18x54             | 457x1370          | 14 1/2                  | 6.6                   | A1854BR                     | A1854NC         | A1854NK3             | A1854NS            |
| 18x60             | 457x1524          | 17                      | 7.7                   | A1860BR                     | A1860NC         | A1860NK3             | A1860NS            |
| 18x72             | 457x1825          | 20                      | 9.1                   | A1872BR                     | A1872NC         | A1872NK3             | A1872NS            |
| 21x24             | 530x610           | 8                       | 3.6                   | A2124BR                     | A2124NC         | A2124NK3             | A2124NS            |
| 21x30             | 530x760           | 9                       | 4.1                   | A2130BR                     | A2130NC         | A2130NK3             | A2130NS            |
| 21x36             | 530x914           | 11                      | 5.0                   | A2136BR                     | A2136NC         | A2136NK3             | A2136NS            |
| 21x42             | 530x1066          | 12                      | 5.4                   | A2142BR                     | A2142NC         | A2142NK3             | A2142NS            |
| 21x48             | 530x1219          | 14                      | 6.4                   | A2148BR                     | A2148NC         | A2148NK3             | A2148NS            |
| 21x54             | 530x1370          | 16                      | 7.3                   | A2154BR                     | A2154NC         | A2154NK3             | A2154NS            |
| 21x60             | 530x1524          | 18                      | 8.2                   | A2160BR                     | A2160NC         | A2160NK3             | A2160NS            |
| 21x72             | 530x1825          | 24                      | 10.9                  | A2172BR                     | A2172NC         | A2172NK3             | A2172NS            |
| 24x24             | 610x610           | 9                       | 4.1                   | A2424BR                     | A2424NC         | A2424NK3             | A2424NS            |
| 24x30             | 610x760           | 11                      | 5.0                   | A2430BR                     | A2430NC         | A2430NK3             | A2430NS            |
| 24x36             | 610x914           | 13                      | 5.9                   | A2436BR                     | A2436NC         | A2436NK3             | A2436NS            |
| 24x42             | 610x1066          | 15                      | 6.8                   | A2442BR                     | A2442NC         | A2442NK3             | A2442NS            |
| 24x48             | 610x1219          | 16                      | 7.3                   | A2448BR                     | A2448NC         | A2448NK3             | A2448NS            |
| 24x54             | 610x1370          | 18                      | 8.6                   | A2454BR                     | A2454NC         | A2454NK3             | A2454NS            |
| 24x60             | 610x1524          | 21                      | 9.6                   | A2460BR                     | A2460NC         | A2460NK3             | A2460NS            |
| 24x72             | 610x1825          | 26                      | 11.9                  | A2472BR                     | A2472NC         | A2472NK3             | A2472NS            |

NOTE: For Metroseal 3 shelving information see sheet # 10.10A.



#### Sleeves/Wedges

Package of 4 per shelf.  
Cat. No. A9995  
SiteSelect™ Posts are grooved at 1" (25mm) increments and numbered at 2" (50mm) increments. Posts are double-grooved every 8" (203mm) for easy identification. Wedge Windows™ allow sight of post number for easy visual identification.

\*MICROBAN® protects the Metroseal 3 coating from bacteria, mold, mildew and fungi that cause odors, stains and product degradation.

\*MICROBAN and the MICROBAN symbol are registered trademarks of the Microban Products Company, Huntersville, NC.

#### SiteSelect™ Posts

| Height (in.) | Height (mm) | Approx. Pkd. Wt. (lbs.) | Approx. Pkd. Wt. (kg) | Cat. No. Pktd. | Cat. No. Metroseal 3 | Cat. No. Stainless |
|--------------|-------------|-------------------------|-----------------------|----------------|----------------------|--------------------|
| 7 1/2        | 191         | 1 1/2                   | 0.3                   | 7P             |                      |                    |
| 14 1/2       | 370         | 1                       | 0.5                   | 13P            | 13PK3                | 13PS               |
| 27 1/2       | 700         | 1 1/4                   | 0.75                  | 27P            |                      | 27PS               |
| 34 1/2       | 875         | 2                       | 0.9                   | 33P            | 33PK3                | 33PS               |
| 54 7/8       | 1385        | 3                       | 1.4                   | 54P            | 54PK3                | 54PS               |
| 62 1/8       | 1580        | 3 1/2                   | 1.6                   | 63P            | 63PK3                | 63PS               |
| 74 1/8       | 1895        | 4                       | 1.8                   | 74P            | 74PK3                | 74PS               |
| 86 1/8       | 2200        | 5                       | 2.3                   | 86P            | 86PK3                | 86PS               |
| 98 1/8       | 2454        | 5 1/2                   | 2.5                   | **96P          |                      |                    |

\*Height includes leveling bolt and cap.

\*\*96P should not be used in units less than 24" (610mm) deep. Consult Metro Engineering for alternate recommendations.

Post lengths to be specified as out to a round number, i.e. 74" out to 69". This will result in an overall post height with adjustment of 69" to 69 1/2".

Important: When ordering by components remember that for maximum stability, units should be kept as wide and low as possible.

All Metro Catalog Sheets are available on our Web Site: [www.metro.com](http://www.metro.com)



**InterMetro Industries Corporation**  
North Washington Street, Wilkes-Barre, PA 18705  
Phone: 570-825-2741 • Fax: 570-825-2852  
For Product Information Call: 1-800-433-2232

L02-005A  
Printed in U.S.A. Rev. 1/02  
Information and specifications are subject to change without notice. Please confirm at time of order.  
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ScottGas Home > Products & Services > Gas Handling Equipment > General Specification

**Cylinder Separators and Process Gas Racks**

The Model 55-84CS Series **cylinder racks and separators** provide a convenient means to organize gas cylinder storage. Cylinder separators are available with either single-chain or two-chain restraints. The two-chain restraint model allows for the safe storage of both full size cylinders and C or CL cylinders. Dual-restraint should be used for short cylinders and additional seismic protection.

The back-to-back process rack saves space where multitudes of gas cylinders are in process. Each side shares the back panel and enables an equal number of cylinders on either side. The manifold platform is wide enough for complete manifolds and/or gas control panels on both sides.

The National Fire Code requires that all process gases be anchored to a strong structure while being used. The Model 55-84-PCS process gas rack system provides the necessary support when anchored to concrete with 1/2" (12.7 mm) steel anchor bolts.

Please note that all racks shipping to the state of California must be dual-restraint type racks. Check your local fire code to determine whether single or dual-restraint racks are required in your area.



**MATERIALS OF CONSTRUCTION**

Durable 2" (50.8 mm) square steel tube, all welded assembly

**Finish:** Powder coated and baked

**Color:** Black (standard)

**APPROVALS**

SCOTT™ racks meet or exceed 1994 Uniform Building Code, Underwriters Laboratories Design Standards, U.S. OSHA requirements, NFC, 1994 Uniform Fire Code, and the N.F.P.A. Standards.

| MODEL NO.   | DESCRIPTION                              | DIMENSIONS<br>W x D x H                     | WEIGHT                |
|-------------|--|---|-----------------------|
| 55-84CS-221 | One-Chain Restraint<br>2 Cylinders Deep* | 30" X 24" X 30" (762mm<br>X 607mm X 762 mm) | 80 lbs.<br>(36.3 kg)  |
| 55-84CS-222 | Two-Chain Restraint<br>2 Cylinders Deep* | 30" X 24" X 30" (762mm<br>X 607mm X 762mm)  | 100 lbs.<br>(45.4 kg) |

<http://www.scottcatalog.com/EquipSpec.nsf/Prin...+Separators+and+Process+Gas+Racks?OpenDocument> (1 of 2) [2/26/2009 8:35:21 AM]

# CYLINDER MANIFOLD CUT SHEET

For inert gases only- Helium,  
Nitrogen

## AUTO CHANGEOVER



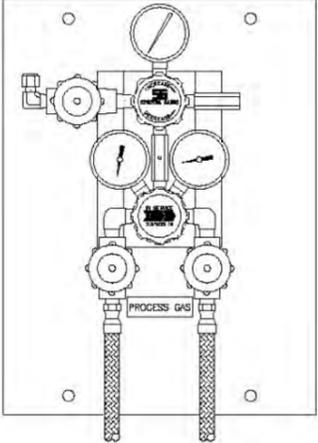
SPEC 1015 Rev. 0

### 7900 Series Changeover

- ◆ Spectra Gases 7900 and 7910 series automatic changeover regulator systems provide a continuous supply of gas from one cylinder or bank to another. Changeover is automatic when one (1) side is depleted. The automatic changeover regulator provides uninterrupted gas delivery to your point of use.

### Standard Features

- ◆ REGULATORS: stainless steel/ brass body; SS diaphragm; maximum inlet pressure: 3500 psig; PCTFE seat material; Cv=.06
- ◆ MULTI-TURN VALVES: stainless steel/ brass body; SS diaphragm; vacuum to 3000 psig; PCTFE seat material; Cv=.26
- ◆ GAUGES: Stainless steel/ brass; 2" dial
- ◆ PANEL: Clear anodized aluminum panel



### Options

- ◆ Flash arrestor
- ◆ Switch gauges
- ◆ Explosion proof switches

| Product Number | Material | Delivery Range | Relief Valve Set | Outlet Connection | Inlet Switch Gauge |
|----------------|----------|----------------|------------------|-------------------|--------------------|
| F7902001PND    | Brass    | 0-100 PSIG     | 130 PSIG         | 1/4 Compression   | No                 |
| F7902002PND    | Brass    | 0-100 PSIG     | 130 PSIG         | 1/4 Compression   | YES                |
| F7912001PND    | SS       | 0-100 PSIG     | 130 PSIG         | 1/4 Compression   | NO                 |
| F7912002PND    | SS       | 0-100 PSIG     | 130 PSIG         | 1/4 Compression   | YES                |

| PND # | GAS SERVICE | CGA | PND # | GAS SERVICE     | CGA |
|-------|-------------|-----|-------|-----------------|-----|
| 001   | NITROGEN    | 580 | 008   | METHANE         | 350 |
| 002   | HELIUM      | 580 | 009   | CARBON MONOXIDE | 350 |
| 003   | ARGON       | 580 | 010   | OXYGEN          | 540 |
| 007   | HYDROGEN    | 350 | 011   | AIR             | 590 |

TO DESIGNATE GAS SERVICE REPLACE "PND" WITH THE THREE DIGIT CODE LISTED ABOVE.

**Spectra Gases, Inc. – Spectra Gases, Ltd. – Spectra Gases GmbH**  
**Tel. (888) 350-7676**



ScottGas Home > Products & Services > Gas Handling Equipment > General Specification

### Gas Safety Cabinets Model 59-1SC

Improper gas cylinder storage can cause serious workplace hazards. Gas users and distributors must be aware of the dangers associated with storing and using compressed gases including the potential for asphyxiation, flammability, toxicity and high-pressure hazards. Gas leaks due to improper handling, tampering, regulator failure, mechanical stress and corrosion are common in many industrial and laboratory facilities. Hazardous and corrosive gases such as hydrogen chloride, chlorine or ammonia should be isolated from the workplace to minimize personnel exposure from toxic leaks. Safe cylinder gas storage is also addressed in Federal and local OSHA building and fire codes. Using the proper storage equipment is a key to minimizing liability associated with these compliance requirements.

The Model 59SC Cylinder Gas Cabinets are designed to provide a safe and cost effective means to isolate hazardous gas cylinders from the surrounding work place. The cabinets, which can safely store 1-4 standard size gas cylinders, are constructed of 11-gauge steel to exceed code requirements. Additional safety features include a large vent exhaust, louvered door panel to provide positive air flow, and an integral sprinkler that is activated in the event of fire. The adjustable cylinder brackets secure a wide range of cylinders, while the removable back panel enables the mounting of gas delivery systems and components.

Protect workers and equipment by preventing gas related accidents at the source – by installing cylinder gas storage cabinets.

#### Promotes Gas Separation

Cylinder storage problems are simplified because the gas cabinet/manifold system concept encourages the separation of gases according to their classification. Separation of gases becomes standard procedure, as opposed to indiscriminate storage and grouping. For example, corrosives, oxidizers, flammables and toxics can be separated and grouped in separate cabinets. Not only will this satisfy both national and local fire and building codes, but is also safer in the event of component failure or



leakage. The Model 59SC provides personnel with a safe, efficient and cost-effective means to organize specialty gas distribution.

#### Provides Containment

Scott gas cabinets have the capacity to allow 150 to 200 linear feet (45 to 60 linear meters) per minute of air to pass through the cabinet's window when open. This is equivalent to 13 air changes per minute. A ventilated gas cabinet facilitates the safe management of gases when installed within these cabinets.

#### BENEFITS/FEATURES

- Integral sprinkler system provides an extra measure of fire protection.
- 11-gauge steel with diamond deck flooring provides one of the sturdiest constructions available.
- Horizontally and vertically adjustable cylinder brackets accommodate a large range of cylinder sizes.
- Available with a wide range of standard and custom manifold configurations to suit your application.
- Provides ultimate protection: meets Uniform Building Code, Uniform Fire Code Article 80, Federal OSHA, Cal OSHA, NFPA, SEMI Standards and International Fire Codes.

#### SPECIFICATIONS

##### Integral Sprinkler:

Fuse Rating: 165°F (74°C)  
Flow Capacity: 40 GPM

**Ventilation:** 13 air changes per minute

**Exhaust Stack:** 6" (152.4mm) standard. Other sizes available:  
8" (203.2mm), 10" (254mm)

##### Dimensions:

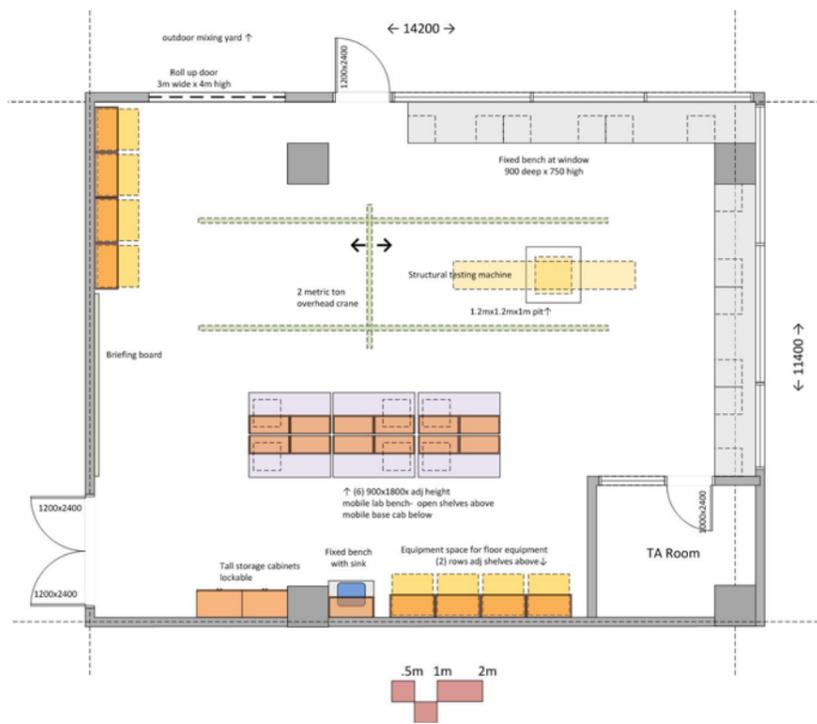
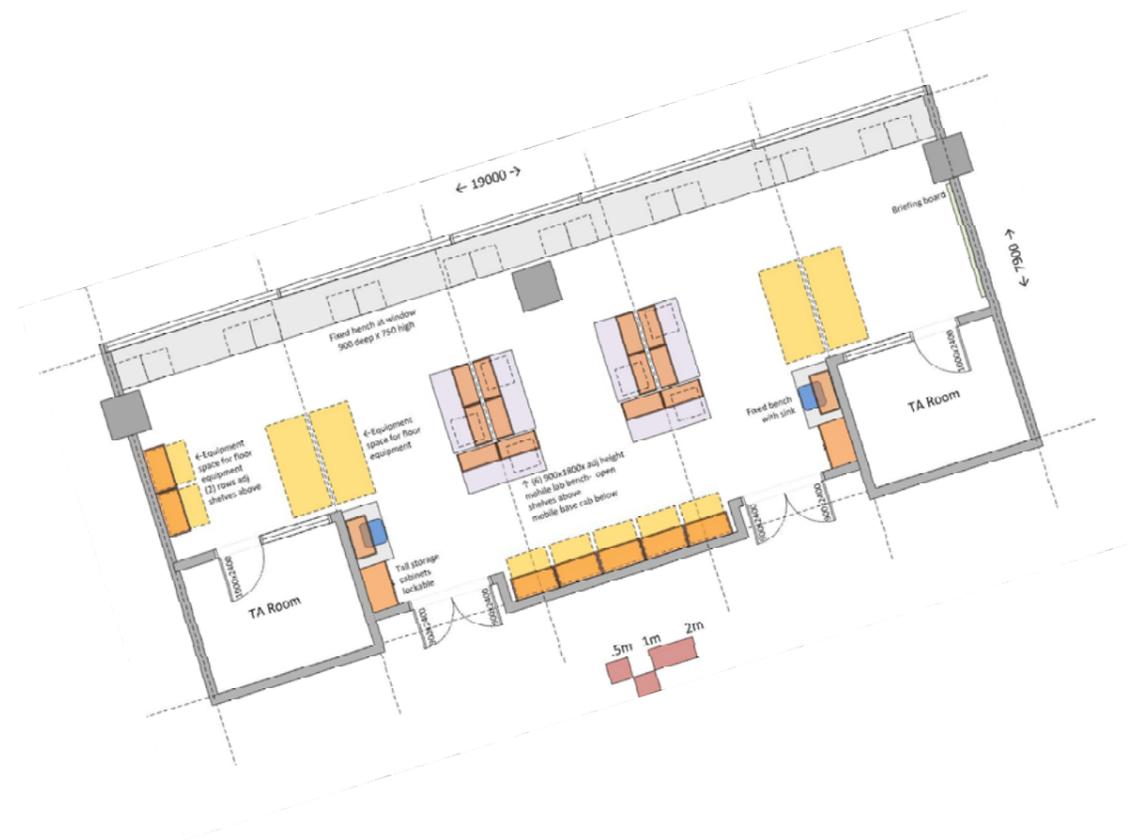
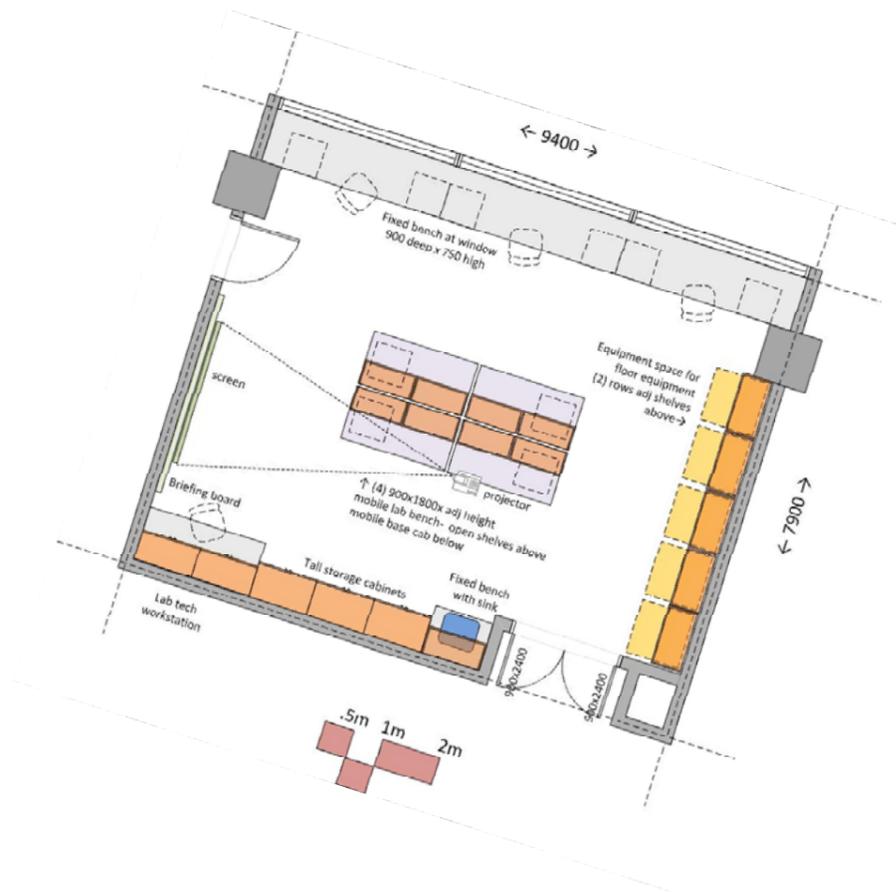
591SC: 72" X 18" X 18" (182.9cm X 45.7cm X 45.7cm)  
592SC: 72" X 18" X 24" (182.9cm X 45.7cm X 70cm)  
593SC: 72" X 18" X 36" (182.9cm X 45.7cm X 91.4cm)  
594SC: 72" X 18" X 48" (182.9cm X 45.7cm X 121.9cm)

##### Weight:

591SC: 245 lbs (111.1 kg)  
592SC: 285 lbs (129.3 kg)  
593SC: 370 lbs (167.8 kg)  
594SC: 395 lbs (179.2 kg)

#### MATERIALS OF CONSTRUCTION

#### OPTIONS

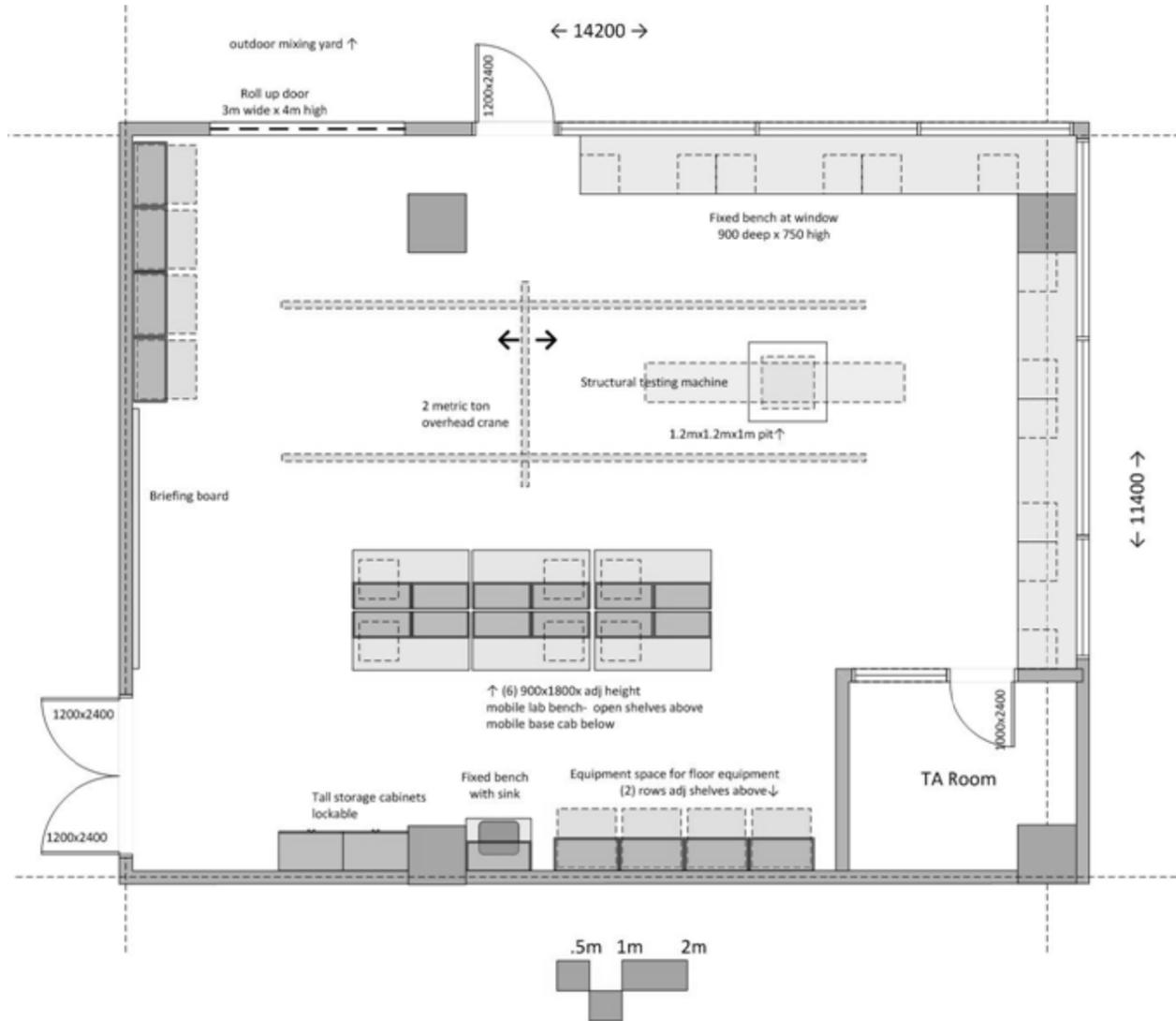


# CIVIL ENGINEERING LAB DESIGN SKETCHBOOK

New College of Engineering  
Qatar University  
2012 Jul 10

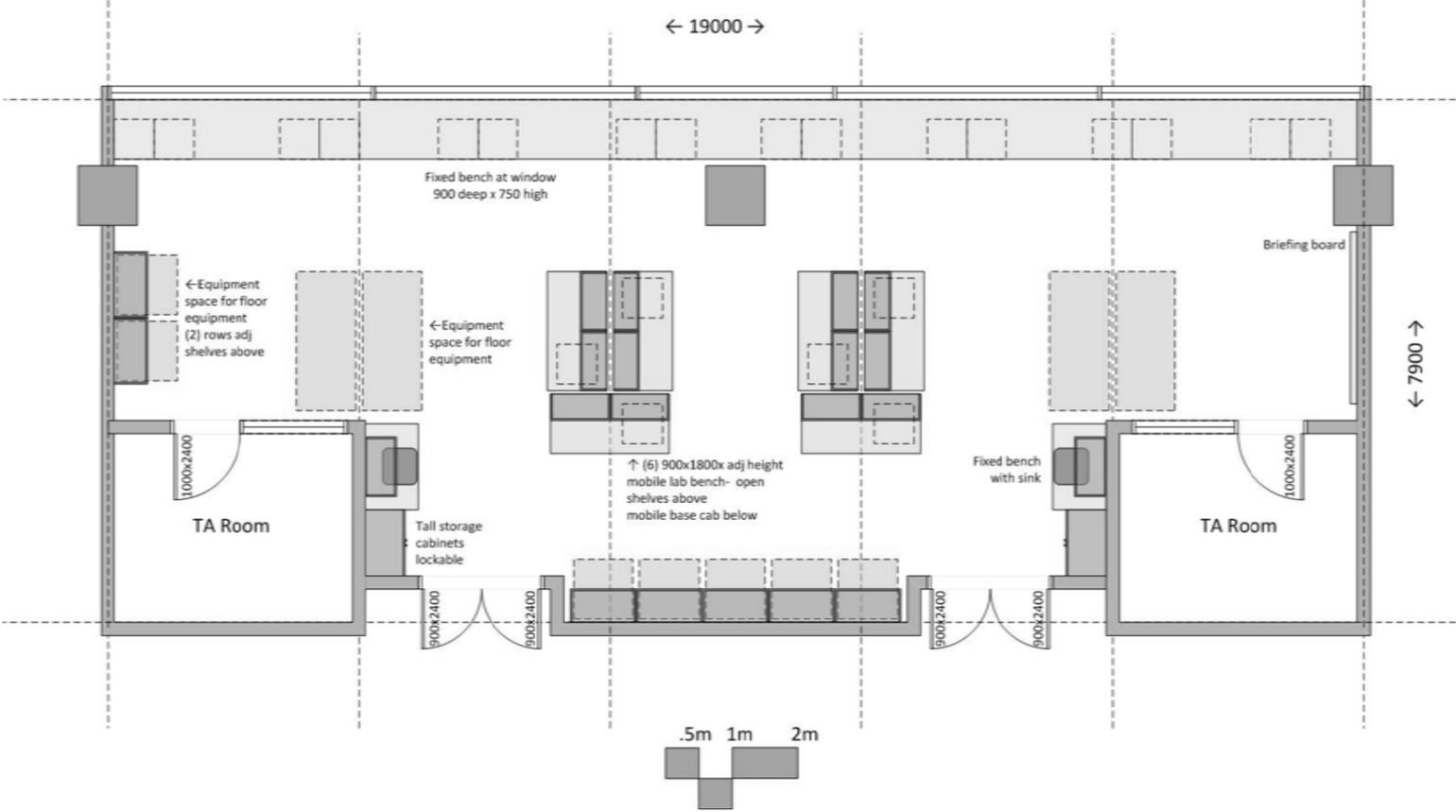


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# SUMMARY



This second edition (revised) sketchbook comprises the labs assigned to the Civil Engineering Department. It includes basic plan diagrams with equipment and furnishings noted. It includes electrical and plumbing outlets and fittings. It also includes section details for typical casework conditions. This document provides the basis of design intent for the labs. It provides basic information to assist the design team in preparing construction documents and to provide information for lab casework manufacturers to provide shop drawing submittals.

Glen Berry, AIA  
 Laboratory Consultant to Mimar  
 glenberry@designforscience.com



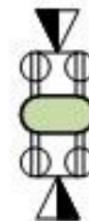
# SYMBOL LEGEND

## PLUMBING & ELECTRICAL SYMBOLS

-  **HW/CW** Hot/Cold water faucet with vacuum breaker
-  **A** Compressed air- 30-100 psi at overhead service carrier with regulator  
Or at high bay column with regulator
-  **Floor drain**

 **240v duplex electrical**  
Dedicated circuit at equipment space  
Standby power at equipment space

 **415v 3phase 60 amp electrical**  
With quick disconnect switch

 **Elec/data service column at ceiling**  
Dedicated circuits for each 240v duplex

 **415v 3phase 200 amp electrical**  
With quick disconnect switch

 **Data/phone box**

# TRAFFIC & TRANSPORTATION LAB

## FIRST FLOOR

### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: gypsum board with enamel paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

hot/cold water at lab sink  
 pure water at lab sink via point-of-use water polisher  
 compressed air

### ELECTRICAL

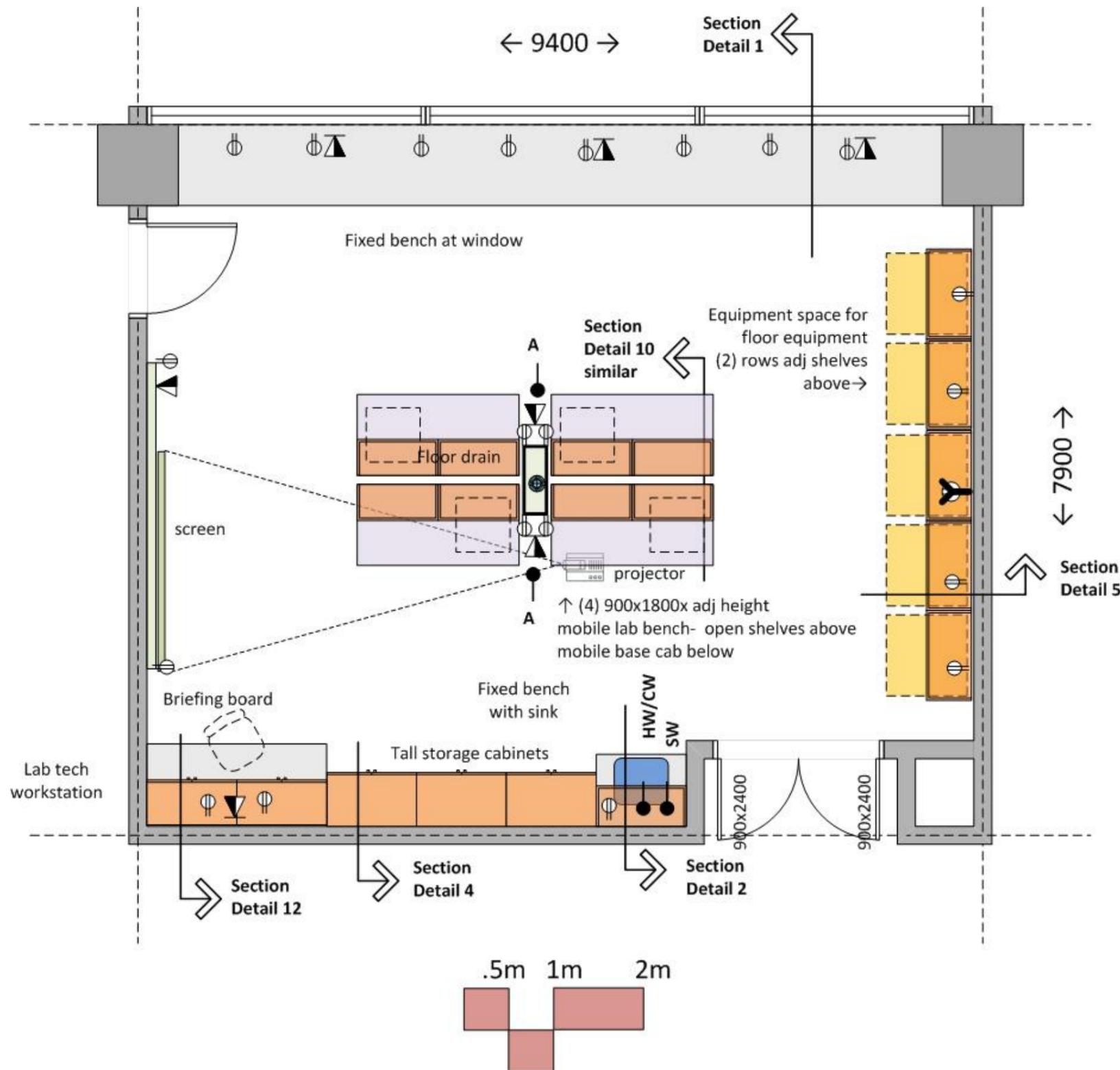
415V with disconnect  
 240v receptacles at benchtop and equipment raceway at ~300 mm on center  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment



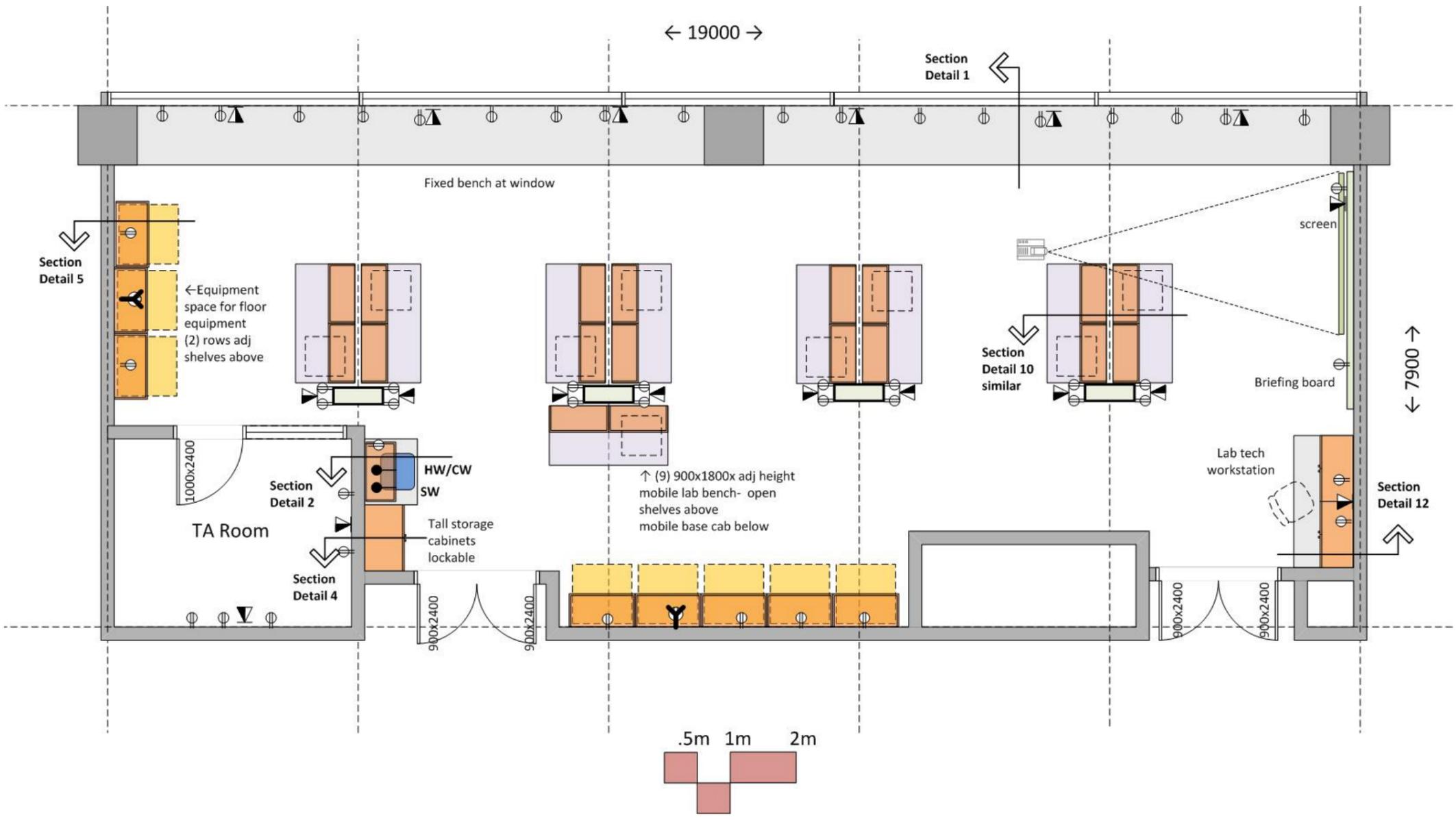
# TRAFFIC & TRANSPORTATION LAB

KEY PLAN- FIRST FLOOR



# SURVEYING LAB

## FIRST FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: gypsum board with enamel paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

hot/cold water at lab sink  
 pure water at sinks via point-of-use water polisher

### ELECTRICAL

415V with disconnect  
 240v receptacles at benchtop and equipment raceway at ~300 mm on center  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment



# ENVIRONMENTAL LAB

## FIRST FLOOR

### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: gypsum board with enamel paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 compressed air at equipment islands  
 cold water at equipment islands  
 Floor drains

### ELECTRICAL

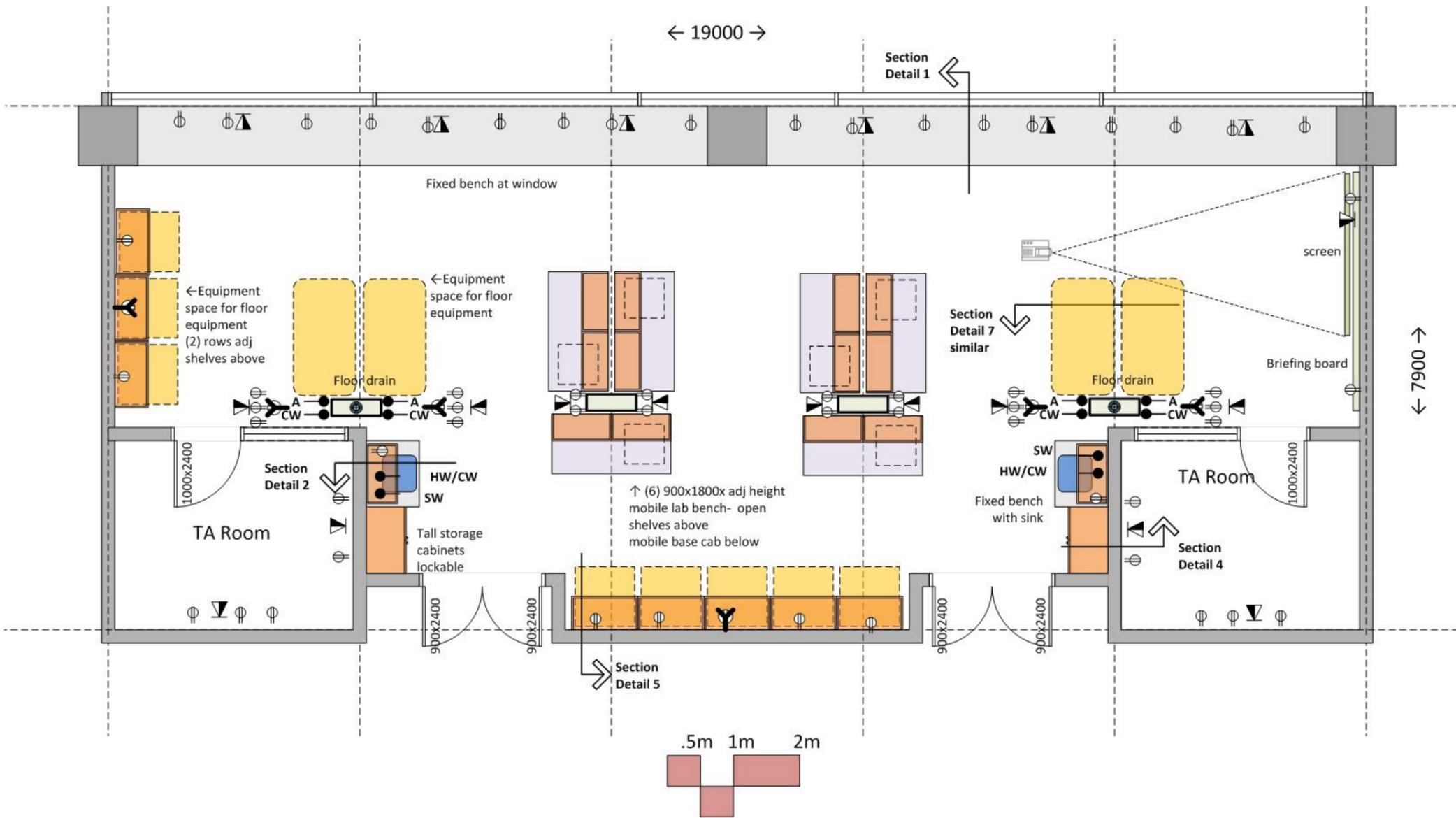
415V with disconnect  
 240v receptacles at benchtop and equipment raceway at ~300 mm on center  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment



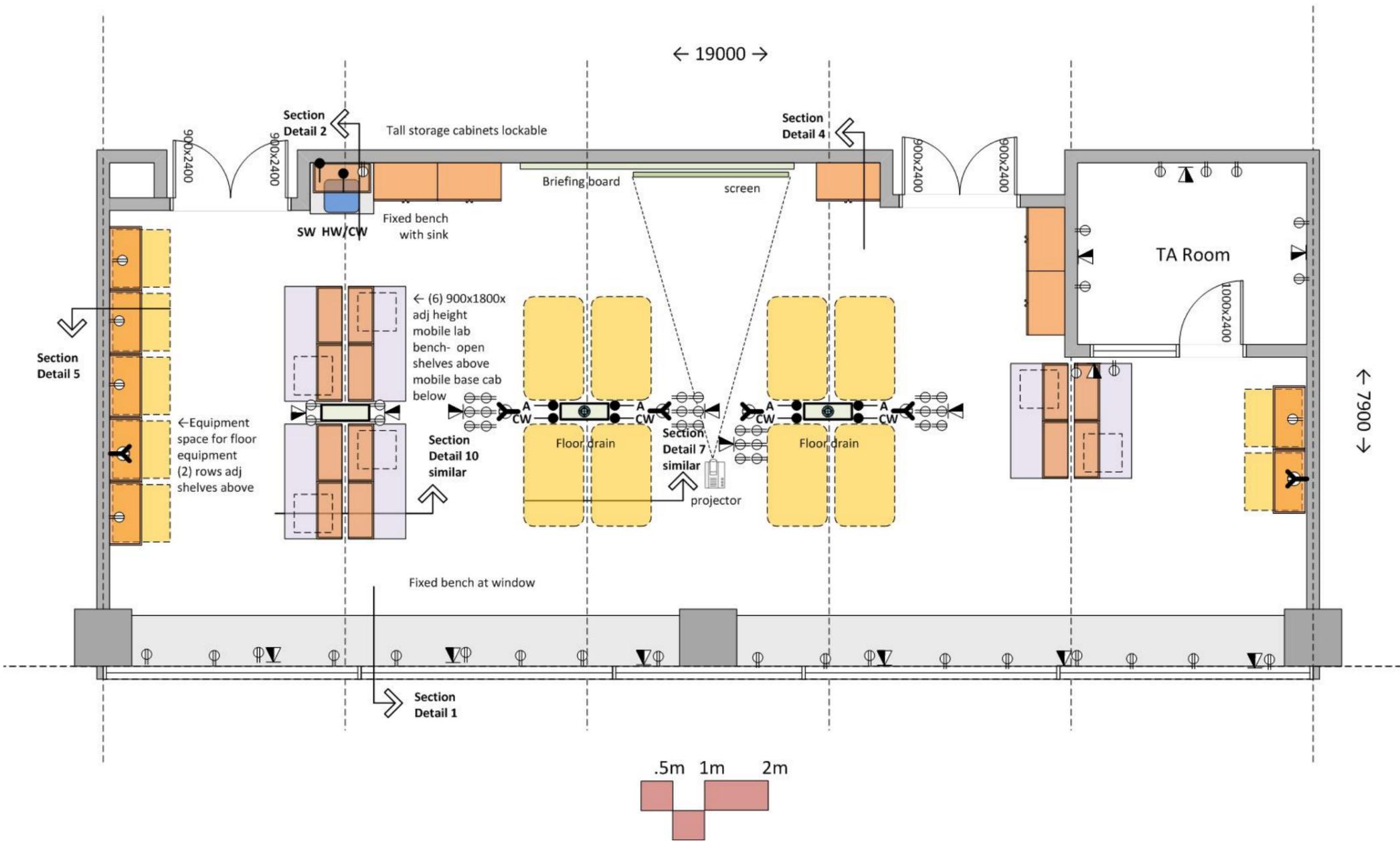
# ENVIRONMENTAL LAB

KEY PLAN- FIRST FLOOR



# HYDRAULICS LAB

GROUND FLOOR- SHARED WITH MECH ENG



**ARCHITECTURAL**

- Floor: sealed, ground concrete
- Walls: gypsum board with enamel paint
- Ceiling: open to structure
- Doors with vision panels
- Vibration attenuation: 25 micrometers/second or less
- Sound attenuation: NC 45 or less
- Light attenuation: at exterior windows with exterior sun shade

**MECHANICAL**

- Temperature: 22 deg. C +/- 1 deg. C
- 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).
- Equipment heat gain: 500-750 btuh/square meter
- Humidity: 30-50% relative
- Pressure: negative

**PLUMBING**

- hot/cold water at lab sink
- Pure water at lab sink via point-of-use water polisher
- cold water at equipment island
- compressed air
- Floor drains

**ELECTRICAL**

- 415V with disconnect
- 240v receptacles at benchtop and equipment raceway at ~300 mm on center
- Dedicated circuits at equipment spaces
- Standby power (emergency) at equipment spaces
- Data junction boxes at perimeter and islands
- Wireless data connection
- Lighting: indirect fluorescent at 60 f.c.

**CONTRACTOR FURNISHED EQUIPMENT**

- Lab casework, sinks, tops, fittings

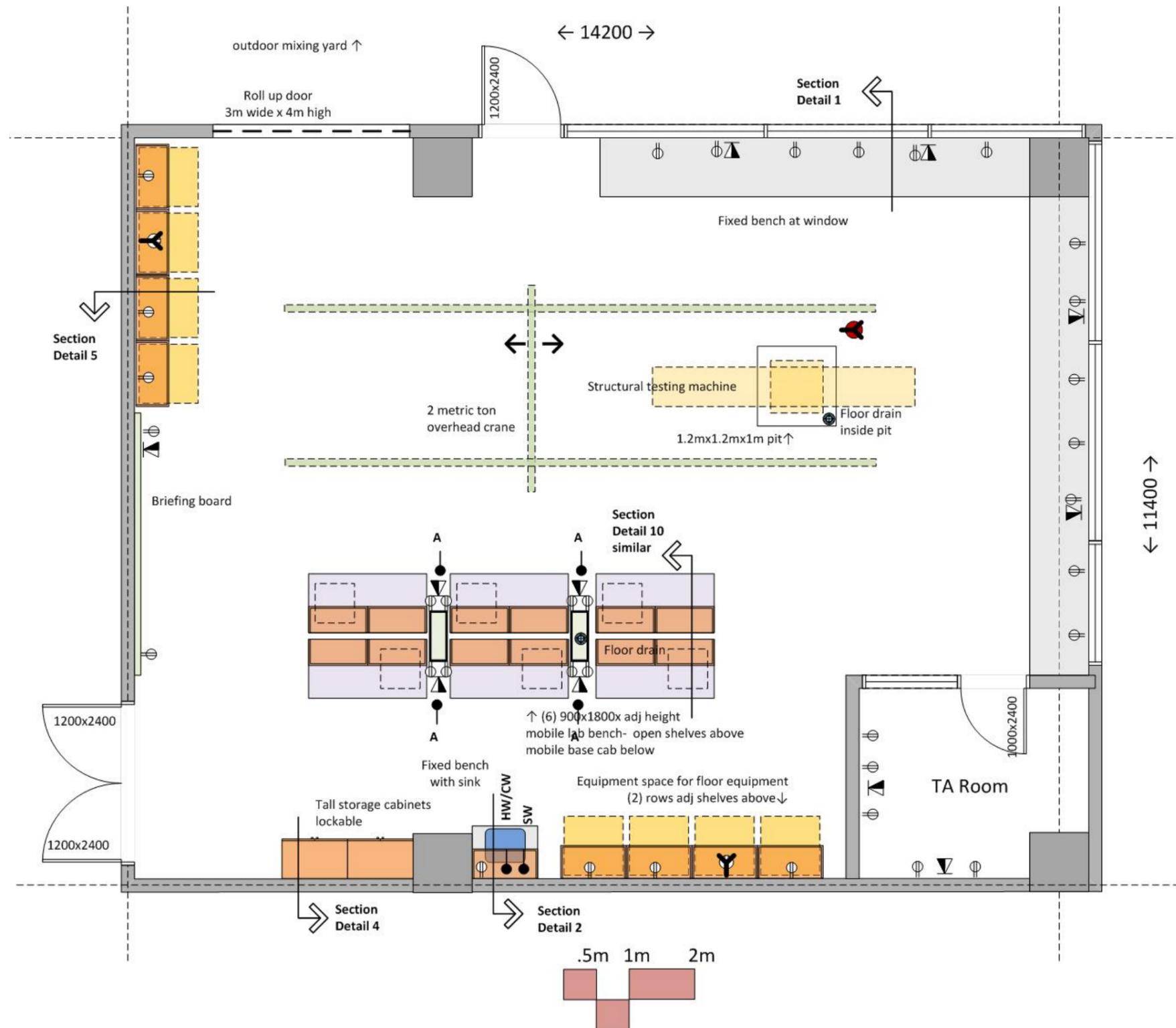
**COLLEGE FURNISHED EQUIPMENT**

- Scientific benchtop equipment
- Floor equipment



# STRUCTURES LAB

## GROUND FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 pit for structural testing machine  
 Walls: gypsum board with enamel paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 compressed air  
 Floor drain

### ELECTRICAL

415V with disconnect  
 240v receptacles at benchtop and equipment raceway at ~300 mm on center  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment

# STRUCTURES LAB

KEY PLAN- GROUND FLOOR



# MATERIALS TESTING LAB

## GROUND FLOOR

### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: gypsum board with enamel paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 compressed air  
 Floor drain

### ELECTRICAL

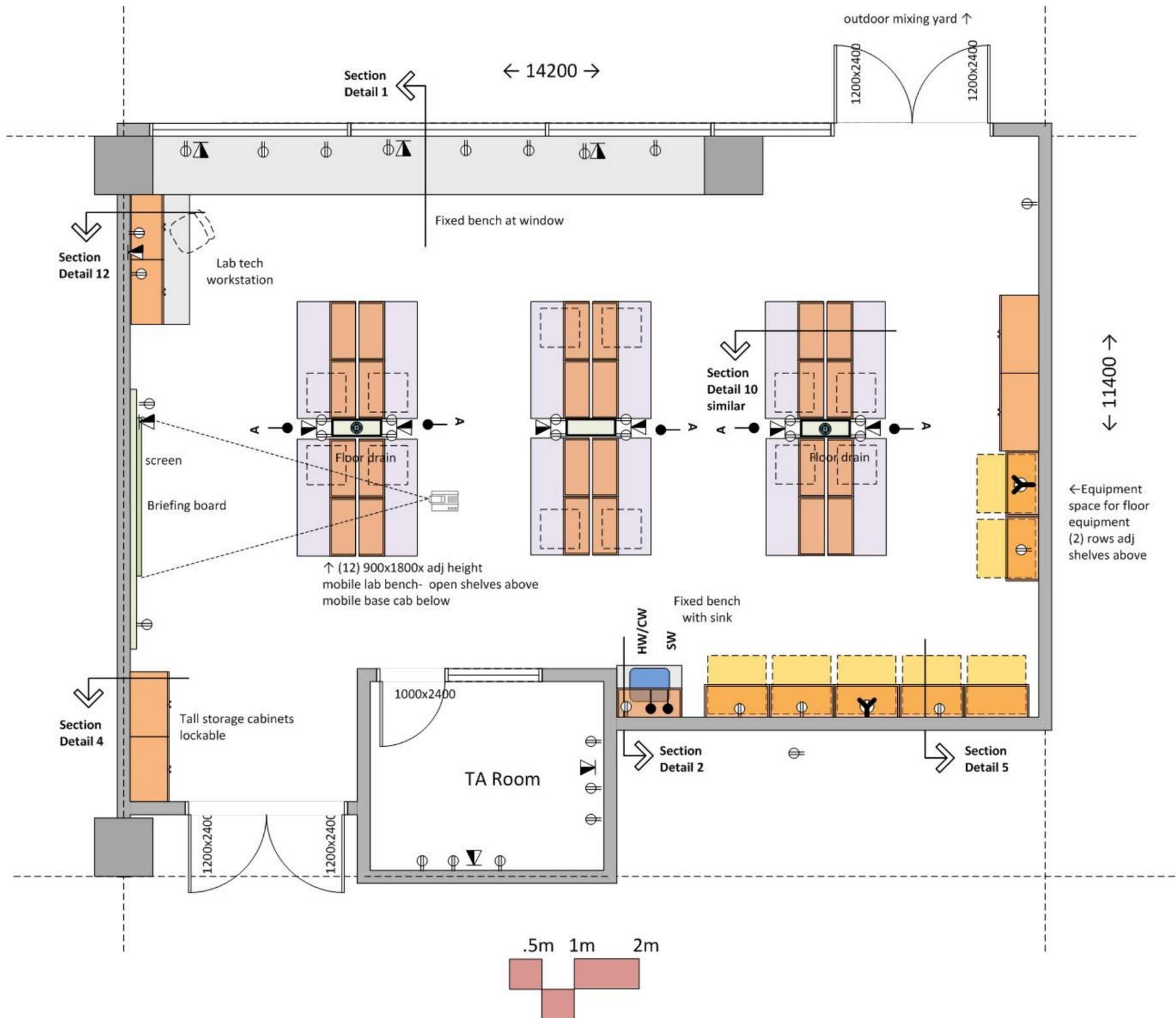
415V with disconnect  
 240v receptacles at benchtop and equipment raceway at ~300 mm on center  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

### COLLEGE FURNISHED EQUIPMENT

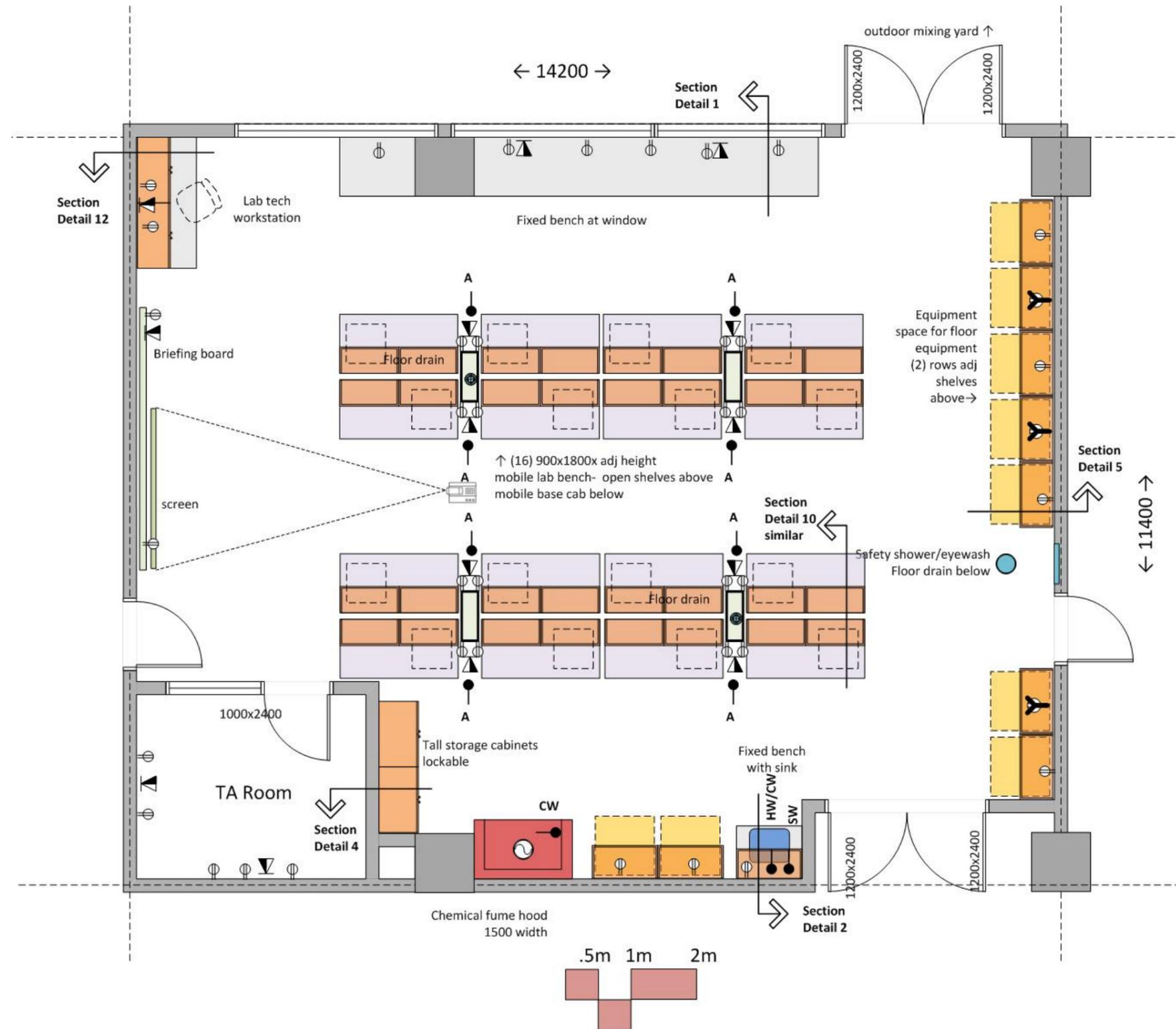
Scientific benchtop equipment  
 Floor equipment





# ASPHALT TESTING LAB

## GROUND FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster & paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 50 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust: 4 air changes per hour minimum occupied  
 2 air changes per hour unoccupied  
 (air change rate may be higher due to equipment heat gain)  
 Equipment heat gain: 250btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

hot/cold water at lab sinks  
 Pure water at lab sink via point-of-use water polisher  
 domestic cold water at safety shower  
 floor drains  
 compressed air

### ELECTRICAL

240v receptacles at ~300 mm on center  
 415v3ph outlets at shop equipment  
 Dedicated circuits at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 Chemical fume hood

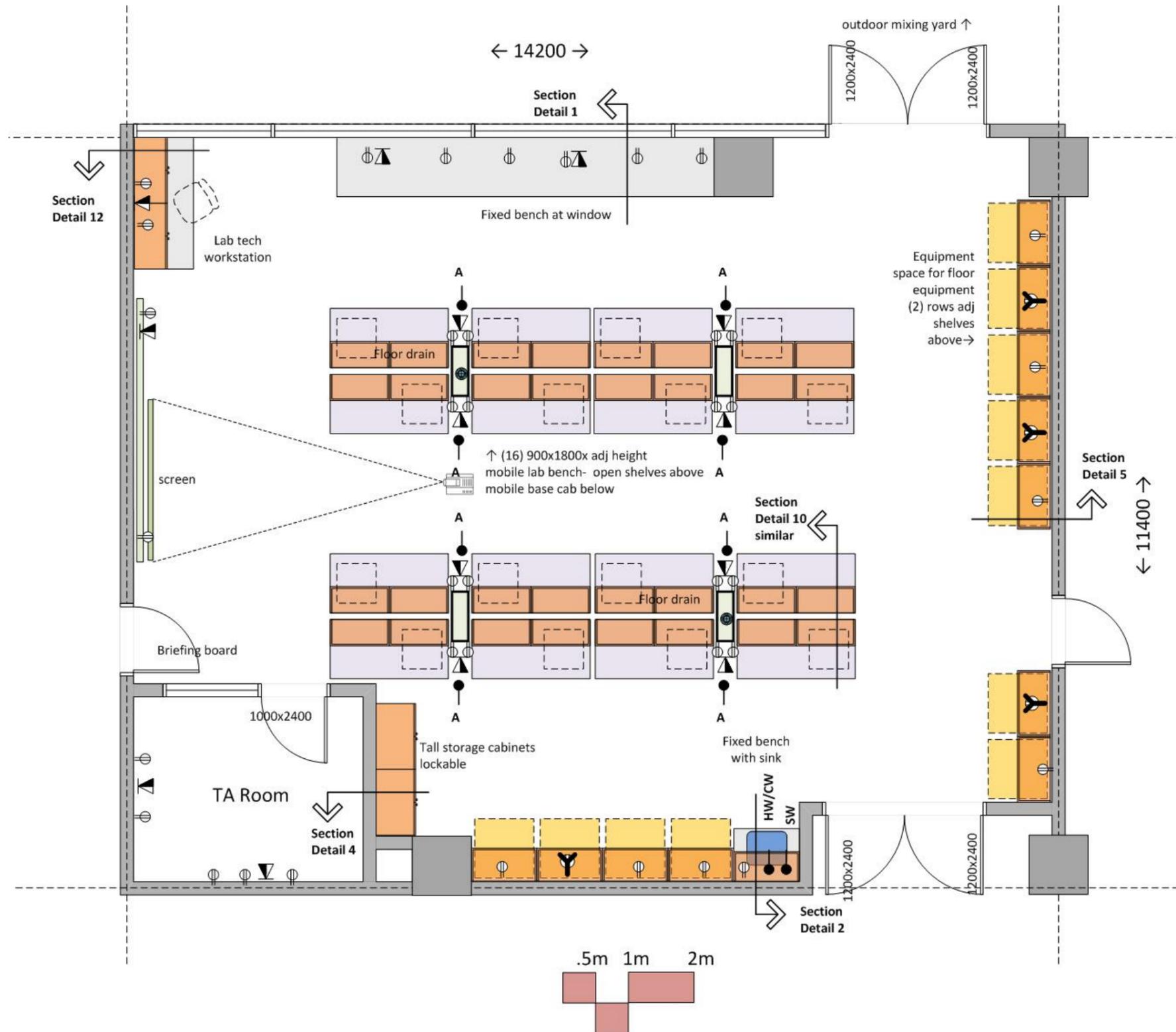
### COLLEGE FURNISHED EQUIPMENT

Shop equipment: saws, sanders, for small scale balsa wood models  
 Printers  
 Arch photography equipment



# SOIL MECHANICS LAB

## GROUND FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: gypsum board with enamel paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 Floor drain  
 compressed air

### ELECTRICAL

415V with disconnect  
 240v receptacles at benchtop and equipment raceway at ~300 mm on center  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

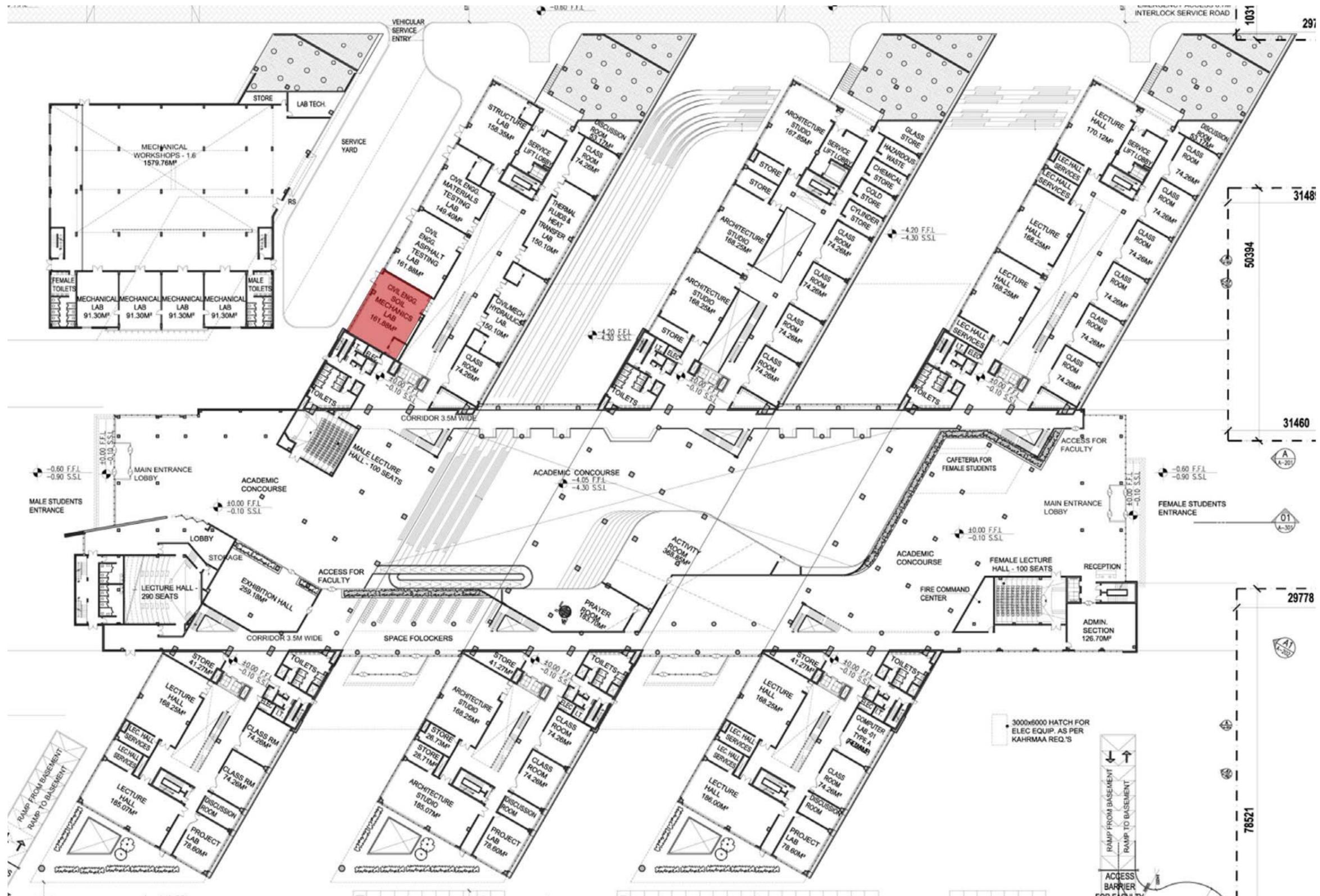
Lab casework, sinks, tops, fittings

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment

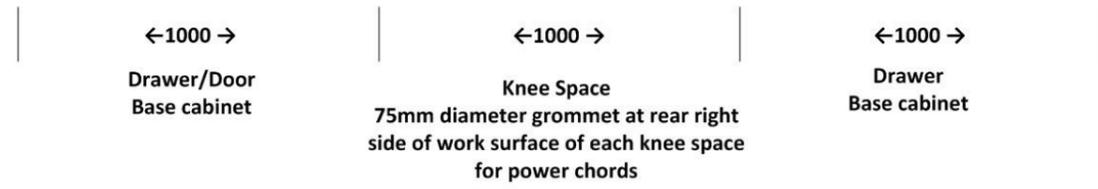
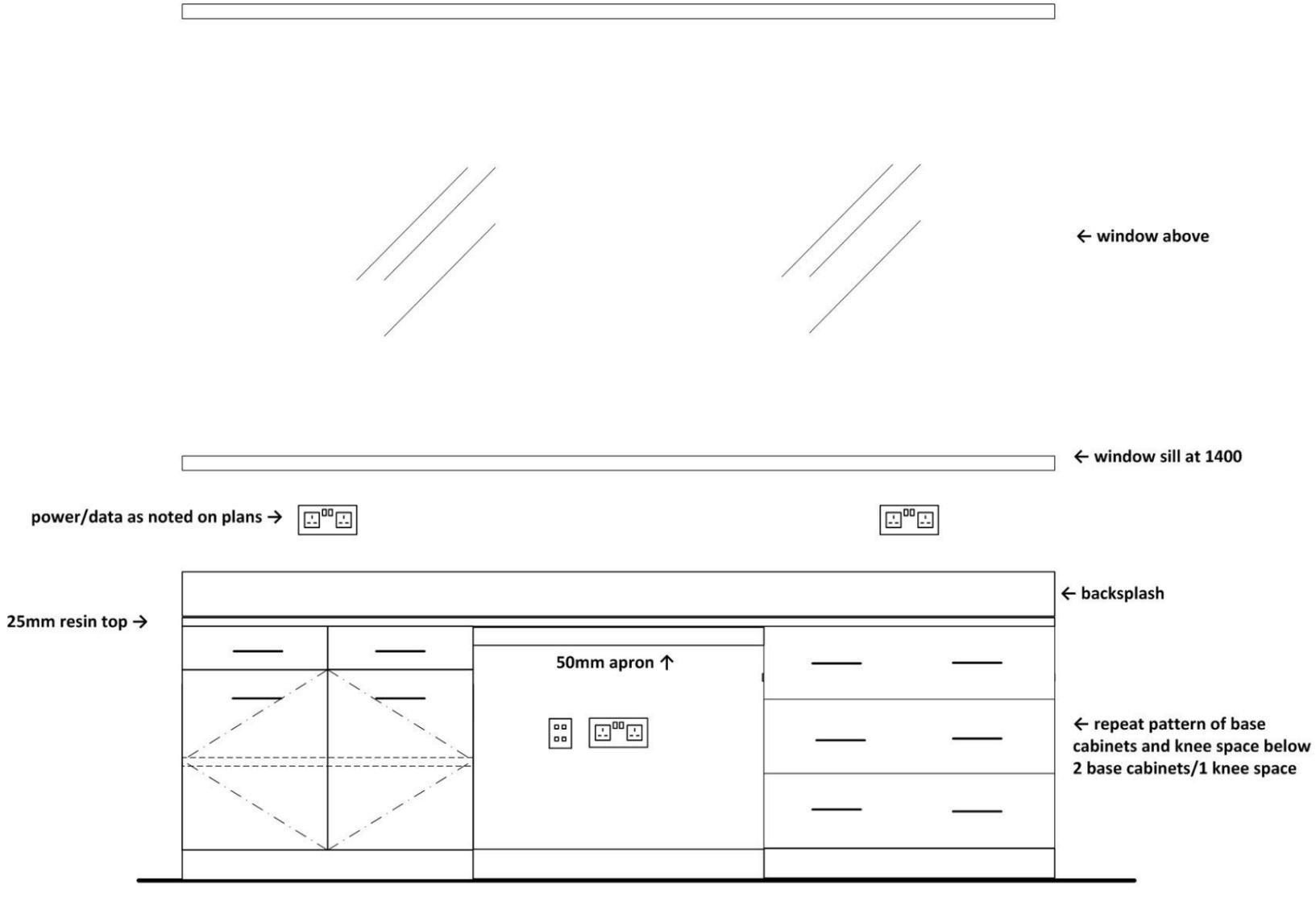
# SOIL MECHANICS LAB

KEY PLAN- GROUND FLOOR

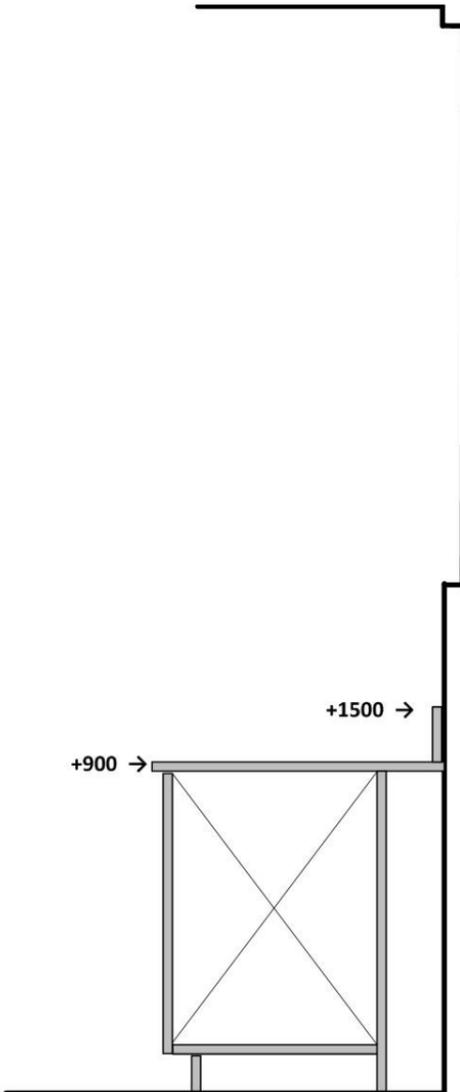


# SECTION DETAIL 1

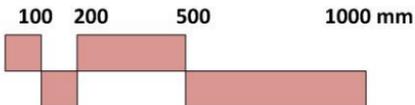
## WINDOW BENCH



**Elevation**

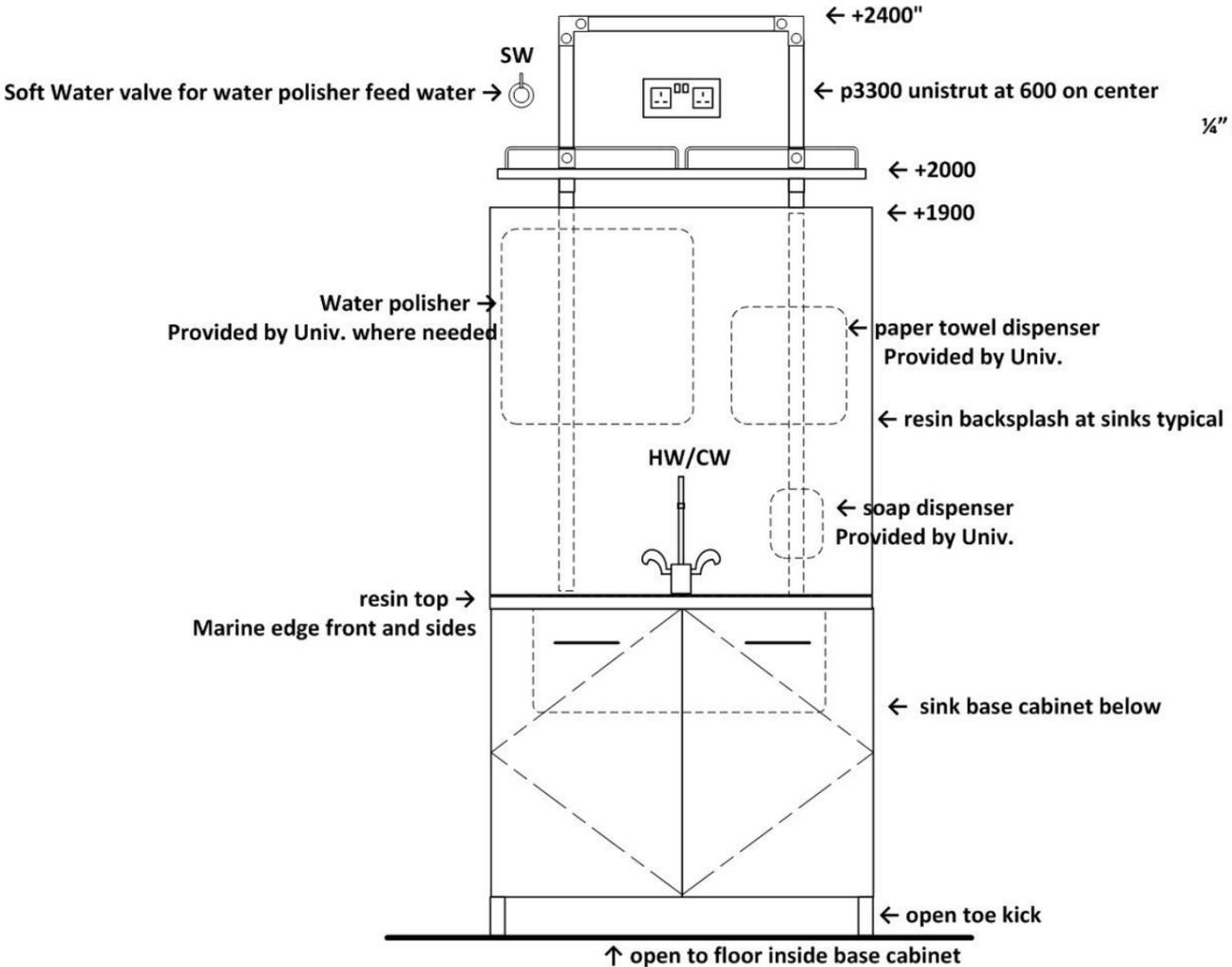


**Section**

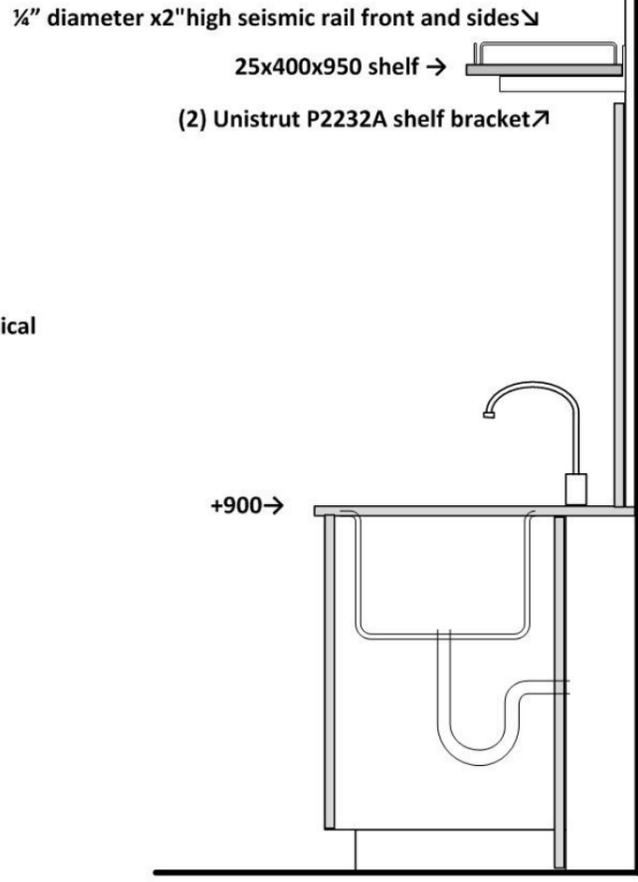


# SECTION DETAIL 2

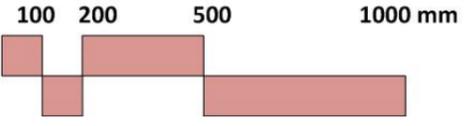
## SINK WITH WATER POLISHER



**Elevation**

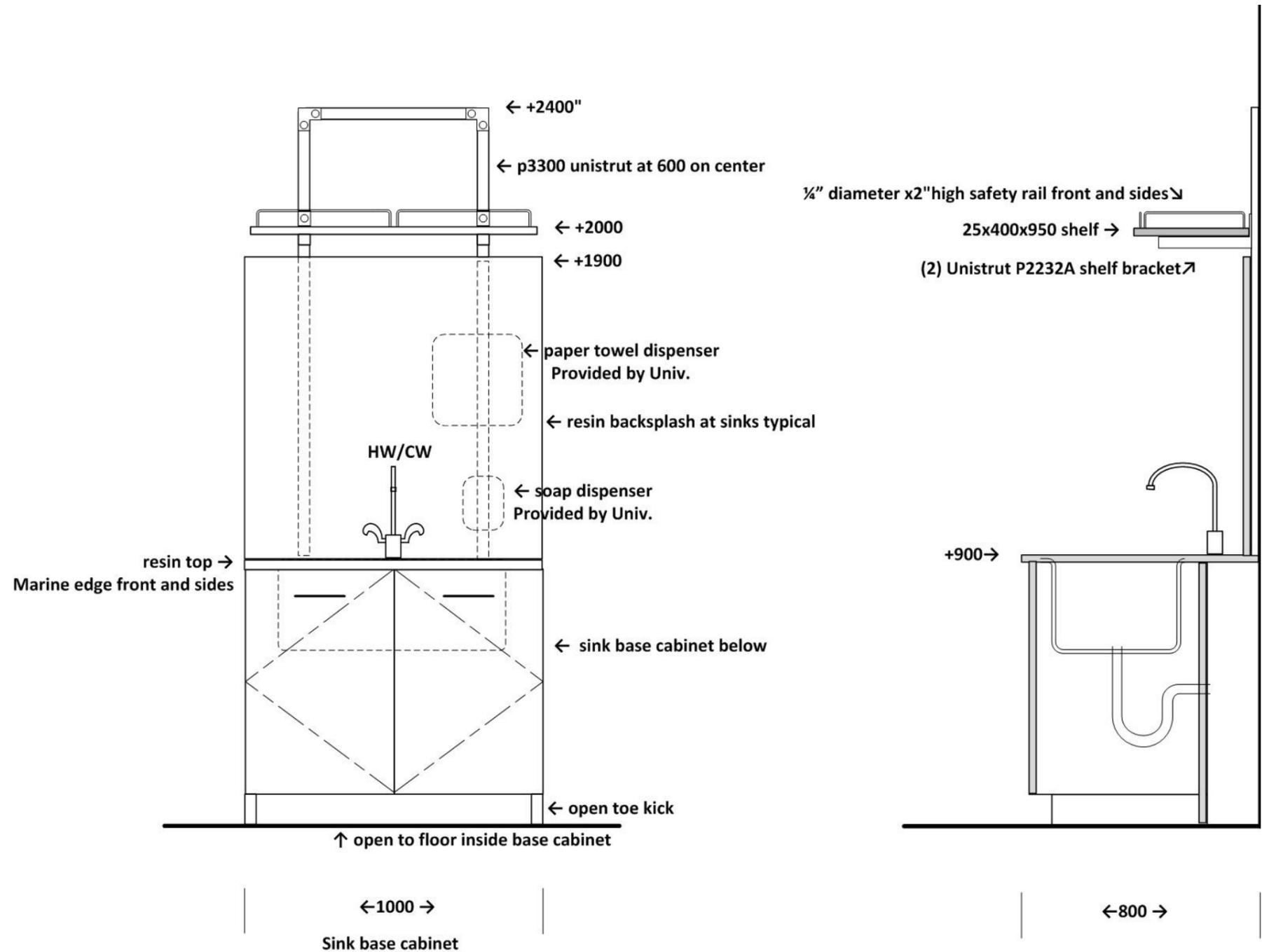


**Section**



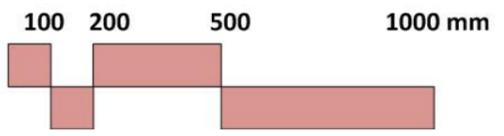
# SECTION DETAIL 2A

## SINK WITHOUT WATER POLISHER

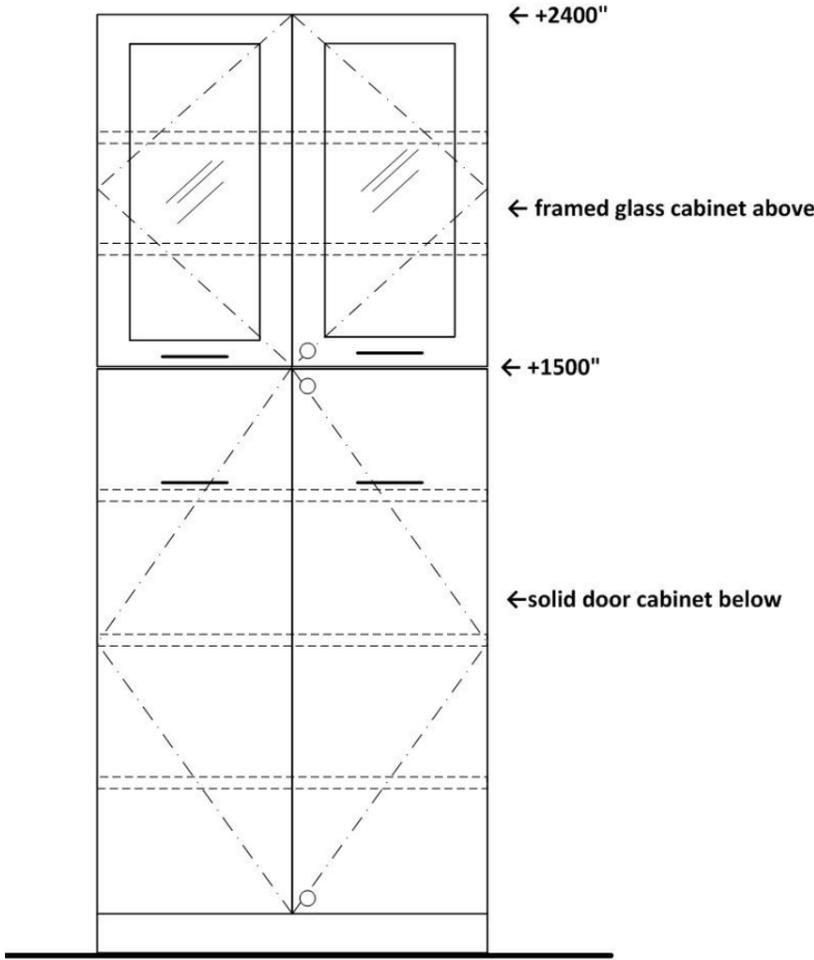


**Elevation**

**Section**



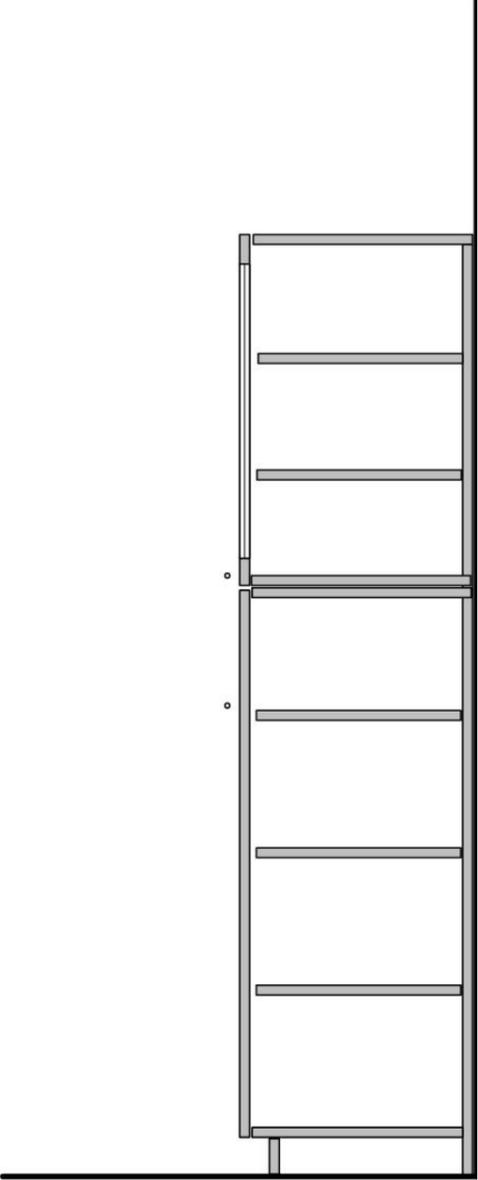
**SECTION DETAIL 4**  
**TALL STORAGE CABINET**



←1000→

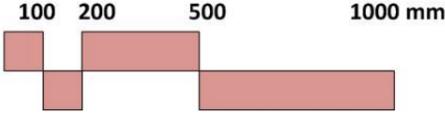
Tall Storage Cabinet  
With lockable doors

**Elevation**

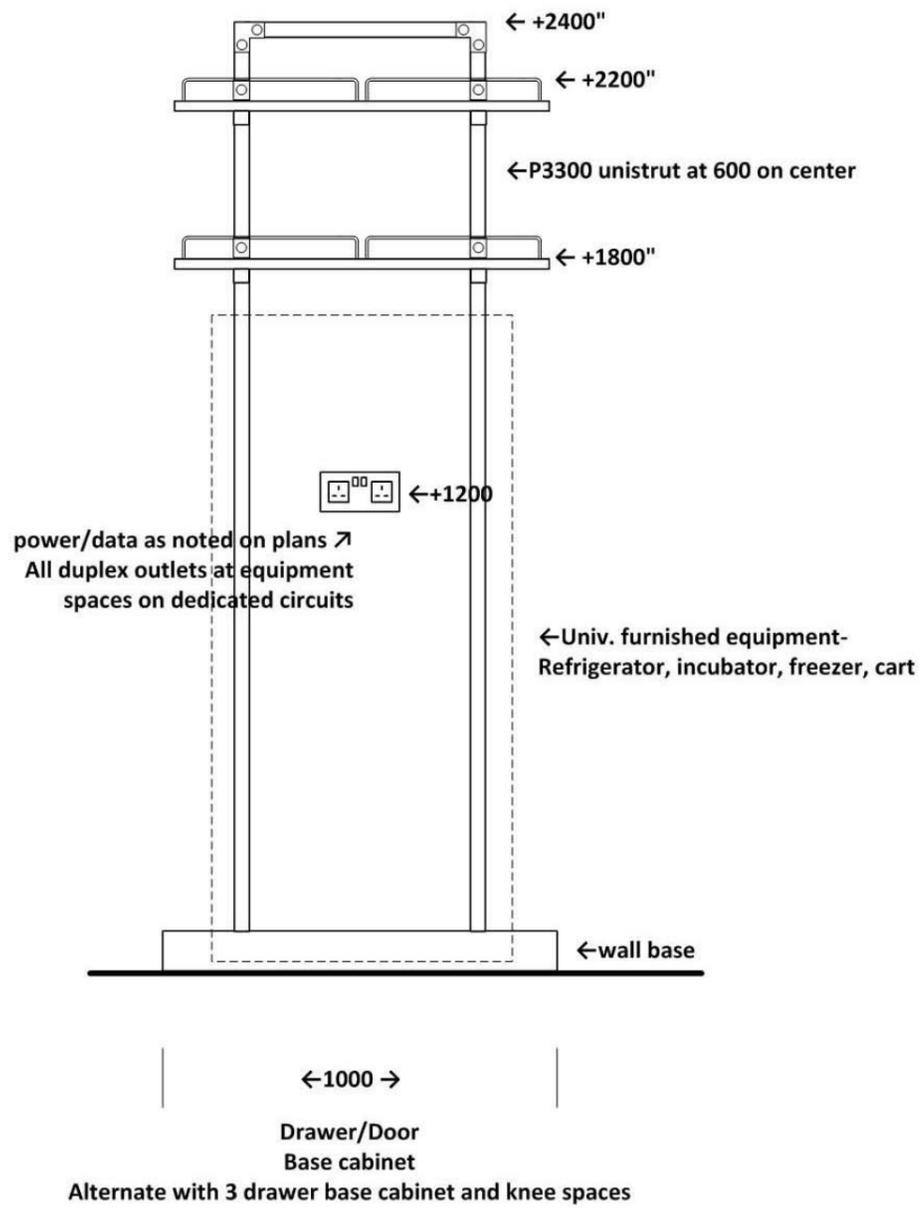


←600→

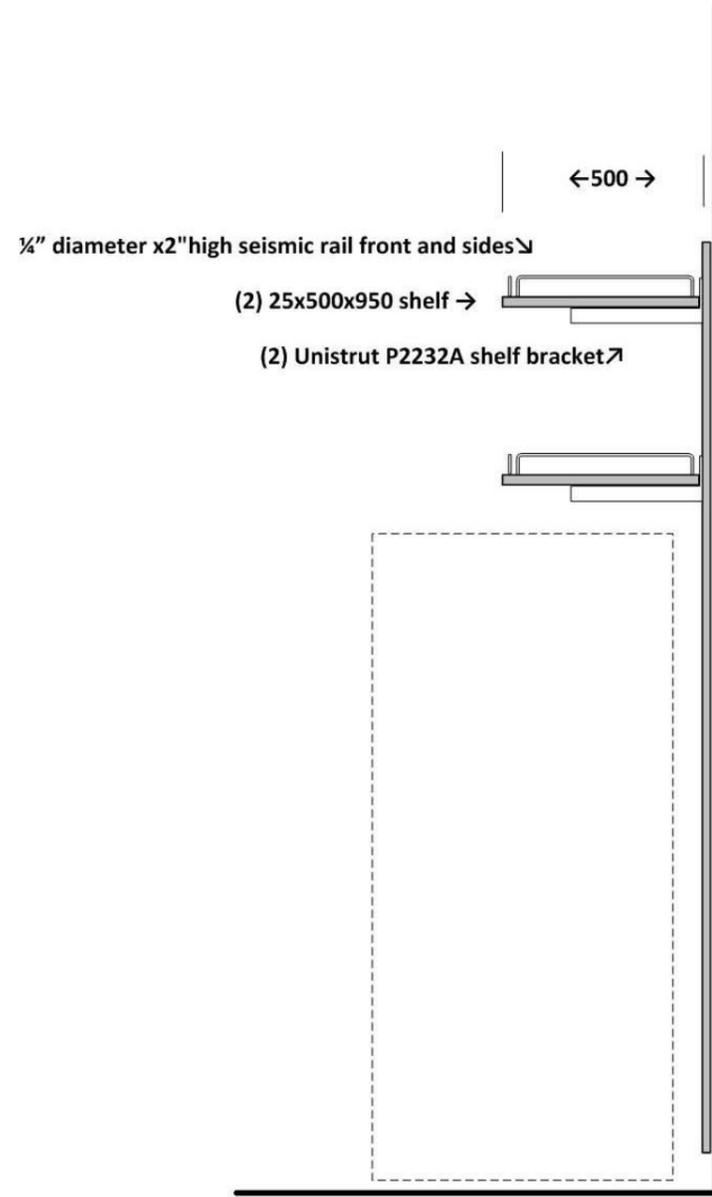
**Section**



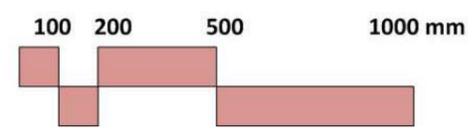
# SECTION DETAIL 5 EQUIPMENT SPACE



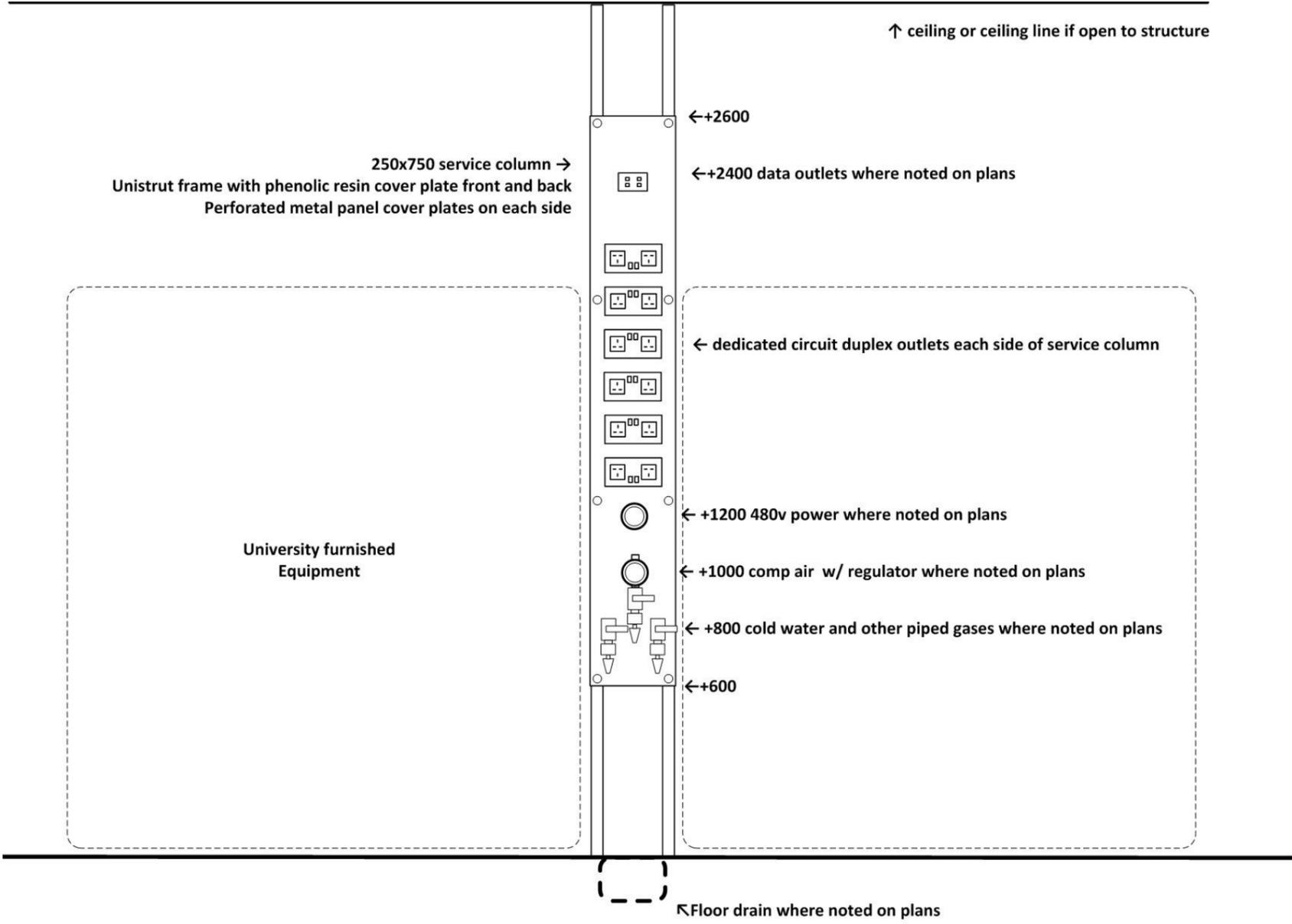
**Elevation**



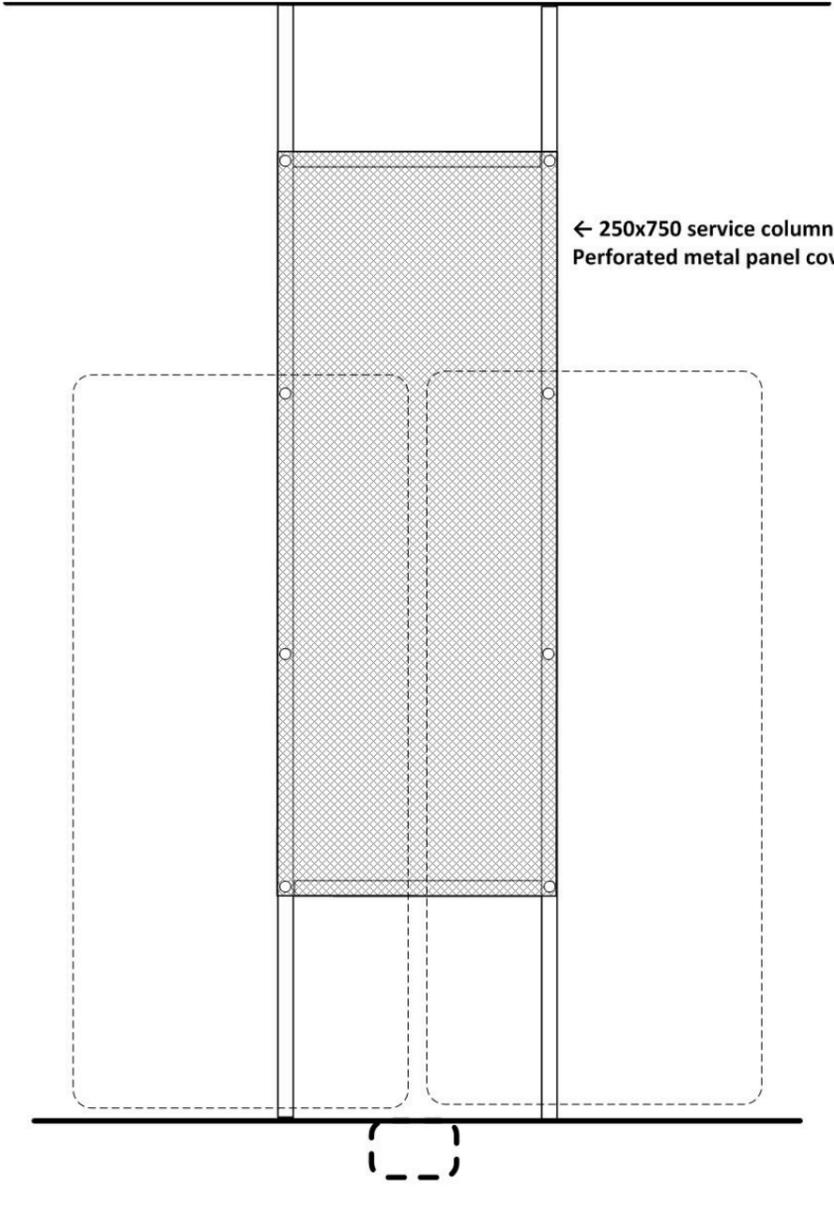
**Section**



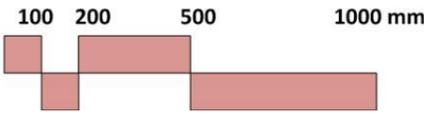
# SECTION DETAIL 7 EQUIPMENT ISLAND



Elevation

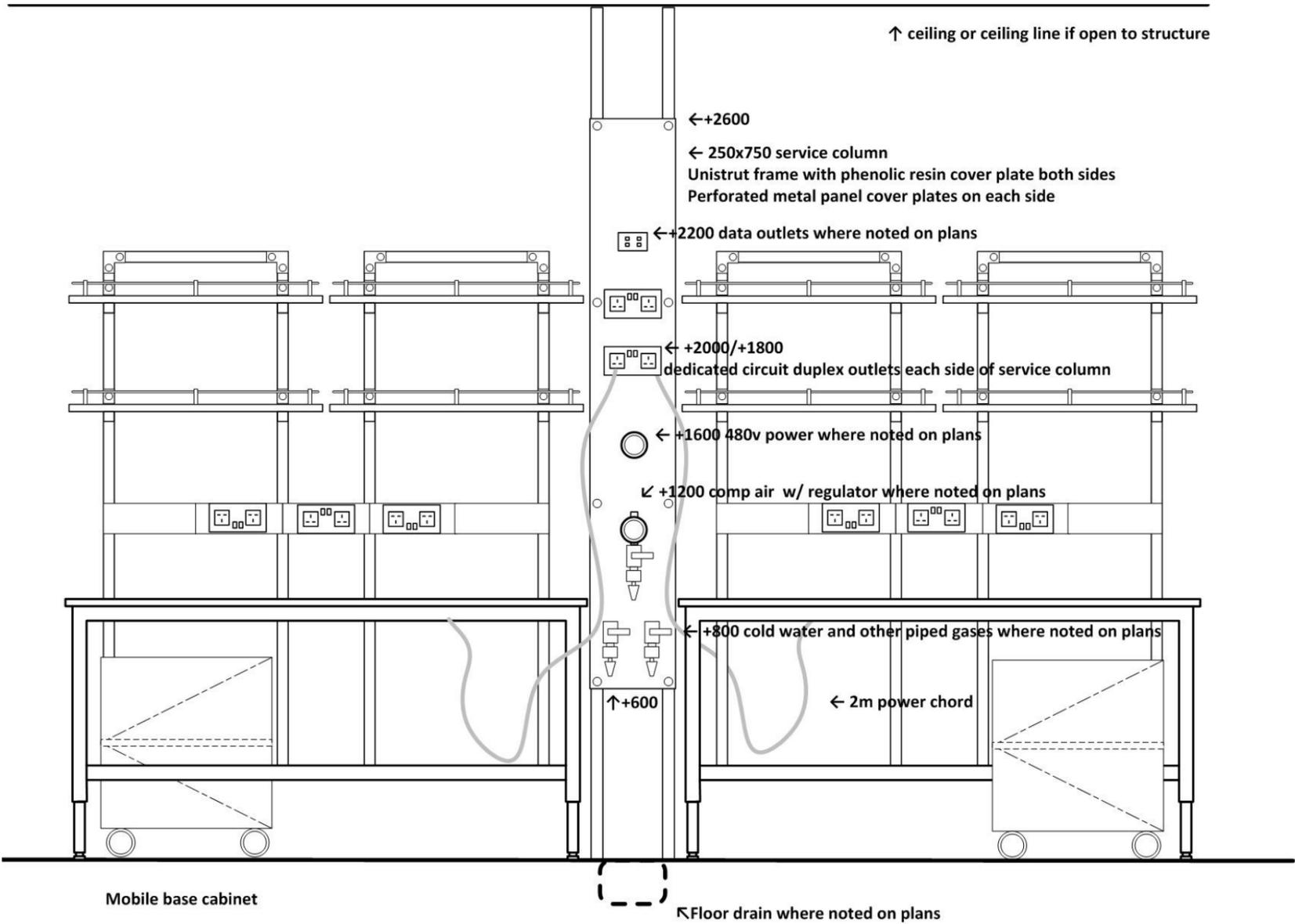


Section

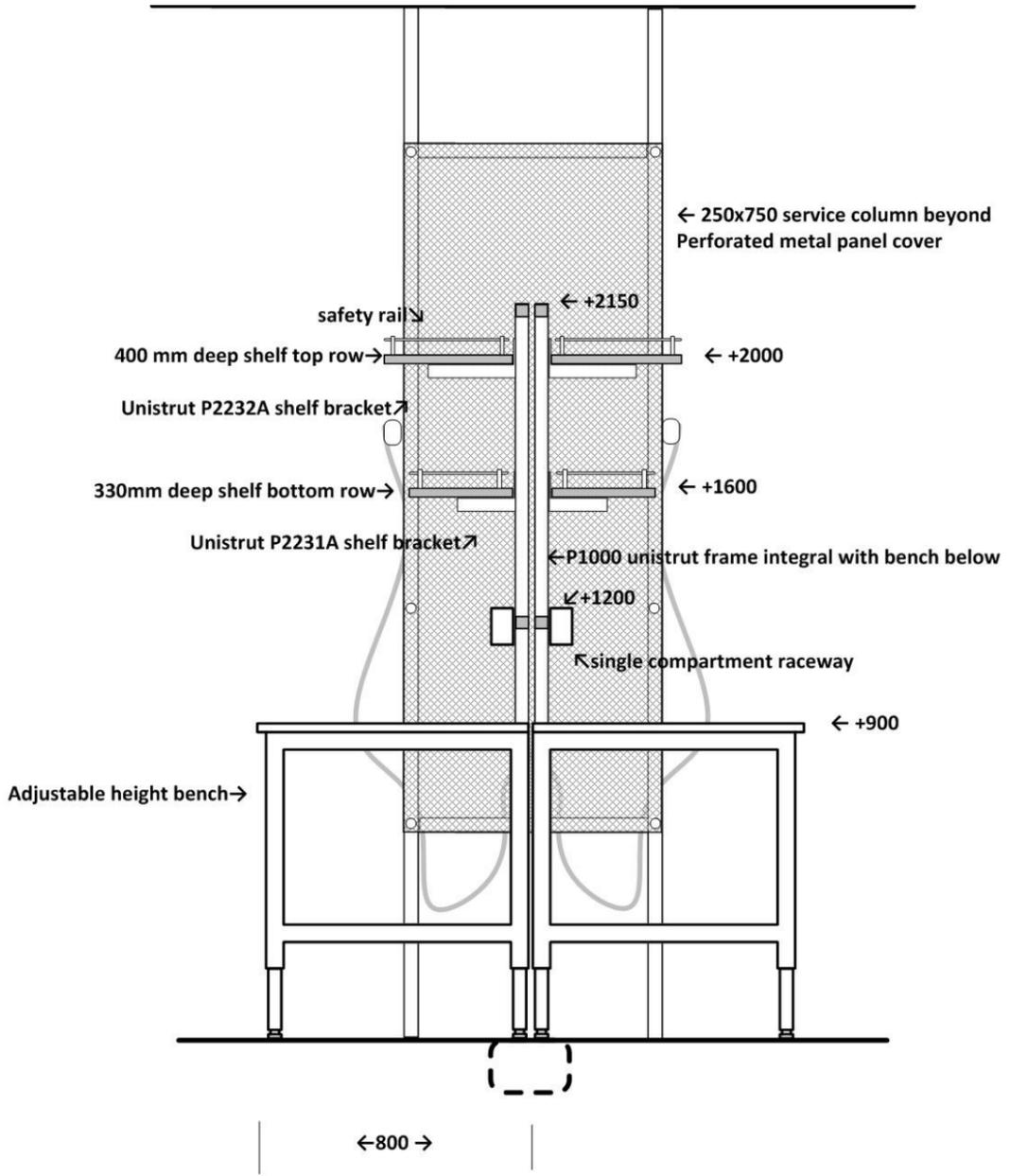


# SECTION DETAIL 10

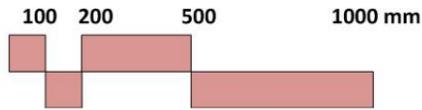
## MOBILE LAB BENCH ISLAND



Elevation

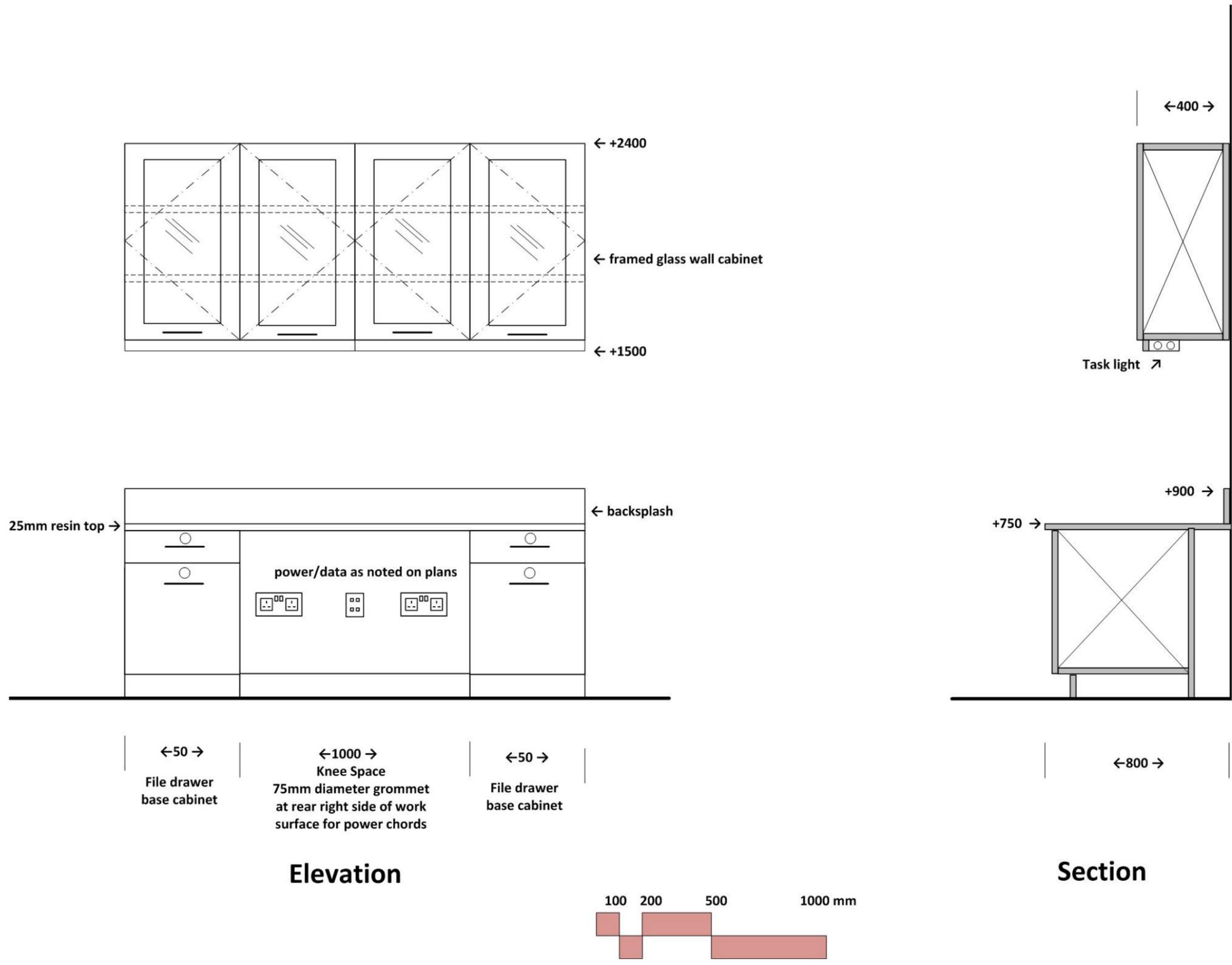


Section



# SECTION DETAIL 12

## LAB TECH WORKSTATION



**Elevation**

**Section**

## Protector® XStream™ Laboratory Hoods



Protector XStream Laboratory Hood 9840600 is shown with Spill Stopper Work Surface 9849800, Protector Acid Storage Cabinet 9901100 and Protector Standard Storage Cabinet 9900100. Blower, ductwork, work surface and base cabinets must be ordered separately.

All models conform to the following regulations and standards:

- SEFA 1-2002
- NFPA 45-2000
- ASTM E84-01
- ASHRAE 110-95
- ANSI Z9.5-1993
- UL 3101-1/61010-1
- CAN/CSA C22.2 No. 1010.1
- UL 1805
- CE Conformity Marking (230 volt models)†

Fixed models feature:

- Two pre-plumbed service fixtures with forged brass valves, lower right side with brass tubing for gas and lower left side with copper tubing for cold water. Components for converting either or both fixtures to air and vacuum are provided. **Inlet tubing is not provided.**
- One pre-wired 115 volt, 20 amp electrical duplex receptacle on lower right side.

All models require (not included):

- **Remote Blower.** See back pocket.
- **Ductwork.** See back pocket.
- **Work Surface.** See pages 92-95.
- **Base Cabinet or Stand.** See pages 96-106.

Optional accessories for on-site installation include:

- **Service Fixture Kits.** See page 107.
- **Electrical Duplex Kits.** See page 108.
- **Guardian Jr. and Digital Airflow Monitor Kits.** See page 108.
- **Distillation Grid Kits.** See page 110.
- **Sash Stop Kits.** See page 108.
- **Snuffer Fire Extinguishers.** See page 110.
- **Ceiling Enclosure and Rear Finish Panel Kits.** See page 109.

† U.S. Patent No. 6,961,233

‡ pending

§ Heights of switches, electrical receptacle and service fixtures meet requirements of ADA.

■ Exclusive Feature

All models feature:

- Modified by-pass airflow design.
- Ergonomic air foil with aerodynamic Clean-Sweep\* airflow openings.
- Upper Dilution Air Supply.\*
- Glacier white, dry powder epoxy-coated steel exterior.
- Chemical-resistant, fiberglass-reinforced, composite panel liner and pre-set Rear Downflow Dual Baffle System\* with flame spread less than 25 per ASTM E-84
- 3/16" thick tempered safety glass vertical-rising sash with epoxy-coated aluminum sash handle with large radius and perforations.\*

- Removable front and side panels and front and interior service access panels for access to plumbing and electrical wiring.
- Pre-wired T8 fluorescent lighting, ADA-compliant light and blower switches for 115 volt, 60 Hz operation.
- Sash stop located at 18" sash opening position.
- Epoxy-coated stainless steel, 12.81" ID exhaust connection(s).

Contact Labconco at **800-821-5525** or **816-333-8811** for ordering information on explosion-proof lighting and other sash configurations and for blower sizing assistance.

## Ordering Information

Protector® XStream™ Laboratory Hoods

ASHRAE 110-95 tests show less than 0.05 ppm leak rate when tested at 4.0 fpm; at OSHA-approved 60, 80, and 100 fpm face velocity and sash positions of 18" and 28". To ensure performance at 60 fpm, Labconco engineers challenged the Protector XStream Hood at less

than ideal conditions such as 30 fpm cross drafts, modified ASHRAE test procedures and average face velocities lower than 60 fpm. Contact Labconco for a technical paper with complete ASHRAE test data.

Total Exhaust CFM and Static Pressure @ 18" Sash Opening (60% open)

| Nominal Width | 100 fpm |       | 80 fpm |       | 60 fpm |       | CFM Savings at 60 fpm vs. 100 fpm | Total Average Annual Dollar Savings at 60 fpm vs. 100 fpm* |
|---------------|---------|-------|--------|-------|--------|-------|-----------------------------------|--|
|               | s.p.    |       | s.p.   |       | s.p.   |       |                                   |  |
| 4 feet        | 470     | 0.11" | 380    | 0.07" | 280    | 0.04" | 190                               | \$760  |
| 5 feet        | 610     | 0.13" | 490    | 0.08" | 370    | 0.05" | 240                               | \$960  |
| 6 feet        | 750     | 0.15" | 600    | 0.10" | 450    | 0.06" | 300                               | \$1200   |
| 8 feet        | 1060    | 0.12" | 850    | 0.08" | 640    | 0.04" | 420                               | \$1680   |

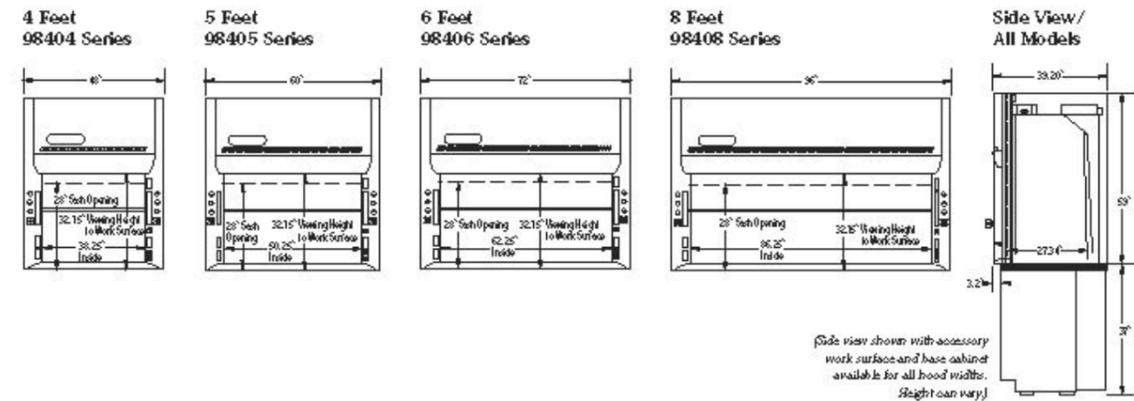
Total Exhaust CFM and Static Pressure @ 28" Sash Opening (100% open)

| Nominal Width | 100 fpm |       | 80 fpm |       | 60 fpm |       | CFM Savings at 60 fpm vs. 100 fpm | Total Average Annual Dollar Savings at 60 fpm vs. 100 fpm* |
|---------------|---------|-------|--------|-------|--------|-------|-----------------------------------|--|
|               | s.p.    |       | s.p.   |       | s.p.   |       |                                   |  |
| 4 feet        | 730     | 0.25" | 590    | 0.13" | 440    | 0.08" | 290                               | \$1160   |
| 5 feet        | 960     | 0.30" | 770    | 0.19" | 580    | 0.11" | 380                               | \$1520   |
| 6 feet        | 1190    | 0.36" | 940    | 0.23" | 710    | 0.13" | 470                               | \$1880   |
| 8 feet        | 1660    | 0.28" | 1330   | 0.18" | 1000   | 0.10" | 660                               | \$2640   |

\*Based on average annual dollars per CFM usage of \$4.00; fume hood operating 24 hours a day and 5 days per week (6240 hours per year).

| Catalog Number | Nominal Width | Electrical Requirements | Exterior Depth | Interior Working Depth | Fluorescent Lamps | Service Fixtures | Electrical Duplex | Exhaust Collar(s) | Shipping Wt. lbs./kg |
|----------------|---------------|-------------------------|----------------|------------------------|-------------------|------------------|-------------------|-------------------|----------------------|
| 9840400        | 4 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | None             | None              | 12.81" ID         | 400/181              |
| 9840401        | 4 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | 2                | 1                 | 12.81" ID         | 400/181              |
| 9840402**      | 4 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | None             | None              | 12.81" ID         | 400/181              |
| 9840403**      | 4 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | 2                | None              | 12.81" ID         | 400/181              |
| 9840500        | 5 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 460/209              |
| 9840501        | 5 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | 1                 | 12.81" ID         | 460/209              |
| 9840502**      | 5 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 460/209              |
| 9840503**      | 5 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | None              | 12.81" ID         | 460/209              |
| 9840600        | 6 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 520/236              |
| 9840601        | 6 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | 1                 | 12.81" ID         | 520/236              |
| 9840602**      | 6 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 520/236              |
| 9840603**      | 6 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | None              | 12.81" ID         | 520/236              |
| 9840800        | 8 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | None             | None              | (2) 12.81" ID     | 700/318              |
| 9840801        | 8 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | 2                | 1                 | (2) 12.81" ID     | 700/318              |
| 9840802**      | 8 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | None             | None              | (2) 12.81" ID     | 700/318              |
| 9840803**      | 8 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | 2                | None              | (2) 12.81" ID     | 700/318              |

\*\*International electrical configuration



Side view shown with accessory work surface and base cabinet available for all hood widths. Slight can vary.



# PRODUCT DIMENSIONS

DOMESTIC SIZES

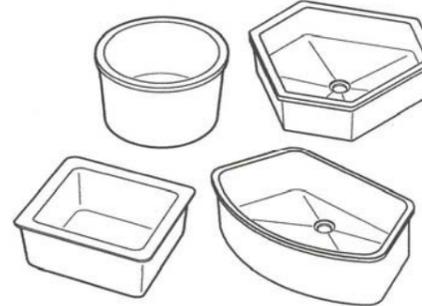
## SINK CUT SHEET

STANDARD LAB SINK:  
D52: ~600x450x280

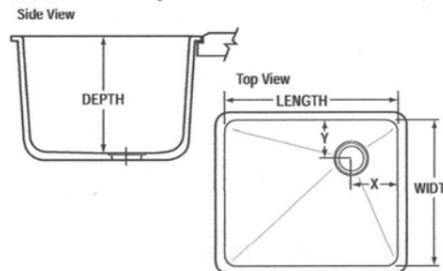
### Standard Dropln® Sinks

| Sink No. | Outlet | Wgt (lb) | Dimensions (in) |       |       |                 |     |
|----------|--------|----------|-----------------|-------|-------|-----------------|-----|
|          |        |          | Inside Bowl     |       |       | Outlet Location |     |
|          |        |          | Length          | Width | Depth | X               | Y   |
| D01C     | Center | 9        | 9.0             | 6.0   | 5.8   | 4.5             | 3.0 |
| D03C     | Center | 16       | 12.0            | 8.0   | 5.8   | 6.0             | 4.0 |
| A05      | Corner | 18       | 14.0            | 10.0  | 5.0   | 3.5             | 3.5 |
| D05      | Corner | 22       | 14.0            | 10.0  | 6.2   | 3.5             | 3.5 |
| D05C     | Center | 24       | 14.0            | 10.0  | 6.2   | 7.0             | 5.0 |
| D10      | End    | 20       | 16.0            | 8.0   | 6.8   | 4.5             | 4.0 |
| D10C     | Center | 22       | 16.0            | 8.0   | 6.8   | 8.0             | 4.0 |
| D15      | Corner | 30       | 16.0            | 12.0  | 8.0   | 3.5             | 3.5 |
| D15C     | Center | 31       | 16.0            | 12.0  | 8.0   | 8.0             | 6.0 |
| D19      | Corner | 42       | 16.0            | 16.0  | 9.6   | 3.5             | 3.5 |
| D20      | Corner | 32       | 16.0            | 16.0  | 7.5   | 3.5             | 3.5 |
| D22C     | Center | 30       | 18.0            | 6.5   | 6.8   | 9.0             | 3.3 |
| D24(C)   | Center | 30       | 18.0            | 14.0  | 10.5  | 9.0             | 6.8 |
| A25      | Corner | 35       | 18.0            | 15.0  | 5.0   | 3.5             | 3.5 |
| D25      | Corner | 39       | 18.0            | 15.0  | 7.9   | 3.5             | 3.5 |
| D30      | Corner | 53       | 18.0            | 15.0  | 11.0  | 3.5             | 3.5 |
| D30C     | Center | 50       | 18.0            | 15.0  | 10.8  | 9.0             | 7.5 |
| D33E     | End    | 59       | 21.0            | 17.0  | 9.8   | 4.5             | 8.5 |
| D45      | Corner | 64       | 21.5            | 15.5  | 11.0  | 3.5             | 3.5 |
| D50C     | Center | 48       | 24.0            | 16.0  | 8.0   | 12.0            | 8.0 |
| D52      | Corner | 77       | 24.0            | 18.0  | 11.0  | 3.5             | 3.5 |
| A55      | Corner | 47       | 25.0            | 15.0  | 4.8   | 3.5             | 3.5 |
| D55      | Corner | 61       | 25.0            | 15.0  | 10.0  | 3.5             | 3.5 |
| D59      | Corner | 61       | 28.0            | 15.0  | 11.8  | 3.5             | 3.5 |
| DRS12    | Center | 18       | 12.0            | Round | 7.8   | Center          |     |

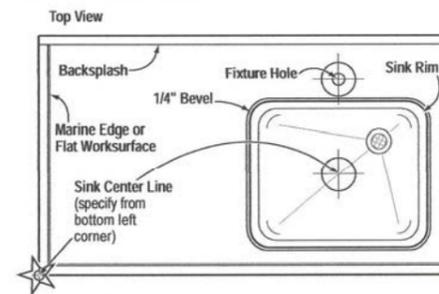
### Dropln® Sink Styles



### Dimensions Key



### Installation Detail



### Special Order Dropln® Sinks

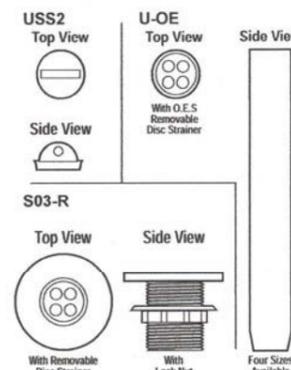
| Sink No. | Outlet | Wgt (lb) | Dimensions (in) |             |       |                 |      |
|----------|--------|----------|-----------------|-------------|-------|-----------------|------|
|          |        |          | Inside Bowl     |             |       | Outlet Location |      |
|          |        |          | Length          | Width       | Depth | X               | Y    |
| D06*     | Center | 34       | 12.0            | 12.0        | 12.0  | 6.0             | 6.0  |
| A07*     | Corner | 24       | 14.0            | 14.0        | 5.0   | 3.5             | 3.5  |
| D08*     | Corner | 25       | 15.0            | 8.0         | 6.0   | 3.5             | 3.5  |
| D09*     | Corner | 25       | 15.0            | 8.0         | 10.8  | 3.5             | 3.5  |
| D21*     | Corner | 58       | 16.0            | 16.0        | 15.0  | 3.5             | 3.5  |
| A26*     | Corner | 39       | 18.0            | 15.0        | 5/11  | 4.5             | 5.5  |
| D32      | Corner | 49       | 18.0            | 15.0        | 15.8  | 3.5             | 3.5  |
| D51*     | Corner | 60       | 24.0            | 16.0        | 9.6   | 3.5             | 3.5  |
| D54*     | Corner | 45       | 25.0            | 15.0        | 8.0   | 3.5             | 3.5  |
| D57*     | Corner | 71       | 25.0            | 15.0        | 13.6  | 3.5             | 3.5  |
| D58*     | Corner | 79       | 25.0            | 15.0        | 17.8  | 3.5             | 3.5  |
| D61      | End    | 94       | 30.0            | 16.0        | 17.8  | 4.5             | 7.5  |
| D65C*    | Center | 98       | 35.5            | 19.5        | 9.8   | 17.8            | 9.8  |
| D68**    | End    | 70       | 30.0            | 16.0        | 10.0  | 4.75            | 8.0  |
| D70C*    | Center | 95       | 24.0            | 16.0        | 15.5  | 8.0             | 12.0 |
| D100**   | Center | 29       | 22.5            | Hexagon     | 5.0   | Center          |      |
| D200**   | End    | 64       | 30.9            | Hexagon     | 7.0   | 15.5            | 8.0  |
| DRS10*   | Center | 14       | 10.0            | Round       | 7.8   | Center          |      |
| DHC20*   | End    | 82       | 30.0            | Hexagon     | 7.0   | Center          |      |
| D99*     | End    | 56       | 32.0            | Semi-Circle | 10.0  | 11.5            | 4.5  |

All sinks are available at both plants unless they are Special Order Sinks, available as noted:  
 \* Available only from Taylor, TX, plant (colors: Black Ornyx, Gray, Graphite, Tan, Forest Green and Steel Blue).  
 \*\* Available only from Canton, MI, plant (colors: Black Ornyx, Gray and Alpine White)

ADA compliant sinks are designated by this symbol.

All Dimensions are nominal. Exterior dimensions vary by MFG location. Cutsheets available upon request.

### Outlets & Accessories



WWW.DURCON.COM

206 Allison Drive • Taylor, TX 76574 • Phone: 512.595.8000 • Fax: 512.595.8400 • E-mail: sales@durcon.com

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Rev. 02/08

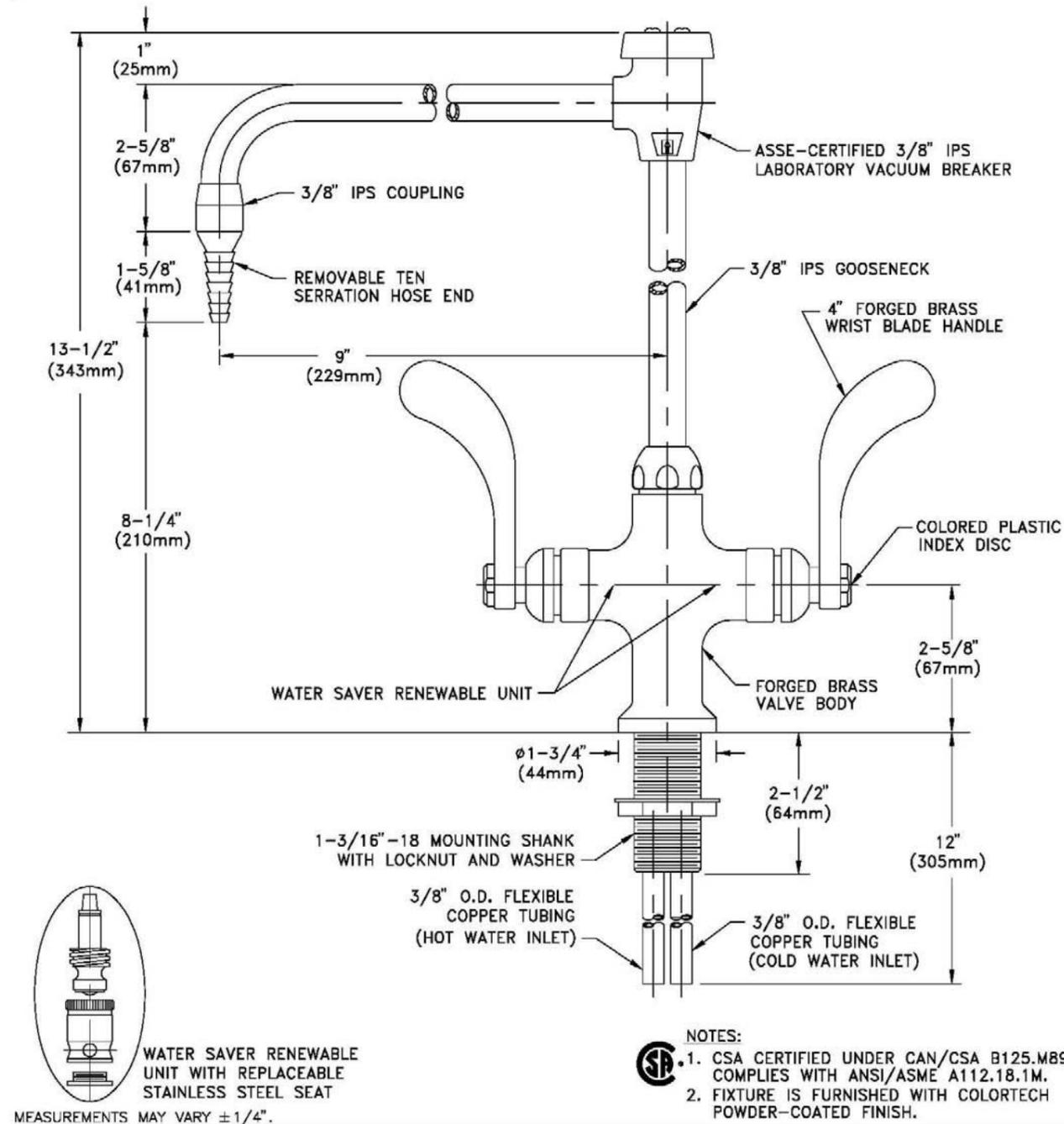
# HOT/COLD WATER FAUCET CUT SHEET

## COLORTECH

701 West Erie Street Phone 312 666 5500  
Chicago, Illinois 60610 Fax 312 666 8597

Laboratory Service Fixtures by  
WaterSaver Faucet Co.

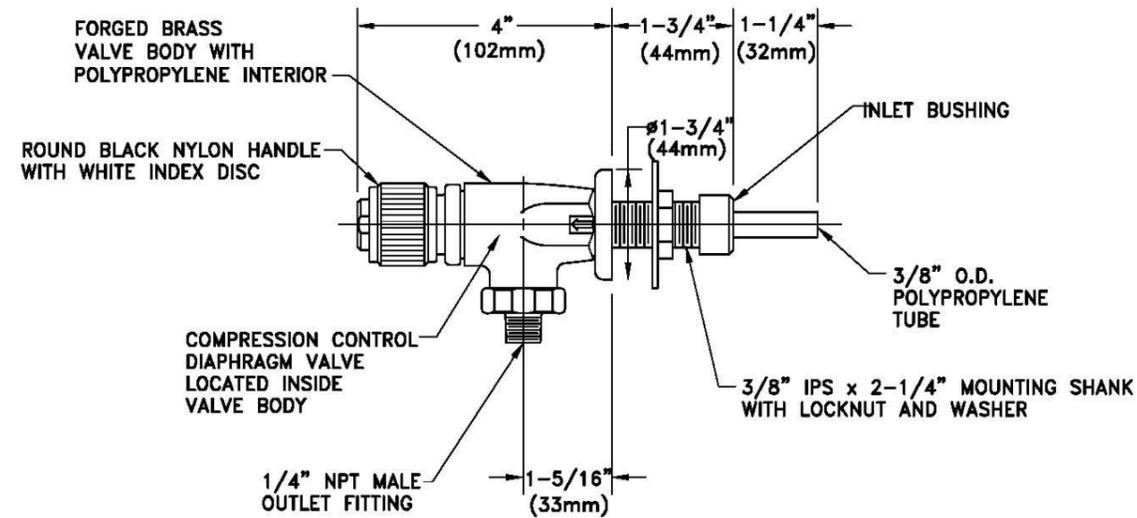
CT414-9VB-BH  
LABORATORY MIXING FAUCET, DECK MOUNTED, 9" RIGID/SWING VACUUM BREAKER GOOSENECK, WRIST  
BLADE HANDLES



Drawing Number: \_\_\_\_\_

Revision Number: 031803-KJS

**L7844-1/4**  
PANEL MOUNTED PURE WATER FIXTURE WITH ALL-POLYPROPYLENE INTERNAL CONSTRUCTION AND 1/4" NPT MALE OUTLET FITTING



**NOTES:**

1. MAXIMUM WORKING PRESSURE IS 50 PSI.
2. ALL COMPONENTS IN CONTACT WITH PURE WATER ARE POLYPROPYLENE.
3. FIXTURE INLET HAS 3/8" O.D. POLYPROPYLENE TUBE. IF REQUIRED, SPECIFY ADAPTER WHEN ORDERING.
4. PROVIDE 3/4" HOLE FOR MOUNTING.

MEASUREMENTS MAY VARY ±1/4".

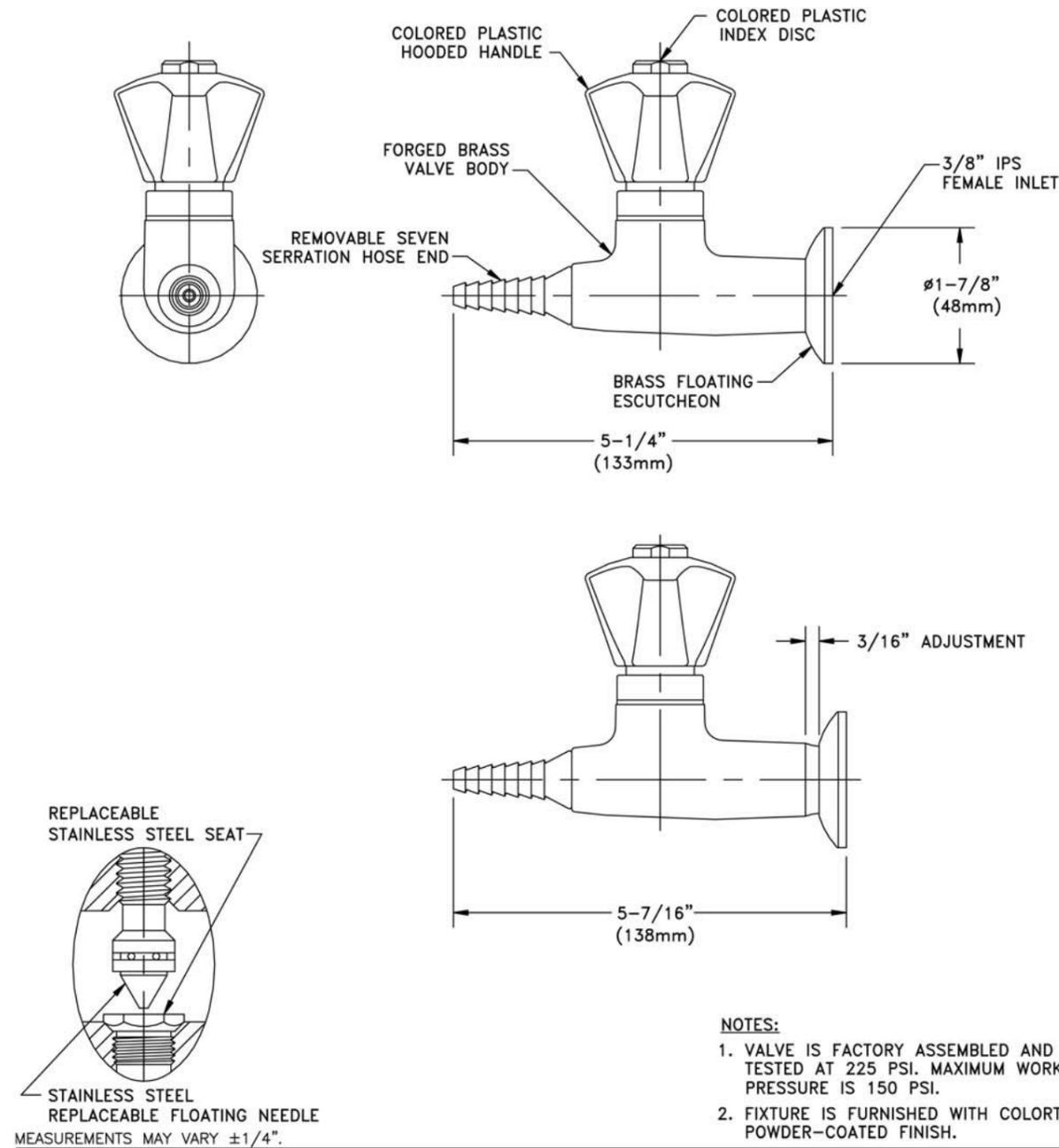
Drawing Number: \_\_\_\_\_

Revision Number: 012204-DWC

Laboratory Service Fixtures by  
WaterSaver Faucet Co.

CT4880FT-325

LABORATORY NEEDLE VALVE ASSEMBLY, WALL MOUNTED, FLOATING ESCUTCHEON

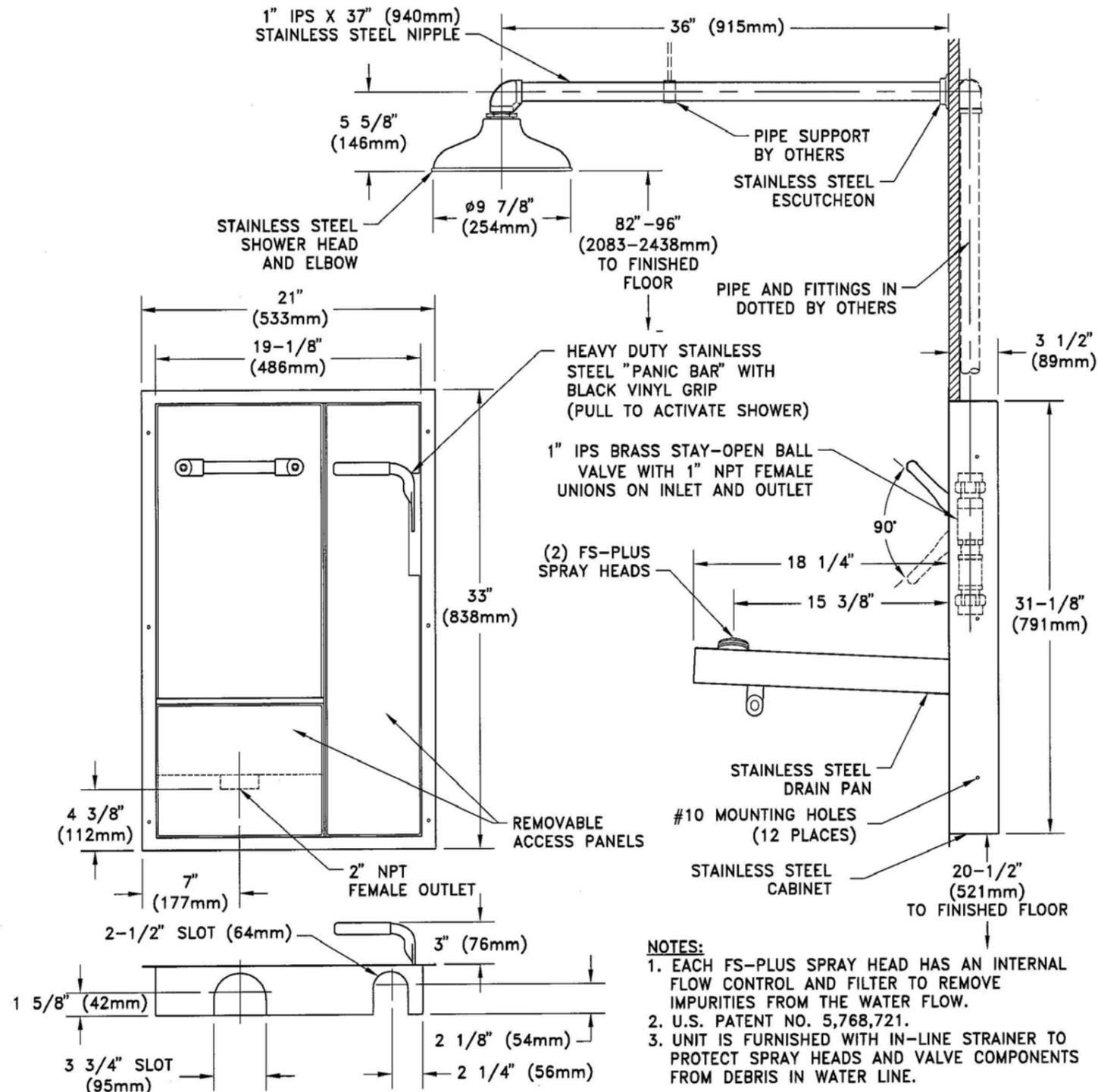


Drawing Number: \_\_\_\_\_

Revision Number: 060807-SJP

# SAFETY SHOWER CUT SHEET

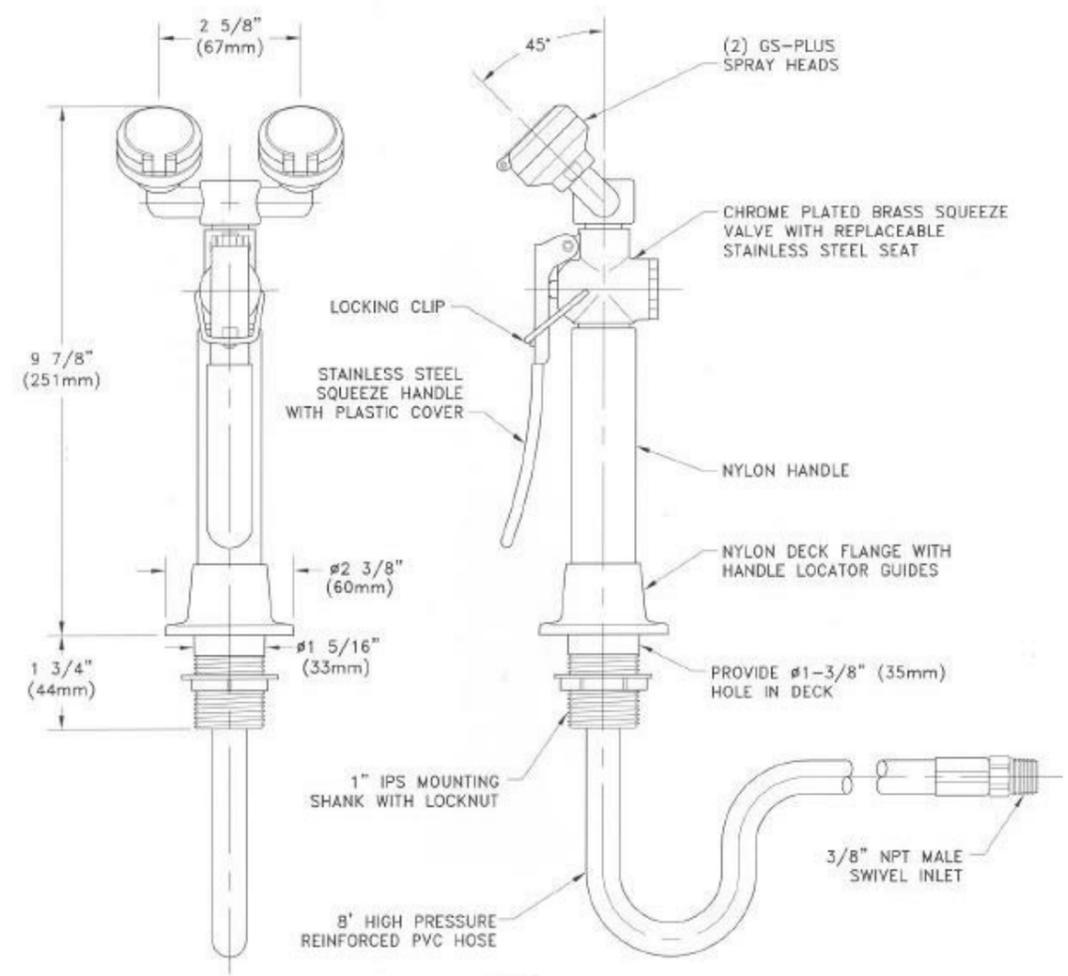
## SSBF2170 RECESSED SAFETY STATION WITH DRAIN PAN



UNITS (EXCEPT THOSE WITH SELF-CLOSING VALVES) COMPLY WITH THE REQUIREMENTS OF ANSI Z358.1. TEST ALL EMERGENCY EQUIPMENT AT LEAST WEEKLY.

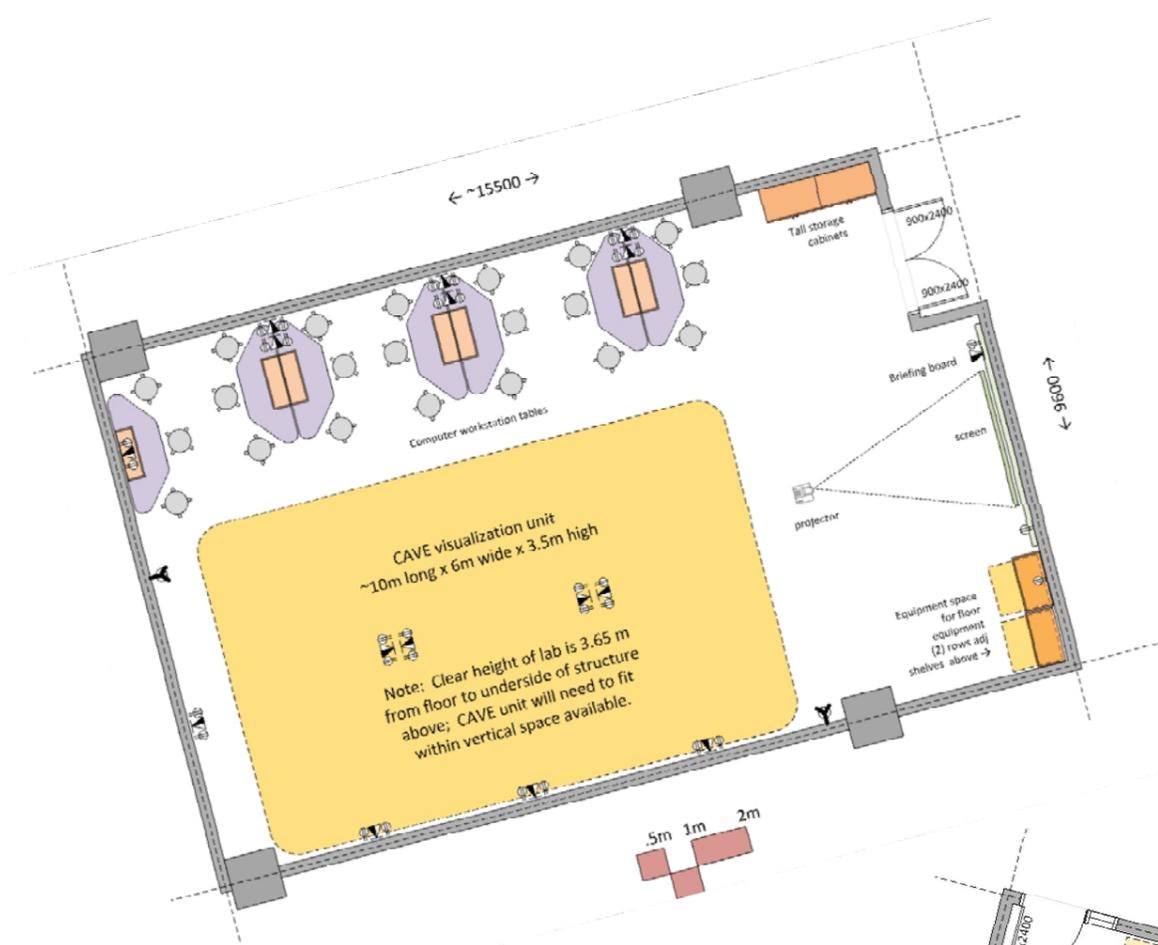
# WaterSaver

## EW1022 Eye Wash/Drench Hose Unit, Deck Mounted



- NOTES:
1. EACH GS-PLUS SPRAY HEAD HAS A "FLIP-TOP" DUST COVER, INTERNAL FLOW CONTROL AND FILTER TO REMOVE IMPURITIES FROM THE WATER FLOW.
  2. HOSE SHOULD NOT BE USED IN APPLICATIONS WHERE WATER PRESSURE EXCEEDS 90 PSI. HOSE SHOULD BE INSPECTED PERIODICALLY FOR DETERIORATION.

**WaterSaver Faucet Company** 701 West Erie Street 312.666.5500 Phone watersaverfaucet.com  
Chicago, Illinois 60610 312.666.8597 Fax

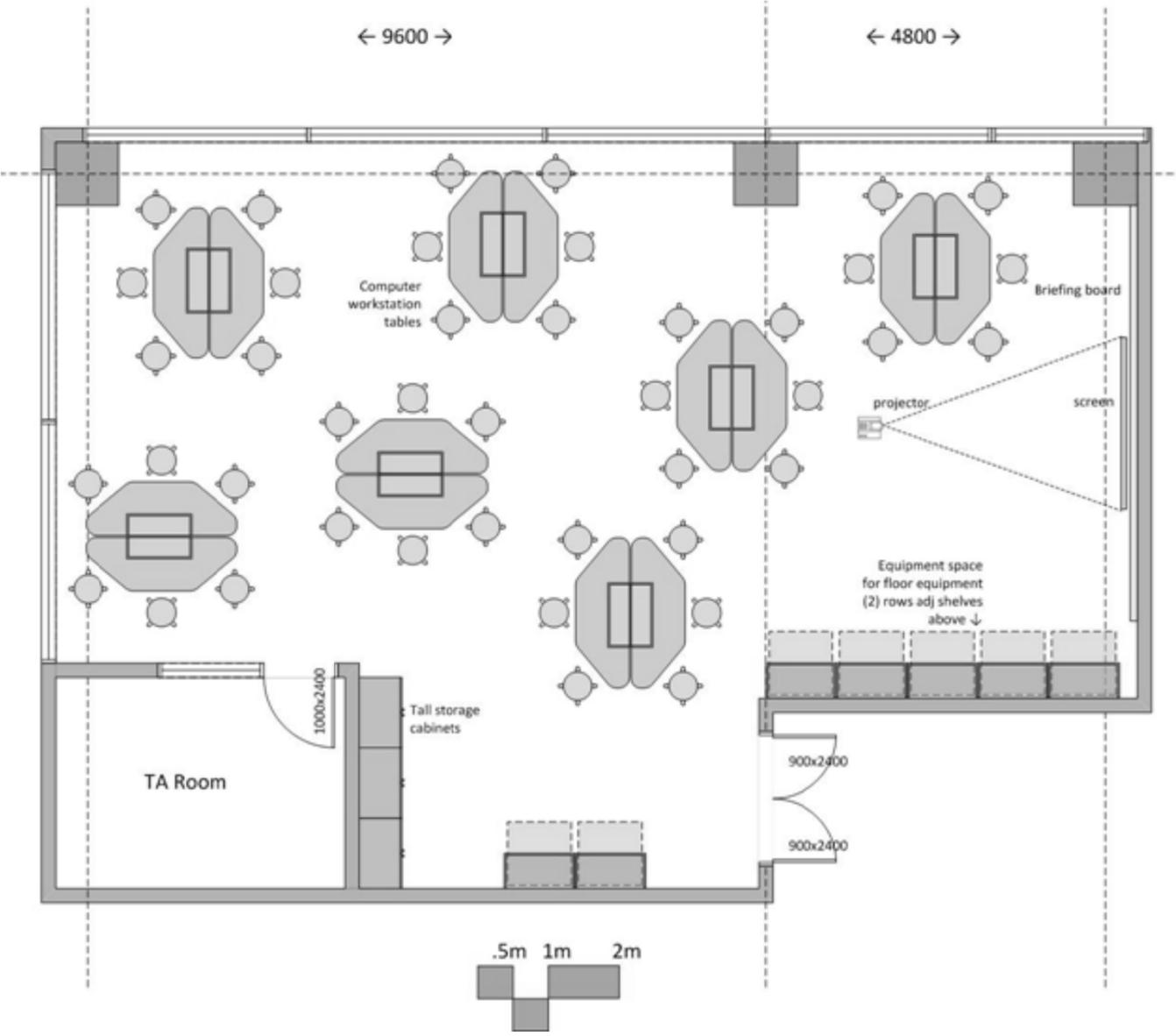


# COMPUTER SCIENCE LABORATORY DESIGN SKETCHBOOK

New College of Engineering  
Qatar University  
2012 Aug 16

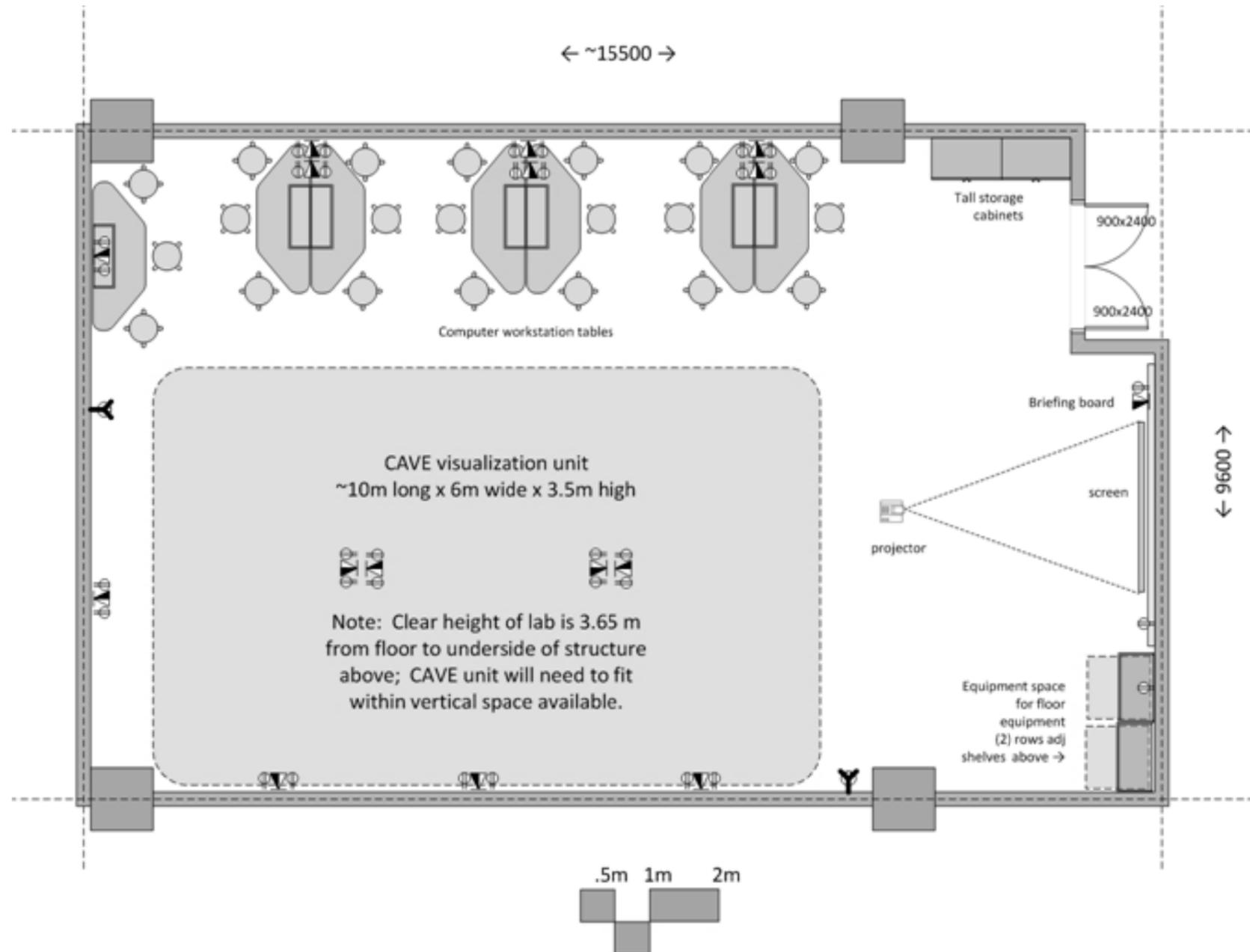


# CONTENTS



- Summary . . . . . 3
- Symbol Legend . . . . . 4
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- Comp Sci Lab Female w/ TA Room . . . . . 9
- Specialized Computer Lab Female . . . . . 11
- Comp Sci Lab Male w/o TA Room . . . . . 13
- Comp Sci Lab Male w/ TA Room . . . . . 15
- Visualization & Interactive Media Lab . . . . . 17
- Specialized Computer Lab Female . . . . . 19  
 note: Comp Sci requests similar lab for male use

# SUMMARY



This second edition sketchbook (revised) comprises the labs assigned to the Computer Science Department. It includes electrical and plumbing outlets and fittings. This document provides the basis of design intent for the labs. It provides basic information to assist the design team in preparing construction documents and to provide information for lab casework manufacturers to provide shop drawing submittals.

  
 Glen Berry, AIA  
 Laboratory Consultant to Mimar  
 glenberry@designforscience.com

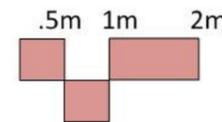
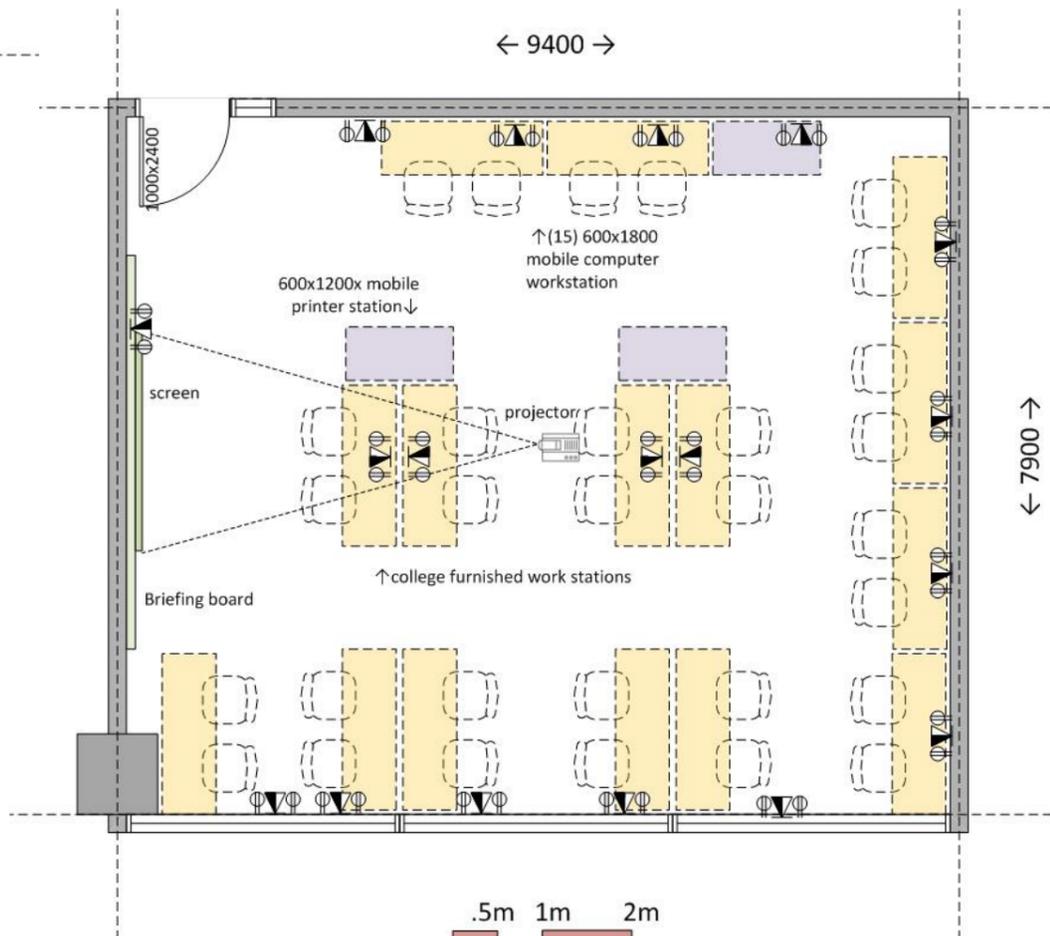
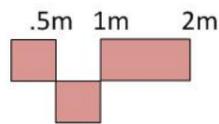
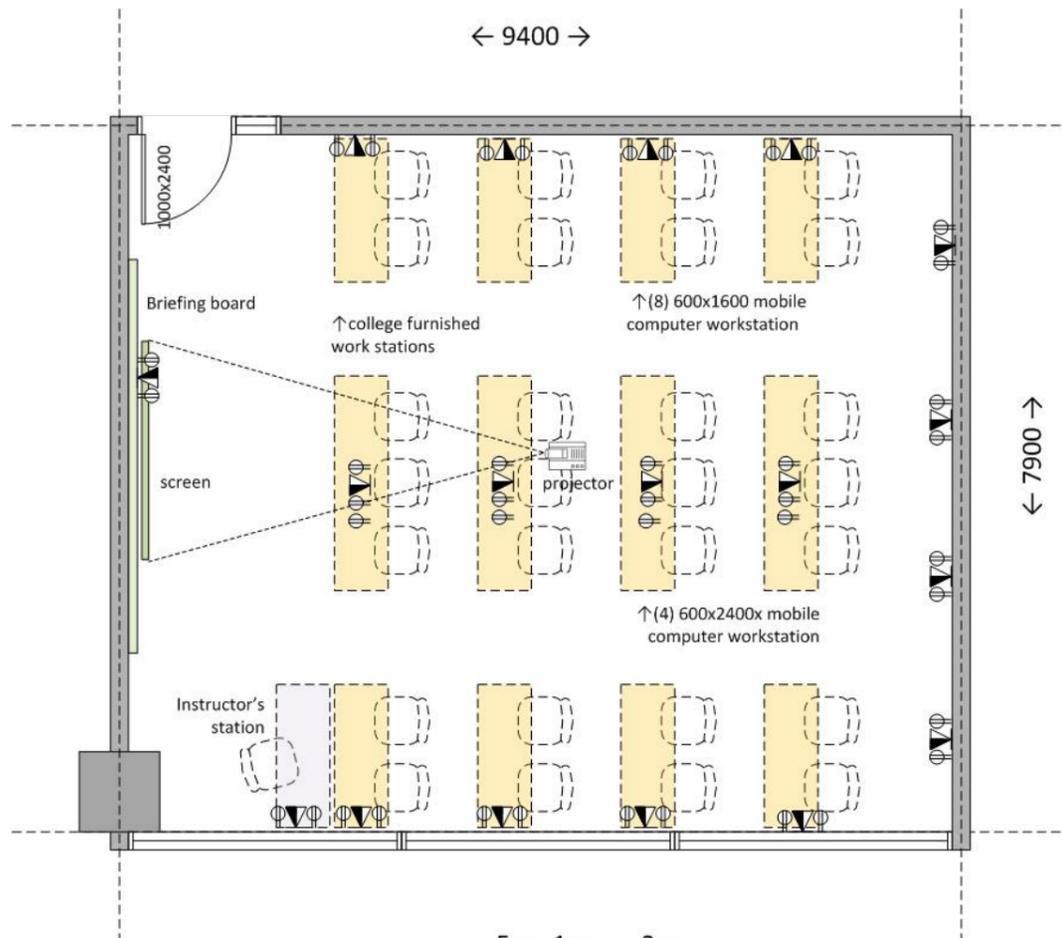


## SYMBOL LEGEND

 **240v duplex electrical**  
**Dedicated circuit at equipment space**  
**UPS power for computer labs**  
**Outlets in center floor area accessible via**  
**recessed floor panel system**

 **415v 3phase 60 amp electrical**  
**With quick disconnect switch**

 **Data/phone box**



## COMPUTER SCIENCE LAB- FEMALE WITHOUT TA ROOM

**GROUND FLOOR- (1) LAB**  
**SIMILAR FOR (1) OTHER LAB- FIRST FLOOR**  
**SIMILAR FOR (1) OTHER LAB- SECOND FLOOR**

### ARCHITECTURAL

Floor: static free carpet over recessed floor panels  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m above floor  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 40 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 Recirculated air  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: neutral

### PLUMBING

None

### ELECTRICAL

240v receptacles at floor and perimeter  
 Maximum of four outlets per circuit  
 power at center area accessed via recessed floor panels  
 UPS power supply  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 40 f.c.  
 Power, data, and lighting design shall accommodate either  
 plan layout indicated at left

### CONTRACTOR FURNISHED EQUIPMENT

Briefing board  
 Projector and screen

### COLLEGE FURNISHED EQUIPMENT

Computer workstations  
 Printer workstations

# COMPUTER SCIENCE LAB- FEMALE WITHOUT TA ROOM

KEY PLAN- GROUND FLOOR



# COMPUTER SCIENCE LAB- FEMALE WITHOUT TA ROOM

KEY PLAN- FIRST FLOOR



# COMPUTER SCIENCE LAB- FEMALE

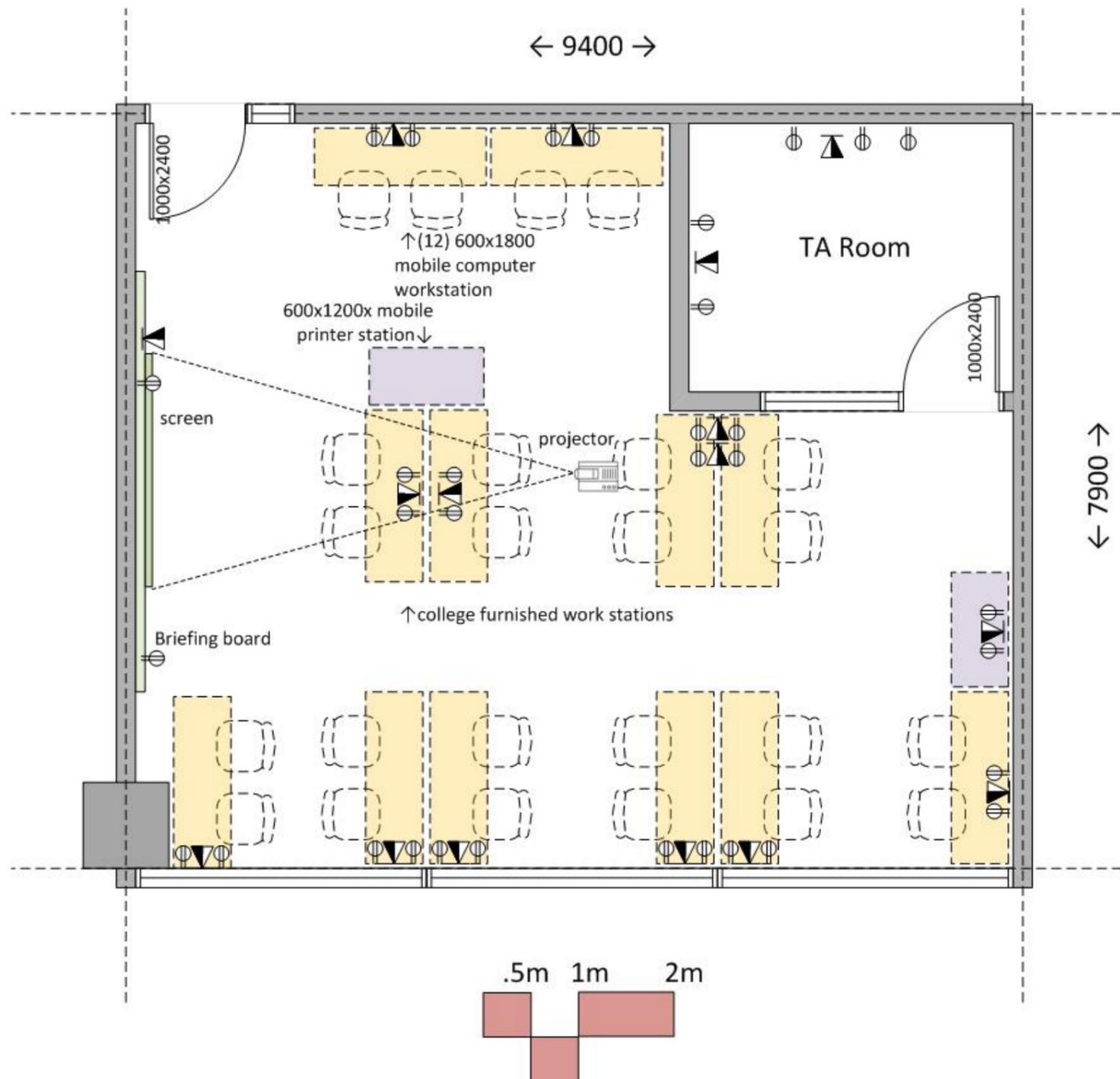
## WITHOUT TA ROOM

KEY PLAN- SECOND FLOOR



# COMPUTER SCIENCE LAB- FEMALE WITH TA ROOM

SECOND FLOOR  
SIMILAR FOR (2) OTHER LABS SECOND FLOOR



## ARCHITECTURAL

Floor: static free carpet over recessed floor panels  
Walls: cmu with plaster, paint  
Ceiling: acoustic tile at 3 m above floor  
Doors with vision panels  
Vibration attenuation: 25 micrometers/second or less  
Sound attenuation: NC 40 or less  
Light attenuation: at exterior windows with exterior sun shade

## MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
Recirculated air  
Equipment heat gain: 500-750 btuh/square meter  
Humidity: 30-50% relative  
Pressure: neutral

## PLUMBING

None

## ELECTRICAL

240v receptacles at floor and perimeter  
Maximum of four outlets per circuit  
power at center area accessed via recessed floor panels  
UPS power supply  
Data junction boxes at perimeter and islands  
Wireless data connection  
Lighting: indirect fluorescent at 40 f.c.

## CONTRACTOR FURNISHED EQUIPMENT

Briefing board  
Projector and screen

## COLLEGE FURNISHED EQUIPMENT

Computer workstations  
Printer workstations

# COMPUTER SCIENCE LAB- FEMALE WITH TA ROOM

KEY PLAN- SECOND FLOOR



# SPECIALIZED COMPUTER LAB- FEMALE

**SECOND FLOOR**  
**NOTE: COMP SCI REQUESTS SIMILAR LAB FOR MALE USE**

**ARCHITECTURAL**  
 Floor: static free carpet over recessed floor panels  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m above floor  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 40 or less  
 Light attenuation: at exterior windows with exterior sun shade

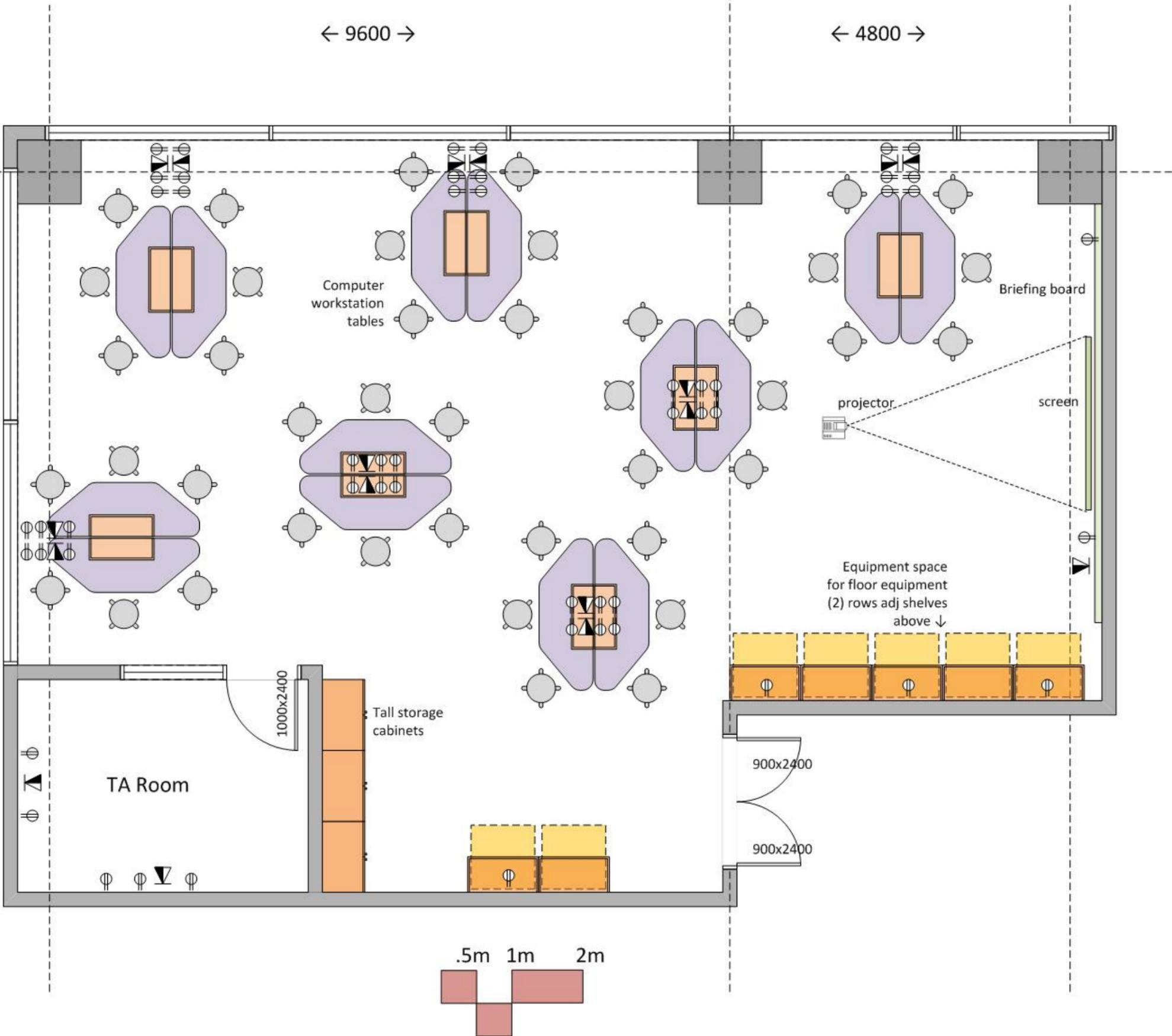
**MECHANICAL**  
 Temperature: 22 deg. C +/- 1 deg. C  
 Recirculated air  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: neutral

**PLUMBING**  
 None

**ELECTRICAL**  
 240v receptacles at floor and perimeter  
 Maximum of four outlets per circuit  
 power at center area accessed via recessed floor panels  
 UPS power supply  
 Data junction boxes at perimeter and workstations  
 Wireless data connection  
 Lighting: indirect fluorescent at 40 f.c.

**CONTRACTOR FURNISHED EQUIPMENT**  
 Briefing board  
 Projector and screen

**COLLEGE FURNISHED EQUIPMENT**  
 Computer workstations  
 CAVE visualization unit



# SPECIALIZED COMPUTER LAB- FEMALE

KEY PLAN- SECOND FLOOR

NOTE: COMP SCI REQUESTS SIMILAR LAB FOR MALE USE



# COMPUTER SCIENCE LAB- MALE

## WITHOUT TA ROOM

**FIRST FLOOR**  
SIMILAR FOR (1) OTHER LAB FIRST FLOOR

**ARCHITECTURAL**  
 Floor: static free carpet over recessed floor panels  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m above floor  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 40 or less  
 Light attenuation: at exterior windows with exterior sun shade

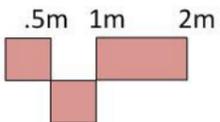
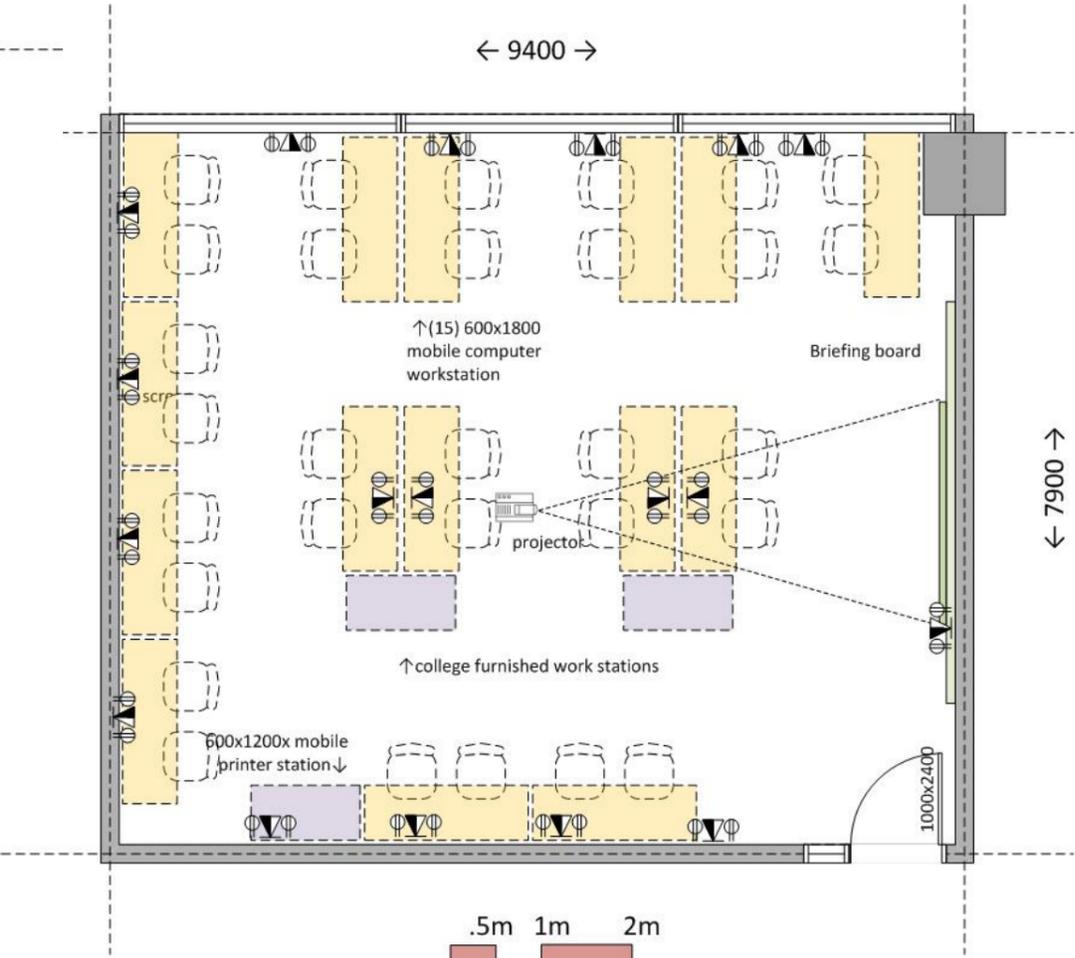
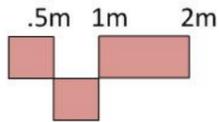
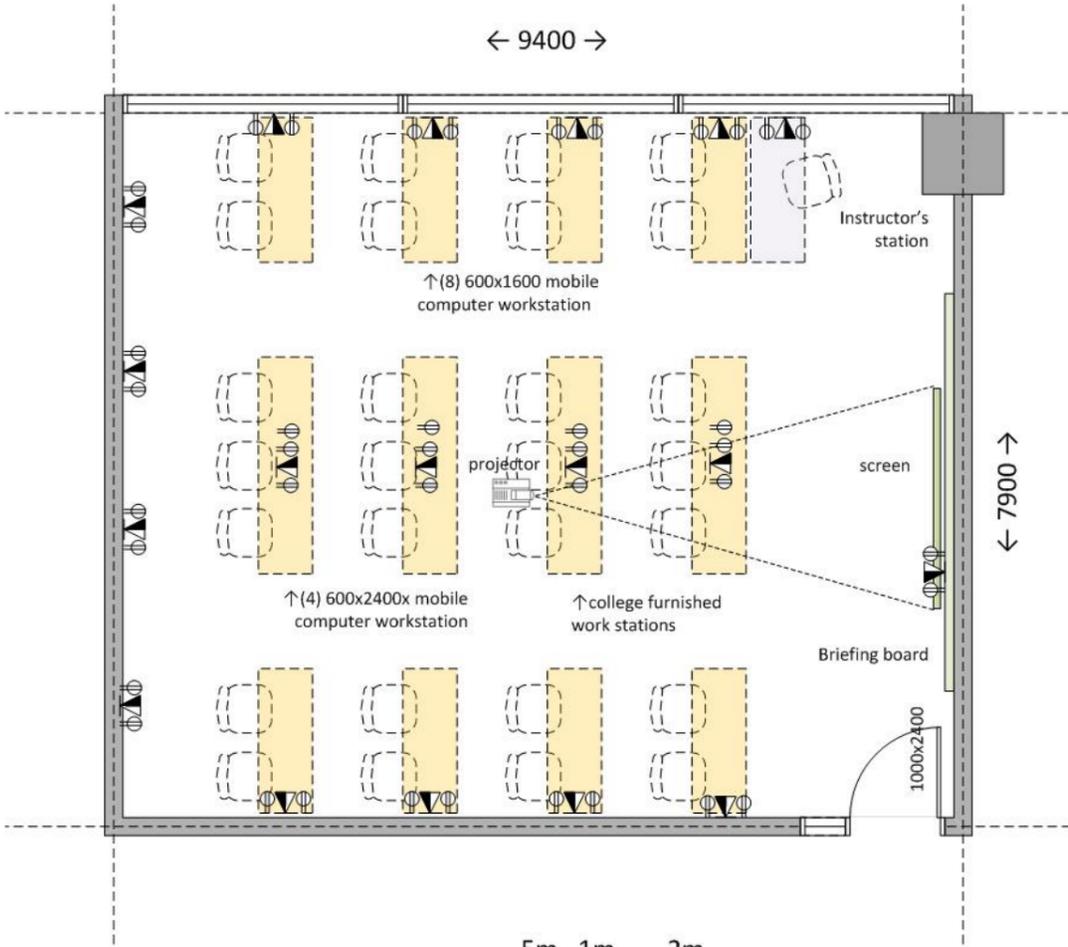
**MECHANICAL**  
 Temperature: 22 deg. C +/- 1 deg. C  
 Recirculated air  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: neutral

**PLUMBING**  
None

**ELECTRICAL**  
 240v receptacles at floor and perimeter  
 Maximum of four outlets per circuit  
 power at center area accessed via recessed floor panels  
 UPS power supply  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 40 f.c.  
 Power, data, and lighting design shall accommodate either plan layout indicated at left

**CONTRACTOR FURNISHED EQUIPMENT**  
 Briefing board  
 Projector and screen

**COLLEGE FURNISHED EQUIPMENT**  
 Computer workstations  
 Printer workstations



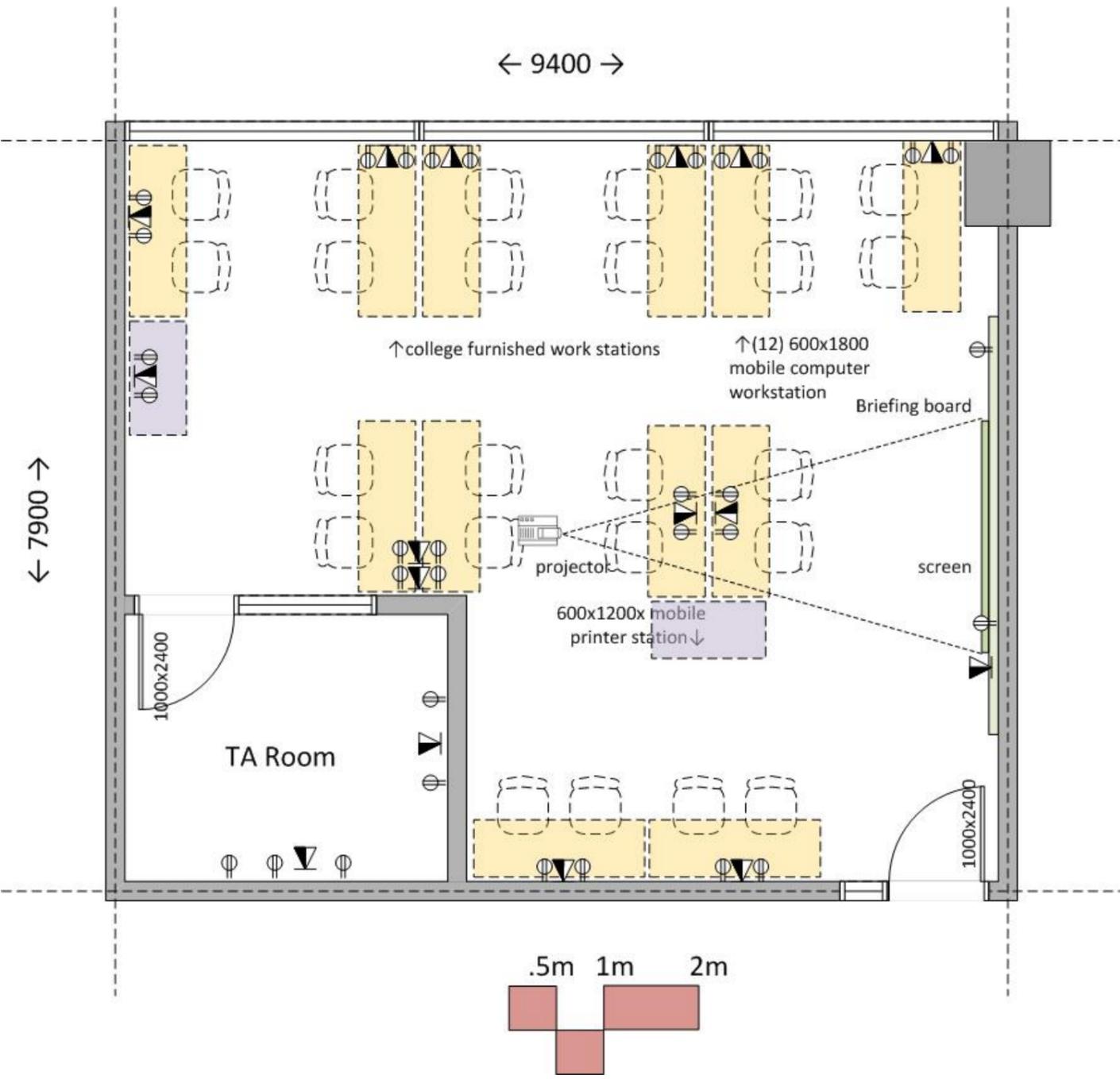
# COMPUTER SCIENCE LAB- MALE WITHOUT TA ROOM

KEY PLAN- FIRST FLOOR



# COMPUTER SCIENCE LAB- MALE WITH TA ROOM

FIRST FLOOR  
SIMILAR FOR (1) OTHER LAB FIRST FLOOR



**ARCHITECTURAL**  
 Floor: static free carpet over recessed floor panels  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m above floor  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 40 or less  
 Light attenuation: at exterior windows with exterior sun shade

**MECHANICAL**  
 Temperature: 22 deg. C +/- 1 deg. C  
 Recirculated air  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: neutral

**PLUMBING**  
 None

**ELECTRICAL**  
 240v receptacles at floor and perimeter  
 Maximum of four outlets per circuit  
 power at center area accessed via recessed floor panels  
 UPS power supply  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 40 f.c.

**CONTRACTOR FURNISHED EQUIPMENT**  
 Briefing board  
 Projector and screen

**COLLEGE FURNISHED EQUIPMENT**  
 Computer workstations  
 Printer workstations

# COMPUTER SCIENCE LAB- MALE With TA Room

KEY PLAN- FIRST FLOOR



# SPECIALIZED COMPUTER LAB- SHARED

## FIRST FLOOR

### ARCHITECTURAL

Floor: static free carpet over recessed floor panels  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m above floor  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 40 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 Recirculated air  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: neutral

### PLUMBING

None

### ELECTRICAL

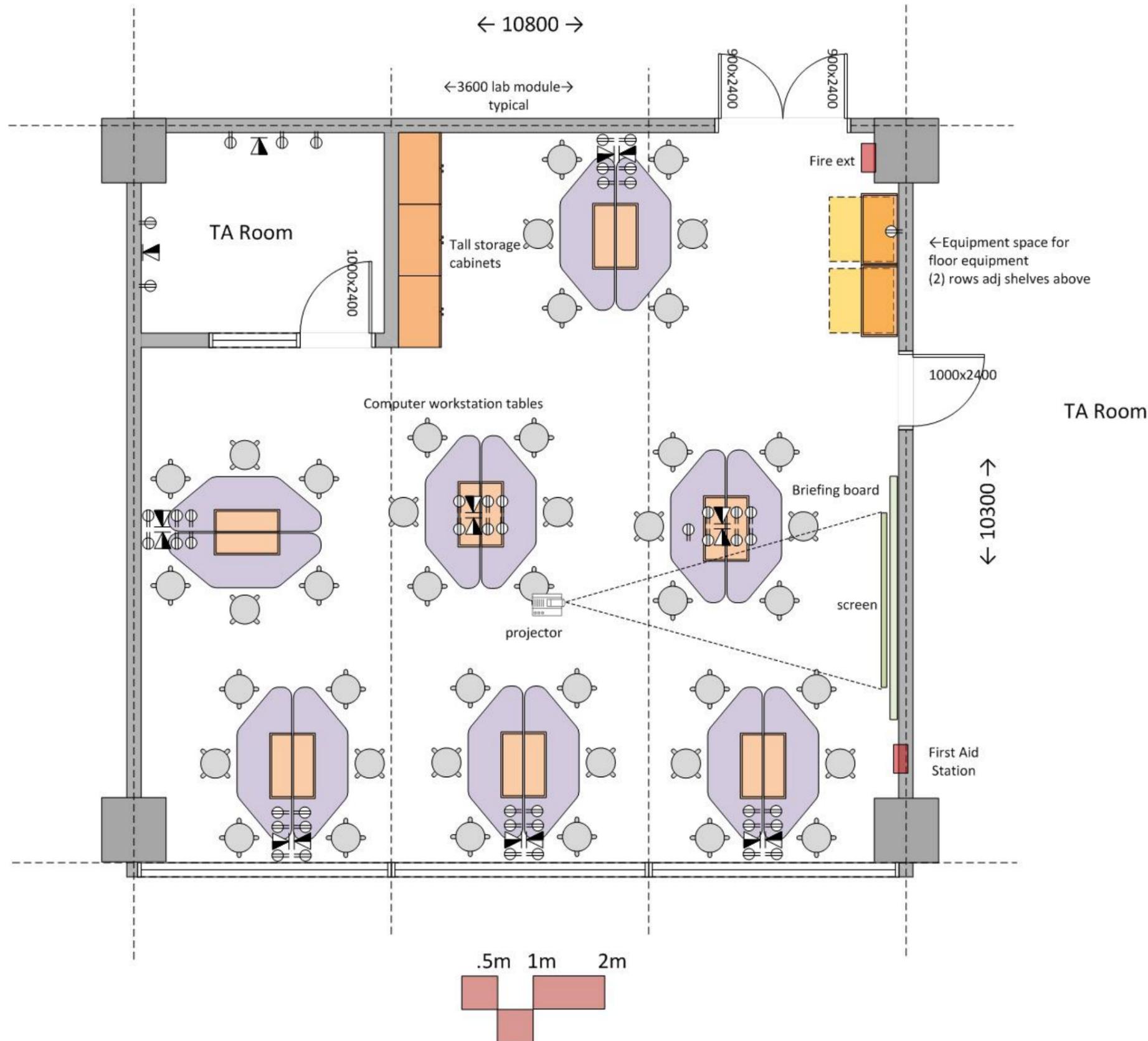
240v receptacles at floor and perimeter  
 Maximum of four outlets per circuit  
 power at center area accessed via recessed floor panels  
 UPS power supply  
 Data junction boxes at perimeter and workstations  
 Wireless data connection  
 Lighting: indirect fluorescent at 40 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Briefing board  
 Projector and screen

### COLLEGE FURNISHED EQUIPMENT

Computer workstations  
 CAVE visualization unit



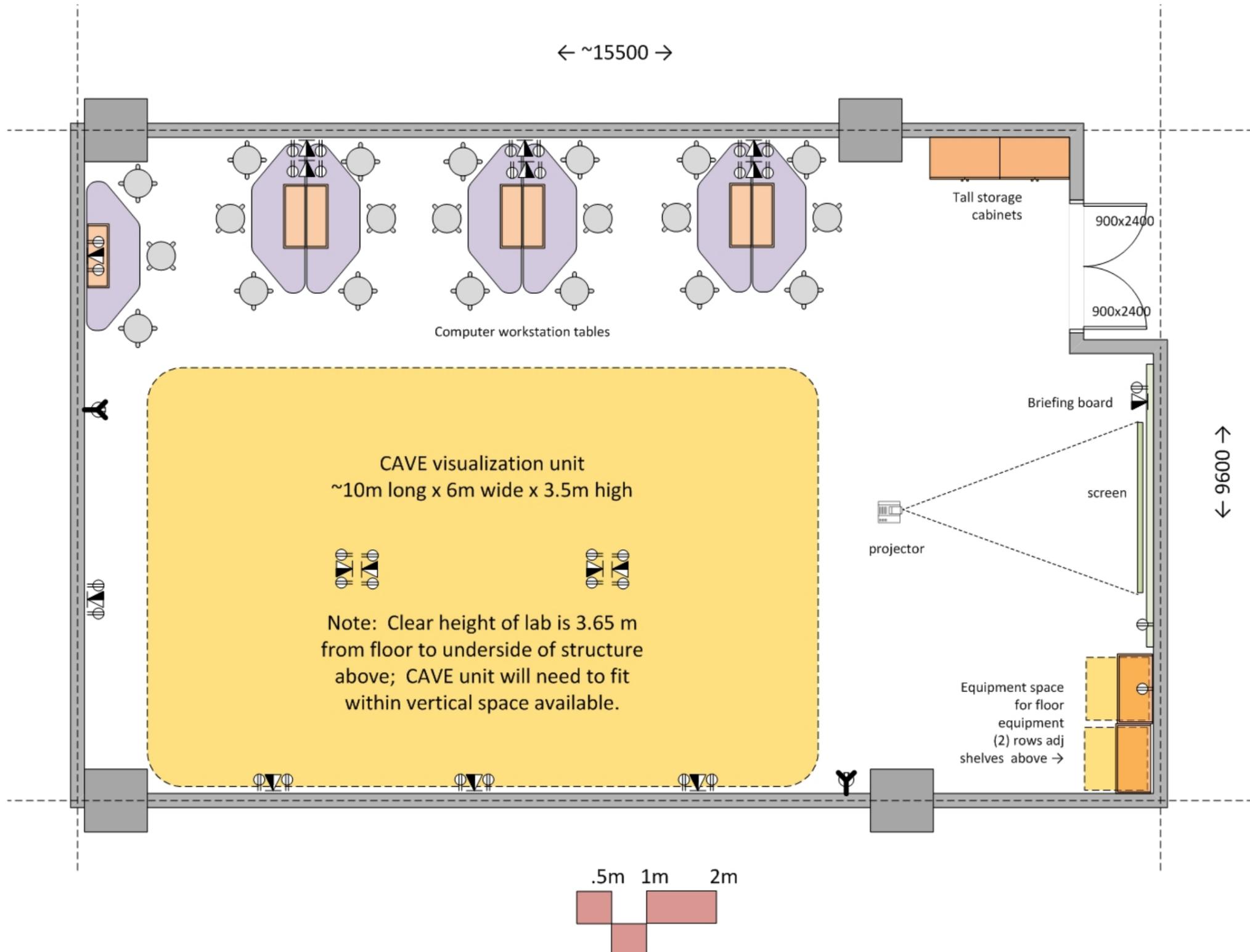
# SPECIALIZED COMPUTER LAB-SHARED

KEY PLAN- FIRST FLOOR



# VISUALIZATION & INTERACTIVE MEDIA LAB

## BASEMENT



### ARCHITECTURAL

Floor: static free carpet over recessed floor panels  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m above floor (except for area above CAVE which will require open to structure)  
 Note: Maximum clear height available is 3.65 m- Comp Sci Department to confirm that CAVE unit will fit within clear height available  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 40 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 Recirculated air  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: neutral

### PLUMBING

None

### ELECTRICAL

240v receptacles at floor and perimeter  
 Maximum of four outlets per circuit  
 power at center located above CAVE  
 UPS power supply  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 40 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

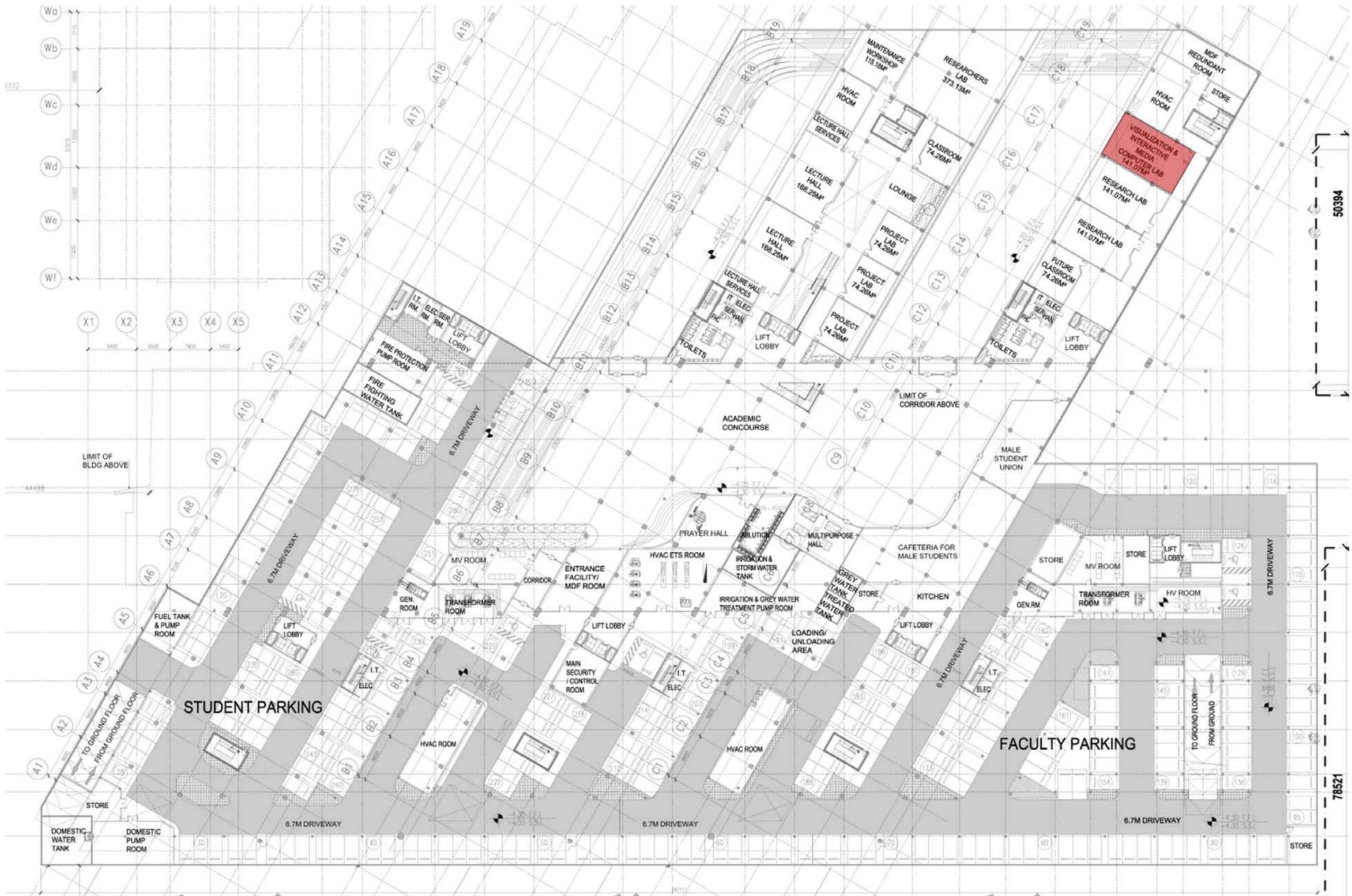
Briefing board  
 Projector and screen

### COLLEGE FURNISHED EQUIPMENT

Computer workstations  
 CAVE visualization unit

# VISUALIZATION & INTERACTIVE MEDIA LAB

KEY PLAN- BASEMENT FLOOR



## Visualization Lab Equipment

# VISUALIZATION & INTERACTIVE MEDIA LAB

## CAVE Equipment List

| Item Code      | Description  | Qty |
|----------------|--|-----|
| WV-CUSTOMSYS   | <p>PURCHASE ALTERNATIVE:<br/>COMPLETE VR SYSTEM WITHOUT SUPPORT</p> <p><b>Item 1</b><br/>Cave System - 3 Wall, 1 Floor, Flexing Walls Manufactured by RP Visual Solutions<br/>Free Standing 1 x 3 Projection Visualization I-Cube Plus floor screen and projector mount on the top.<br/>- RP WALL, with three 135 inch RP Screens, plus Floor Screen<br/>- Tube steel frame material base construction with black "doveteen" fabric cladding.<br/>- 6 Axis fine tuning cradle for top mounted floor projector<br/>- Multi-Point FSG - First Surface Glass Mirrors<br/>- With/casters and connecting hinge.<br/>- 2 Wings screen enclosures can be swung out at any angle</p> <p>135 inch ACP CinePro REAR Diffusion Screen<br/>- On Axis 1.0 Peak Gain, (180 degree Field of View), Gray tint.<br/>- Conical 1/2 Gain = 45 degrees, Thickness = 3/8 inch, Size = 81inch x 108inch<br/>- Includes: Frame C - 1mm Customer Screen Can Assembly<br/>- Full Functional Testing at RP Visual shop floor<br/>- International grade wood shipping crate<br/>- Includes Floor Screen, staging area, and wood platform 40 to 60 Production Days after Sign-Off (Source: Randy, President, RP Visuals)</p> | 1   |
| WV-PPT-EYES    | <p><b>Item 2</b><br/>WorldViz Wireless PPT Eyes mountable tracker for shutter glasses (<b>one year warranty included, support sold separately</b>)</p>   | 2   |
| WV-PPT-6DWAN   | <p><b>Item 3</b><br/>WorldViz Wireless 6DOF tracked hand-held wand for PPT X and E (<b>one year warranty included, support sold separately</b>)</p>  | 1   |
| NU-60GX-G5     | <p><b>Item 4</b><br/>Wireless LC Stereoscopic Glasses Only, Five Pack</p>  | 1   |
| NU-MREM        | <p><b>Item 5</b><br/>Mid-Range Emitter for Stereo Ready Computers. Includes one mid-range emitter, Frame Sync Cable, BNC to 3 pin mini-DIN and 24V power supply</p>  | 4   |
| WV-VIZR4-E20   | <p><b>Item 6</b><br/>WorldViz Vizard 4.x Enterprise Edition (20 seat) 3D software toolkit</p>  | 1   |
| WV-D-VIZR4-E20 | <p>WorldViz Vizard Enterprise Edition (20 seats) academic Discount<br/><b>Note: ITEM 7 intentionally omitted in order to maintain organizational consistency between alternate quotes</b></p>  |     |
| WV-PPTE4       | <p><b>Item 8</b><br/>WorldViz PPTE (4 sensor) High Speed Position Tracker (<b>one year warranty included, support sold separately</b>)<br/>Note: ITEM 9 intentionally omitted in order to maintain organizational consistency between alternate quotes</p>   | 1   |
| WV-D-PPTE      | <p><b>Item 10</b></p>  |     |

# VISUALIZATION & INTERACTIVE MEDIA LAB

## CAVE Equipment List p. 2

|                |   |   |
|----------------|---|---|
|                | WorldViz PPTE (4 sensors) High-Speed Precision Position Tracker academic <b>discount</b>  |   |
| WV-PPT-MC-TGT  | WorldViz PPT MoCap Target (active LED marker ID, maximum 8 targets)<br>- these are position-tracked points  | 8 |
| NV-ST50-4MC    | <b>Item 11</b><br>NVIS nVisor ST50 high-resolution optical see-through display (50 degree FOV, 1280x1024 resolution)<br>- ST = See Through. Removable panel allows user to see through transparent front of HMD to provide an optical See Through head mounted display.<br>- includes one year manufacturer's warranty<br>- <b>warranty for year 2 and 3 available, \$1900/yr</b><br>** 8 week lead time after receipt of order | 1 |
| IS-IC2U        | <b>Item 12</b><br>InterSense InertiaCube2+ (US/JP version)<br>- Connects to Serial Port   | 1 |
| WV-MISC-PRODH  | <b>Item 13</b><br>Serial capture board for HMD Inertial Cube  |   |
| WV-PC-H        | <b>Item 14</b><br>WorldViz High Performance Rendering PC (includes NVIDIA Quadro 4800 graphics card and requires a license purchase to run Vizard)<br>- This Rendering PC to control the CAVE projection system   | 5 |
| WV-CUSTOMSYS   | <b>Item 15</b><br>Upgrade to Quadro 6800 graphics cards for all 5 computers (computer configurations must match)  | 5 |
| WV-PC-H        | <b>Item 16</b><br>WorldViz High Performance Rendering PC (includes NVIDIA graphics card and requires a license purchase to run Vizard)<br>- This Rendering PC to control the HMD system   | 1 |
| CG-2-2202-L-22 | <b>Item 17</b><br>CyberGlove II Wireless System 22-sensor (left hand).<br>Requires Virtual Hand driver (one driver per customer site).  | 1 |
| CG-2-2202-R-22 | <b>Item 18</b><br>CyberGlove II Wireless System 22-sensor (right hand).<br>Requires Virtual Hand driver (one driver per customer site).   | 1 |
| CG-VHD-PC-INT  | <b>Item 19</b><br>Virtual Hand Drivers, including Device Manager and Device Configuration Utility (DCU) - International Sale  | 1 |
| CG-VHMB7.5     | <b>Item 20</b><br>Virtual Hand Drivers Plugin for MotionBuilder 7.5   | 1 |
| WV-PPT-6DOF-HP | <b>Item 21</b><br>Secure and ergonomic 6DOF sensor mounting plate for each hand, left and right<br>- functions with data gloves or standalone   | 2 |
| IS-IC3-RT      | <b>Item 22</b><br>InterSense InertiaCube3 wireless precision tracker USB package (receiver and one transmit)  | 1 |
| IS-IC3-T       | <b>Item 23</b><br>InterSense InertiaCube3 wireless single transmitting sensor<br>- transmitting sensor for right hand   | 1 |
| WV-MISC-PRODH  | <b>Item 24</b><br>Christie Digital Projectors: Mirage DS+6K-M 1400x1050 Stereo Projectors<br>- Alternates available, see proposal text  | 4 |
| WV-MISC-PRODH  | <b>Item 25</b><br>Christie Digital Projectors: Mirage Lens: 1.2:1 SX+/1.1:1 HD/WU   | 4 |
| WV-SETUP-ADD   | <b>Item 26</b>  | 1 |

## VISUALIZATION & INTERACTIVE MEDIA LAB

### CAVE Equipment List p. 3

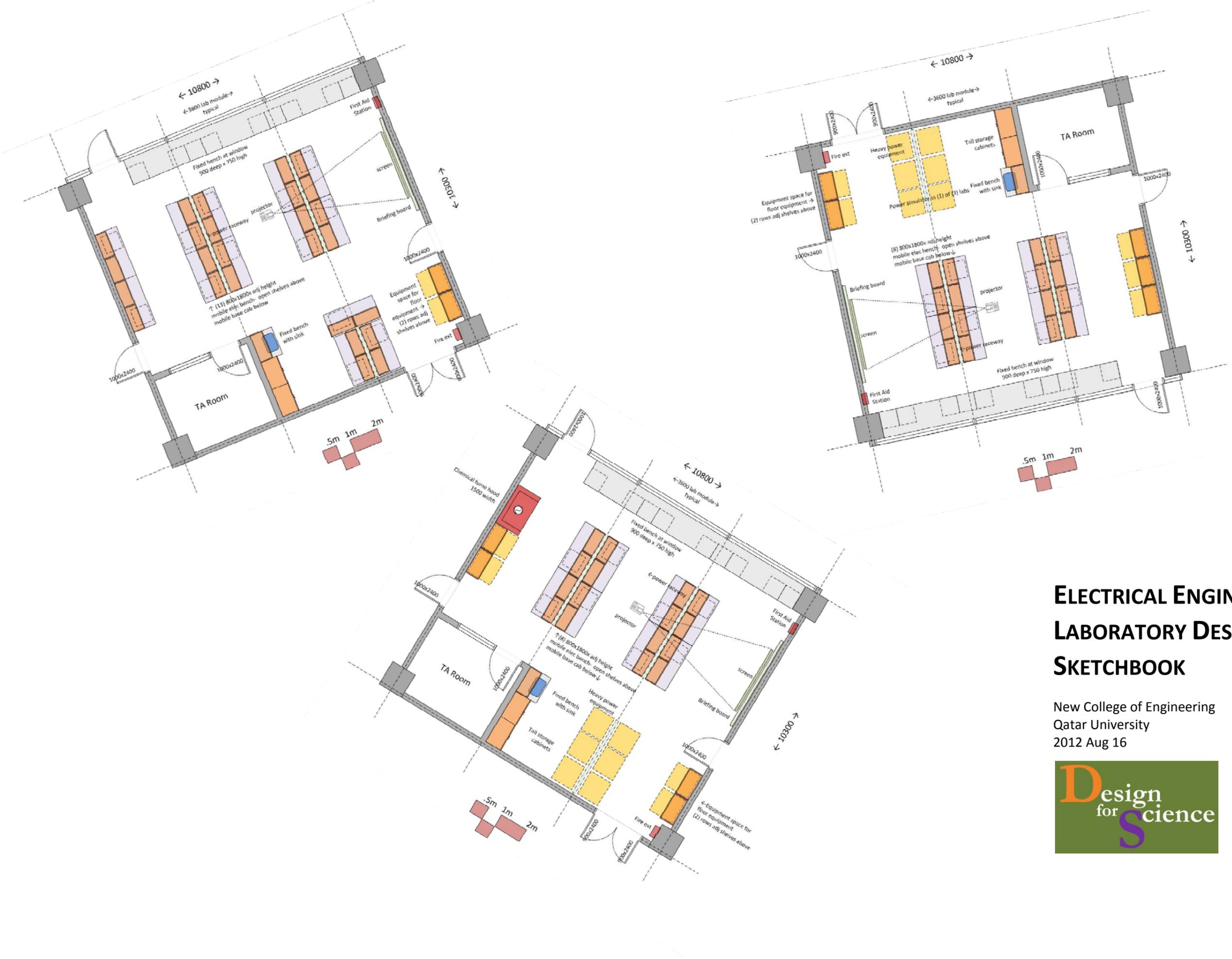
|                |   |    |
|----------------|---|----|
|                | <p>RP Visuals Professional Setup</p> <ul style="list-style-type: none"> <li>- 1 install supervisor, plus one install technician</li> <li>- travel to Qatar University to collaborate with WorldViz team to install and deploy the system</li> <li>- 5 days working on site, 2 days in travel. Total 7 days trip.</li> </ul>   |    |
| WV-SETUP-I20H3 | <p><b>Item 27</b></p> <p>WorldViz International VR System Professional Setup Service by WorldViz (3 working days on site including travel ~ 20 hour flight)</p> <ul style="list-style-type: none"> <li>- Quantity 2 for two WorldViz associates</li> </ul>  | 2  |
| WV-SETUP-ADD   | <p><b>Item 28</b></p> <p>WorldViz International VR System Professional Setup Service by WorldViz per additional day (cannot be quoted without initial system setup/travel fee)</p> <ul style="list-style-type: none"> <li>- Quantity 18 (two WorldViz installation associates for 9 working days)</li> </ul> <p>Note: Items 27 and 28 taken together constitute 12 working days on-site plus 2 days in travel for two WorldViz associates. Total trip duration: 14 days.</p>  | 18 |
| WV-SHIP-PPA    | <p><b>Item 29</b></p> <p>WorldViz shipping and handling charges<br/>For "DOOR TO AIRPORT" FREIGHT SHIPPING</p> <ul style="list-style-type: none"> <li>- ESTIMATED \$40551.35</li> <li>- Provided by Stevens Global Logistics</li> <li>- Prepaid &amp; Add terms, FOB to Qatar University</li> <li>- Estimates may vary based on fuel or taxes: Actual shipping costs added to invoice at time of shipment</li> <li>- Customer may opt to use alternate freight carrier</li> <li>- CUSTOMER TO COORDINATE WITH THEIR CUSTOMS BROKER TO CLEAR CUSTOMS, PAY FEES, AND BRING EQUIPMENT TO FINAL LOCATION</li> </ul> <p>NOTE: Stevens Global Logistics suggests Aramex shipping agents in Qatar to assist Qatar University with Airport to University customs clearance and local transport logistics<br/>Insurance costs for shipment will be the responsibility of Qatar University. WorldViz shipping quotes exclude taxes/duties, customs clearance, customs brokerage, and local delivery in Qatar. All Qatar associated charges are the responsibility of the customer, Qatar University.</p> <p>Shipment Breakdown:<br/>CAVE</p> <ul style="list-style-type: none"> <li>1 crate 58x38x30 @ 303 Lbs. / ceiling pod</li> <li>3 crates 124x72x92 @ 870 Lbs. ea / screens</li> <li>1 crate 86x22x56 @ 490 Lbs. / floor wood</li> <li>3 crates 109x34x79 @ 881 Lbs. ea / unit structure</li> <li>1 crate 104x36x57 @ 783 Lbs. / mirrors.</li> <li>1 crate 131x72x88 @ 862 Lbs. / floor screen</li> </ul> <p>WV Equipment, palletized:</p> <ul style="list-style-type: none"> <li>5 boxes (computers) 36x36x30 @ 45lbs ea</li> <li>1 box (tracking system) 30x30x26 @ 45lbs\</li> <li>1 box (various Virtual Reality equipment) 24x24x20 @ 30lbs</li> <li>1 box (Head Mounted Display) 17x16x18 @ 20lbs</li> <li>4 boxes (Projectors from CAVE quote) 22x20x11 @ 87lb</li> <li>1 box (Projector lenses from CAVE quote) 30x30x20 @ 70lbs</li> </ul> | 1  |

# VISUALIZATION & INTERACTIVE MEDIA LAB

## CAVE Equipment List p. 4

Date: 23/05/2012

| Item             | Description  | Qty |
|------------------|--|-----|
|                  | Summary of applicable 3 Year Standard Support Option for Primary Tender Response Quote number 5217<br>Note: Item references taken from Qatar University document: "Invitation to Tender 50/2011/2012"      |     |
| WV-S1-PPT-EYE    | <b>Reference: Item 2</b><br>WorldViz Wireless PPT Eyes mountable tracker one year Standard Support/Maintenance (including upgrades)<br>- Covering both units for the price of one<br>- Support for 3 years | 3   |
| WV-S1-PPT-6DWAN  | <b>Reference: Item 3</b><br>WorldViz Wireless 6DOF tracked hand-held wand one year Standard Support/Maintenance (including upgrades)<br>- Support for 1 wand for 3 years. Total quantity: 3.               | 3   |
| WV-S1-VIZR4-E20  | <b>Reference: Item 7</b><br>WorldViz Vizard Enterprise Edition (20 seat) one year Standard Support/Maintenance (including upgrades)<br>- Support for 3 years. Total quantity: 3                            | 3   |
| WV-S1PPTE4       | <b>Reference: Item 9</b><br>WorldViz PPTE (4 sensor) High Speed Position Tracker one year Standard Support/Maintenance (including upgrades)<br>- Support for 3 years. Total quantity: 3                    | 3   |
| WV-S1-PPT-MC-TGT | WorldViz PPT Motion Capture Target one year Standard Support/Maintenance (including upgrades)<br>- Support for 8 units for 3 years of support per unit. Total quantity: 24                                 | 24  |
| NV-ST50-WAR      | <b>Reference: Item 11</b><br>NVIS nVisor ST50 one year extended warranty (limited to 2nd or 3rd year)<br>- First year warranty included with purchase. Total: 3 years                                      | 2   |

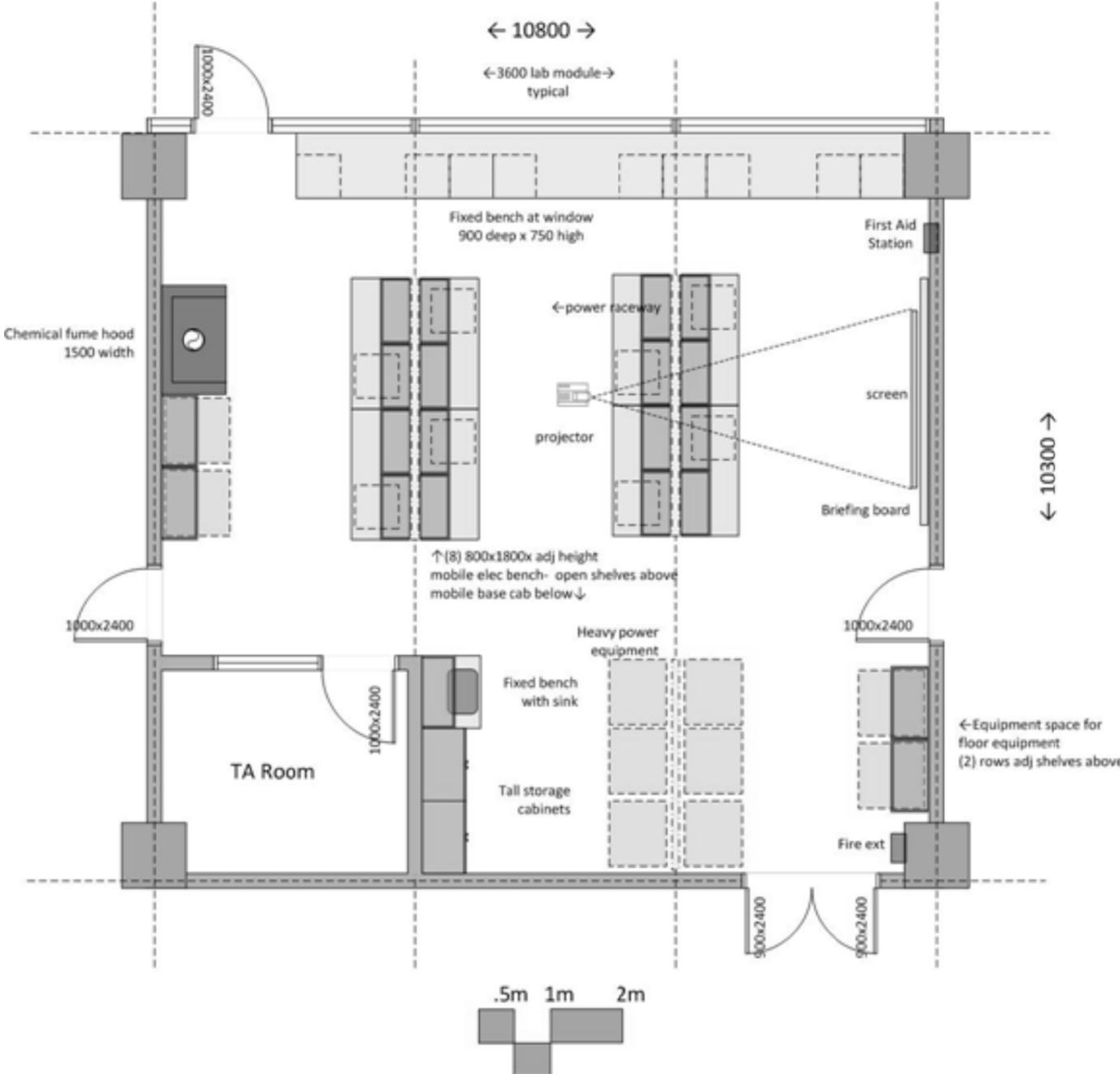


# ELECTRICAL ENGINEERING LABORATORY DESIGN SKETCHBOOK

New College of Engineering  
Qatar University  
2012 Aug 16

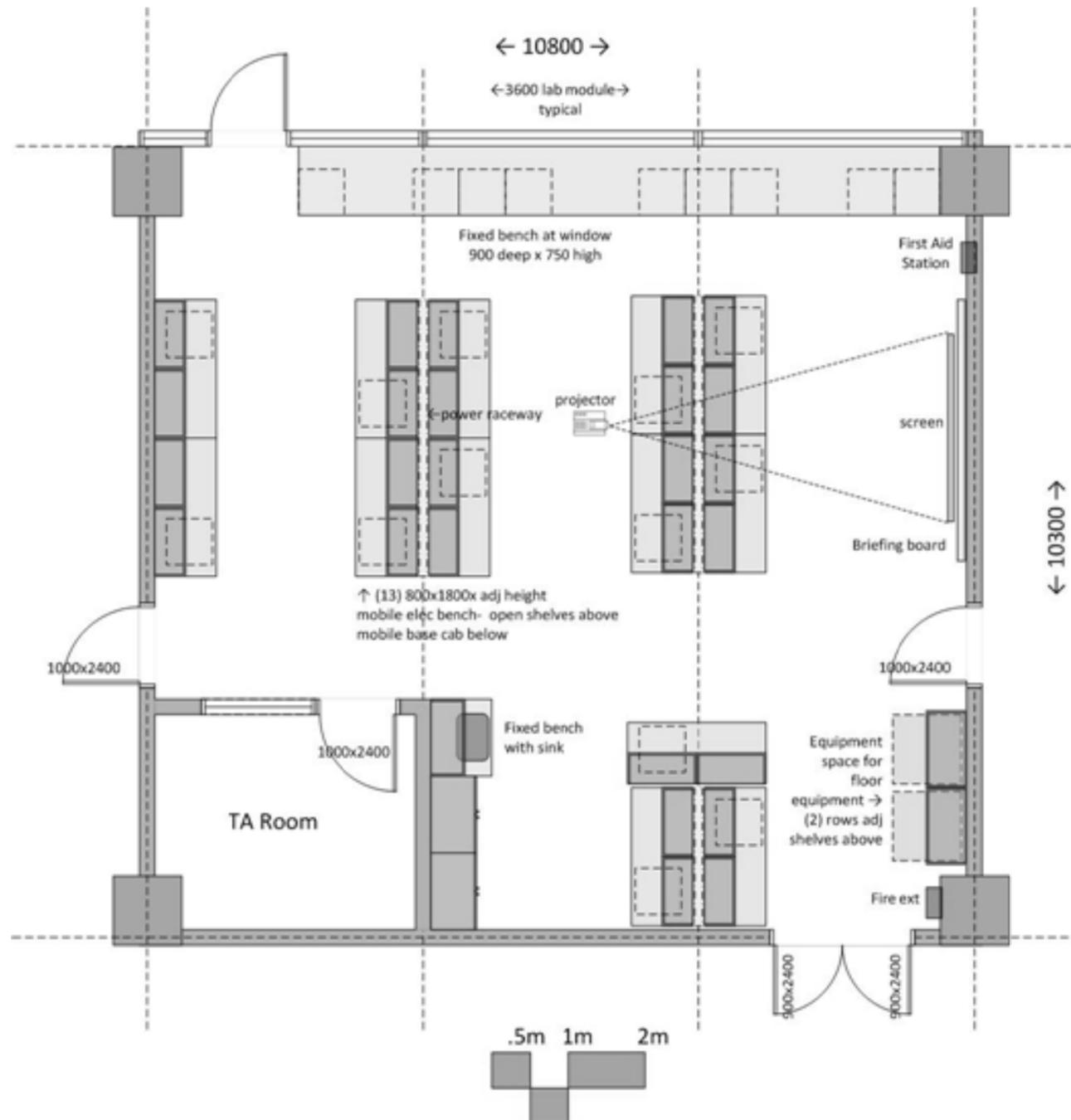


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- Summary . . . . . 3
- Symbol Legend . . . . . 4
- Electrical Engineering Lab Type A . . . . . 5
- Electrical Engineering Lab Type B . . . . . 7
- Electrical Engineering Lab Type C . . . . . 9
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- Electrical Engineering Lab Type D Female . . . . . 13
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# SUMMARY



This second edition (revised) sketchbook comprises the labs assigned to the Electrical Engineering Department. It includes basic plan diagrams with equipment and furnishings noted. It includes electrical and plumbing outlets and fittings. It also includes section details for typical casework conditions. This document provides the basis of design intent for the labs. It provides basic information to assist the design team in preparing construction documents and to provide information for lab casework manufacturers to provide shop drawing submittals.

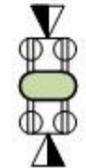
*Glen Berry*  
 Glen Berry, AIA  
 Laboratory Consultant to Mimar  
[glenberry@designforscience.com](mailto:glenberry@designforscience.com)



# SYMBOL LEGEND

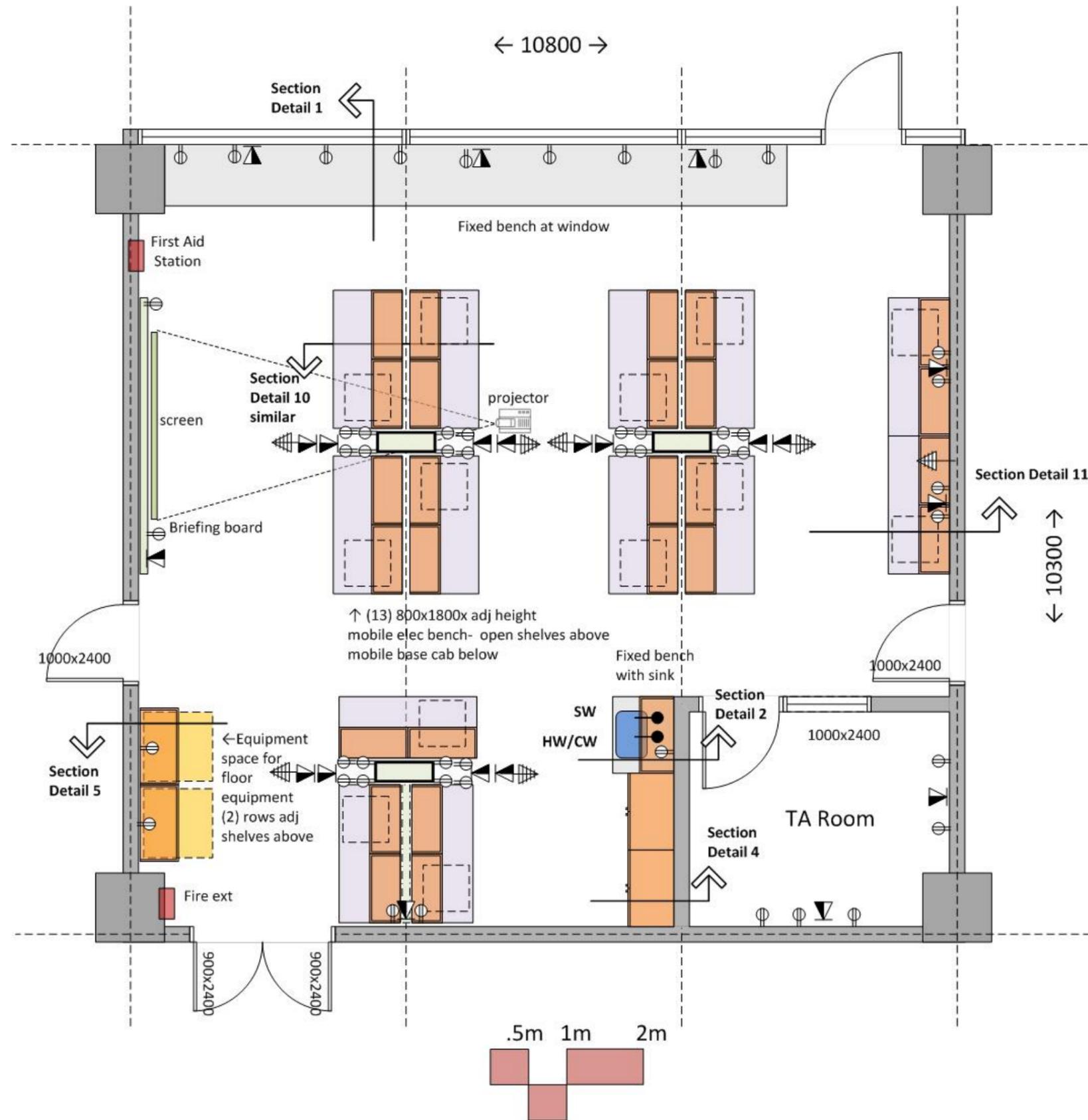
## PLUMBING & ELECTRICAL SYMBOLS

- SW      Soft water at water polisher
  
- HW/CW      Hot/Cold water faucet with vacuum breaker

- ⊕      240v duplex electrical  
Dedicated circuit at equipment space  
Standby power at equipment space
  
- ⚡      415v 3phase 60 amp electrical  
With quick disconnect switch
  
- ⚡      415v 3phase 200 amp electrical  
With quick disconnect switch
  
-       Elec/data service column at ceiling  
Dedicated circuits for each 240v duplex
  
- ⚡      Data/phone box
  
- ⚡      Instrument ground

# ELECTRICAL ENGINEERING LABORATORY TYPE A

SECOND FLOOR  
SIMILAR FOR (5) OTHER LABS SECOND FLOOR



## ARCHITECTURAL

Floor: sealed, ground concrete  
Walls: cmu with plaster, paint  
Ceiling: acoustic tile at 3 m  
Doors with vision panels  
Vibration attenuation: 25 micrometers/second or less  
Sound attenuation: NC 45 or less  
Light attenuation: at exterior windows with exterior sun shade

## MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
Recirc air within lab zone- do not recirc to non-lab spaces such as offices, classrooms  
Equipment heat gain: 750-1000 btuh/square meter  
Humidity: 30-50% relative  
Pressure: negative

## PLUMBING

Industrial hot/cold water at lab sink  
Pure water at lab sink via point-of-use water polisher

## ELECTRICAL

240v receptacles at benchtop and equipment  
Instrument ground  
Dedicated circuits at equipment spaces  
Standby power (emergency) at equipment spaces  
Data junction boxes at perimeter and islands  
Wireless data connection  
Lighting: indirect fluorescent at 60 f.c.

## CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

## COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
Floor equipment

# ELECTRICAL ENGINEERING LABORATORY TYPE A

KEY PLAN- SECOND FLOOR



# ELECTRICAL ENGINEERING LABORATORY TYPE B MACHINES LAB POWER ELECTRONICS LAB POWER SIMULATOR LAB

FIRST FLOOR  
SIMILAR FOR (2) OTHER LABS FIRST FLOOR

## ARCHITECTURAL

Floor: sealed, ground concrete  
Walls: cmu with plaster, paint  
Ceiling: acoustic tile at 3 m  
Doors with vision panels  
Vibration attenuation: 25 micrometers/second or less  
Sound attenuation: NC 45 or less  
Light attenuation: at exterior windows with exterior sun shade

## MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
Recirc air within lab zone- do not recirc to non-lab spaces such as offices, classrooms  
Equipment heat gain: 750-1000 btuh/square meter  
Humidity: 30-50% relative  
Pressure: negative

## PLUMBING

hot/cold water at lab sink  
Soft water at sink for pure water polisher

## ELECTRICAL

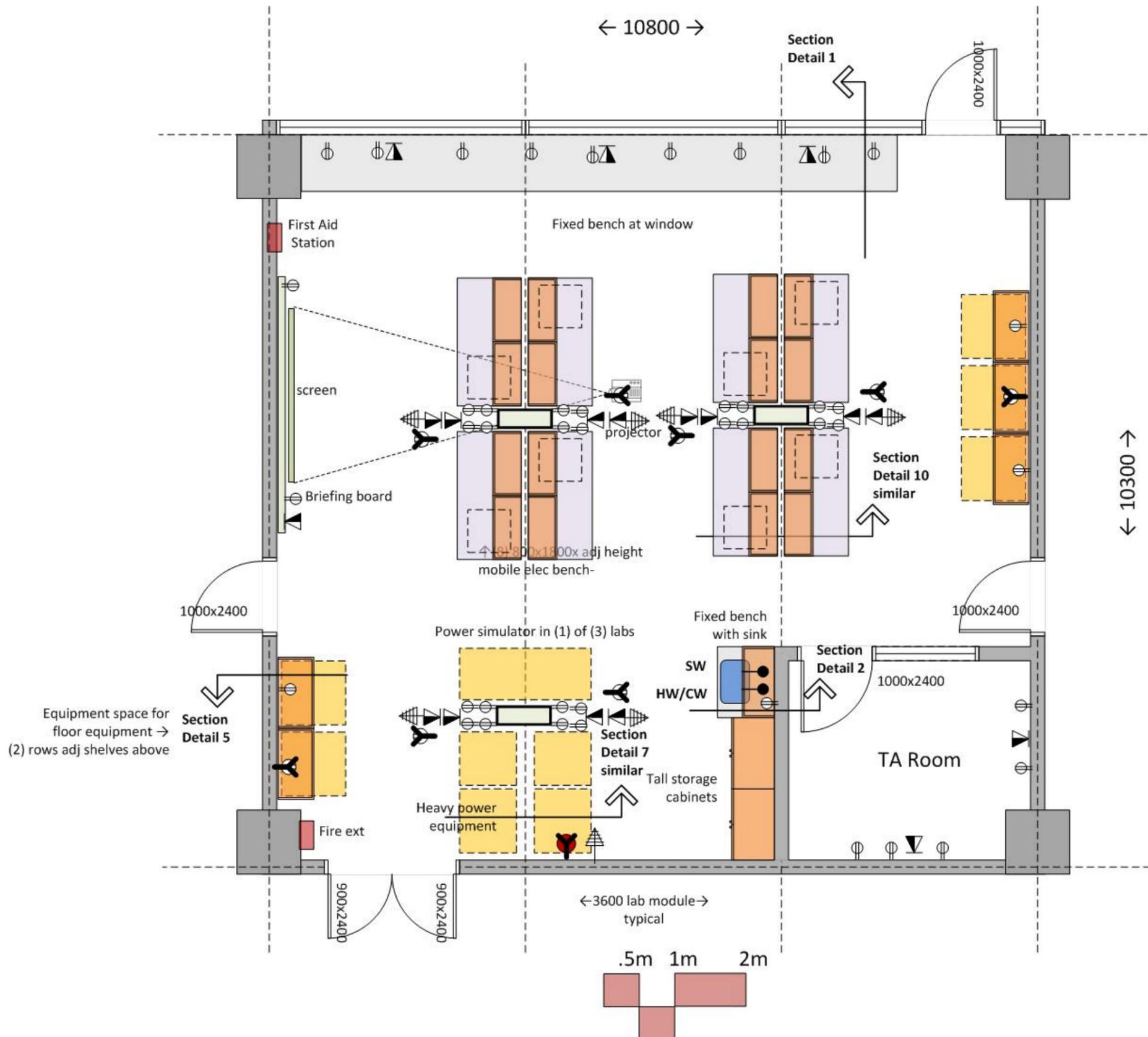
240v receptacles at benchtop and equipment  
415v3ph power at islands and perimeter  
Max load of 10KW at each bench or equipment space  
DC power at islands and perimeter  
Instrument ground  
Dedicated circuits at equipment spaces  
Standby power (emergency) at equipment spaces  
Data junction boxes at perimeter and islands  
Wireless data connection  
Lighting: indirect fluorescent at 60 f.c.  
(1) lab to have power simulator (3030 mm x 2250 mm x ~750 mm)

## CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

## COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
Floor equipment



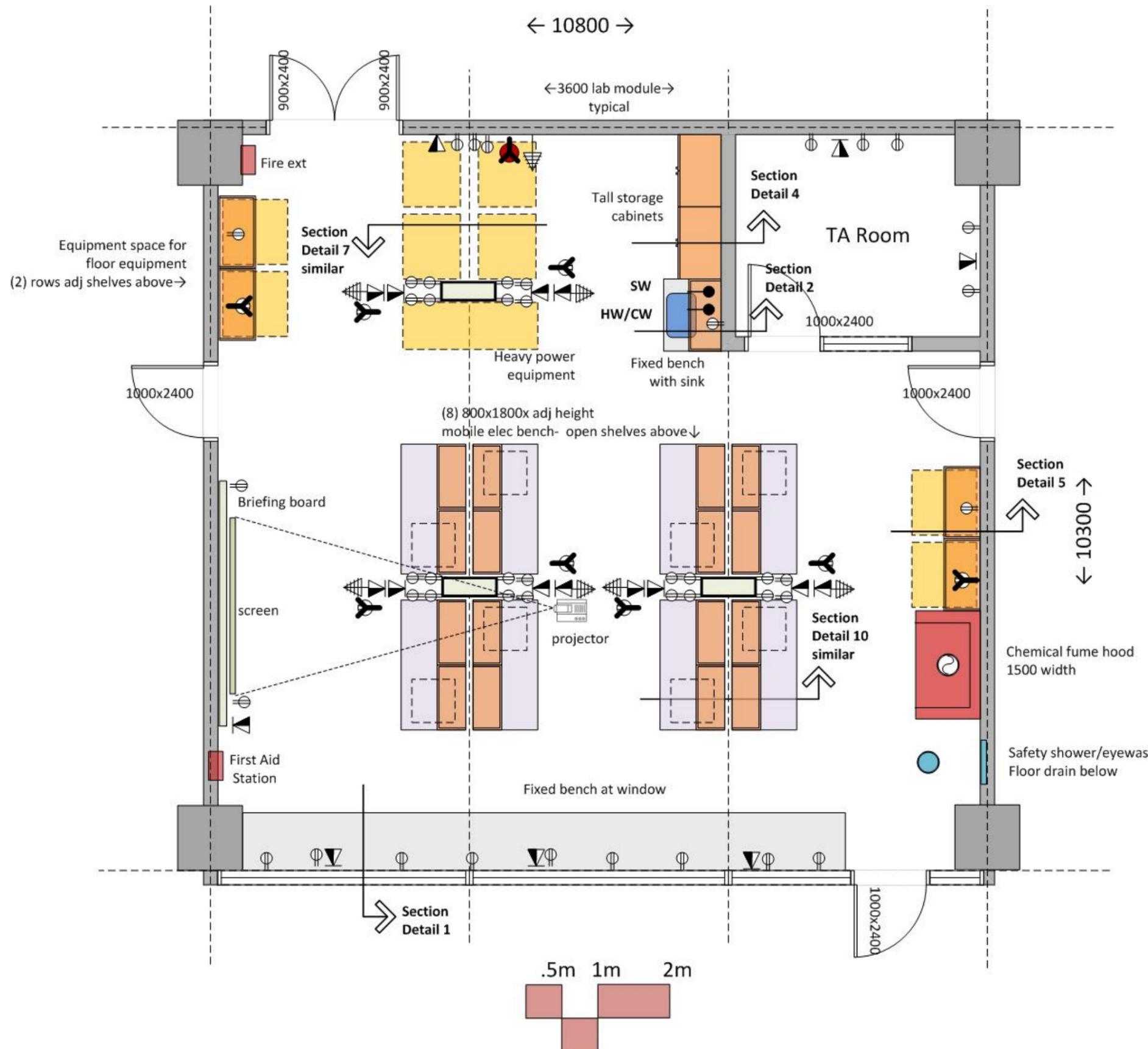
# ELECTRICAL ENGINEERING LABORATORY TYPE B

KEY PLAN- FIRST FLOOR



# ELECTRICAL ENGINEERING LABORATORY TYPE C

## FIRST FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust: 6 air changes per hour minimum occupied  
 4 air changes per hour unoccupied  
 (air change rate may be higher due to equipment heat gain)  
 Equipment heat gain: 750-1000 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher

### ELECTRICAL

240v receptacles at benchtop and equipment  
 415v3ph power at islands and perimeter  
 Max load of 10KW at each bench or equipment space  
 Instrument ground  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.  
 (1) to have power simulator (3030 mm x 2250 mm x ~750 mm)

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 Chemical Fume Hood: VAV 20 c.m.m.

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment

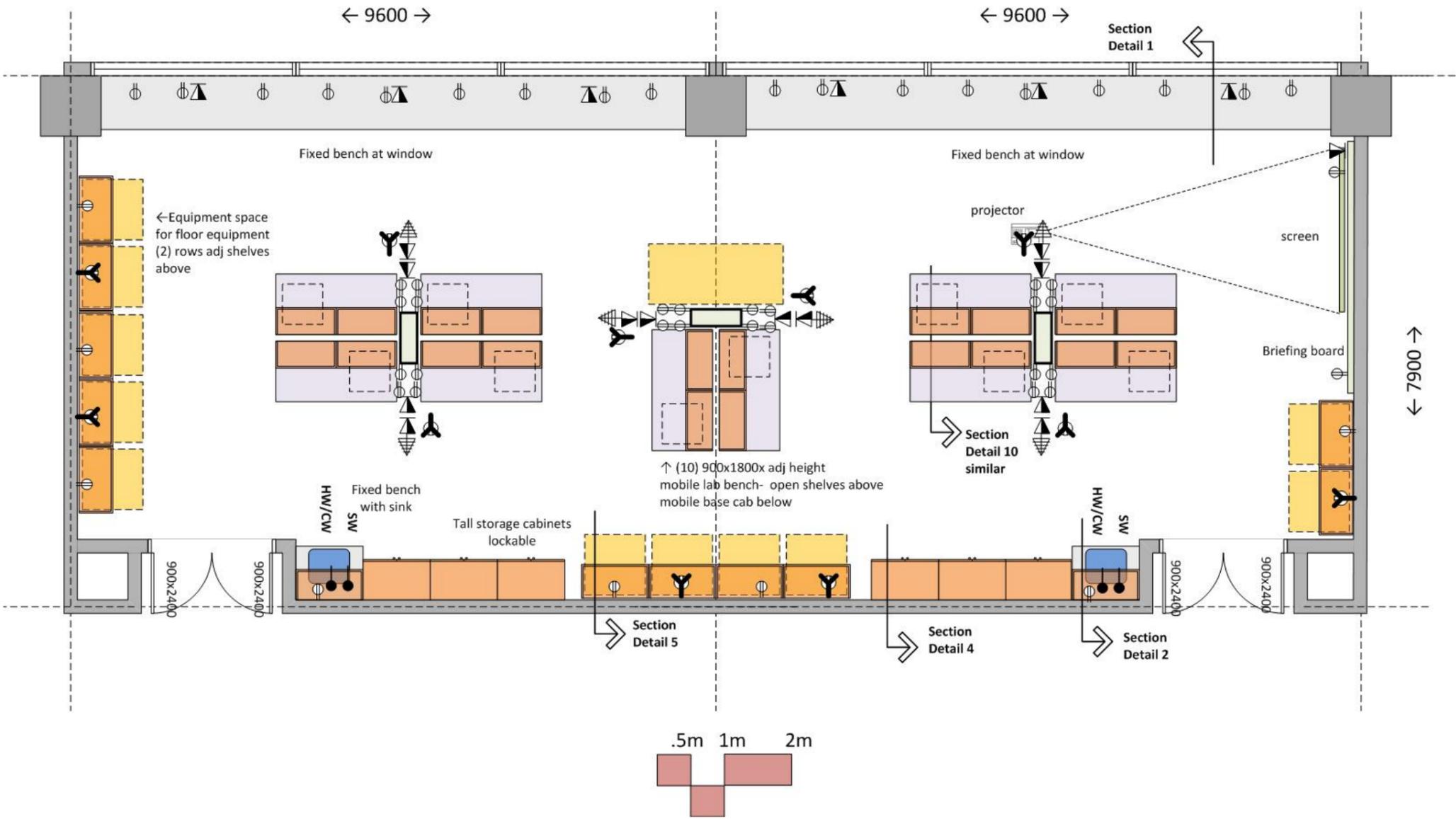
# ELECTRICAL ENGINEERING LABORATORY TYPE C

KEY PLAN- FIRST FLOOR



# ELECTRICAL ENGINEERING LABORATORY TYPE D MALE

## FIRST FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 Recirc air within lab zone- do not recirc to non-lab spaces such as offices, classrooms  
 Equipment heat gain: 750-1000 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher

### ELECTRICAL

240v receptacles at benchtop and equipment  
 415v3ph power at islands and perimeter  
 Instrument ground  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.  
 (1) to have power simulator (3030 mm x 2250 mm x ~750 mm)

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment

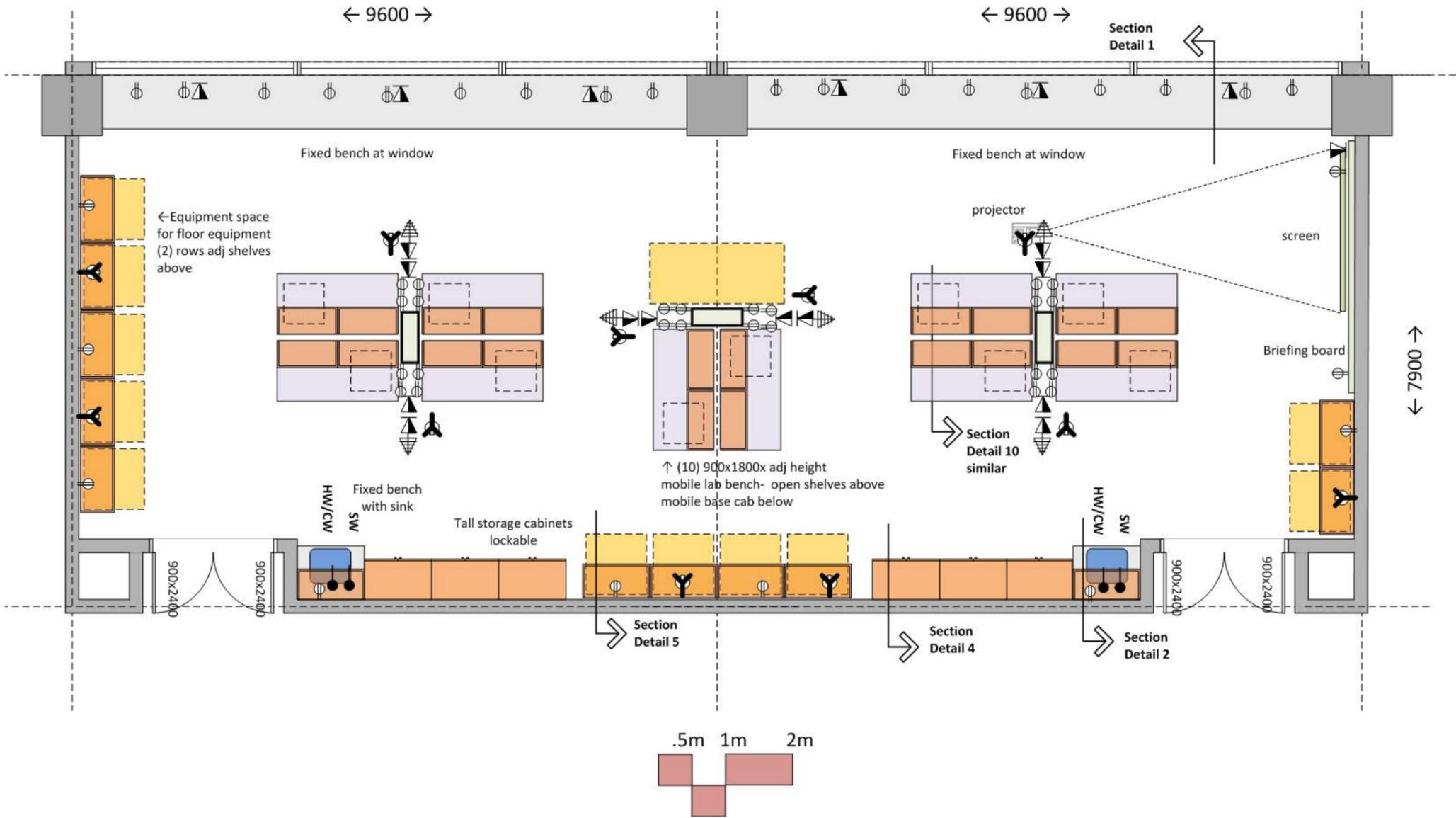
# ELECTRICAL ENGINEERING LABORATORY TYPE D MALE

KEY PLAN- FIRST FLOOR



# ELECTRICAL ENGINEERING LABORATORY TYPE D FEMALE

## FIRST FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 Recirc air within lab zone- do not recirc to non-lab spaces such as offices, classrooms  
 Equipment heat gain: 750-1000 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher

### ELECTRICAL

240v receptacles at benchtop and equipment  
 415v3ph power at islands and perimeter  
 Instrument ground  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.  
 (1) to have power simulator (3030 mm x 2250 mm x ~750 mm)

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

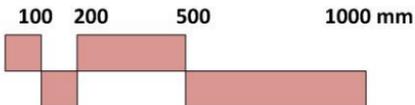
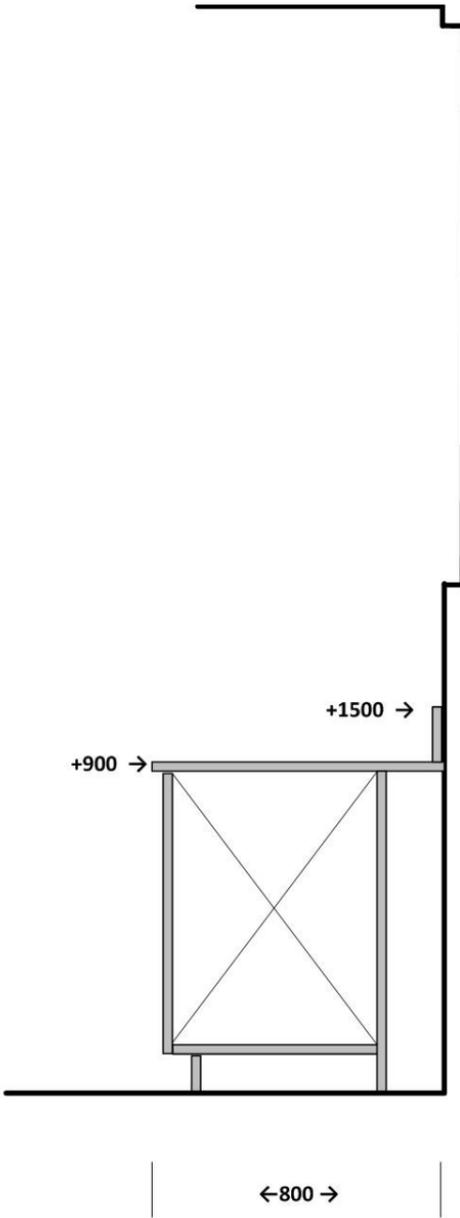
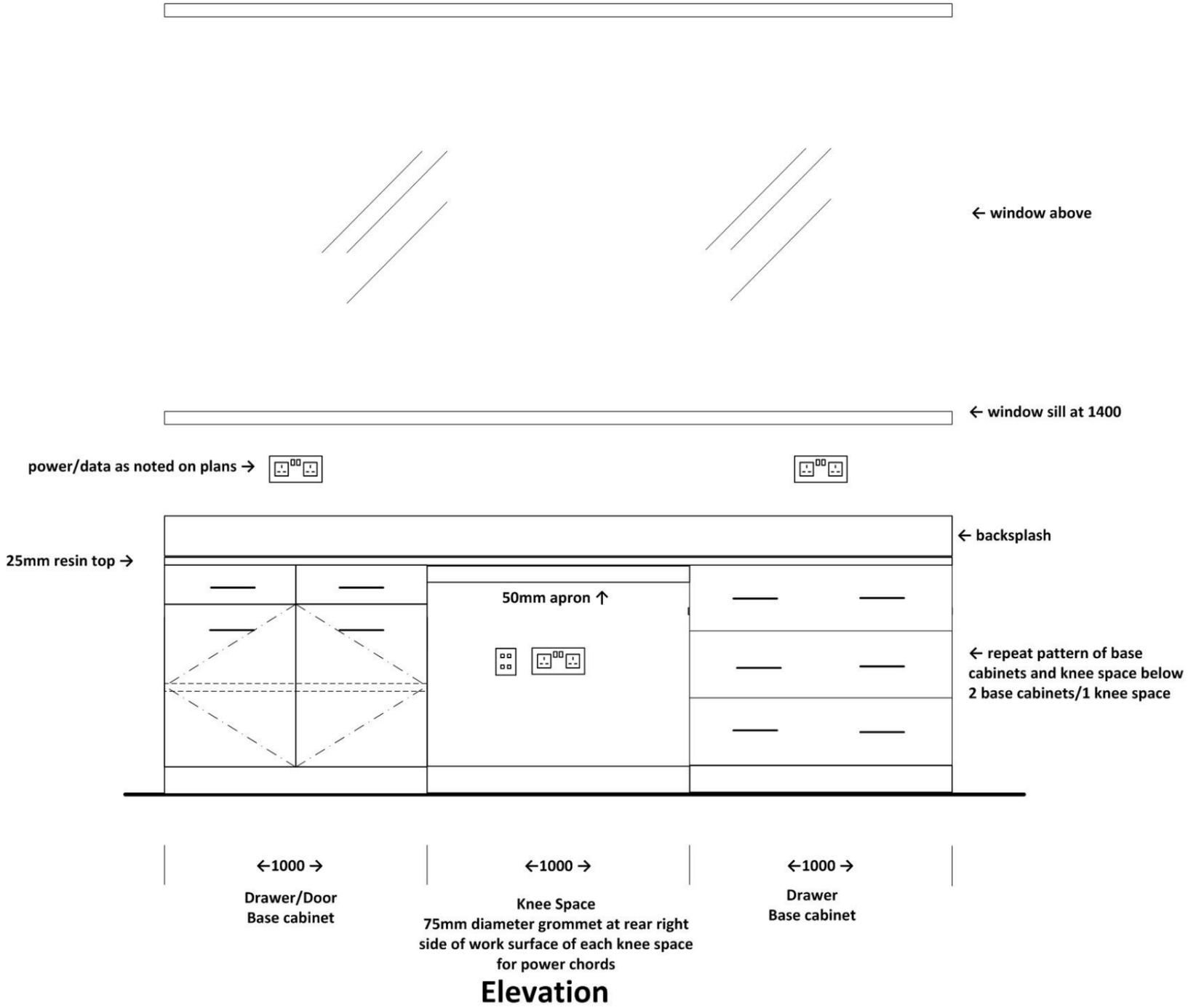
### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment



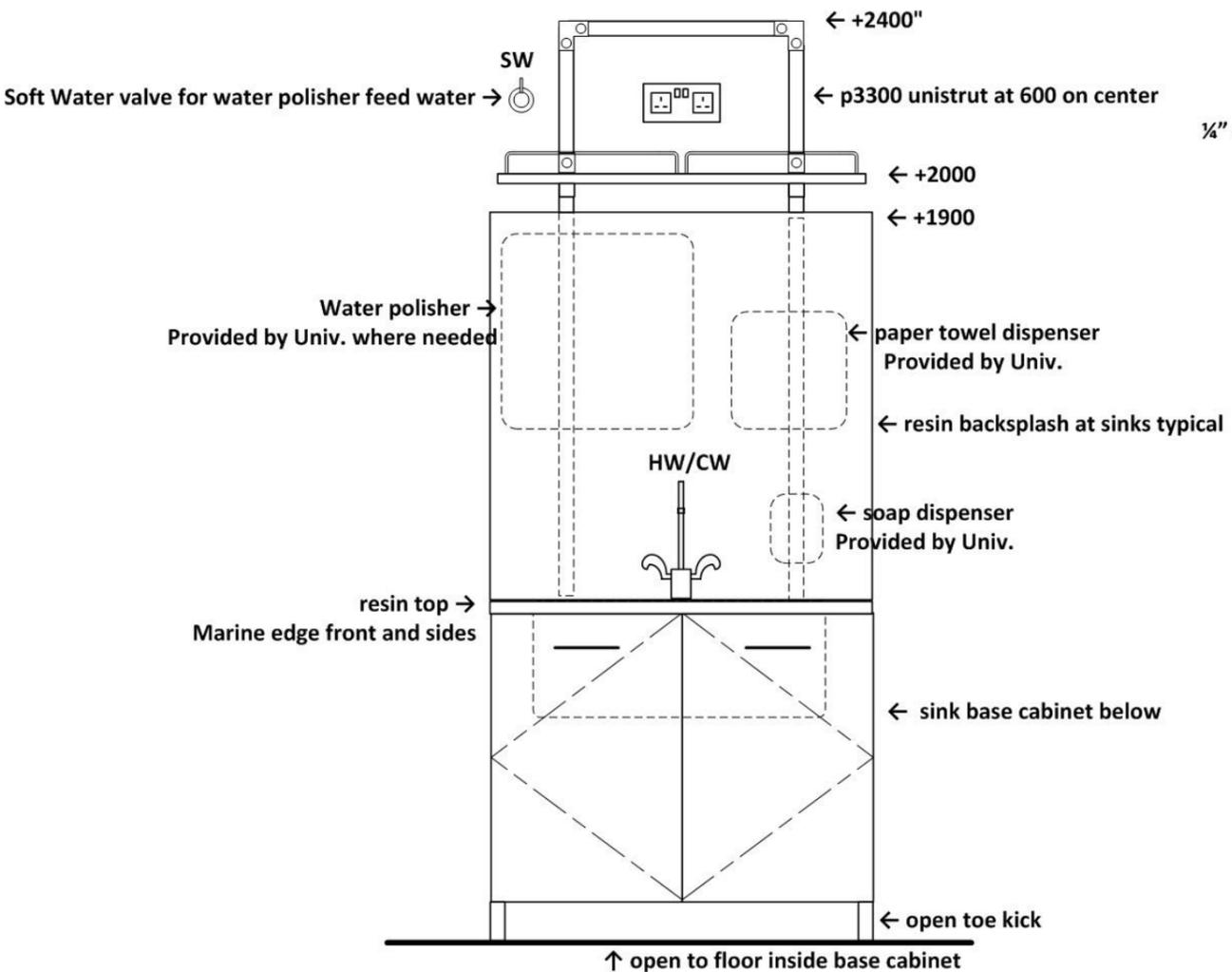
# SECTION DETAIL 1

## WINDOW BENCH



# SECTION DETAIL 2

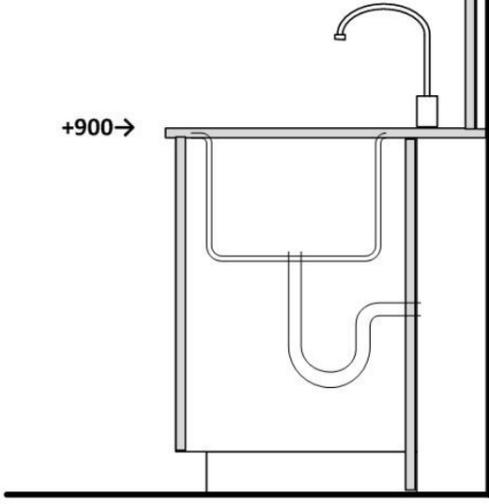
## SINK WITH WATER POLISHER



←1000→  
Sink base cabinet

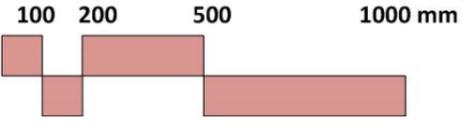
**Elevation**

¼" diameter x2" high seismic rail front and sides  
 25x400x950 shelf →  
 (2) Unistrut P2232A shelf bracket ↗

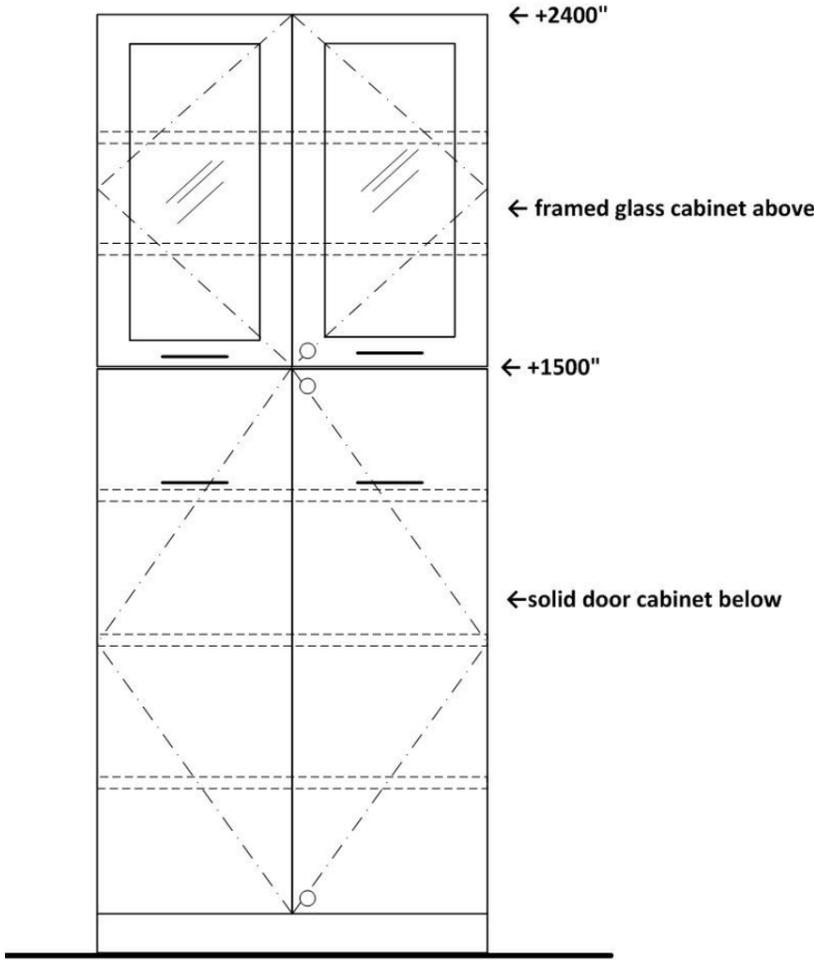


←800→

**Section**



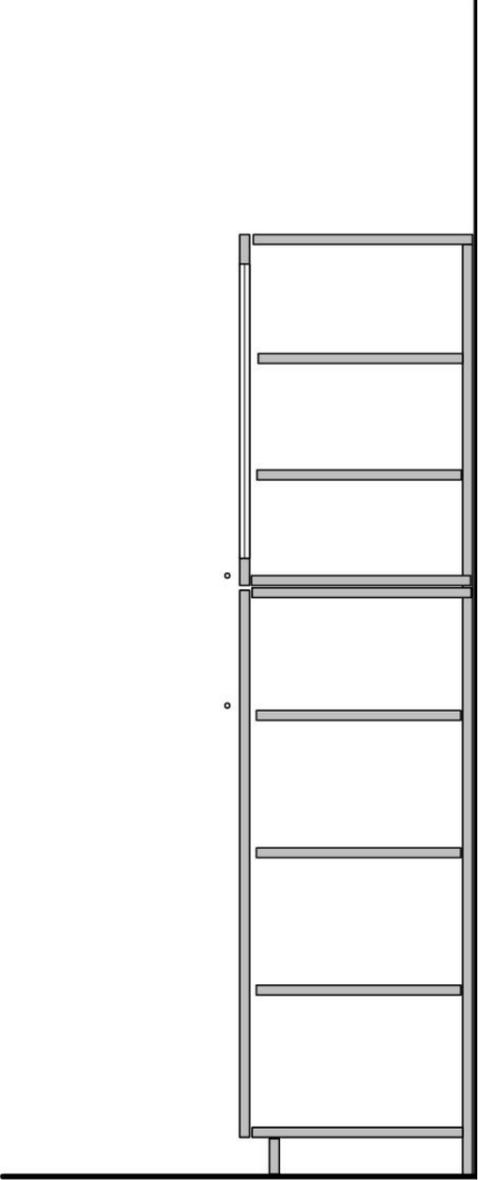
**SECTION DETAIL 4**  
**TALL STORAGE CABINET**



←1000→

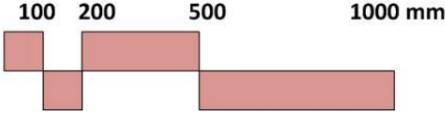
Tall Storage Cabinet  
With lockable doors

**Elevation**

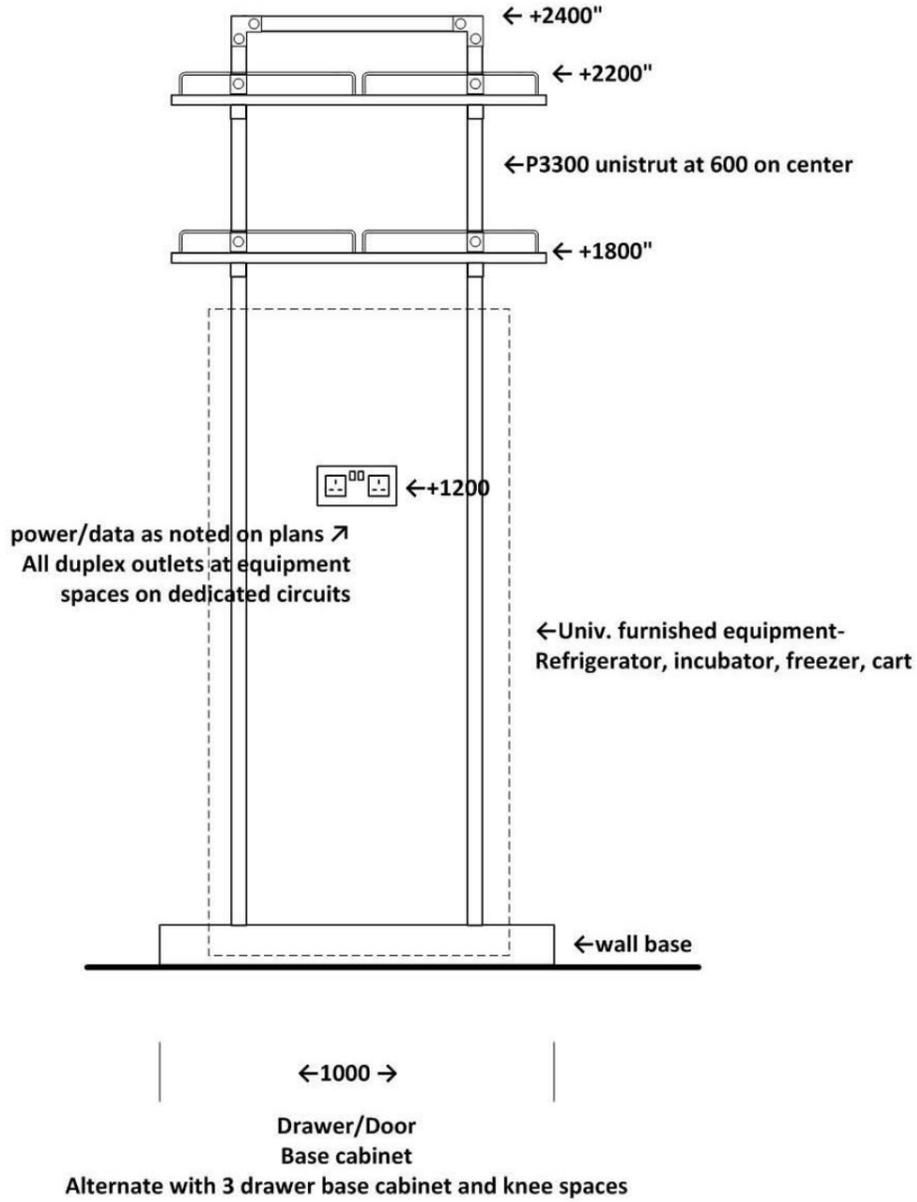


←600→

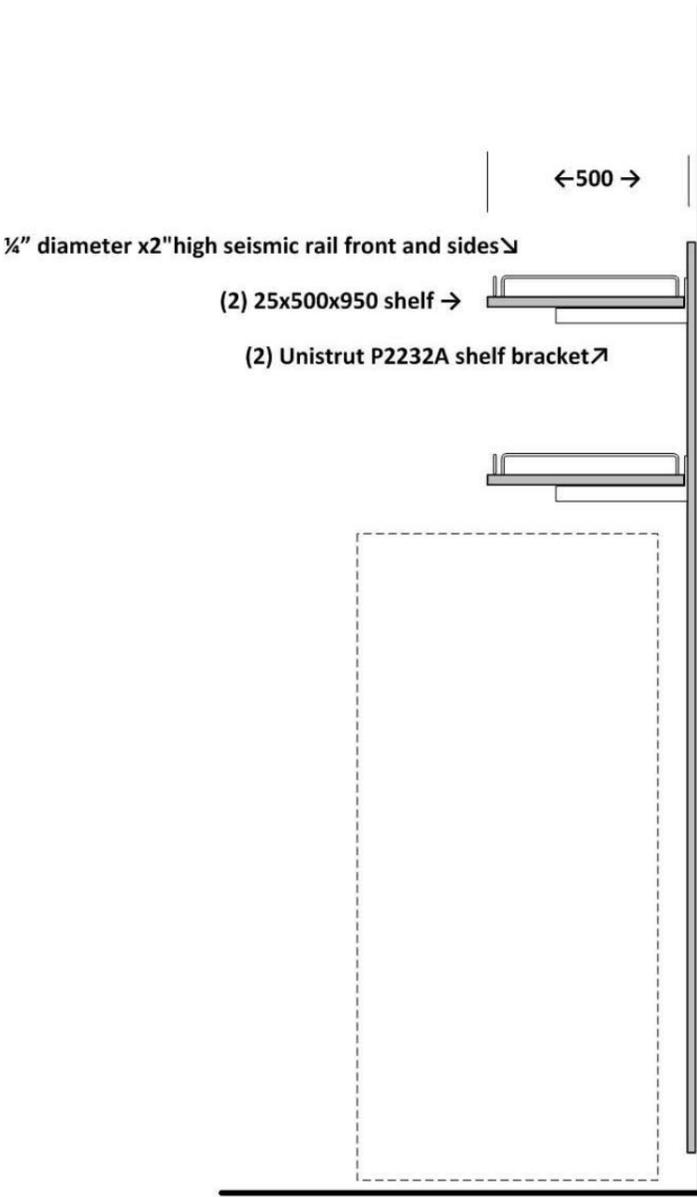
**Section**



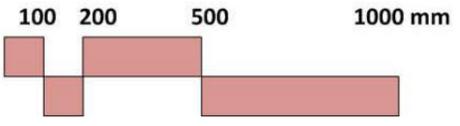
# SECTION DETAIL 5 EQUIPMENT SPACE



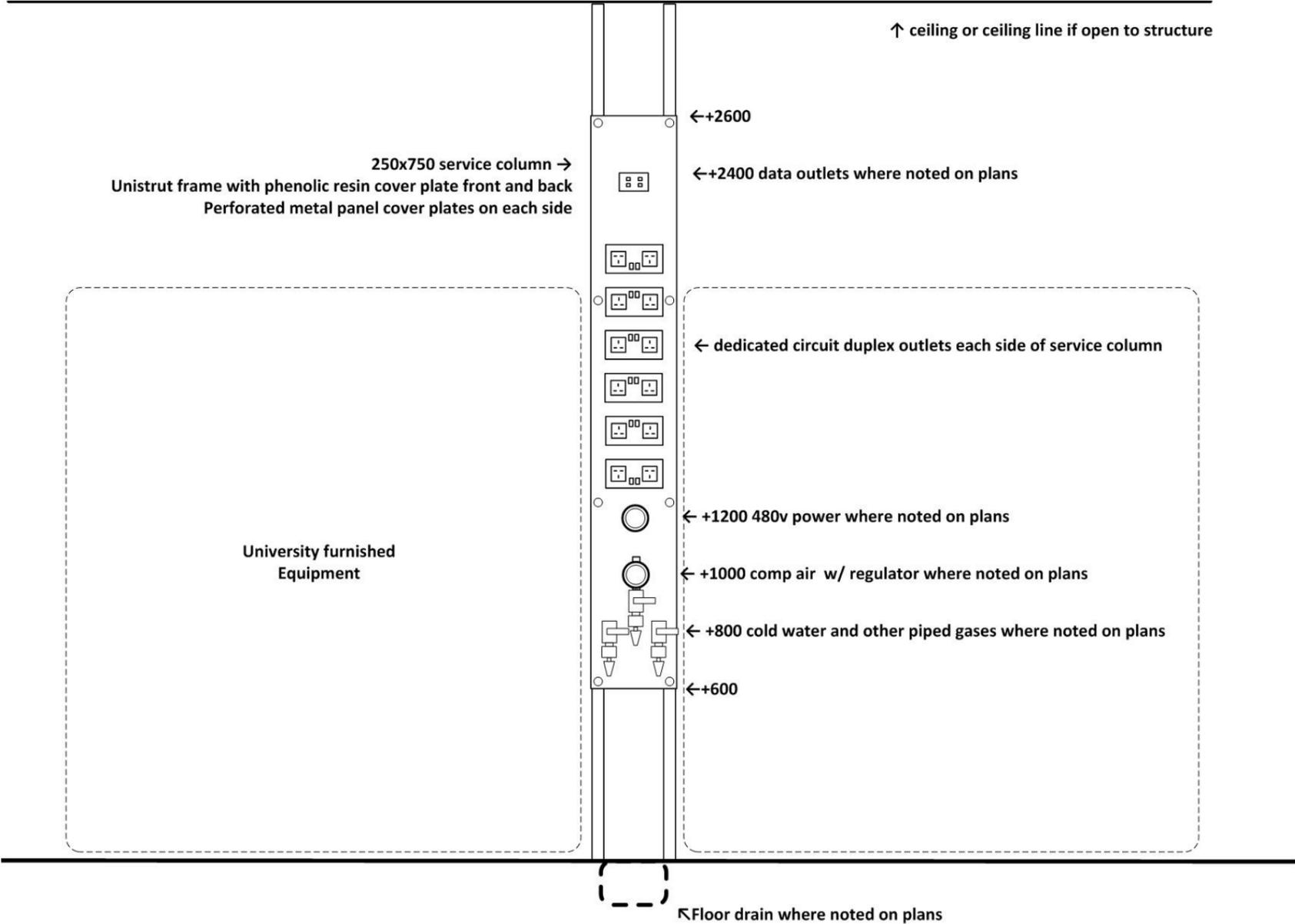
**Elevation**



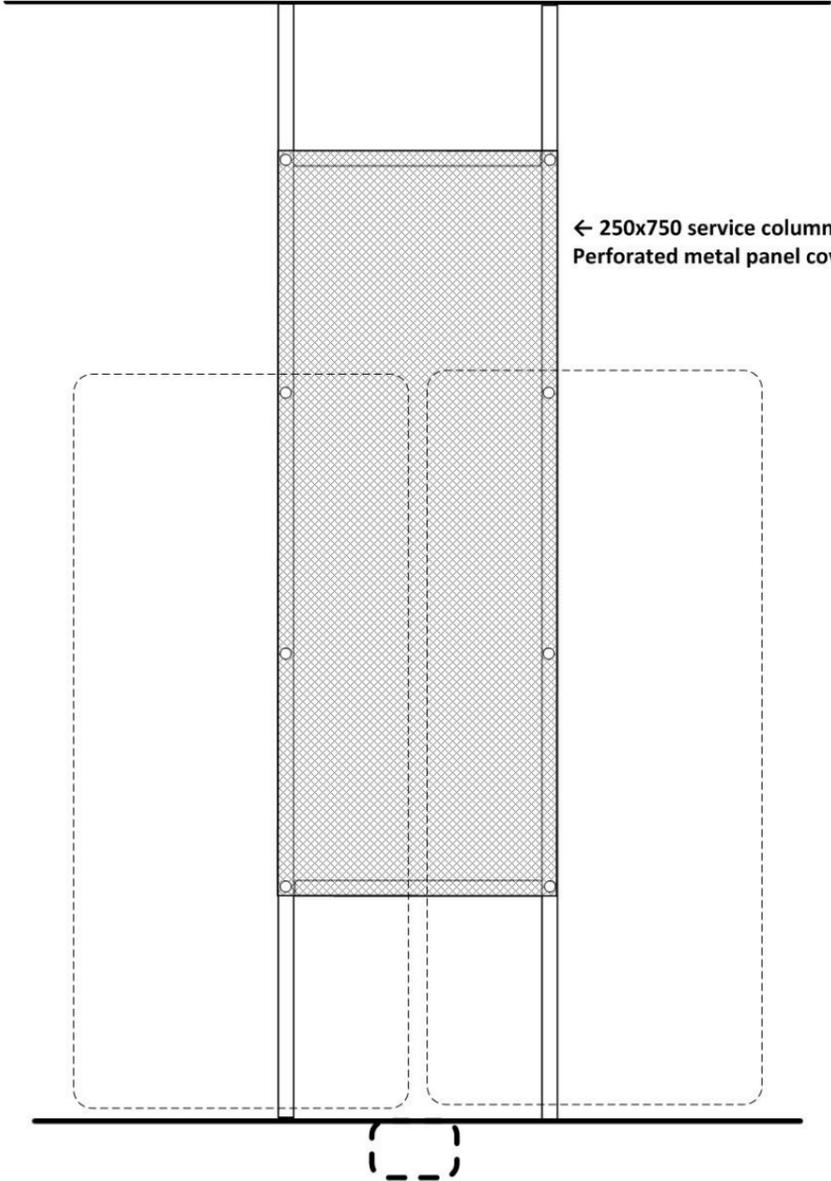
**Section**



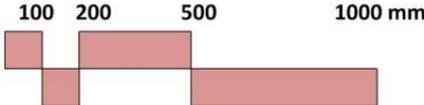
# SECTION DETAIL 7 EQUIPMENT ISLAND



**Elevation**

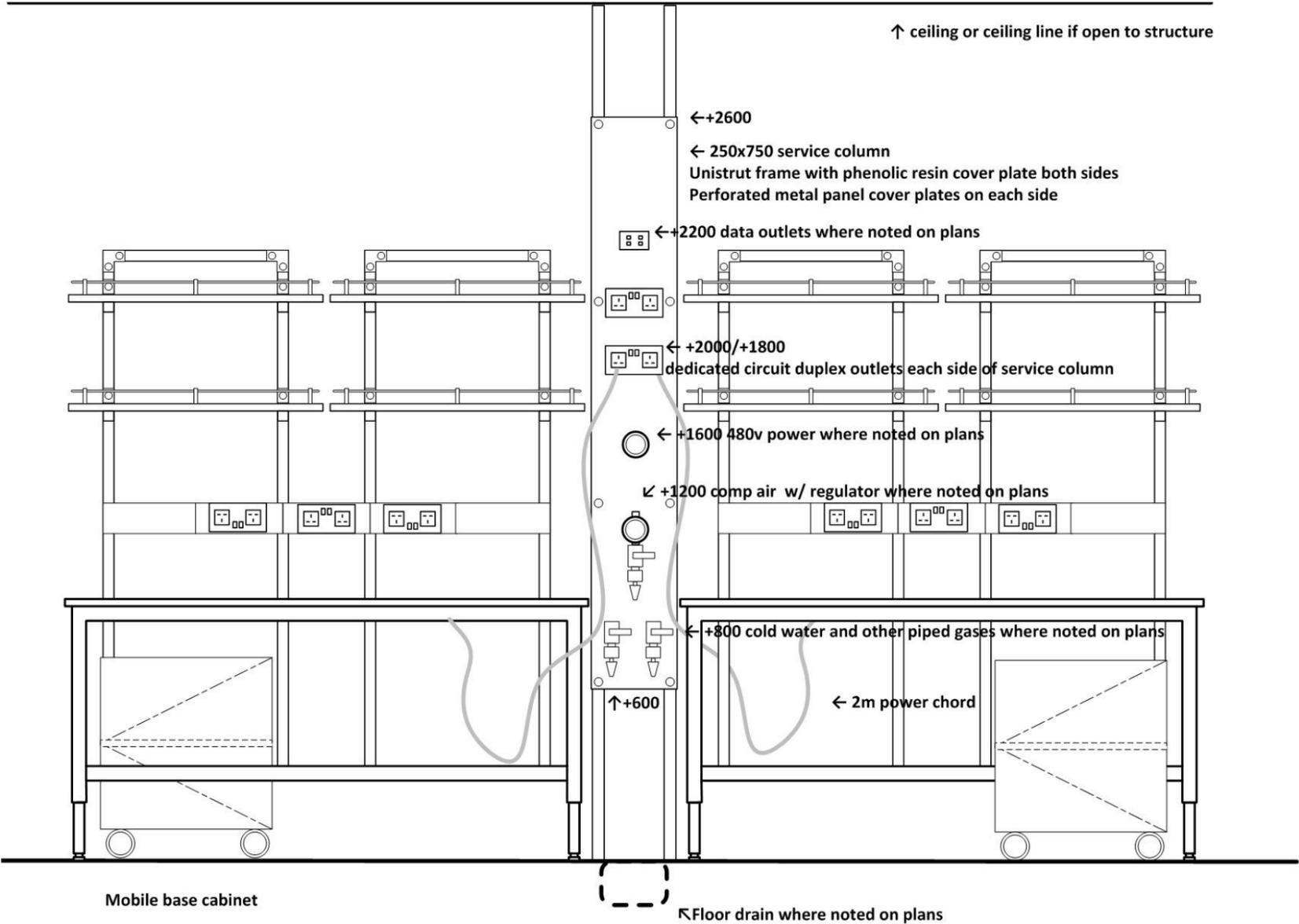


**Section**

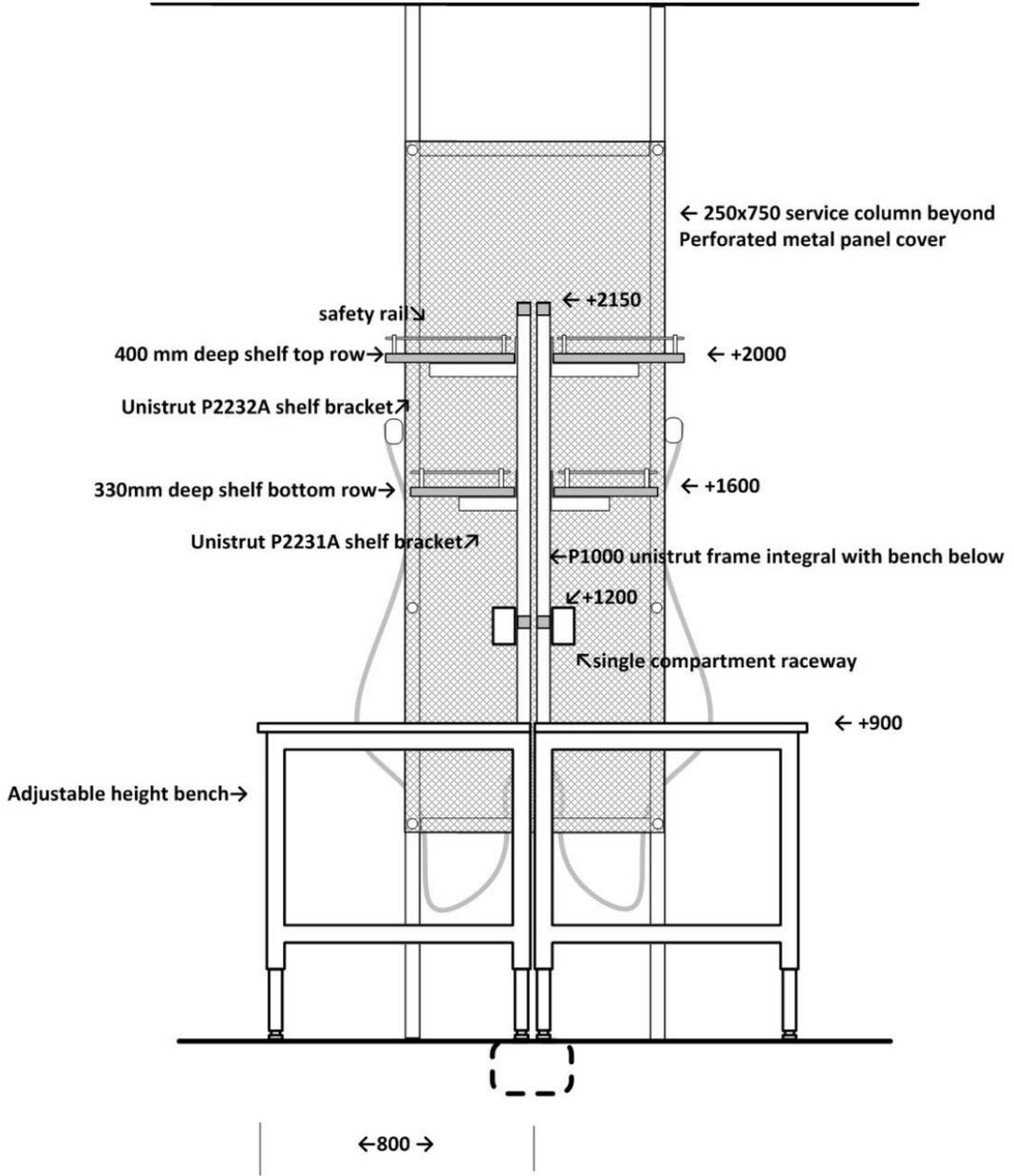


# SECTION DETAIL 10

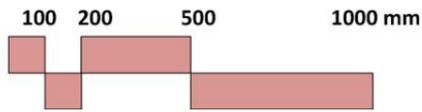
## MOBILE LAB BENCH ISLAND



Elevation

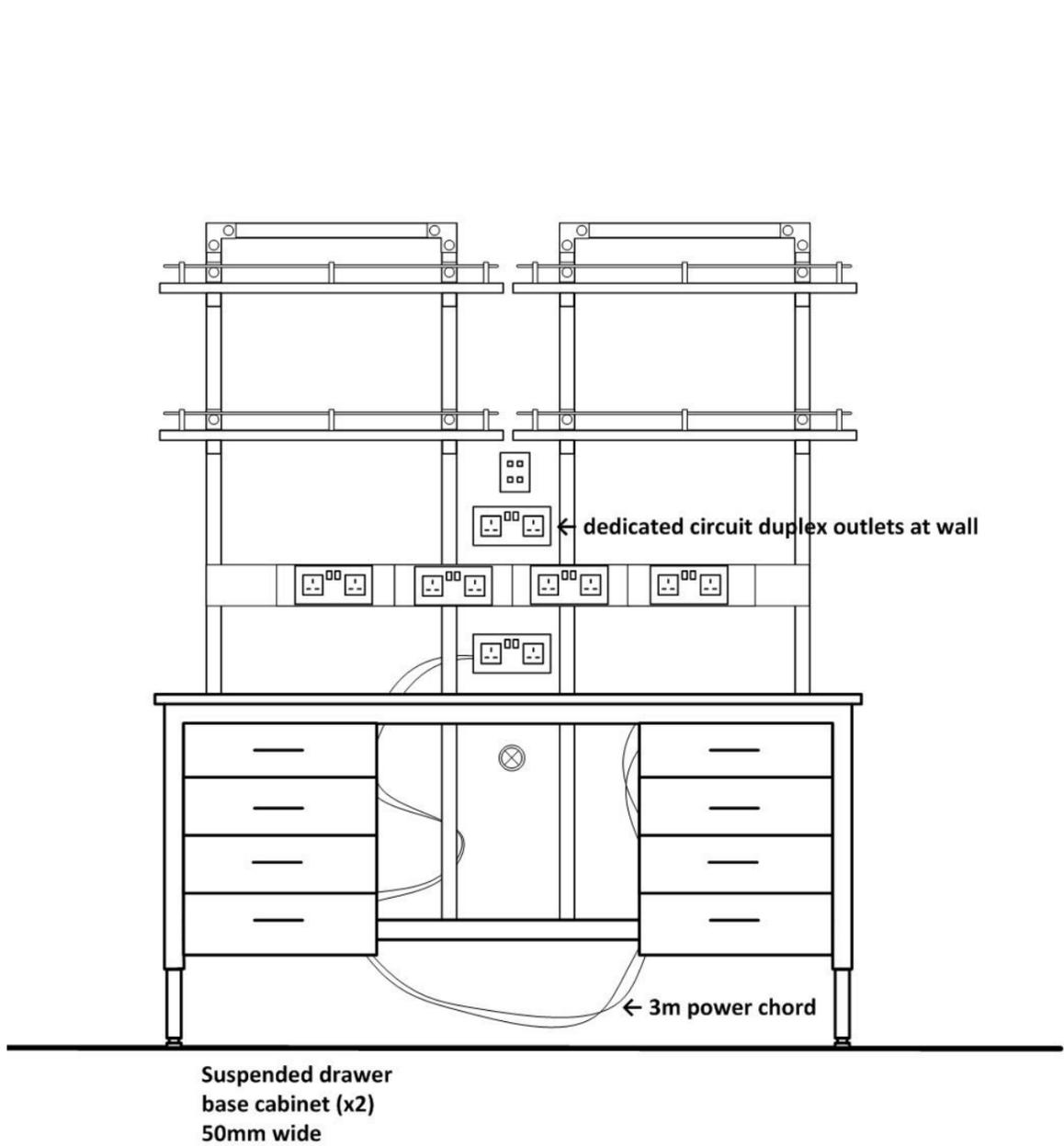


Section

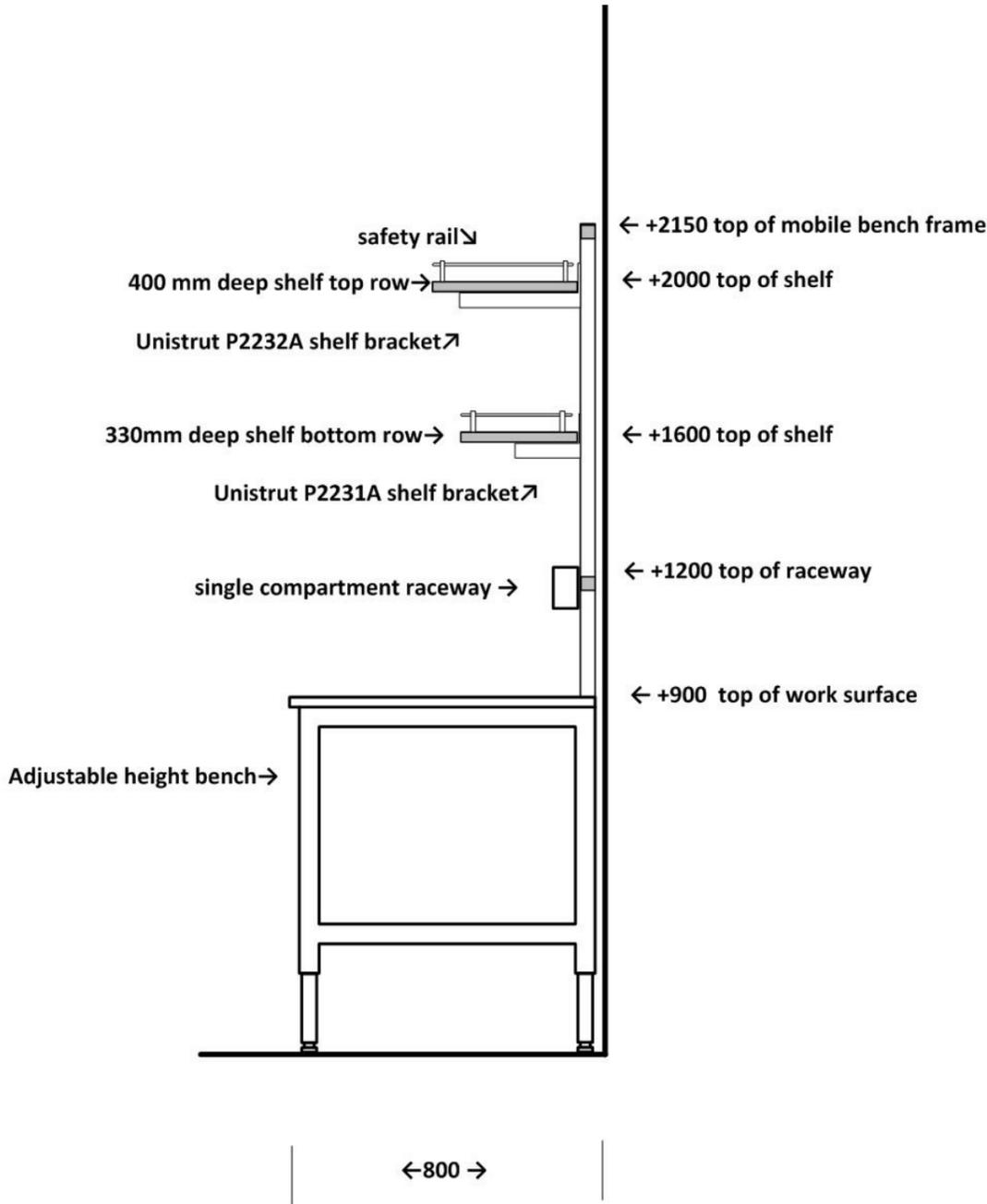


# SECTION DETAIL 11A

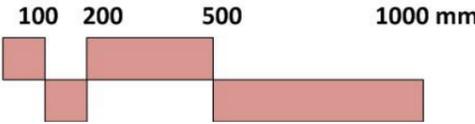
## MOBILE LAB BENCH AT WALL



**Elevation**



**Section**



## Protector® XStream™ Laboratory Hoods



Protector XStream Laboratory Hood 9840600 is shown with Spill Stopper Work Surface 9849800, Protector Acid Storage Cabinet 9901100 and Protector Standard Storage Cabinet 9900100. Blower, ductwork, work surface and base cabinets must be ordered separately.

All models conform to the following regulations and standards:

- SEFA 1-2002
- NFPA 45-2000
- ASTM E84-01
- ASHRAE 110-95
- ANSI Z9.5-1993
- UL 3101-1/61010-1
- CAN/CSA C22.2 No. 1010.1
- UL 1805
- CE Conformity Marking (230 volt models)†

Fixed models feature:

- Two pre-plumbed service fixtures with forged brass valves, lower right side with brass tubing for gas and lower left side with copper tubing for cold water. Components for converting either or both fixtures to air and vacuum are provided. **Inlet tubing is not provided.**
- One pre-wired 115 volt, 20 amp electrical duplex receptacle on lower right side.

All models require (not included):

- **Remote Blower.** See back pocket.
- **Ductwork.** See back pocket.
- **Work Surface.** See pages 92-95.
- **Base Cabinet or Stand.** See pages 96-106.

Optional accessories for on-site installation include:

- **Service Fixture Kits.** See page 107.
- **Electrical Duplex Kits.** See page 108.
- **Guardian Jr. and Digital Airflow Monitor Kits.** See page 108.
- **Distillation Grid Kits.** See page 110.
- **Sash Stop Kits.** See page 108.
- **Snuffer Fire Extinguishers.** See page 110.
- **Ceiling Enclosure and Rear Finish Panel Kits.** See page 109.

\* U.S. Patent No. 6,961,233

† pending

‡ Heights of switches, electrical receptacle and service fixtures meet requirements of ADA.

■ Exclusive Feature

All models feature:

- Modified by-pass airflow design.
- Ergonomic air foil with aerodynamic Clean-Sweep\* airflow openings.
- Upper Dilution Air Supply.\*
- Glacier white, dry powder epoxy-coated steel exterior.
- Chemical-resistant, fiberglass-reinforced, composite panel liner and pre-set Rear Downflow Dual Baffle System\* with flame spread less than 25 per ASTM E-84
- 3/16" thick tempered safety glass vertical-rising sash with epoxy-coated aluminum sash handle with large radius and perforations.\*

- Removable front and side panels and front and interior service access panels for access to plumbing and electrical wiring.
- Pre-wired T8 fluorescent lighting, ADA-compliant light and blower switches for 115 volt, 60 Hz operation.
- Sash stop located at 18" sash opening position.
- Epoxy-coated stainless steel, 12.81" ID exhaust connection(s).

Contact Labconco at **800-821-5525** or **816-333-8811** for ordering information on explosion-proof lighting and other sash configurations and for blower sizing assistance.

## Ordering Information

Protector® XStream™ Laboratory Hoods

ASHRAE 110-95 tests show less than 0.05 ppm leak rate when tested at 4.0 fpm; at OSHA-approved 60, 80, and 100 fpm face velocity and sash positions of 18" and 28". To ensure performance at 60 fpm, Labconco engineers challenged the Protector XStream Hood at less

than ideal conditions such as 30 fpm cross drafts, modified ASHRAE test procedures and average face velocities lower than 60 fpm. Contact Labconco for a technical paper with complete ASHRAE test data.

Total Exhaust CFM and Static Pressure @ 18" Sash Opening (60% open)

| Nominal Width | 100 fpm |       | 80 fpm |       | 60 fpm |       | CFM Savings at 60 fpm vs. 100 fpm | Total Average Annual Dollar Savings at 60 fpm vs. 100 fpm* |
|---------------|---------|-------|--------|-------|--------|-------|-----------------------------------|--|
|               | s.p.    |       | s.p.   |       | s.p.   |       |                                   |  |
| 4 feet        | 470     | 0.11" | 380    | 0.07" | 280    | 0.04" | 190                               | \$760  |
| 5 feet        | 610     | 0.13" | 490    | 0.08" | 370    | 0.05" | 240                               | \$960  |
| 6 feet        | 750     | 0.15" | 600    | 0.10" | 450    | 0.06" | 300                               | \$1,200  |
| 8 feet        | 1060    | 0.12" | 850    | 0.08" | 640    | 0.04" | 420                               | \$1,680  |

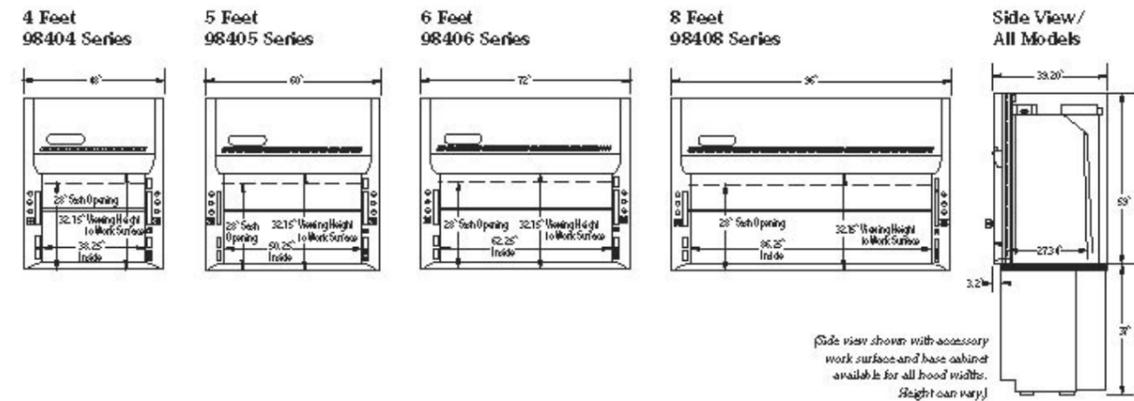
Total Exhaust CFM and Static Pressure @ 28" Sash Opening (100% open)

| Nominal Width | 100 fpm |       | 80 fpm |       | 60 fpm |       | CFM Savings at 60 fpm vs. 100 fpm | Total Average Annual Dollar Savings at 60 fpm vs. 100 fpm* |
|---------------|---------|-------|--------|-------|--------|-------|-----------------------------------|--|
|               | s.p.    |       | s.p.   |       | s.p.   |       |                                   |  |
| 4 feet        | 730     | 0.25" | 590    | 0.13" | 440    | 0.08" | 290                               | \$1,160  |
| 5 feet        | 960     | 0.30" | 770    | 0.19" | 580    | 0.11" | 380                               | \$1,520  |
| 6 feet        | 1190    | 0.36" | 940    | 0.23" | 710    | 0.13" | 470                               | \$1,880  |
| 8 feet        | 1660    | 0.28" | 1330   | 0.18" | 1000   | 0.10" | 660                               | \$2,640  |

\*Based on average annual dollars per CFM usage of \$4.00; fume hood operating 24 hours a day and 5 days per week (6240 hours per year).

| Catalog Number | Nominal Width | Electrical Requirements | Exterior Depth | Interior Working Depth | Fluorescent Lamps | Service Fixtures | Electrical Duplex | Exhaust Collar(s) | Shipping Wt. lbs./kg |
|----------------|---------------|-------------------------|----------------|------------------------|-------------------|------------------|-------------------|-------------------|----------------------|
| 9840400        | 4 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | None             | None              | 12.81" ID         | 400/181              |
| 9840401        | 4 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | 2                | 1                 | 12.81" ID         | 400/181              |
| 9840402**      | 4 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | None             | None              | 12.81" ID         | 400/181              |
| 9840403**      | 4 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | 2                | None              | 12.81" ID         | 400/181              |
| 9840500        | 5 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 460/209              |
| 9840501        | 5 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | 1                 | 12.81" ID         | 460/209              |
| 9840502**      | 5 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 460/209              |
| 9840503**      | 5 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | None              | 12.81" ID         | 460/209              |
| 9840600        | 6 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 520/236              |
| 9840601        | 6 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | 1                 | 12.81" ID         | 520/236              |
| 9840602**      | 6 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 520/236              |
| 9840603**      | 6 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | None              | 12.81" ID         | 520/236              |
| 9840800        | 8 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | None             | None              | (2) 12.81" ID     | 700/318              |
| 9840801        | 8 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | 2                | 1                 | (2) 12.81" ID     | 700/318              |
| 9840802**      | 8 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | None             | None              | (2) 12.81" ID     | 700/318              |
| 9840803**      | 8 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | 2                | None              | (2) 12.81" ID     | 700/318              |

\*\*International electrical configuration





# PRODUCT DIMENSIONS

DOMESTIC SIZES

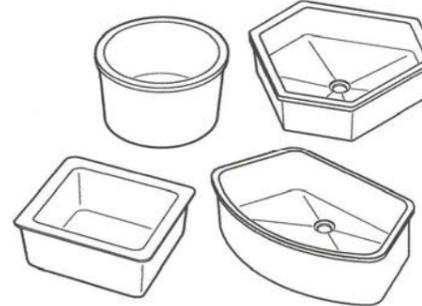
## SINK CUT SHEET

STANDARD LAB SINK:  
D52: ~600x450x280

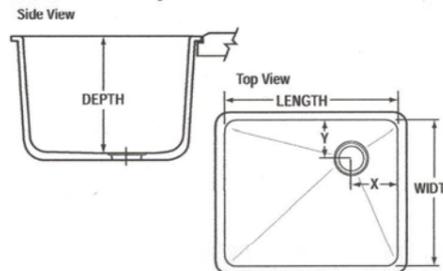
### Standard Dropln® Sinks

| Sink No. | Outlet | Wgt (lb) | Dimensions (in) |       |       |                 |        |
|----------|--------|----------|-----------------|-------|-------|-----------------|--------|
|          |        |          | Inside Bowl     |       |       | Outlet Location |        |
|          |        |          | Length          | Width | Depth | X               | Y      |
| D01C     | Center | 9        | 9.0             | 6.0   | 5.8   | 4.5             | 3.0    |
| D03C     | Center | 16       | 12.0            | 8.0   | 5.8   | 6.0             | 4.0    |
| A05      | Corner | 18       | 14.0            | 10.0  | 5.0   | 3.5             | 3.5    |
| D05      | Corner | 22       | 14.0            | 10.0  | 6.2   | 3.5             | 3.5    |
| D05C     | Center | 24       | 14.0            | 10.0  | 6.2   | 7.0             | 5.0    |
| D10      | End    | 20       | 16.0            | 8.0   | 6.8   | 4.5             | 4.0    |
| D10C     | Center | 22       | 16.0            | 8.0   | 6.8   | 8.0             | 4.0    |
| D15      | Corner | 30       | 16.0            | 12.0  | 8.0   | 3.5             | 3.5    |
| D15C     | Center | 31       | 16.0            | 12.0  | 8.0   | 8.0             | 6.0    |
| D19      | Corner | 42       | 16.0            | 16.0  | 9.6   | 3.5             | 3.5    |
| D20      | Corner | 32       | 16.0            | 16.0  | 7.5   | 3.5             | 3.5    |
| D22C     | Center | 30       | 18.0            | 6.5   | 6.8   | 9.0             | 3.3    |
| D24(C)   | Center | 30       | 18.0            | 14.0  | 10.5  | 9.0             | 6.8    |
| A25      | Corner | 35       | 18.0            | 15.0  | 5.0   | 3.5             | 3.5    |
| D25      | Corner | 39       | 18.0            | 15.0  | 7.9   | 3.5             | 3.5    |
| D30      | Corner | 53       | 18.0            | 15.0  | 11.0  | 3.5             | 3.5    |
| D30C     | Center | 50       | 18.0            | 15.0  | 10.8  | 9.0             | 7.5    |
| D33E     | End    | 59       | 21.0            | 17.0  | 9.8   | 4.5             | 8.5    |
| D45      | Corner | 64       | 21.5            | 15.5  | 11.0  | 3.5             | 3.5    |
| D50C     | Center | 48       | 24.0            | 16.0  | 8.0   | 12.0            | 8.0    |
| D52      | Corner | 77       | 24.0            | 18.0  | 11.0  | 3.5             | 3.5    |
| A55      | Corner | 47       | 25.0            | 15.0  | 4.8   | 3.5             | 3.5    |
| D55      | Corner | 61       | 25.0            | 15.0  | 10.0  | 3.5             | 3.5    |
| D59      | Corner | 61       | 28.0            | 15.0  | 11.8  | 3.5             | 3.5    |
| DRS12    | Center | 18       | 12.0            | Round | 7.8   | Center          | Center |

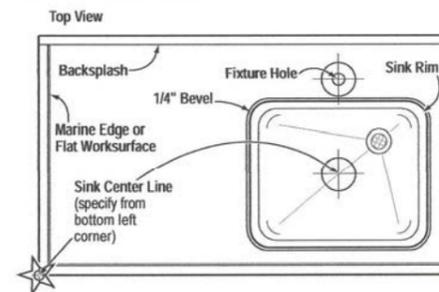
### Dropln® Sink Styles



### Dimensions Key



### Installation Detail



### Special Order Dropln® Sinks

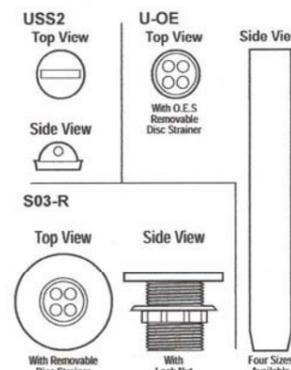
| Sink No. | Outlet | Wgt (lb) | Dimensions (in) |             |       |                 |        |
|----------|--------|----------|-----------------|-------------|-------|-----------------|--------|
|          |        |          | Inside Bowl     |             |       | Outlet Location |        |
|          |        |          | Length          | Width       | Depth | X               | Y      |
| D06*     | Center | 34       | 12.0            | 12.0        | 12.0  | 6.0             | 6.0    |
| A07*     | Corner | 24       | 14.0            | 14.0        | 5.0   | 3.5             | 3.5    |
| D08*     | Corner | 25       | 15.0            | 8.0         | 6.0   | 3.5             | 3.5    |
| D09*     | Corner | 25       | 15.0            | 8.0         | 10.8  | 3.5             | 3.5    |
| D21*     | Corner | 58       | 16.0            | 16.0        | 15.0  | 3.5             | 3.5    |
| A26*     | Corner | 39       | 18.0            | 15.0        | 5/11  | 4.5             | 5.5    |
| D32      | Corner | 49       | 18.0            | 15.0        | 15.8  | 3.5             | 3.5    |
| D51*     | Corner | 60       | 24.0            | 16.0        | 9.6   | 3.5             | 3.5    |
| D54*     | Corner | 45       | 25.0            | 15.0        | 8.0   | 3.5             | 3.5    |
| D57*     | Corner | 71       | 25.0            | 15.0        | 13.6  | 3.5             | 3.5    |
| D58*     | Corner | 79       | 25.0            | 15.0        | 17.8  | 3.5             | 3.5    |
| D61      | End    | 94       | 30.0            | 16.0        | 17.8  | 4.5             | 7.5    |
| D65C*    | Center | 98       | 35.5            | 19.5        | 9.8   | 17.8            | 9.8    |
| D68**    | End    | 70       | 30.0            | 16.0        | 10.0  | 4.75            | 8.0    |
| D70C*    | Center | 95       | 24.0            | 16.0        | 15.5  | 8.0             | 12.0   |
| D100**   | Center | 29       | 22.5            | Hexagon     | 5.0   | Center          | Center |
| D200**   | End    | 64       | 30.9            | Hexagon     | 7.0   | 15.5            | 8.0    |
| DRS10*   | Center | 14       | 10.0            | Round       | 7.8   | Center          | Center |
| DHC20*   | End    | 82       | 30.0            | Hexagon     | 7.0   | Center          | Center |
| D99*     | End    | 56       | 32.0            | Semi-Circle | 10.0  | 11.5            | 4.5    |

All sinks are available at both plants unless they are Special Order Sinks, available as noted:  
 \* Available only from Taylor, TX, plant (colors: Black Ornyx, Gray, Graphite, Tan, Forest Green and Steel Blue).  
 \*\* Available only from Canton, MI, plant (colors: Black Ornyx, Gray and Alpine White)

ADA compliant sinks are designated by this symbol.

All Dimensions are nominal. Exterior dimensions vary by MFG location. Cutsheets available upon request.

### Outlets & Accessories



WWW.DURCON.COM

206 Allison Drive • Taylor, TX 76574 • Phone: 512.595.8000 • Fax: 512.595.8400 • E-mail: sales@durcon.com

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Rev. 02/08

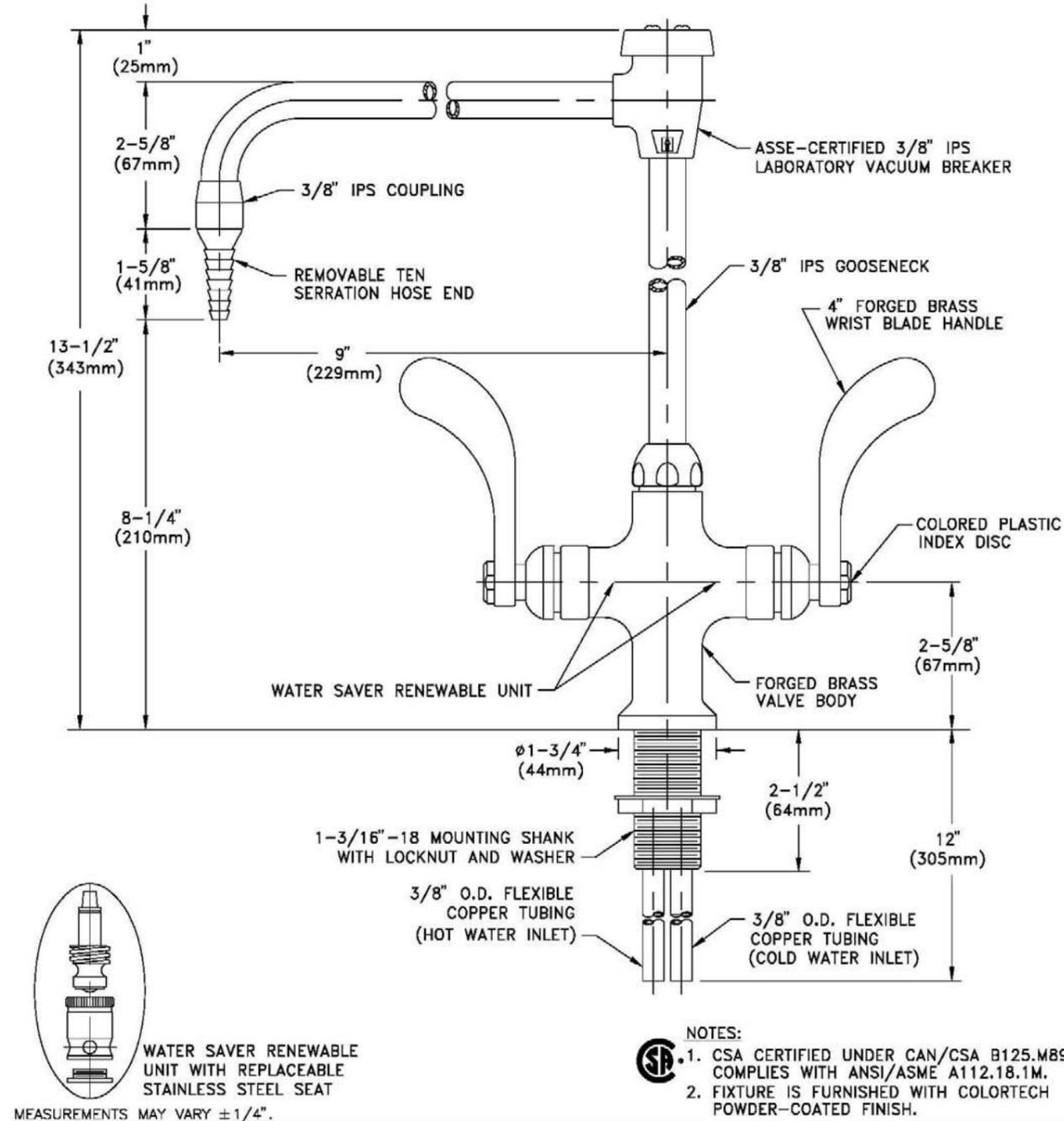
# HOT/COLD WATER FAUCET CUT SHEET

## COLORTECH

701 West Erie Street Phone 312 666 5500  
Chicago, Illinois 60610 Fax 312 666 8597

Laboratory Service Fixtures by  
WaterSaver Faucet Co.

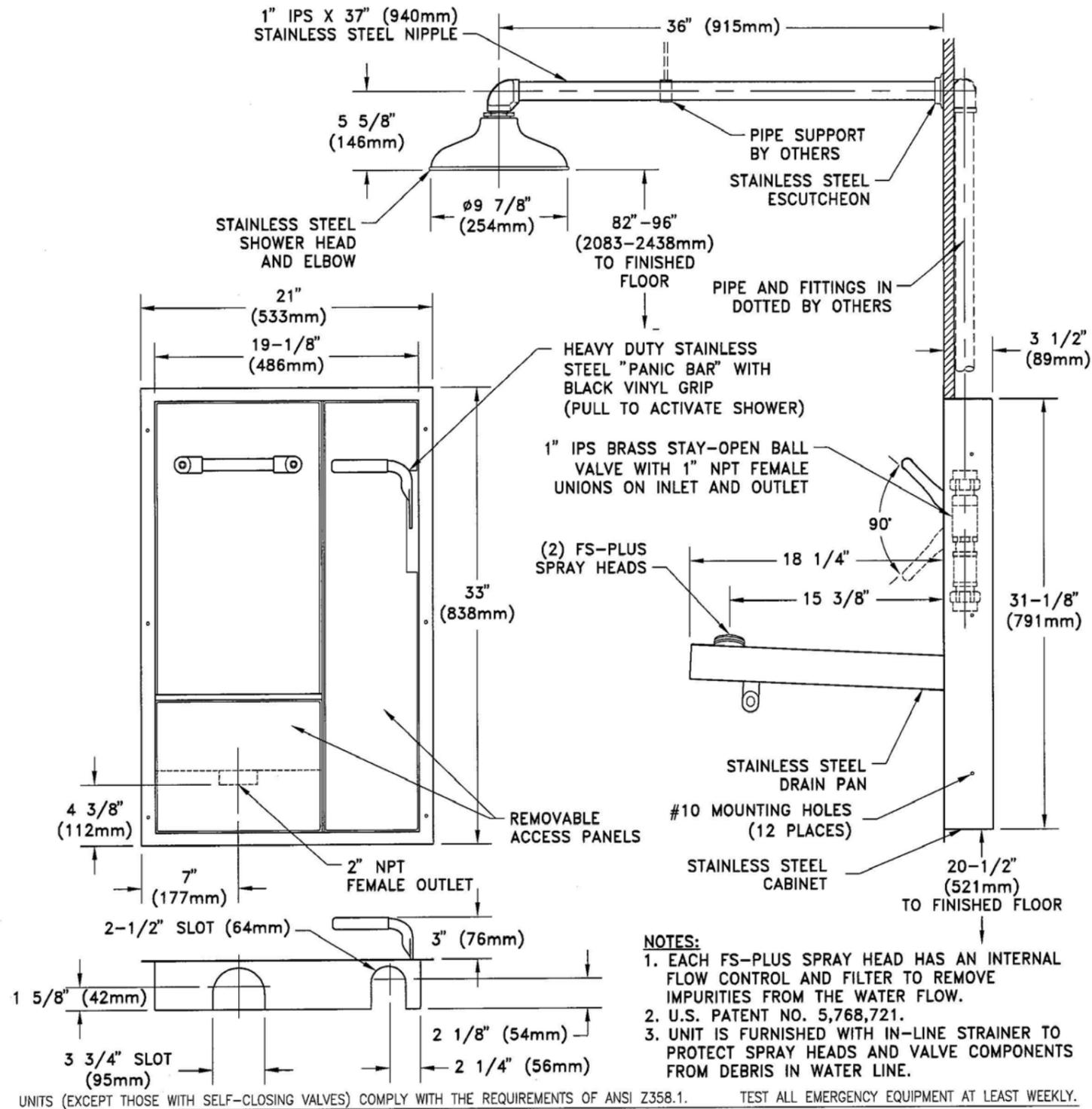
CT414-9VB-BH  
LABORATORY MIXING FAUCET, DECK MOUNTED, 9" RIGID/SWING VACUUM BREAKER GOOSENECK, WRIST BLADE HANDLES

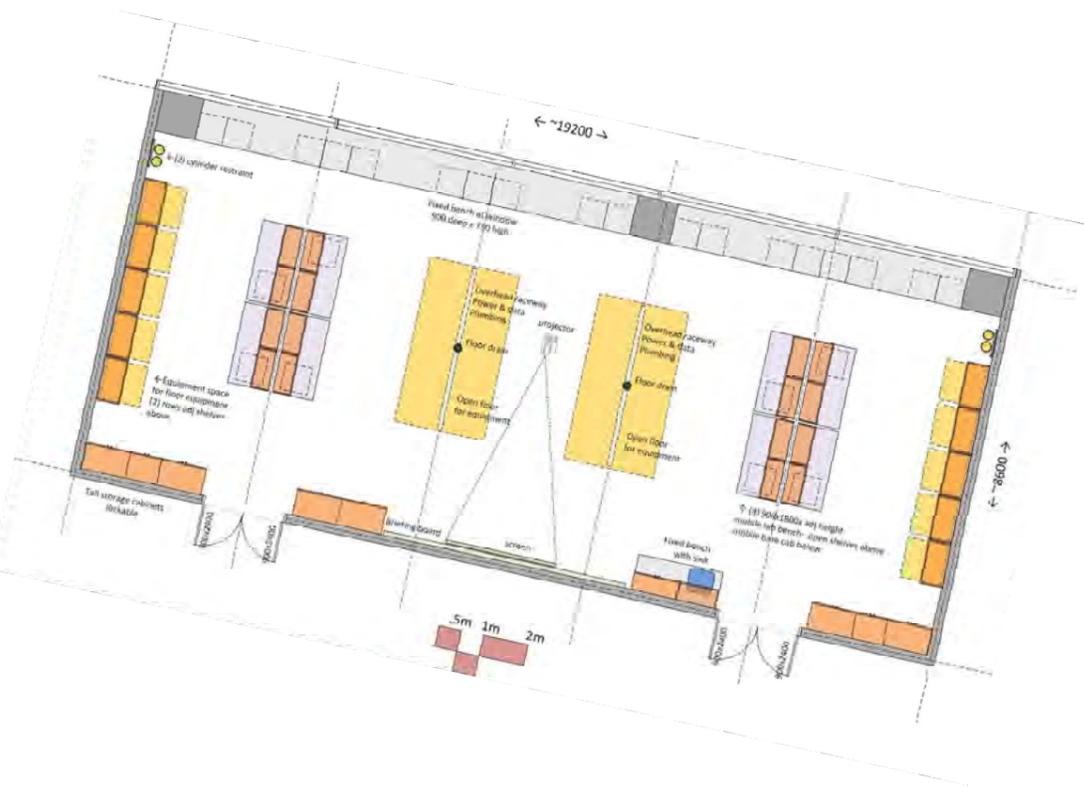
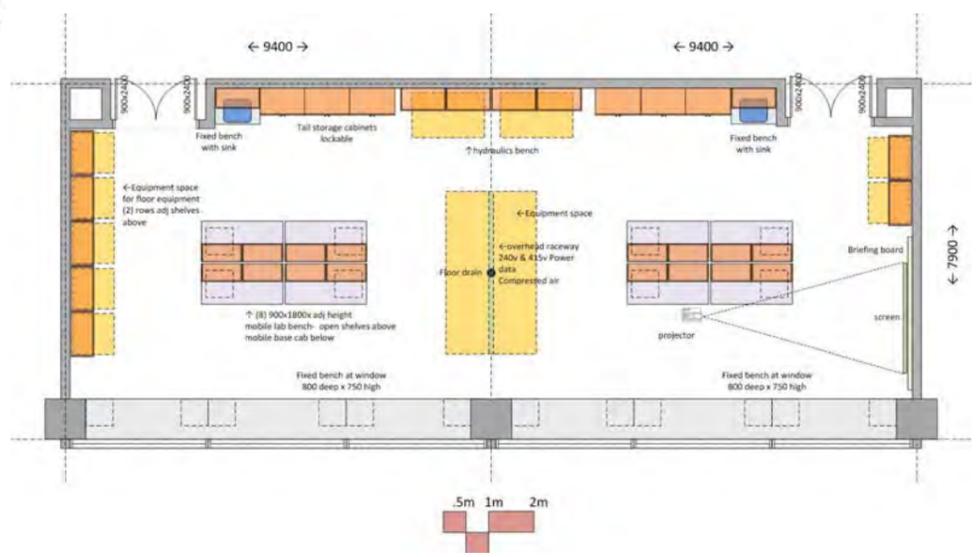


Drawing Number: \_\_\_\_\_

Revision Number: 031803-KJS

**SSBF2170**  
 RECESSED SAFETY STATION WITH DRAIN PAN





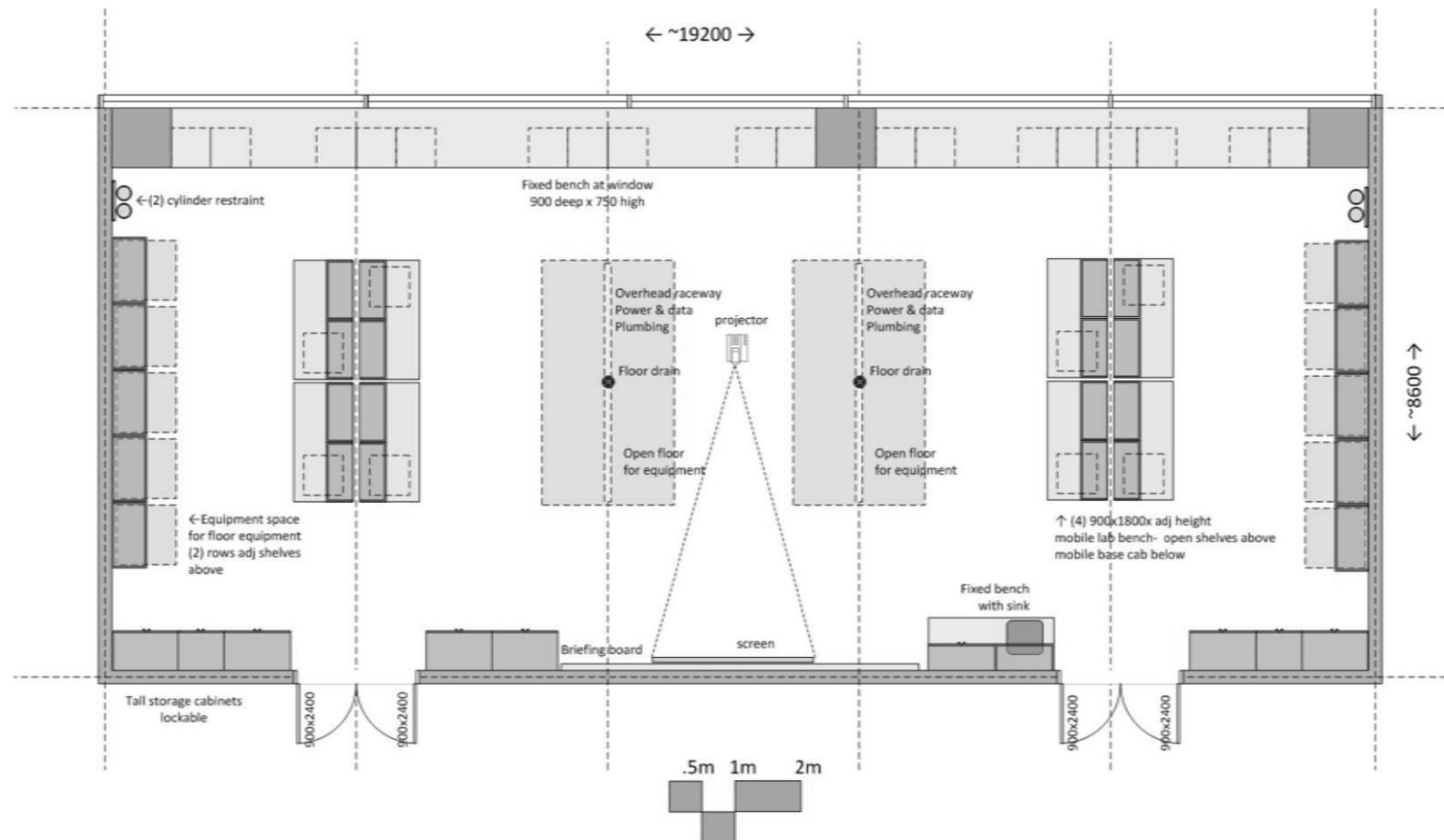
# MECHANICAL ENGINEERING LAB DESIGN SKETCHBOOK

New College of Engineering  
 Qatar University  
 2012 Aug 16

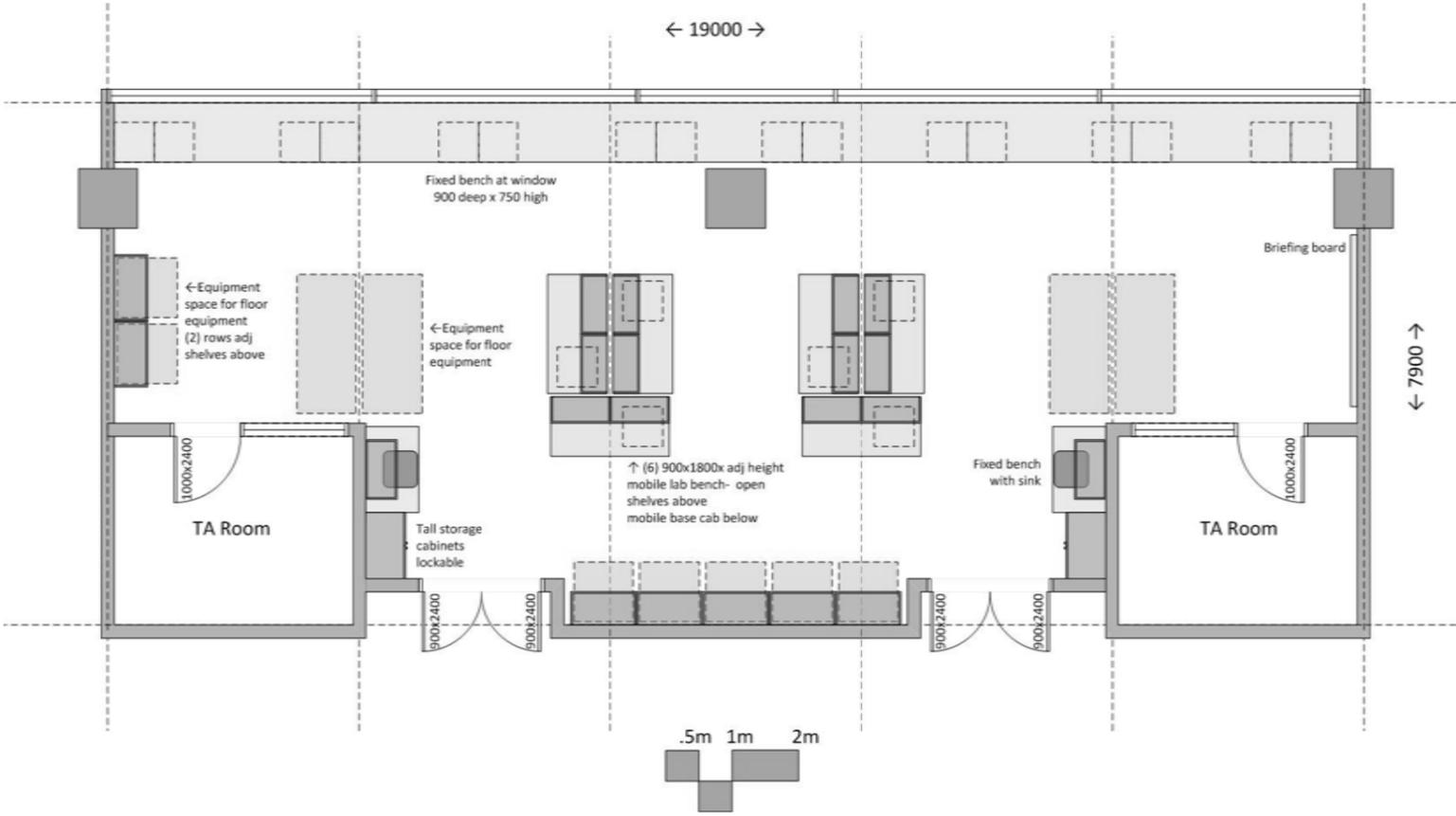


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# SUMMARY



This second edition sketchbook (revised) comprises the studios and labs assigned to the Mechanical Engineering Department. It includes basic plan diagrams with equipment and furnishings noted. It includes electrical and plumbing outlets and fittings. It also includes section details for typical casework conditions. This document provides the basis of design intent for the labs. It provides basic information to assist the design team in preparing construction documents and to provide information for lab casework manufacturers to provide shop drawing submittals.

Glen Berry, AIA  
 Laboratory Consultant to Mimar  
 glenberry@designforscience.com



# SYMBOL LEGEND

## PLUMBING & ELECTRICAL SYMBOLS

 HW/CW Hot/Cold water faucet with vacuum breaker

 A Compressed air- 30-100 psi at overhead service carrier with regulator  
Or at high bay column with regulator

 Floor drain

 240v duplex electrical  
Dedicated circuit at equipment space  
Standby power at equipment space

 415v 3phase 60 amp electrical  
With quick disconnect switch

 Recessed floor elec/data box

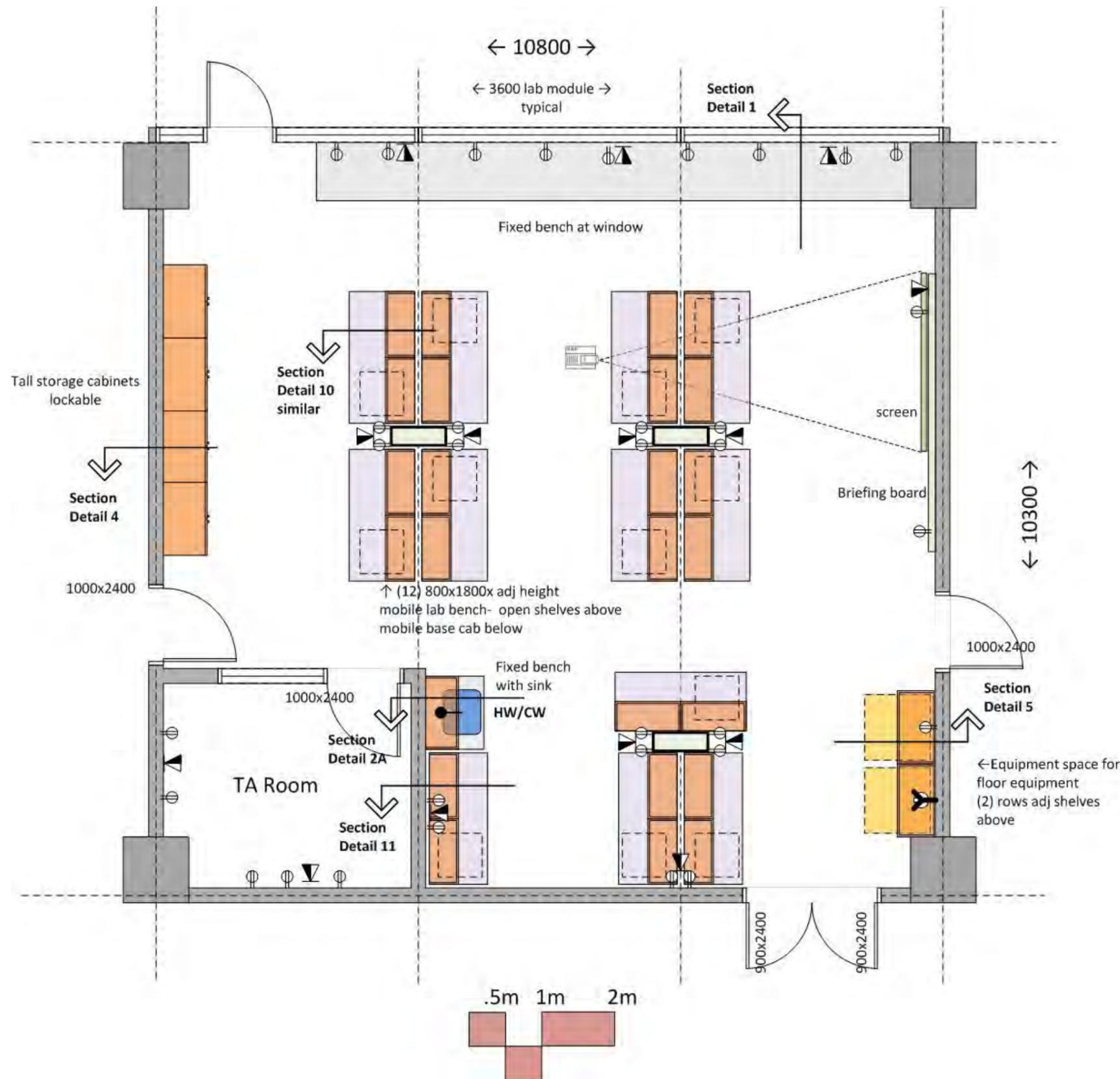
 Elec/data service column at ceiling  
Dedicated circuits for each 240v duplex

 415v 3phase 100 amp electrical  
With quick disconnect switch

 Data/phone box

# INDUSTRIAL LAB TYPE A

FIRST FLOOR  
SIMILAR FOR (2) OTHER STUDIOS FIRST FLOOR



## ARCHITECTURAL

Floor: sealed, ground concrete  
Walls: cmu with plaster, paint  
Ceiling: acoustic tile at 3 m  
Doors with vision panels  
Vibration attenuation: 25 micrometers/second or less  
Sound attenuation: NC 45 or less  
Light attenuation: at exterior windows with exterior sun shade

## MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
Equipment heat gain: 500-750 btuh/square meter  
Humidity: 30-50% relative  
Pressure: negative

## PLUMBING

Industrial hot/cold water at lab sink

## ELECTRICAL

240v receptacles at benchtop and equipment  
415v3ph outlet at equipment space  
Dedicated circuits at equipment spaces  
Standby power (emergency) at equipment spaces  
Data junction boxes at perimeter and islands  
Wireless data connection  
Lighting: indirect fluorescent at 60 f.c.

## CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

## COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
Computers

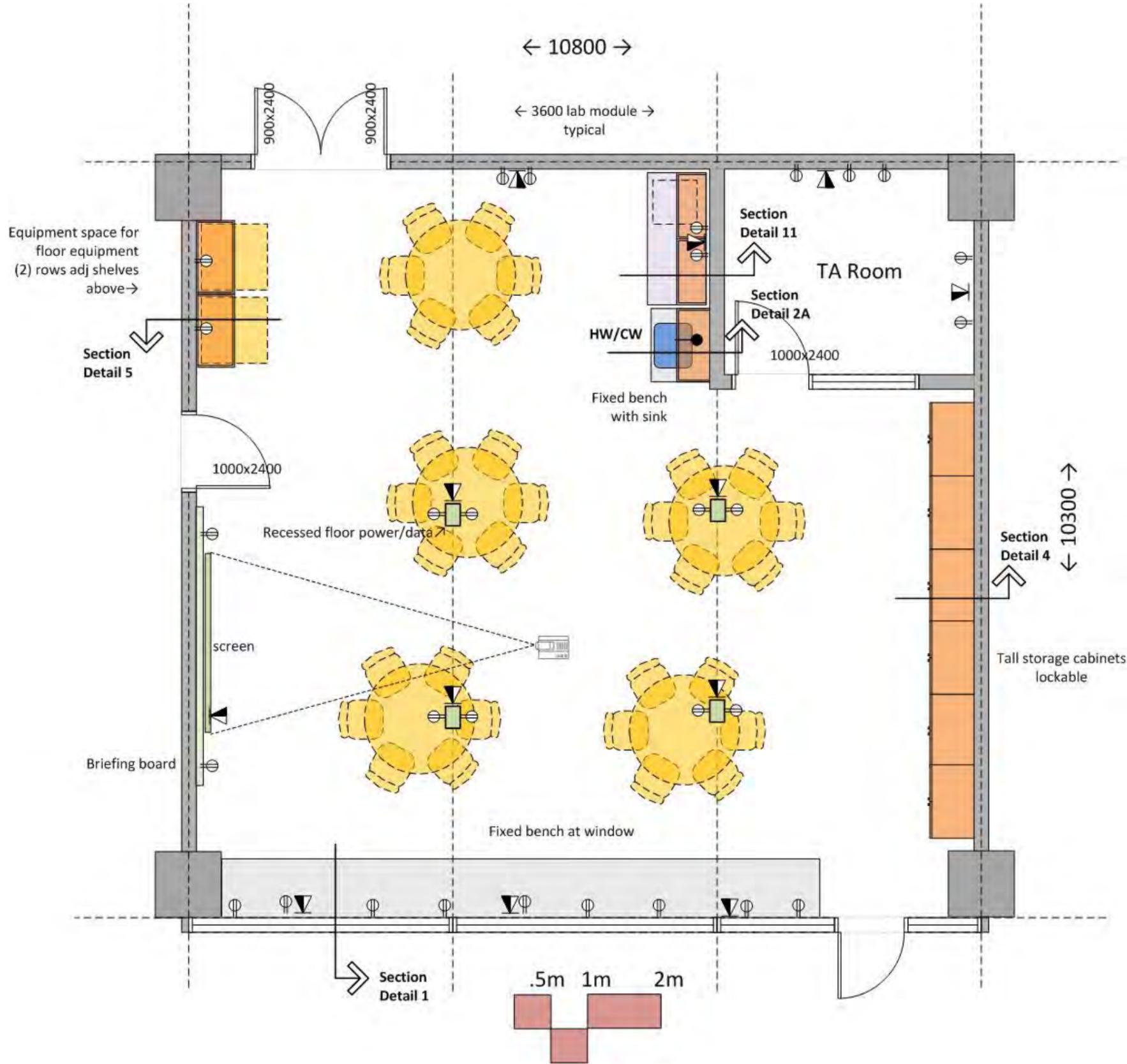
# INDUSTRIAL LAB TYPE A

KEY PLAN- FIRST FLOOR



# INDUSTRIAL LAB TYPE B

## FIRST FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink

### ELECTRICAL

240v receptacles at perimeter  
 Dedicated circuits at equipment spaces  
 Data junction boxes at perimeter  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Tables and chairs  
 Computers

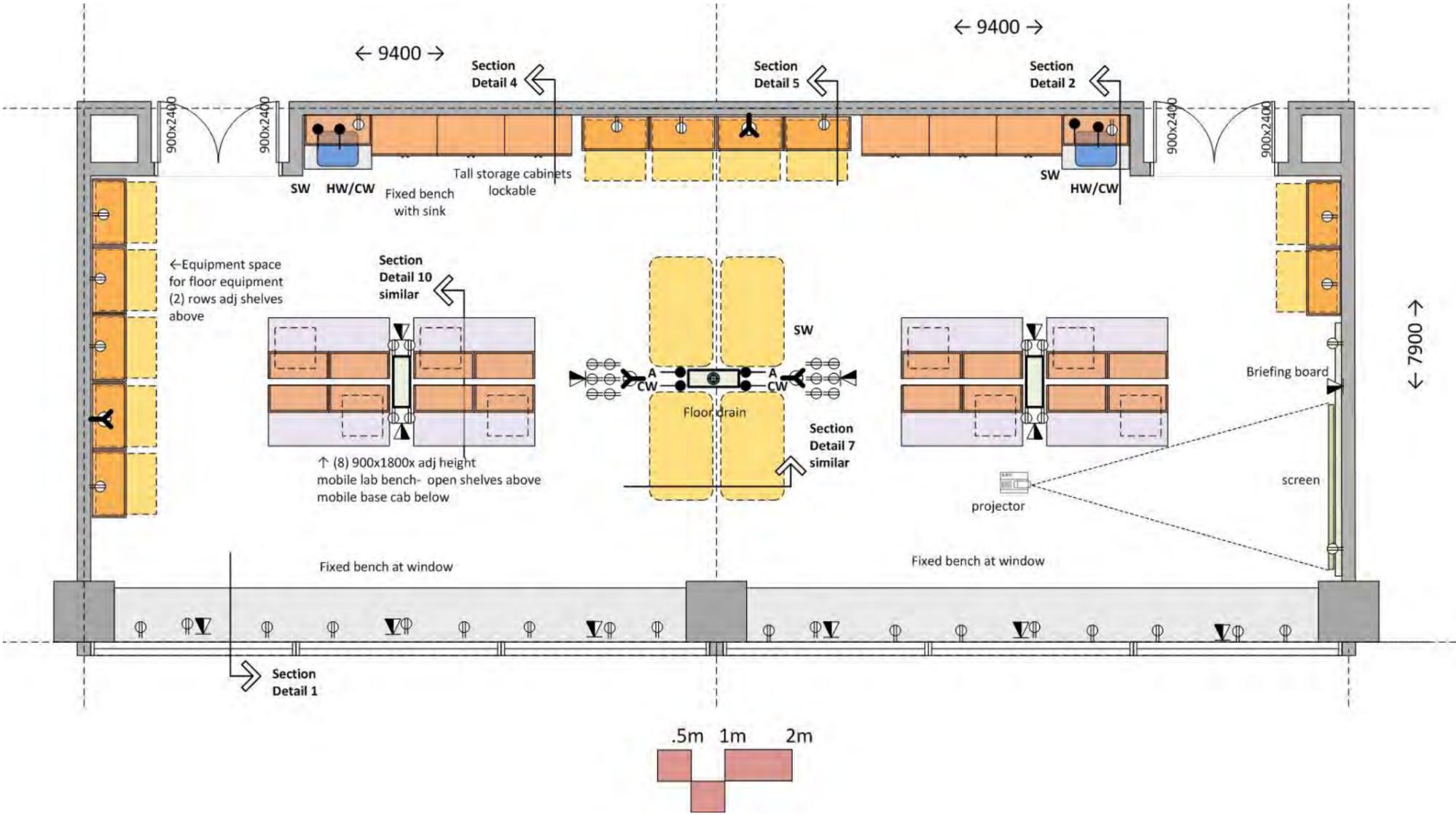
# INDUSTRIAL LAB TYPE B

KEY PLAN- FIRST FLOOR



# MECH ENG LAB SMALL

## FIRST FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sinks  
 Pure water at lab sink via point-of-use water polisher  
 Floor drains  
 compressed air & cold water at equipment island

### ELECTRICAL

415V with disconnect  
 240v receptacles at benchtop and equipment raceway  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment

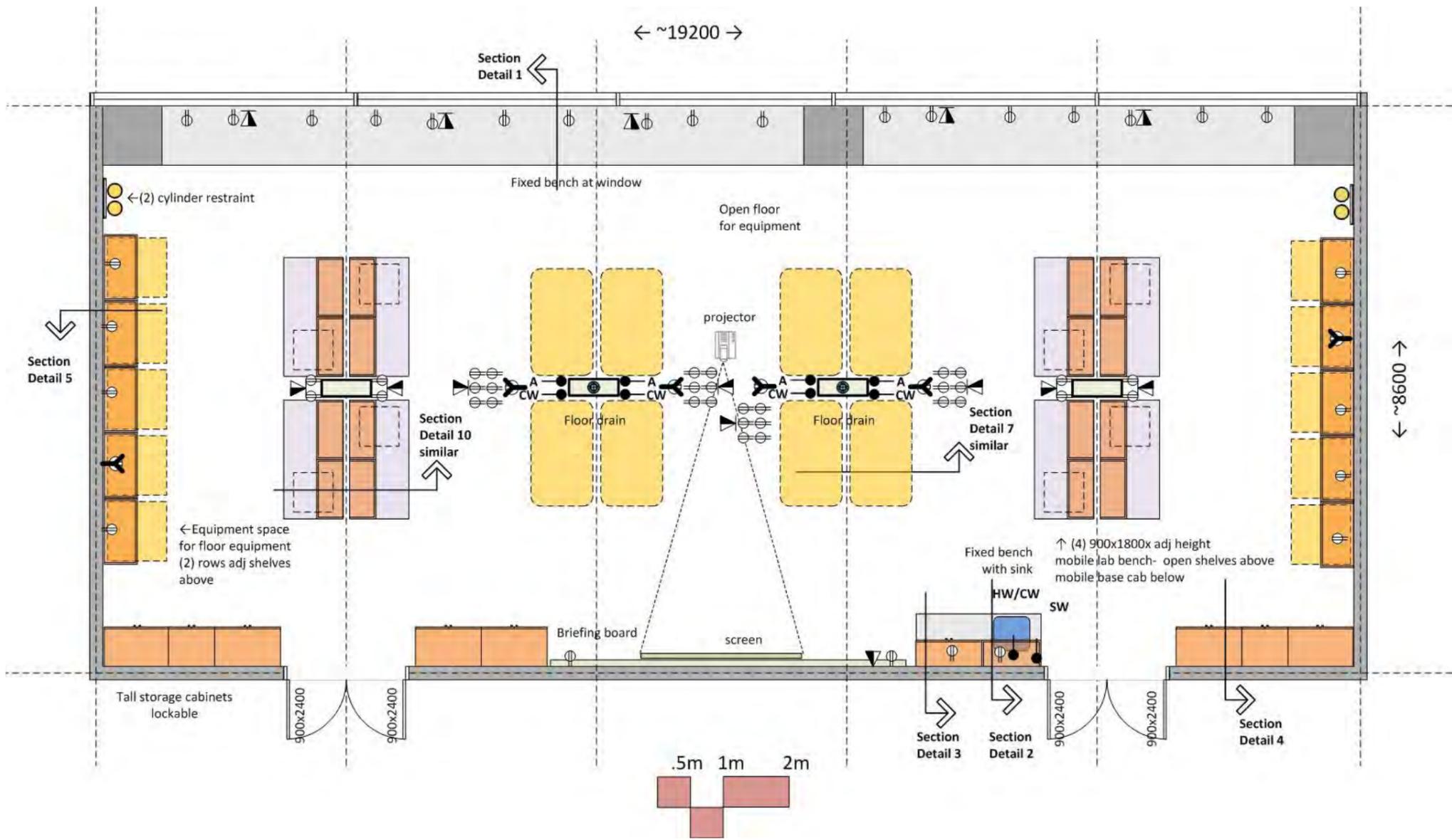
# MECH ENG LAB SMALL

KEY PLAN- FIRST FLOOR



# MECH ENG LAB LARGE

## FIRST FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 compressed air & cold water at equipment islands  
 Floor drains

### ELECTRICAL

415V with disconnect  
 240v receptacles at benchtop and equipment  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 projector & screen

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment

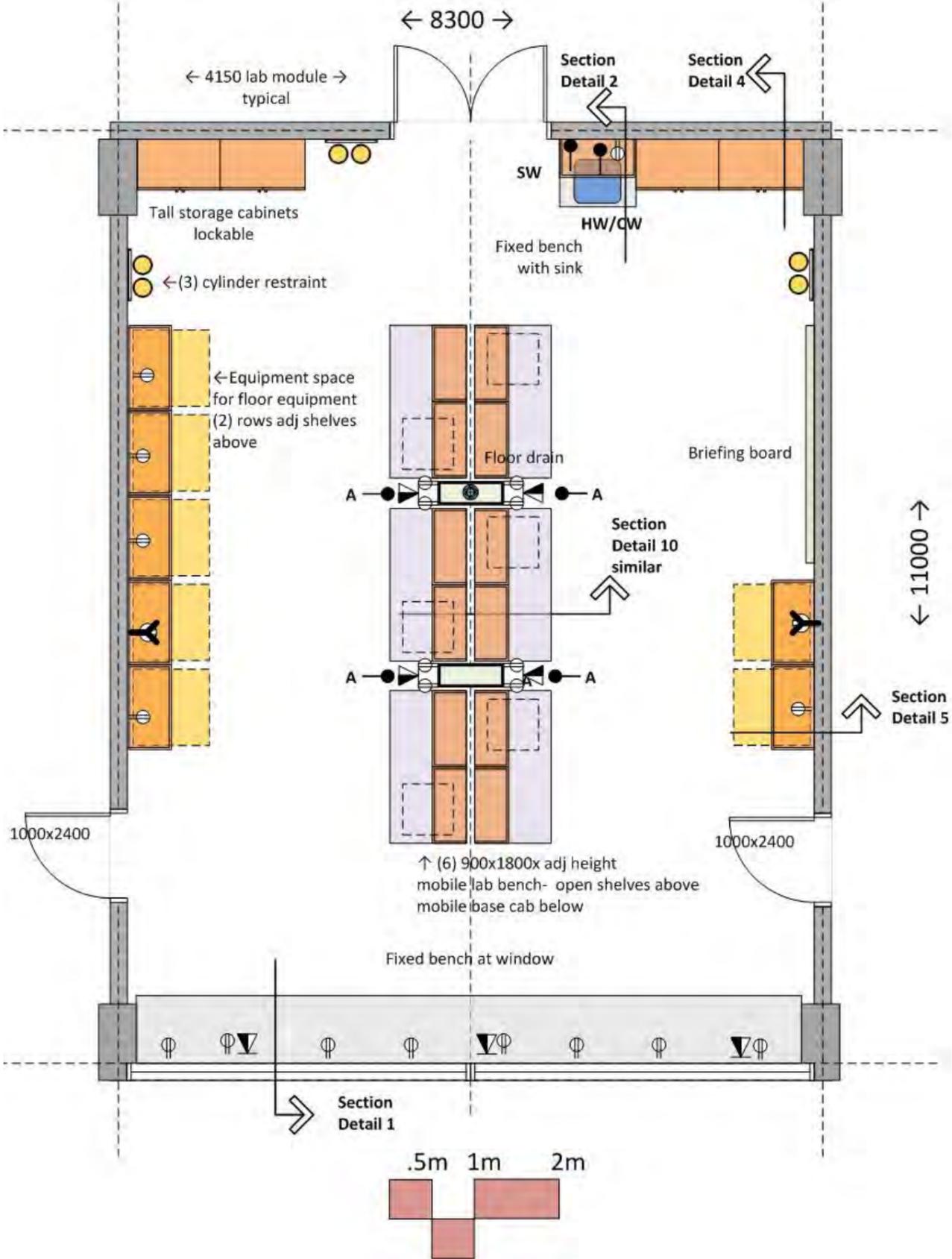
# MECH ENG LAB LARGE

KEY PLAN- FIRST FLOOR



# MECH ENG LAB

FIRST FLOOR ADJ TO HIGH BAY WORKSHOP  
SIMILAR FOR (3) OTHER LABS FIRST FLOOR



**ARCHITECTURAL**

Floor: sealed, ground concrete  
Walls: cmu with plaster, paint  
Ceiling: open to structure  
Doors with vision panels  
Vibration attenuation: 25 micrometers/second or less  
Sound attenuation: NC 45 or less  
Light attenuation: at exterior windows with exterior sun shade

**MECHANICAL**

Temperature: 22 deg. C +/- 1 deg. C  
100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
Equipment heat gain: 500-750 btuh/square meter  
Humidity: 30-50% relative  
Pressure: negative

**PLUMBING**

Industrial hot/cold water at lab sink  
Pure water at lab sink via point-of-use water polisher  
Floor drains  
compressed air at islands

**ELECTRICAL**

415V3ph  
240v receptacles at benchtop and equipment  
Dedicated circuits at equipment spaces  
Standby power (emergency) at equipment spaces  
Data junction boxes at perimeter and islands  
Wireless data connection  
Lighting: indirect fluorescent at 60 f.c.

**CONTRACTOR FURNISHED EQUIPMENT**

Lab casework, sinks, tops, fittings  
briefing board

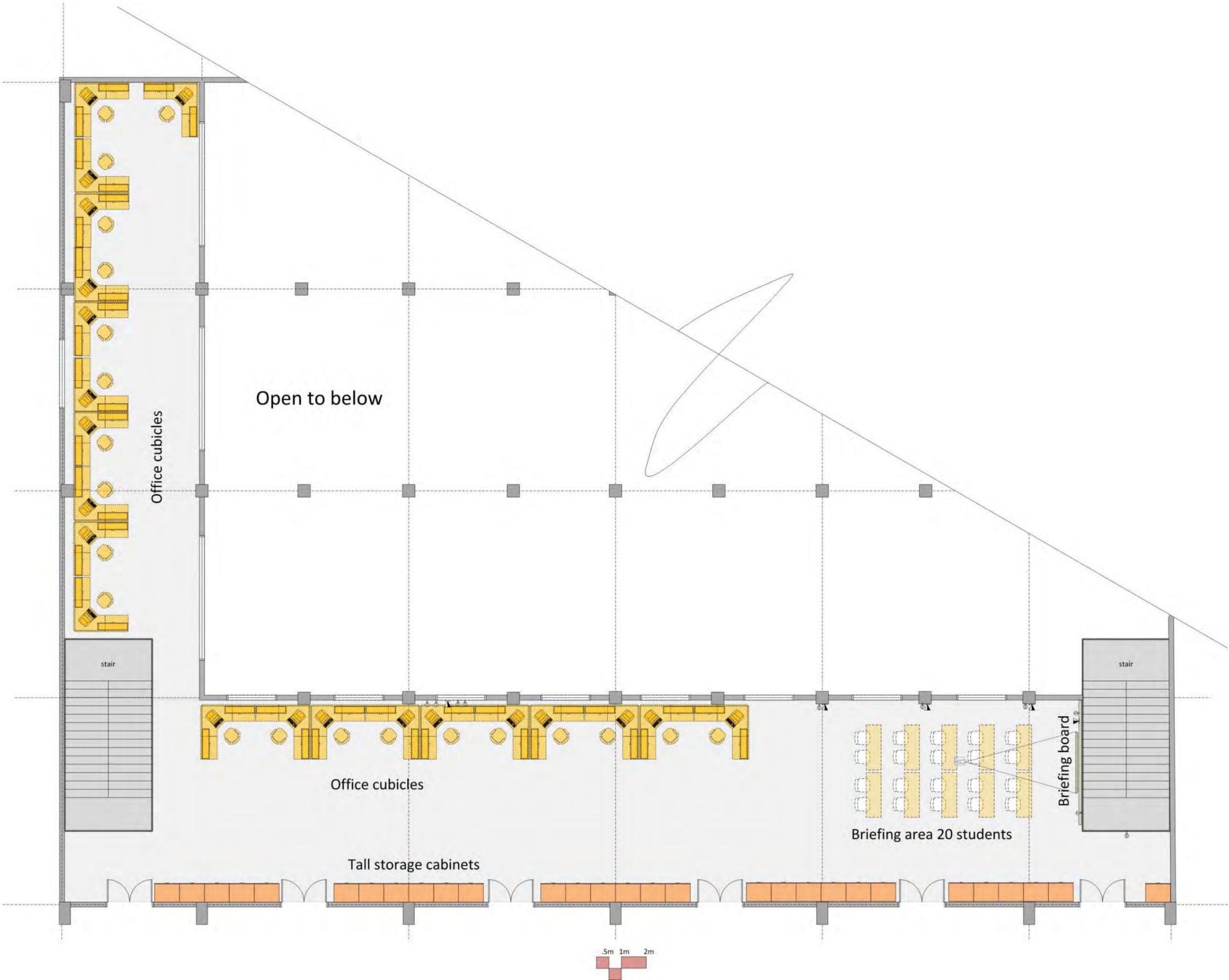
**COLLEGE FURNISHED EQUIPMENT**

Scientific benchtop equipment  
Floor equipment



# MEZZANINE AREA

FIRST FLOOR ADJ TO HIGH BAY WORKSHOP



**ARCHITECTURAL**

- Floor: carpet in office cubicle areas
- sealed, ground concrete in pathway outside of labs
- Walls: cmu with plaster & paint
- Ceiling: acoustic tile ceiling at 4 m above floor
- Doors with vision panels
- Vibration attenuation: 50 micrometers/second or less
- Sound attenuation: NC 45 or less
- Light attenuation: at exterior windows with exterior sun shade

**MECHANICAL**

- Temperature: 22 deg. C +/- 1 deg. C
- Recirc air
- Equipment heat gain: 250btuh/square meter
- Humidity: 30-50% relative
- Pressure: negative

**PLUMBING**

None

**ELECTRICAL**

- 240v receptacles at ~300 mm on center
- Data junction boxes at perimeter
- Wireless data connection
- Lighting: indirect fluorescent at 50 f.c.

**CONTRACTOR FURNISHED EQUIPMENT**

- Tall storage cabinets
- Briefing board
- projector & screen

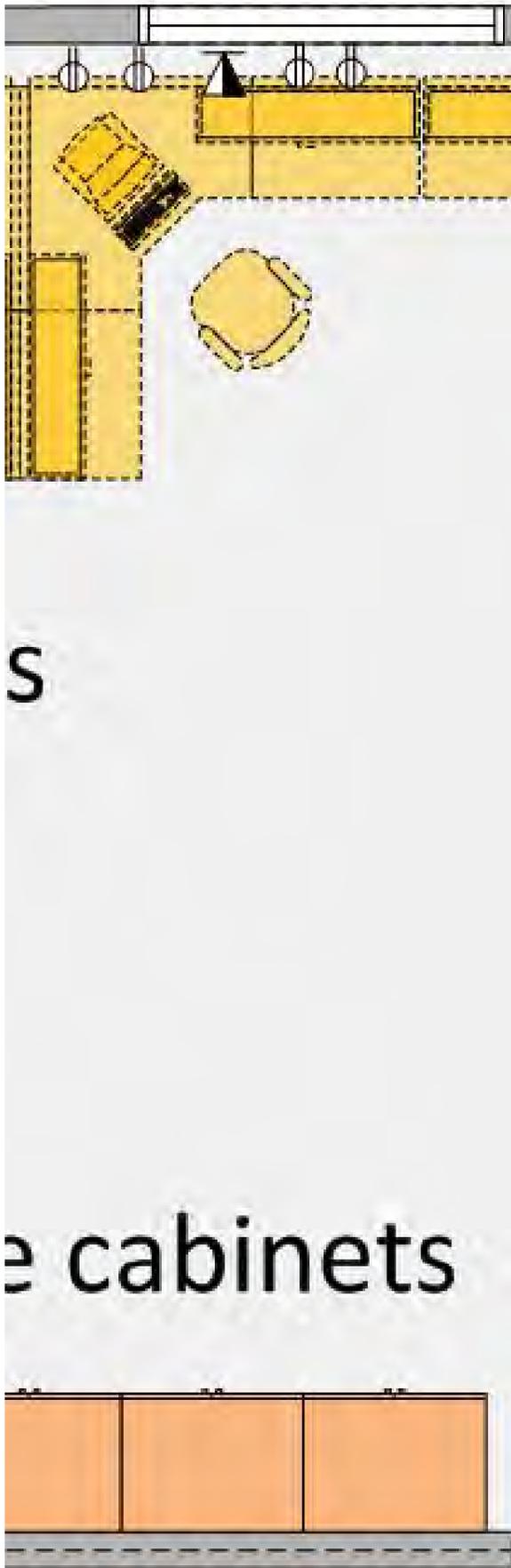
**COLLEGE FURNISHED EQUIPMENT**

- office systems furniture
- chairs and tables



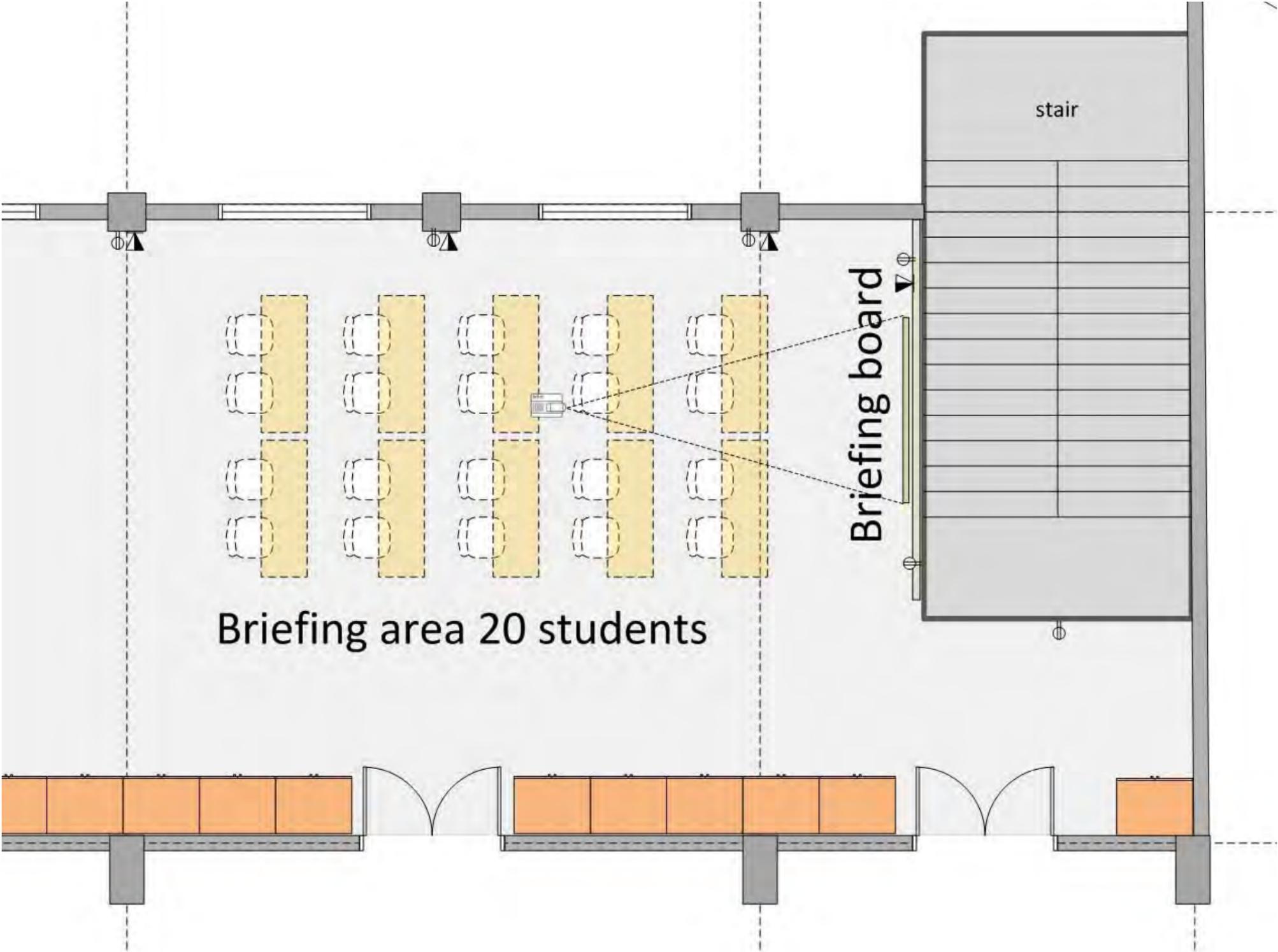
**MEZZANINE AREA**

**Typical Office Cubicle**



**MEZZANINE AREA**

Briefing Area



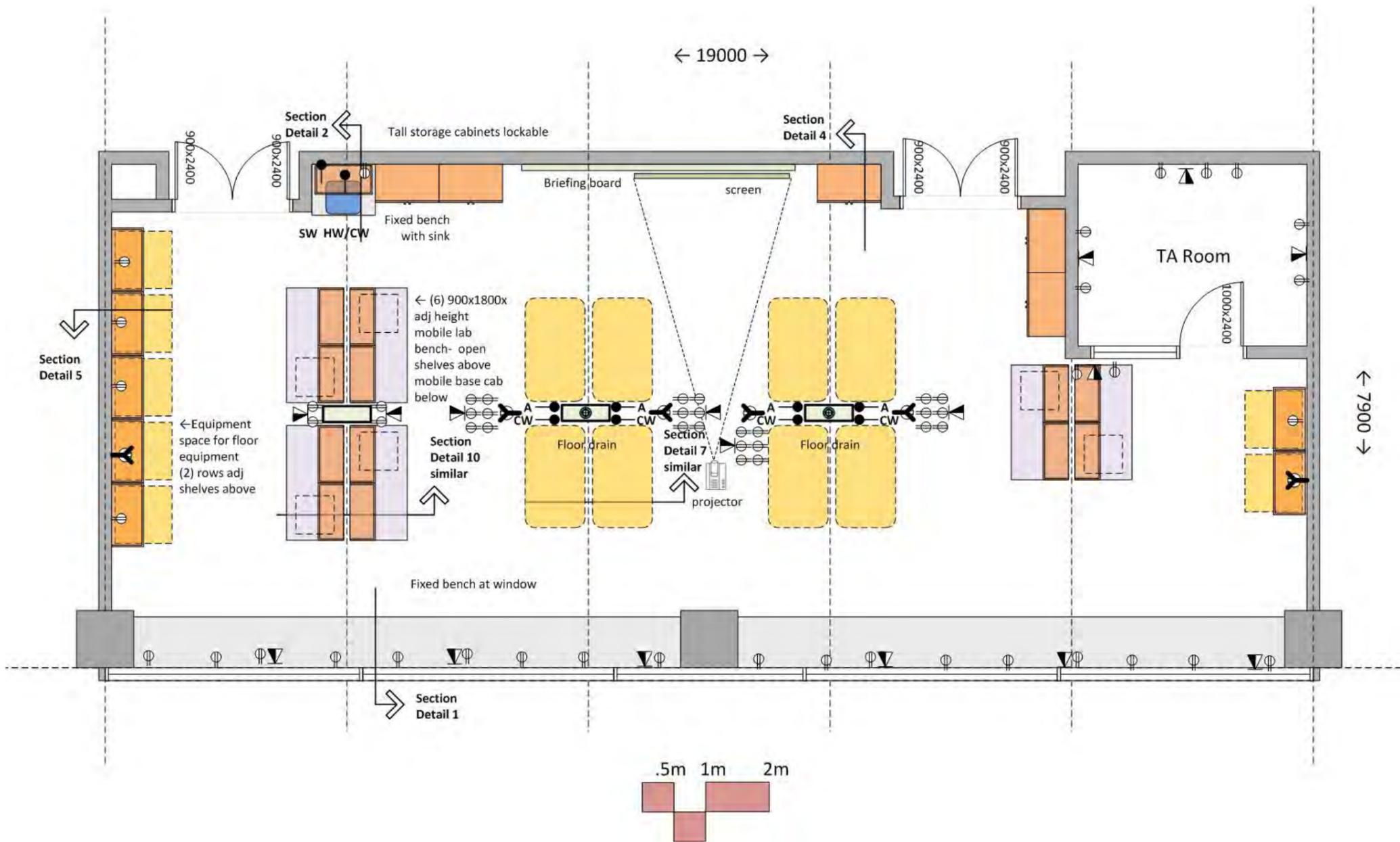
Briefing area 20 students

Briefing board

stair

# HYDRAULICS LAB

GROUND FLOOR- SHARED WITH CIV ENG



## ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

## MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

## PLUMBING

Industrial hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 Floor drain  
 Cold water and compressed air at equipment islands

## ELECTRICAL

415V 3ph  
 240v receptacles at benchtop and equipment raceway at ~300 mm on center  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

## CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 briefing board  
 projector  
 screen

## COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment

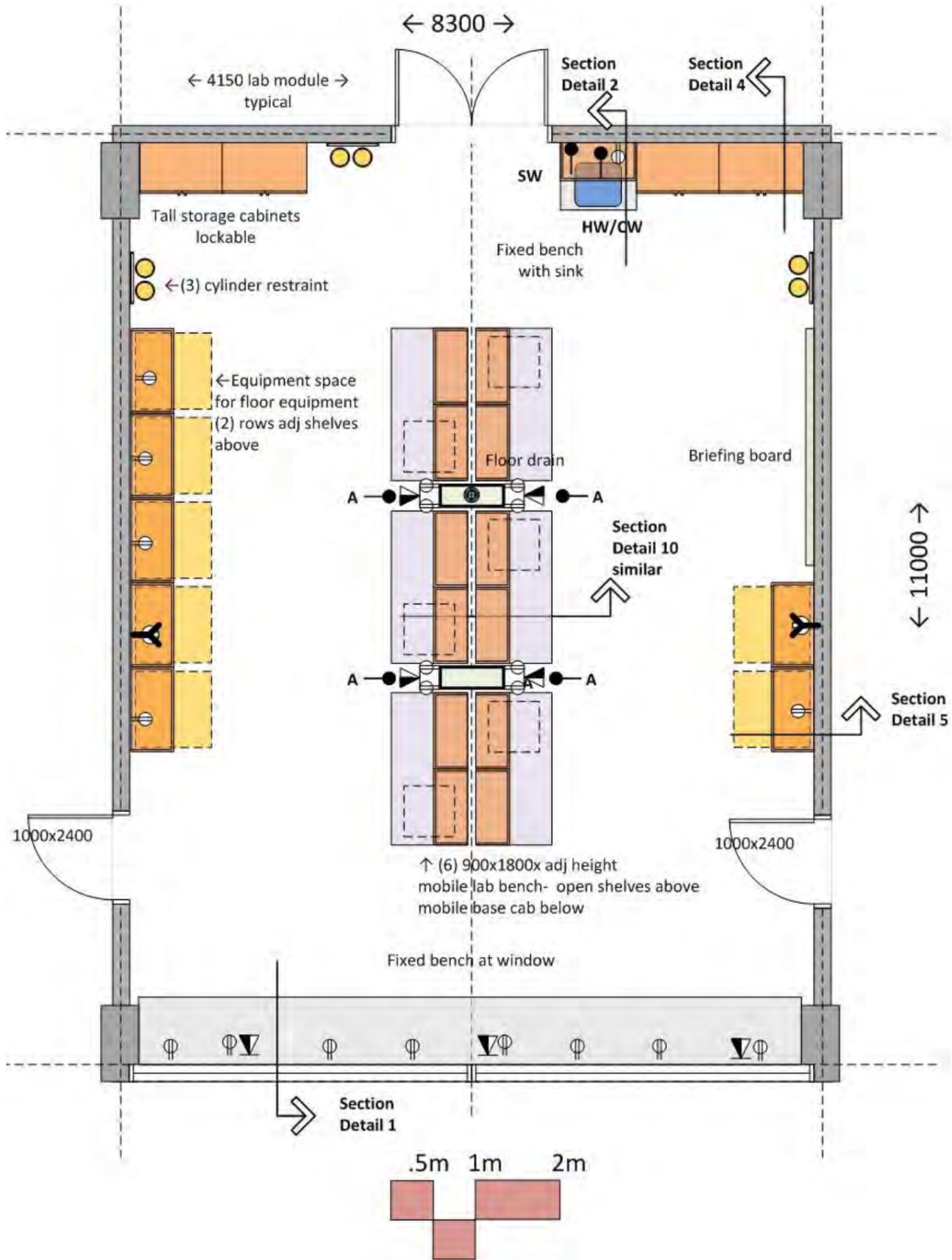
# HYDRAULICS LAB

## KEY PLAN- GROUND FLOOR



# MECH ENG LAB

GROUND FLOOR ADJ TO HIGH BAY WORKSHOP  
SIMILAR FOR (3) OTHER LABS GROUND FLOOR



**ARCHITECTURAL**

Floor: sealed, ground concrete  
Walls: cmu with plaster, paint  
Ceiling: open to structure  
Doors with vision panels  
Vibration attenuation: 25 micrometers/second or less  
Sound attenuation: NC 45 or less  
Light attenuation: at exterior windows with exterior sun shade

**MECHANICAL**

Temperature: 22 deg. C +/- 1 deg. C  
100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
Equipment heat gain: 500-750 btuh/square meter  
Humidity: 30-50% relative  
Pressure: negative

**PLUMBING**

Industrial hot/cold water at lab sink  
Pure water at lab sink via point-of-use water polisher  
Floor drains  
compressed air at islands

**ELECTRICAL**

415V3ph  
240v receptacles at benchtop and equipment  
Dedicated circuits at equipment spaces  
Standby power (emergency) at equipment spaces  
Data junction boxes at perimeter and islands  
Wireless data connection  
Lighting: indirect fluorescent at 60 f.c.

**CONTRACTOR FURNISHED EQUIPMENT**

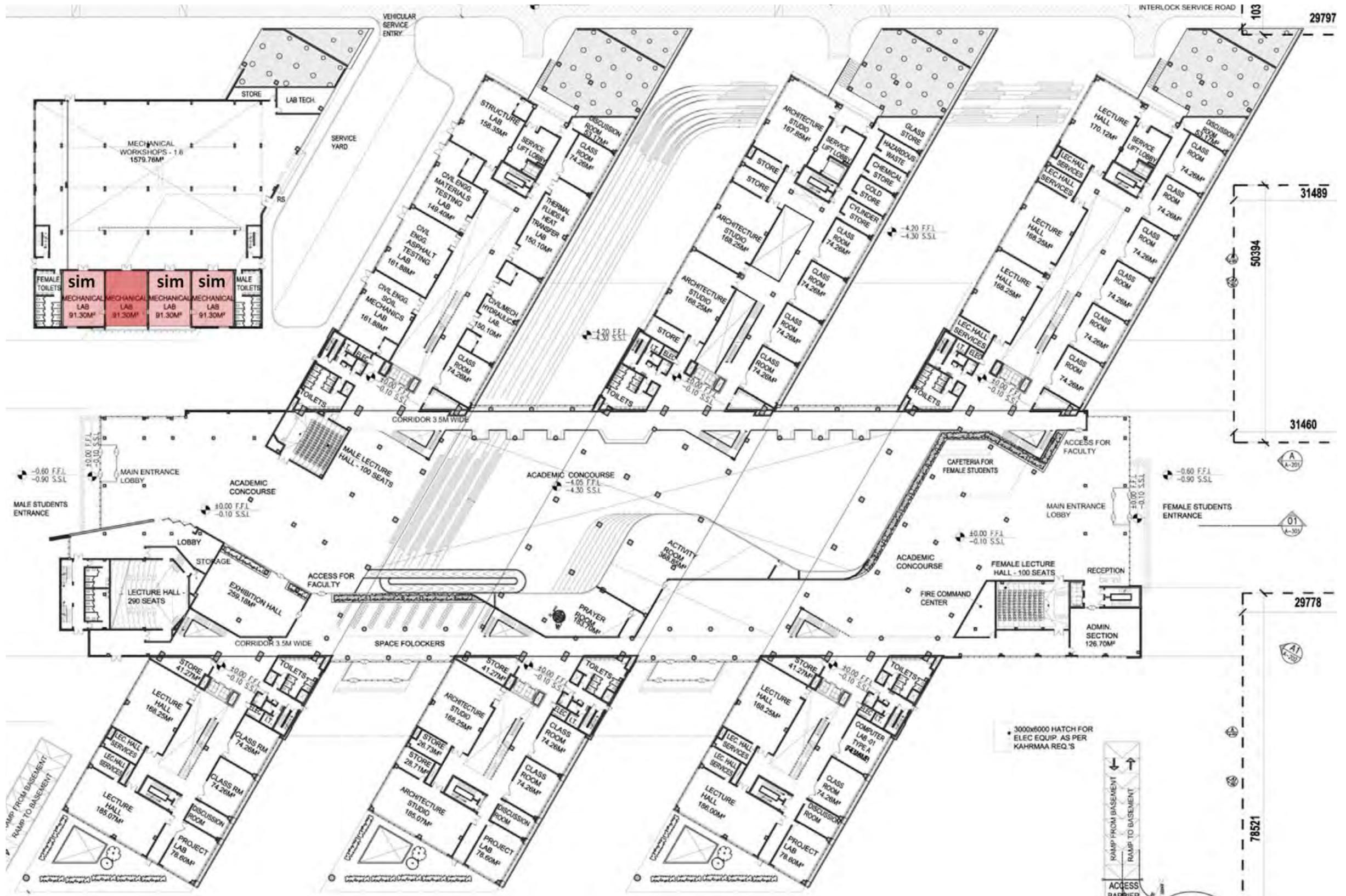
Lab casework, sinks, tops, fittings  
briefing board

**COLLEGE FURNISHED EQUIPMENT**

Scientific benchtop equipment  
Floor equipment

# MECH ENG LAB

## KEY PLAN- GROUND FLOOR



# HIGH BAY WORKSHOP

## GROUND FLOOR

### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 50 or less  
 Light attenuation: at exterior windows with exterior sun shade  
 Provide open office workstations with cubicles and briefing area for 20 students at upper mezzanine level

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 250-500 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sinks  
 Pure water at lab sink via point-of-use water polisher  
 floor drains  
 compressed air  
 Chilled water supply/return

### ELECTRICAL

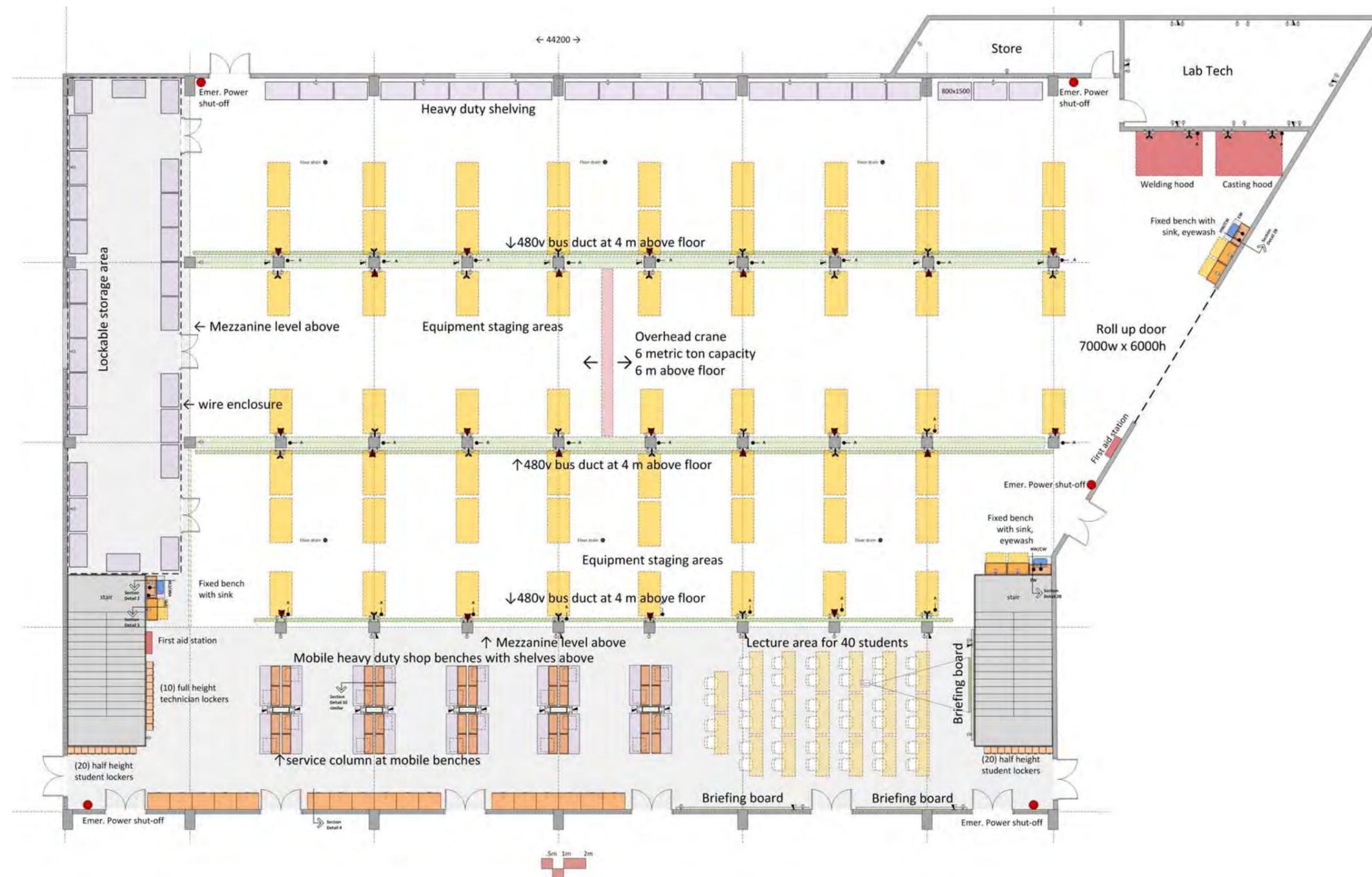
414V3ph bus duct at equipment staging areas  
 240v receptacles at benchtop and equipment  
 Dedicated circuits at equipment spaces  
 High amp power required- 100 amps per circuit  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 mobile lab benches  
 Crane  
 lockers  
 briefing boards  
 projector and screen

### COLLEGE FURNISHED EQUIPMENT

Shop equipment- lathes, saws, grinders





# HIGH BAY WORKSHOP

## Typical Column

At each column:

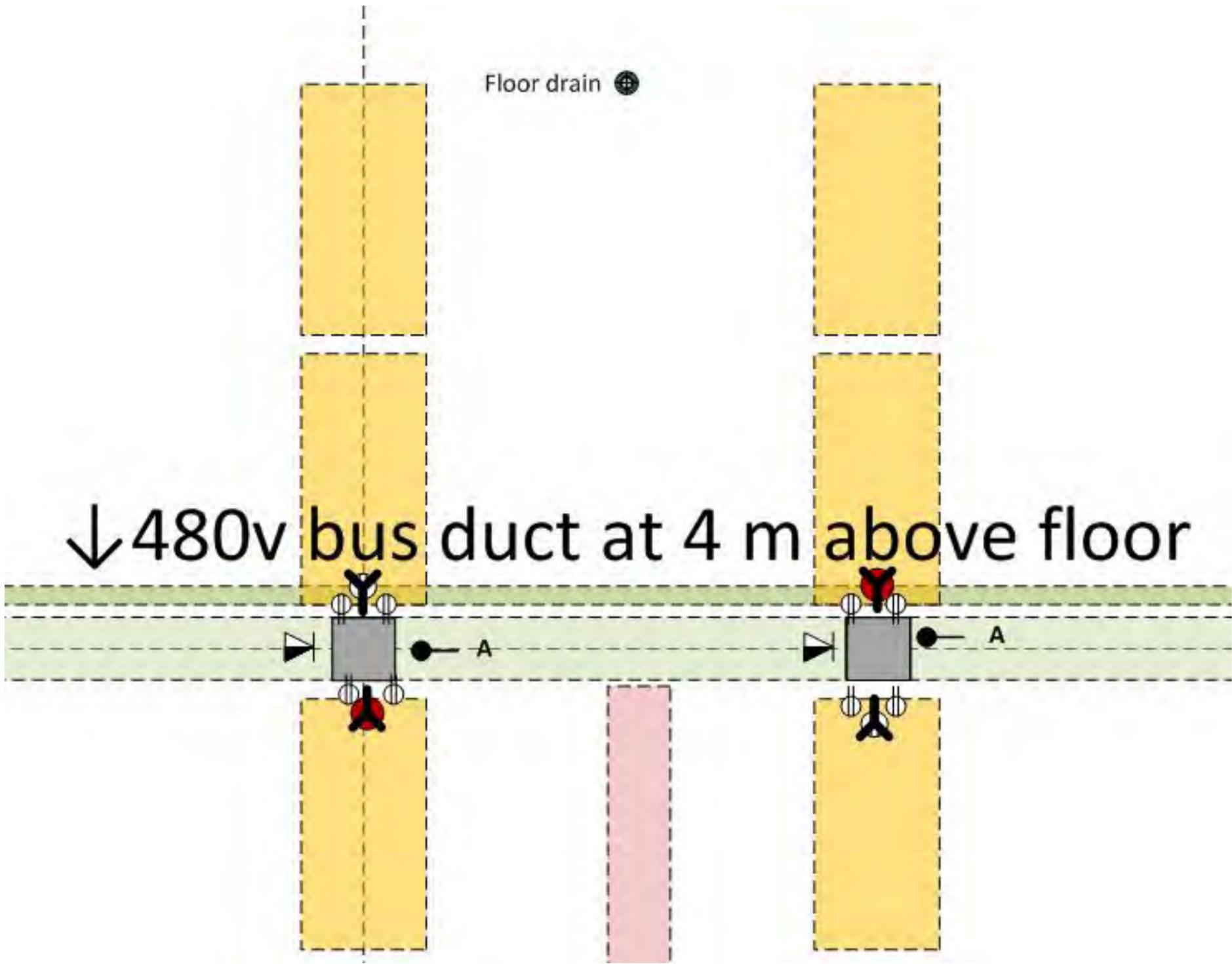
415v3ph100a with quick disconnect

415v3ph60a with quick disconnect

(4) duplex 240v outlets

Data/phone

Compressed air with regulator (30-100 psi)



# HIGH BAY WORKSHOP

## Equipment List

### Department of Mechanical and Industrial Engineering

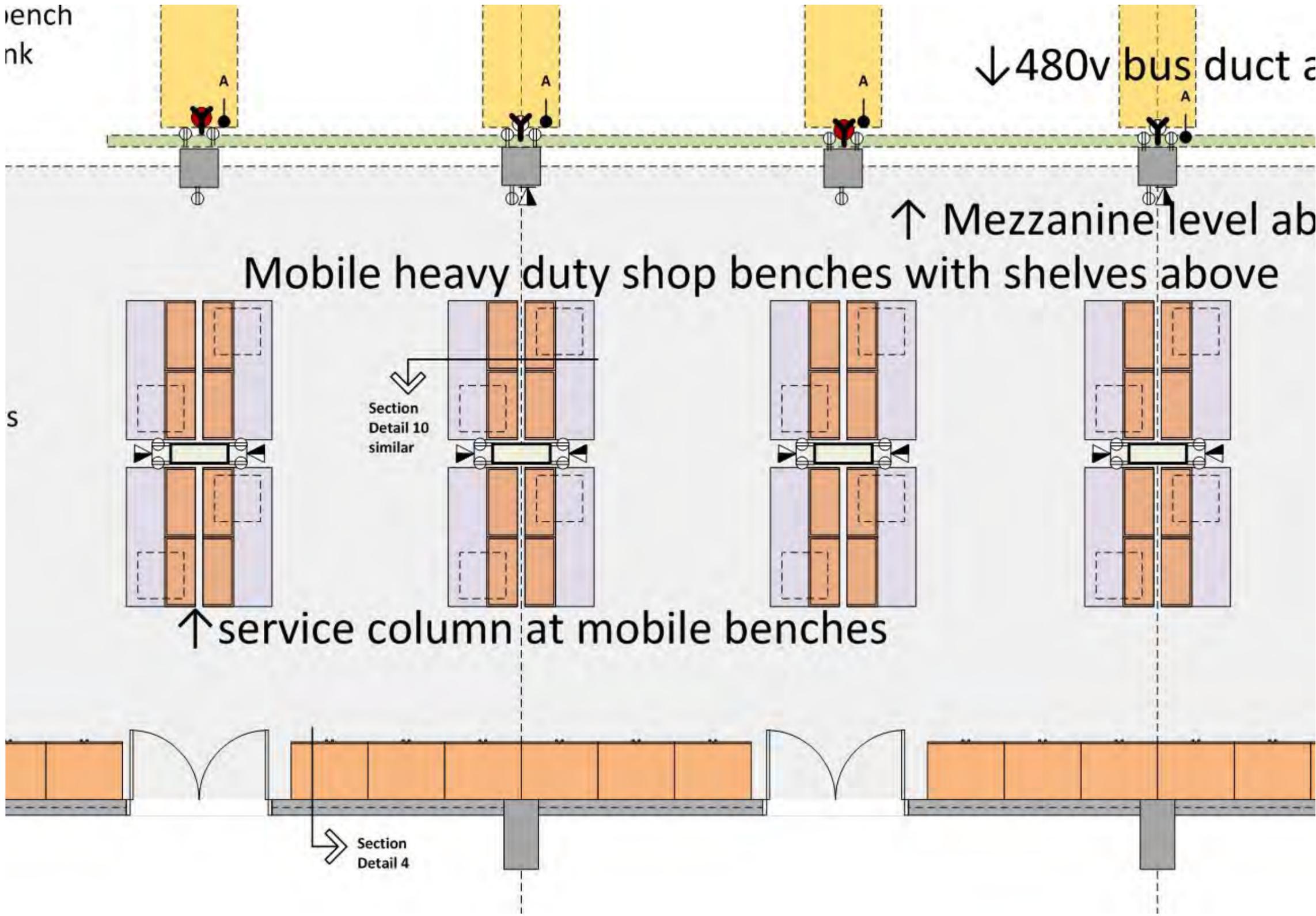
| #  | Items                              | Phase  | Current (Amp) | Voltage (V) |
|----|------------------------------------|--------|---------------|-------------|
| 1  | Impact Drop Weight Machine         | Single | 16            | 220-240     |
| 2  | High Pressure Technology           | 3      | 25            | 400         |
| 3  | Computerized Torsion Machine       | Single | 16            | 220-240     |
| 4  | Deep Drawing Machine               | 3      | 16            | 415         |
| 5  | Injection Molding machine          | 3      | 100           | 415         |
| 6  | High Pressure Hose Test Unit       |        |               |             |
| 7  | 15" Lathe Machine (Qty=3)          | 3      | 9.8           | 415         |
| 8  | GAP-BED Lathe Machine              | 3      | 14.8          | 415         |
| 9  | Horizontal Milling Machine (Qty=2) | 3      | 21            | 415         |
| 10 | Vertical Milling Machine           | 3      | 21            | 415         |
| 11 | Milling Machine                    | 3      | 1.61          | 415         |
| 12 | Mechiancal Shaper (Qty=2)          | 3      | 3.8-6         | 415         |
| 13 | Horizontal Surface Grinder (Qty=2) | 3      | No info       | 415         |
| 14 | Turning Machine                    | 3      | 32            | 440         |
| 15 | CNC Machine                        | 3      | 63            | 415         |
| 16 | Drilling Machine                   | 3      | 5.2           | 415         |
| 17 | Radial Drilling Machine (Qty=2)    | 3      | 16            | 415         |
| 18 | Hyrolic Pressing Machine (Manual)  | -      | -             | -           |
| 19 | Saw Machine (Qty=2)                | 3      | 3.7-4.6       | 420         |
| 20 | Casing Furnace                     | Single | 10.4          | 240         |
| 21 | Casing Double Furnace              | Single | No info       | 240         |
| 22 | Casing Furnace                     | 3      | 100           | 415         |
| 23 | Casing Furnace                     | Single | 8.7           | 220         |
| 24 | Casing Furnace                     | Single | No info       | 220         |

Note: Quantity of electrical outlets noted on highbay workshop plan exceed requirements of Equipment List. The quantity of outlets noted on the plan should be provided for flexibility of equipment location and acquisition of future equipment not identified to date.

Specific location of each equipment item will be determined by the Mech Eng department upon occupancy of the building.

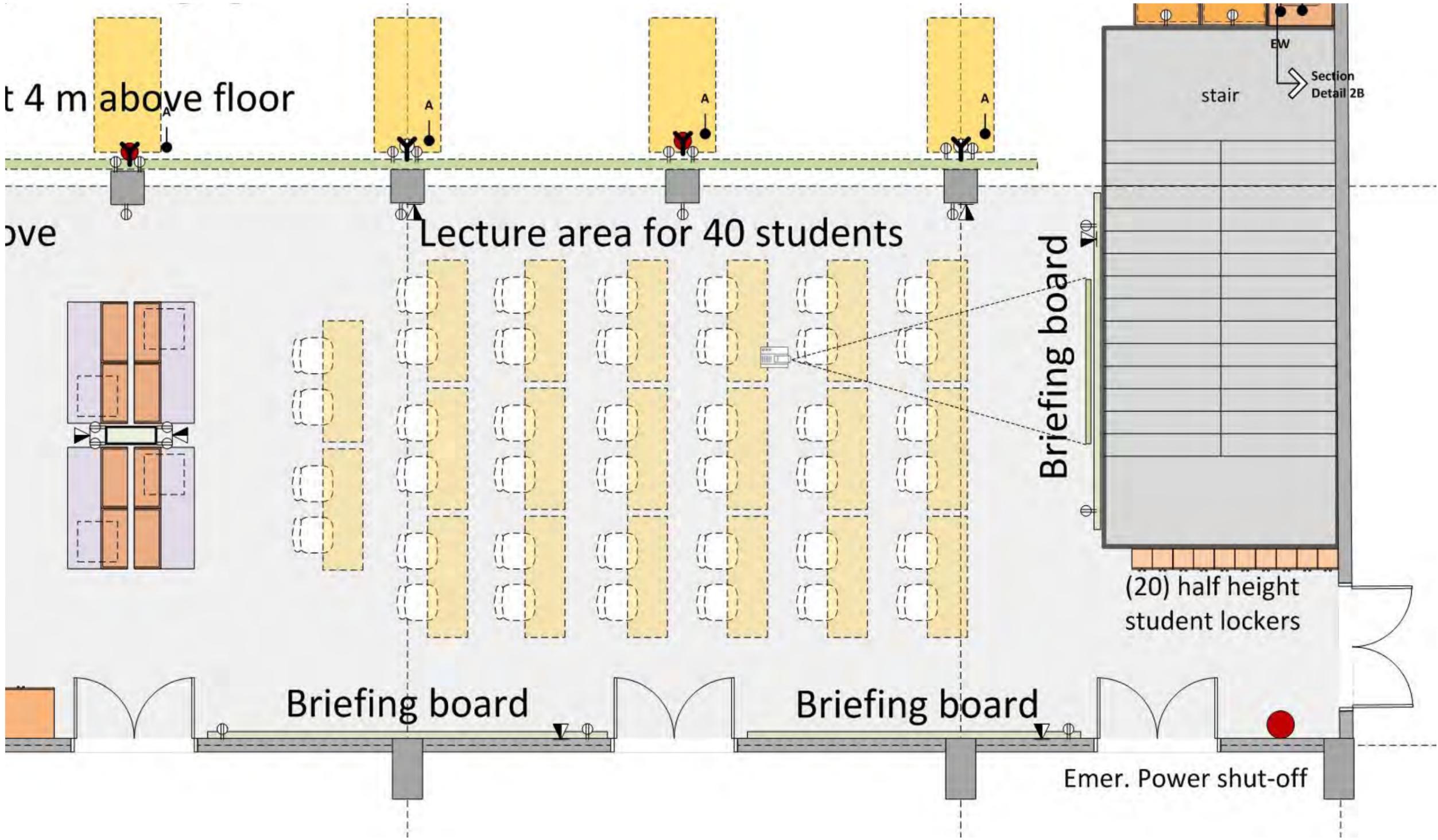
# HIGH BAY WORKSHOP

## Typical Work Bench

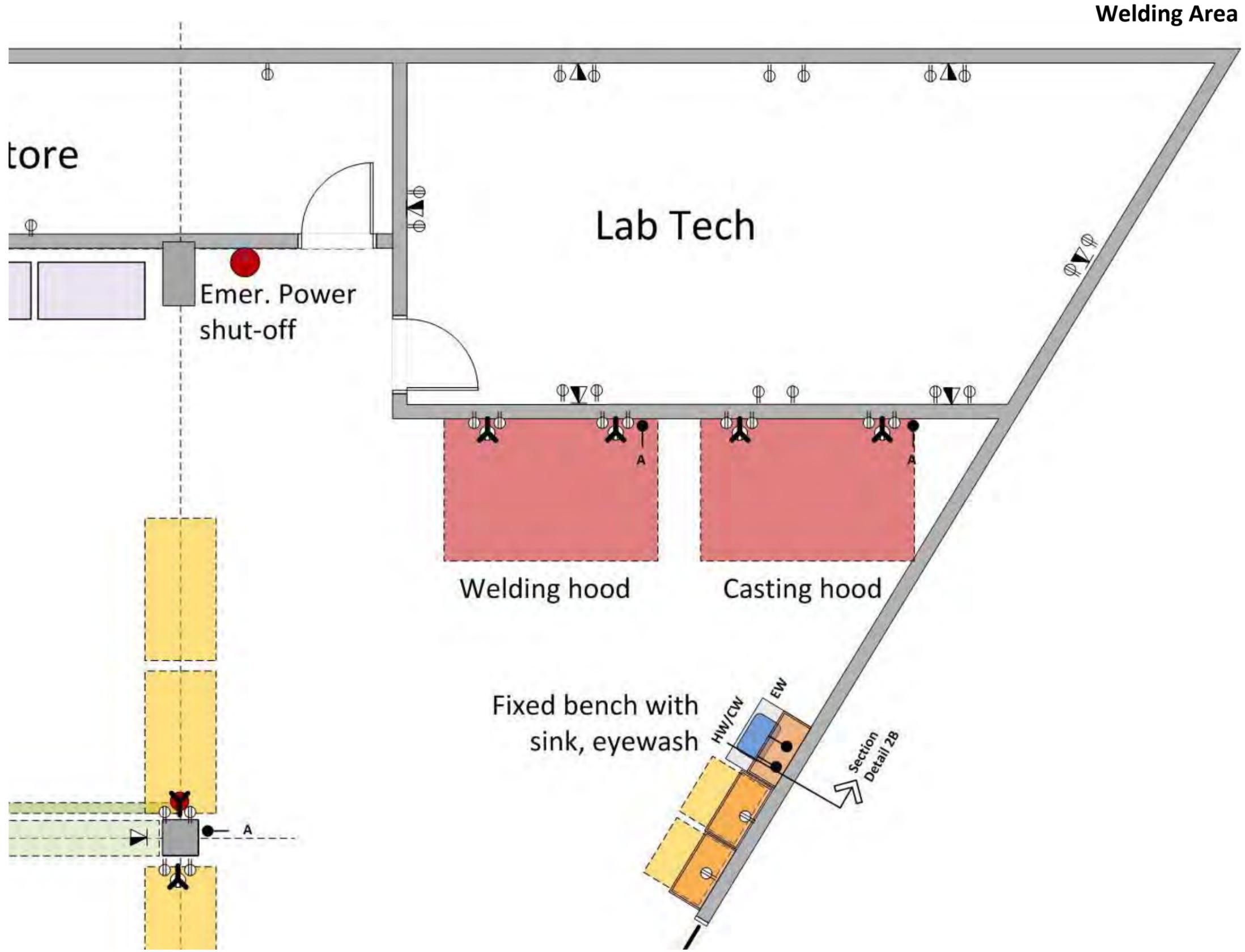


# HIGH BAY WORKSHOP

## Lecture Area

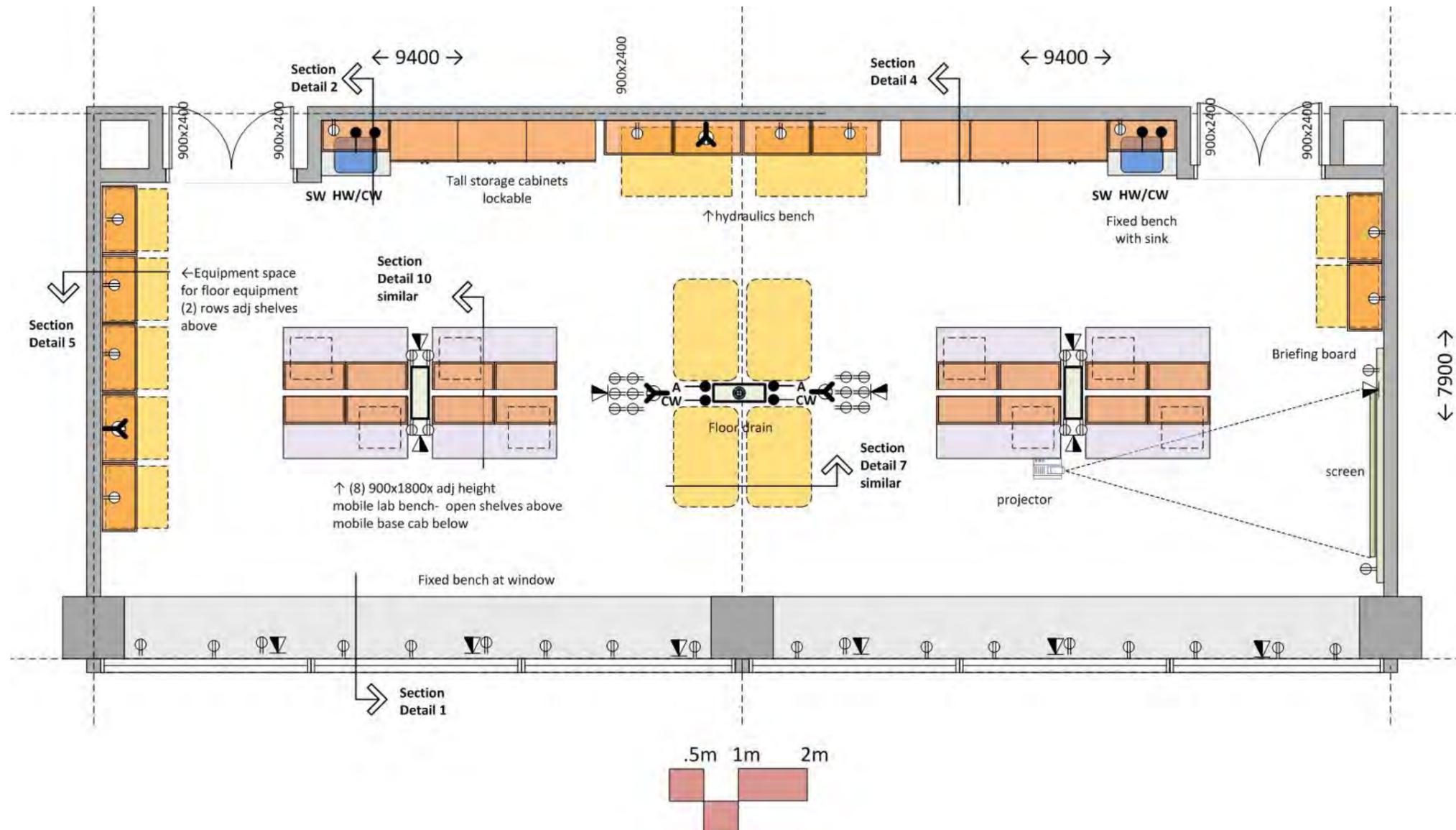


# HIGH BAY WORKSHOP



# THERMAL FLUIDS & HEAT TRANSFER LAB

## GROUND FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust air (Option 1-recommended), or alternatively, recirc air could be considered within lab zones - do not recirc to non-lab spaces such as offices, classrooms (Option 2).  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

Industrial hot/cold water at lab sinks  
 Pure water at lab sink via point-of-use water polisher  
 Floor drains  
 Compressed air and cold water at equipment island

### ELECTRICAL

415V with disconnect  
 240v receptacles at benchtop and equipment raceway  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment  
 hydraulics benches

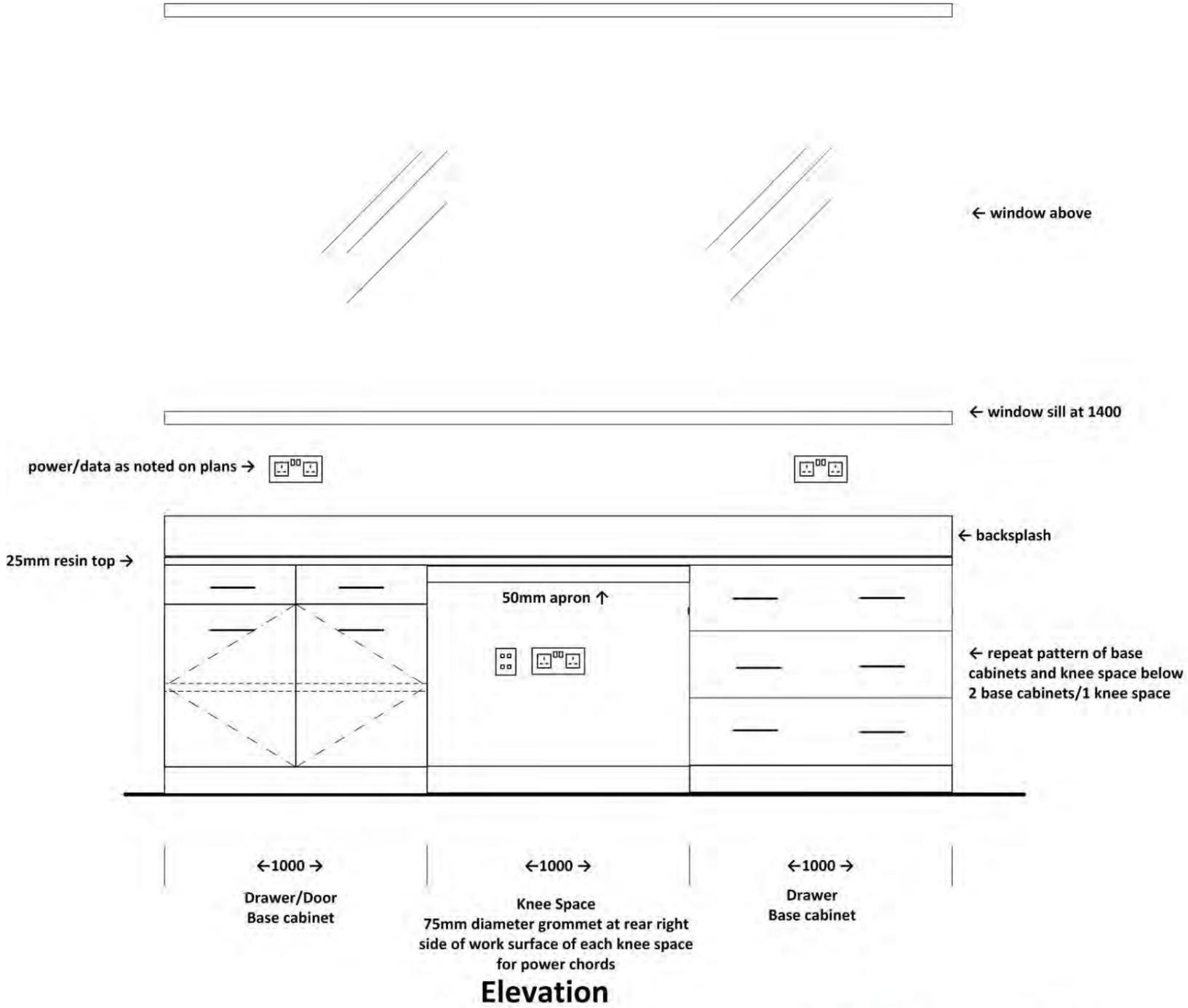
# THERMAL FLUIDS & HEAT TRANSFER LAB

KEY PLAN- GROUND FLOOR

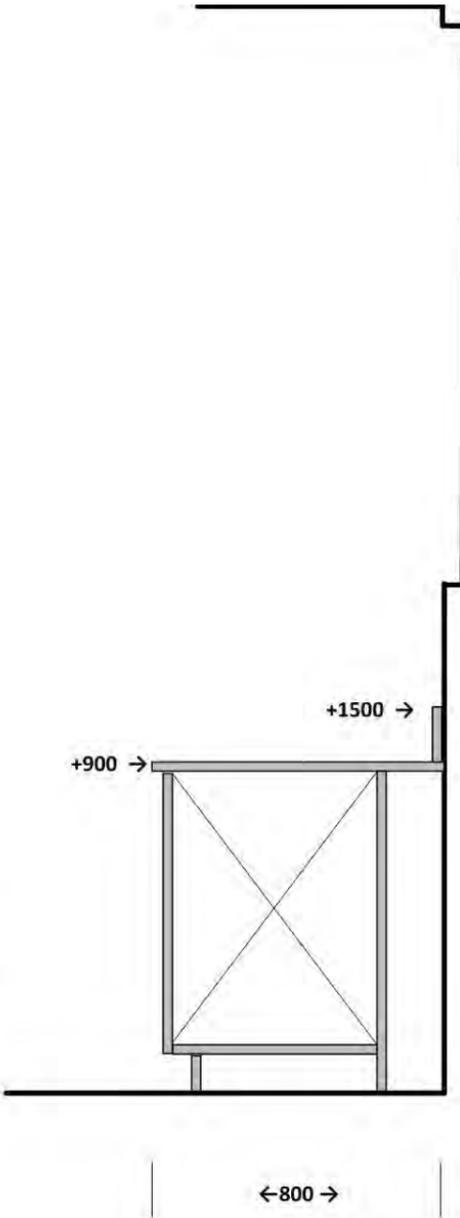


# SECTION DETAIL 1

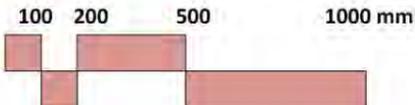
## WINDOW BENCH



**Elevation**

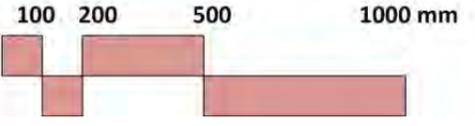
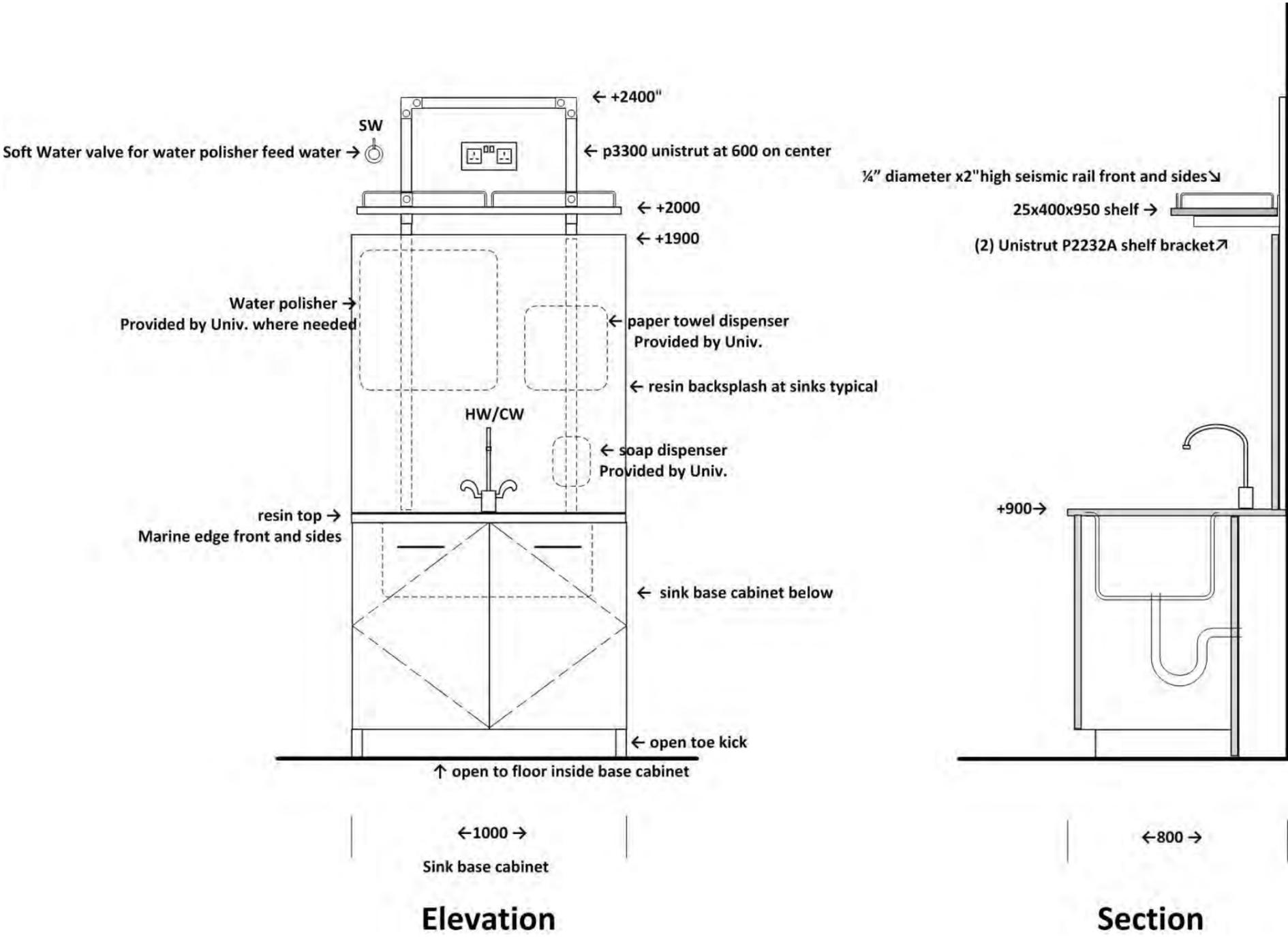


**Section**



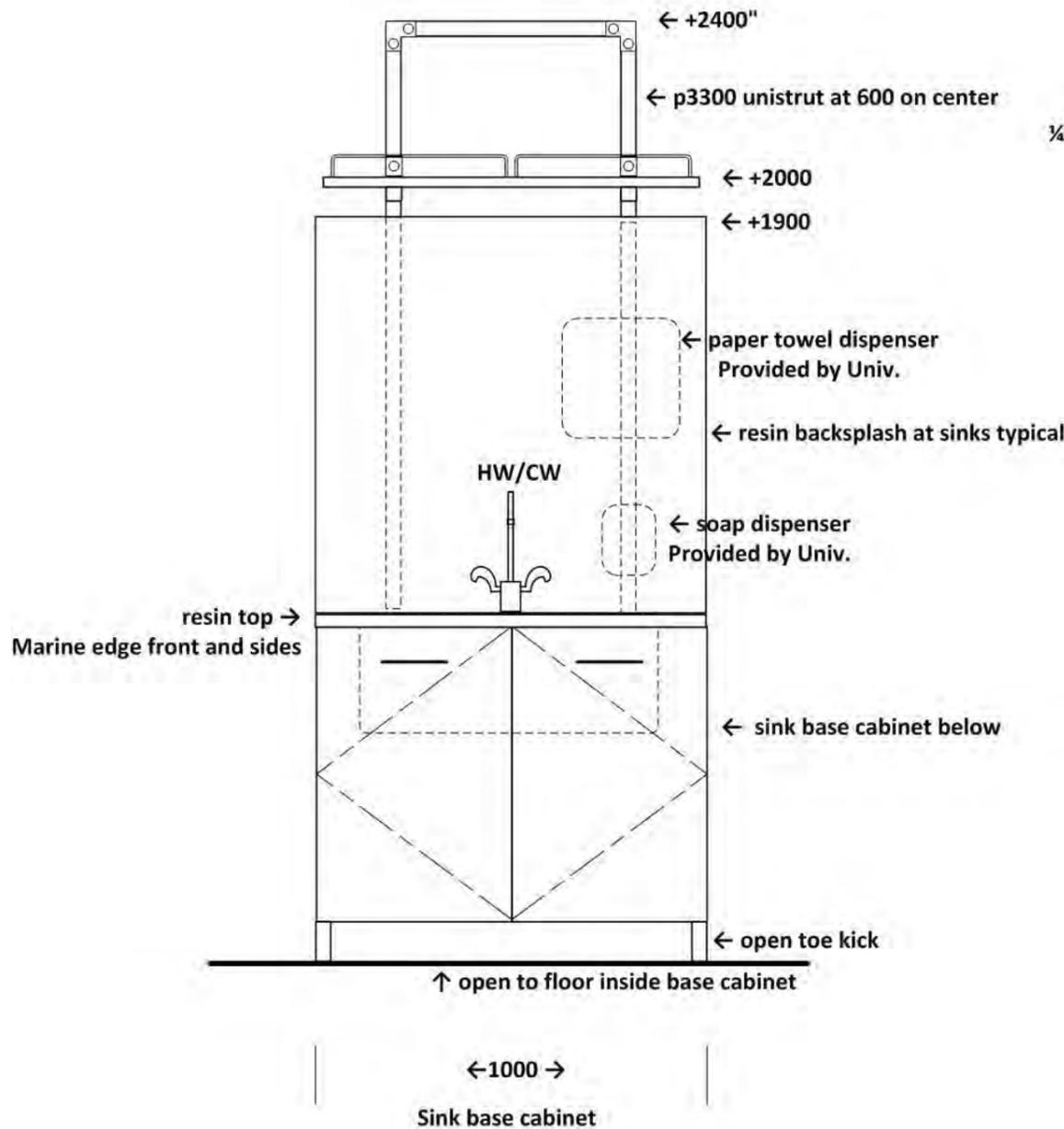
# SECTION DETAIL 2

## SINK WITH WATER POLISHER

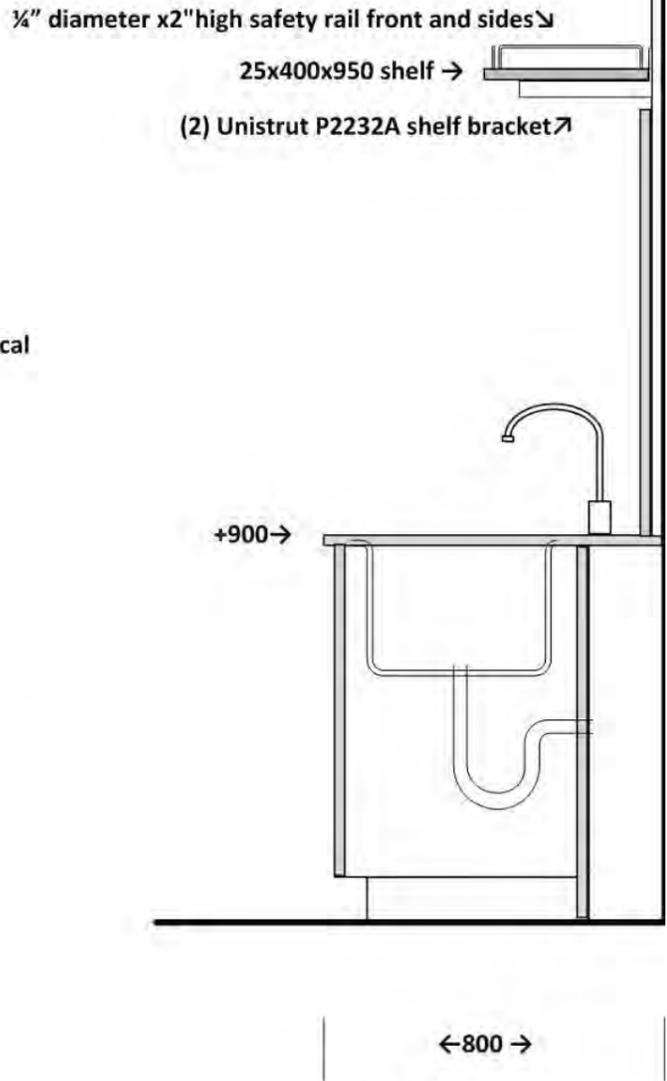


# SECTION DETAIL 2A

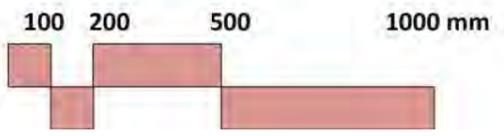
## SINK WITHOUT WATER POLISHER



**Elevation**

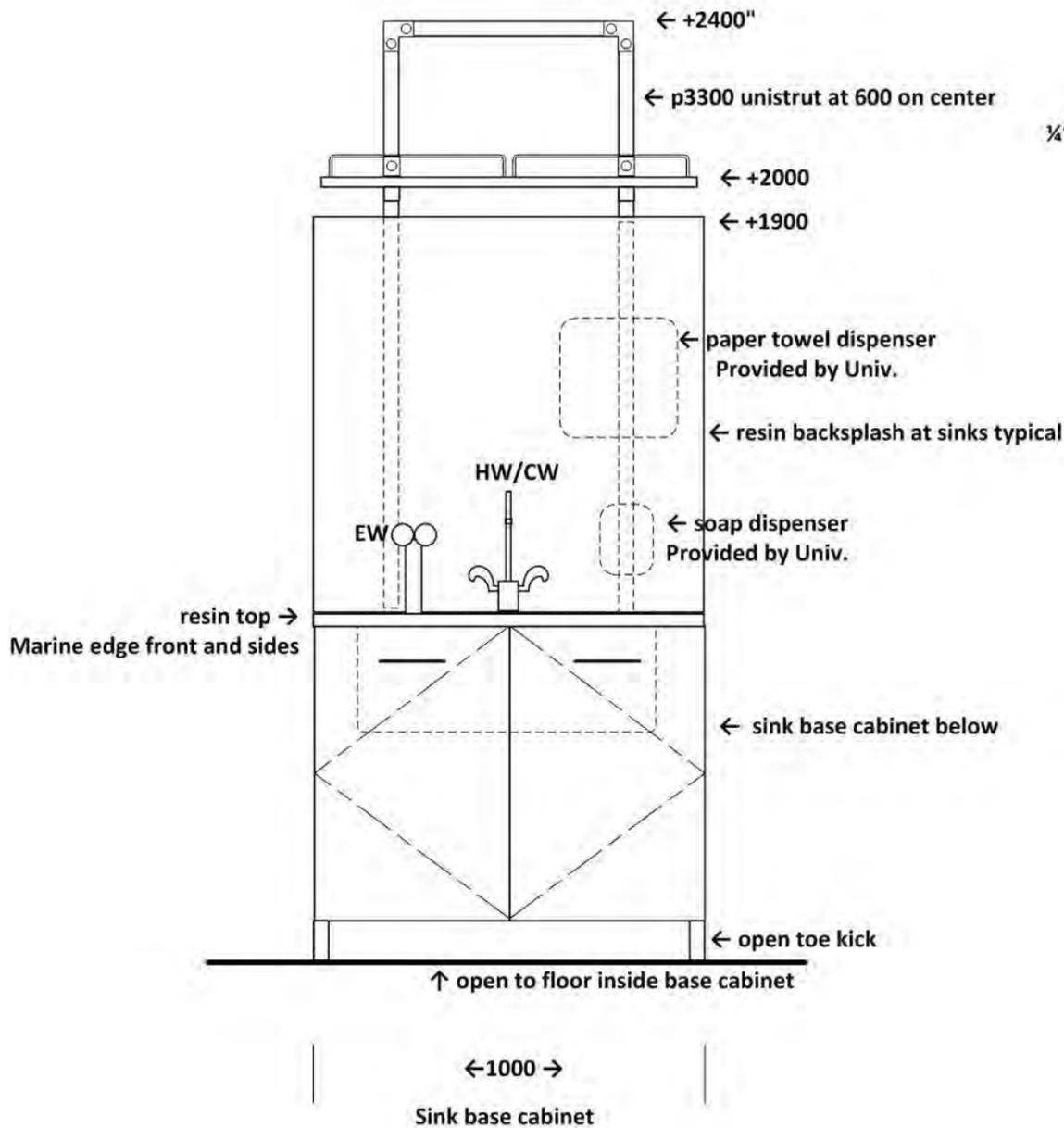


**Section**

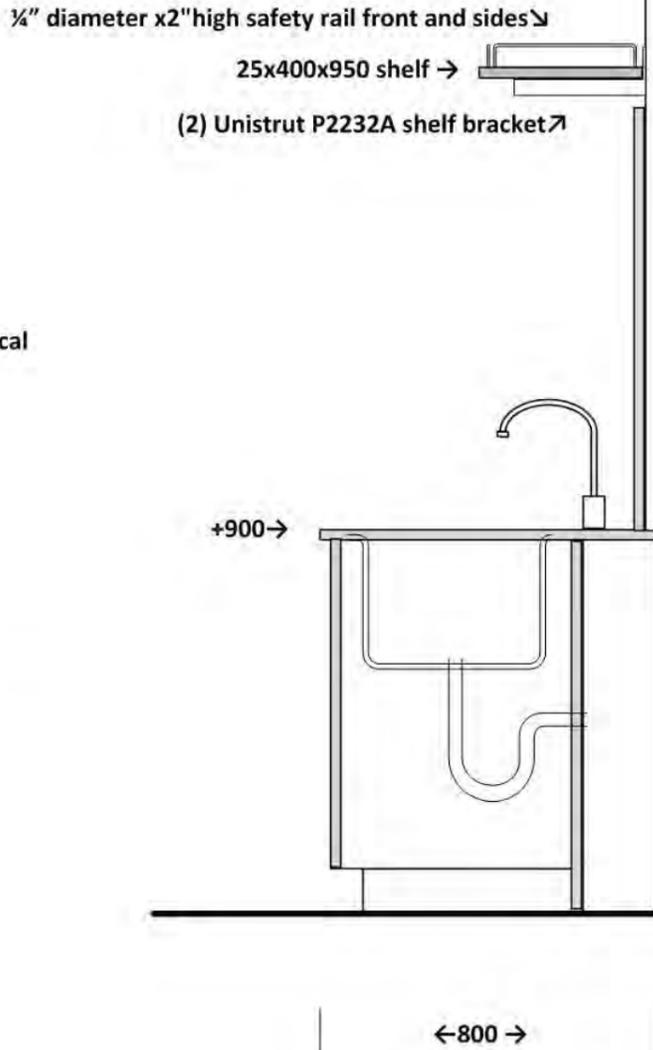


# SECTION DETAIL 2B

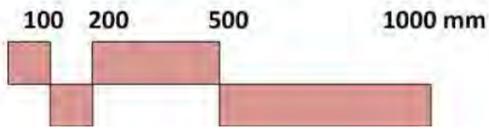
## SINK WITH EYEWASH



**Elevation**

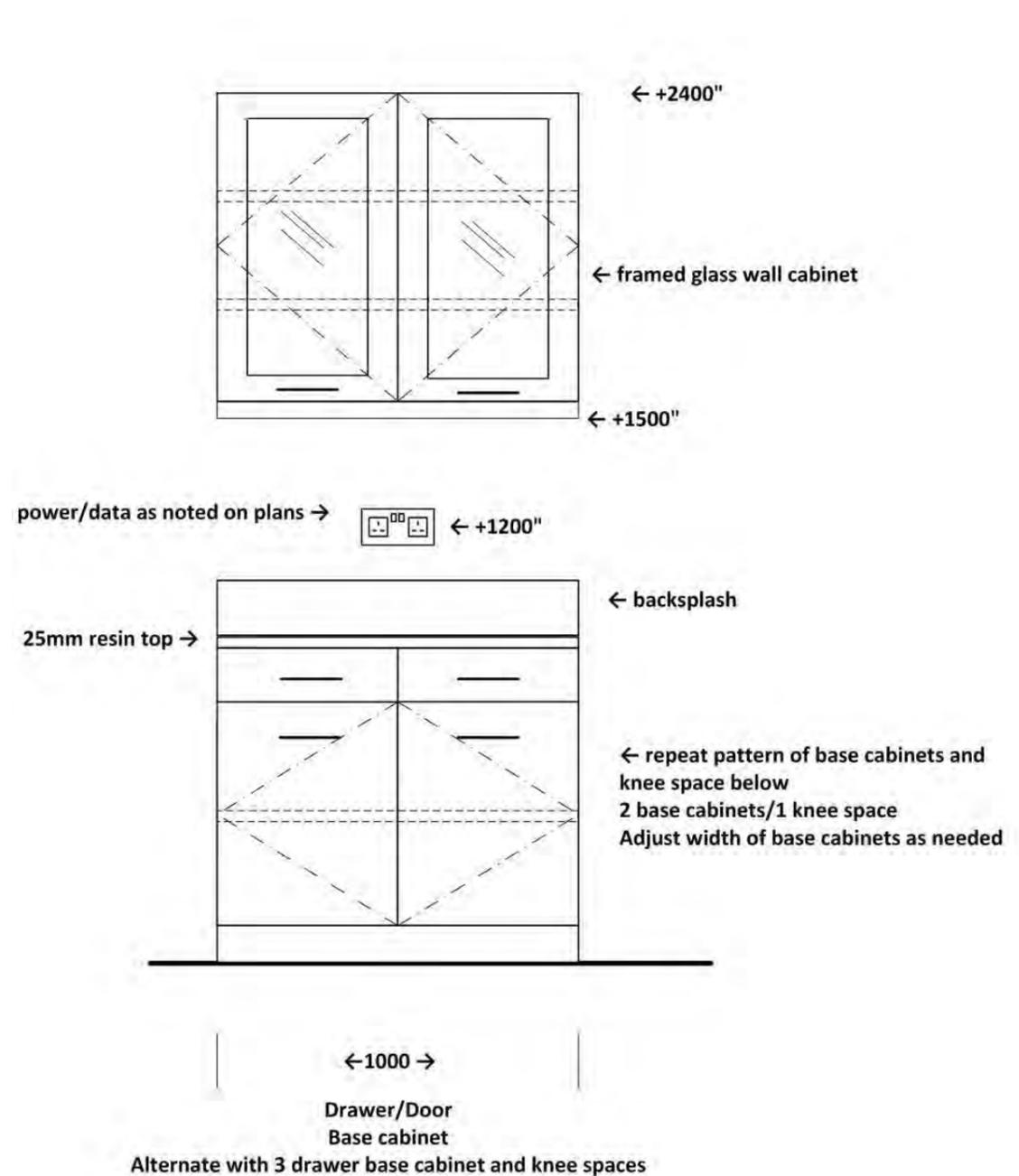


**Section**

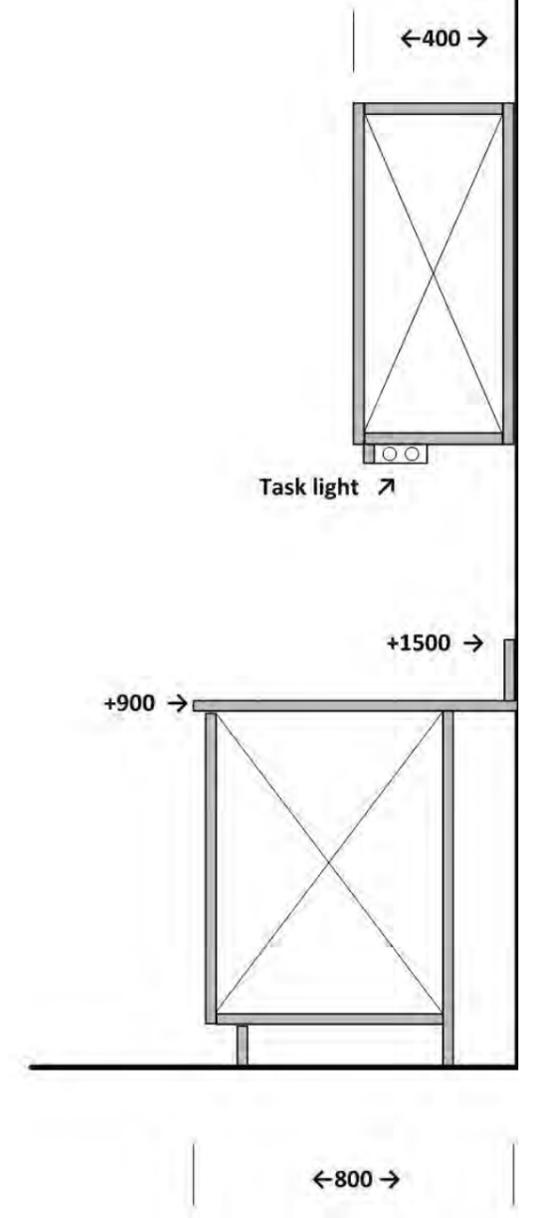


# SECTION DETAIL 3

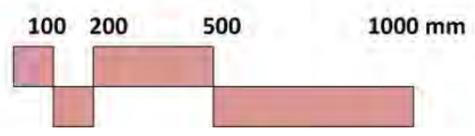
## WALL CABINET ABOVE BASE CABINET BELOW



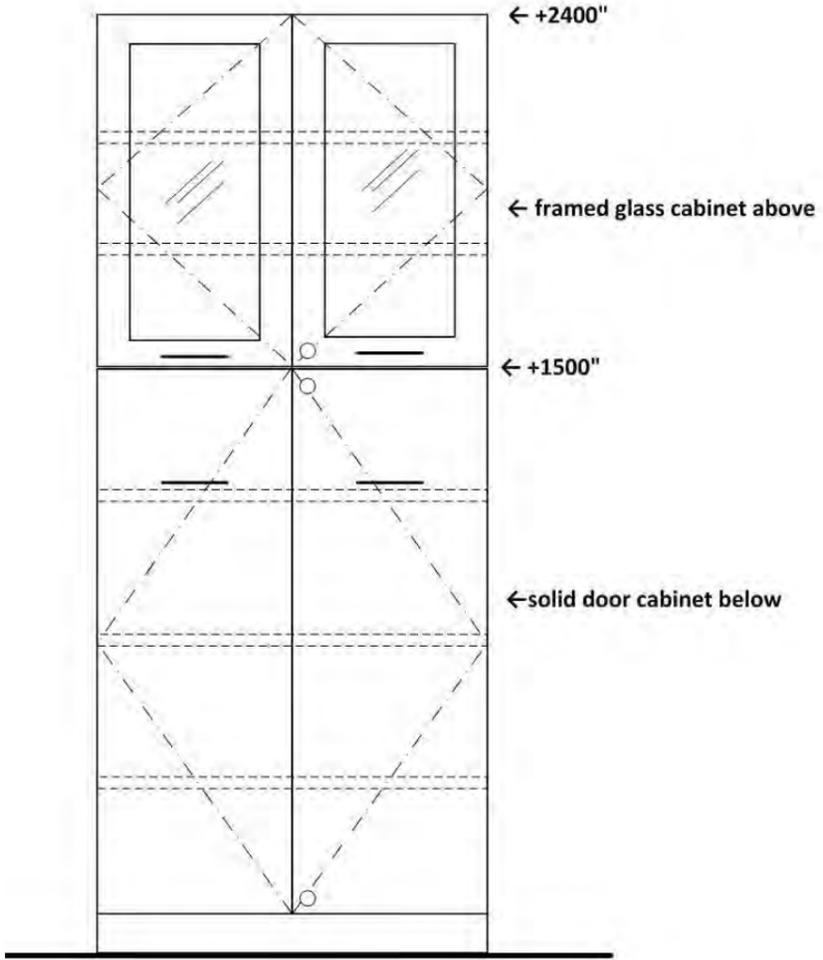
**Elevation**



**Section**

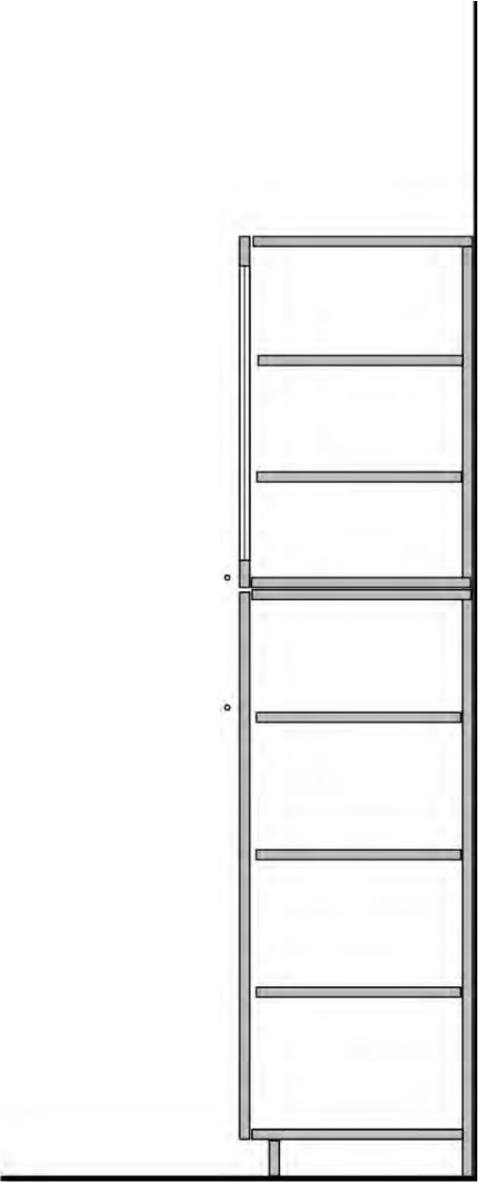


**SECTION DETAIL 4**  
**TALL STORAGE CABINET**



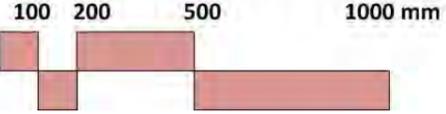
←1000→  
Tall Storage Cabinet  
With lockable doors

**Elevation**

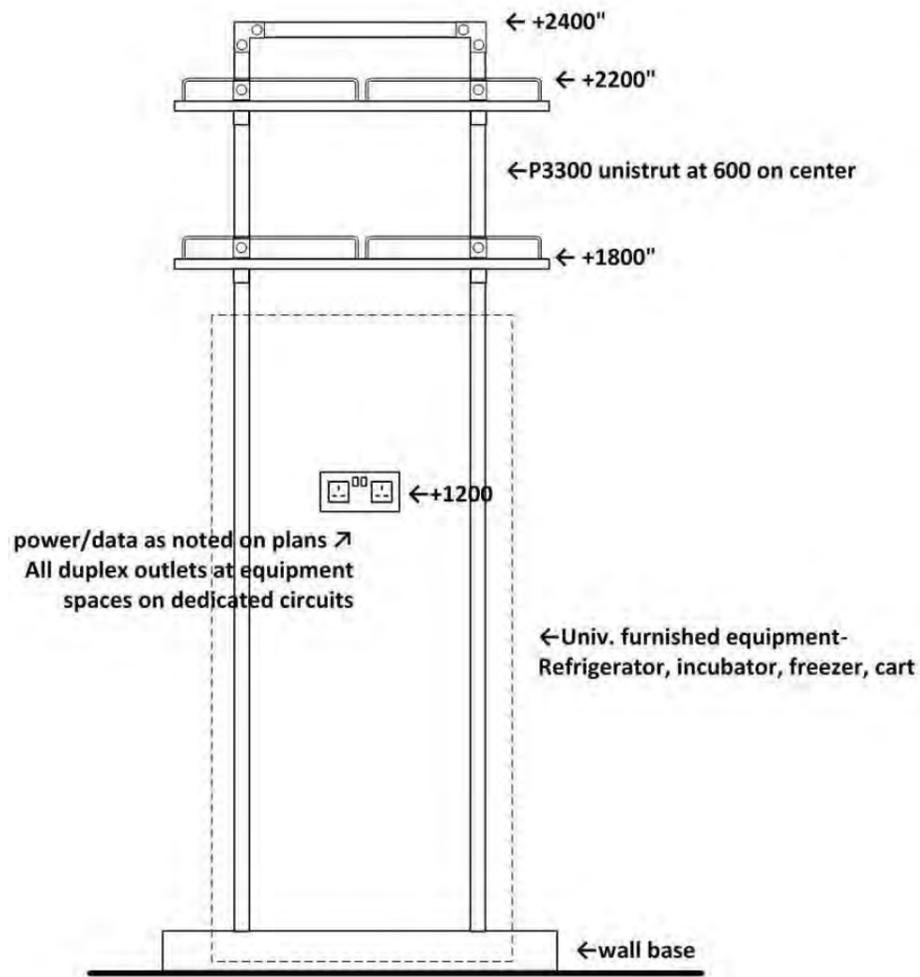


←600→

**Section**

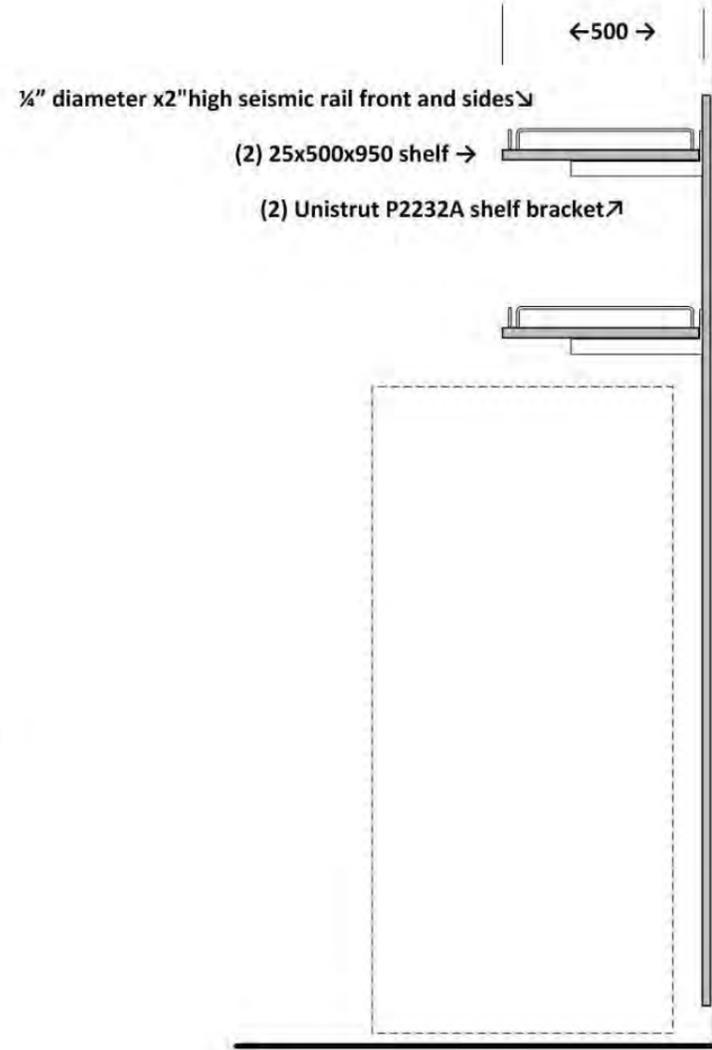


# SECTION DETAIL 5 EQUIPMENT SPACE

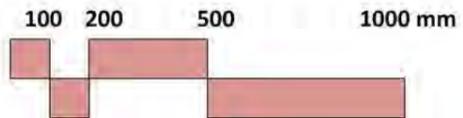


←1000 →  
 Drawer/Door  
 Base cabinet  
 Alternate with 3 drawer base cabinet and knee spaces

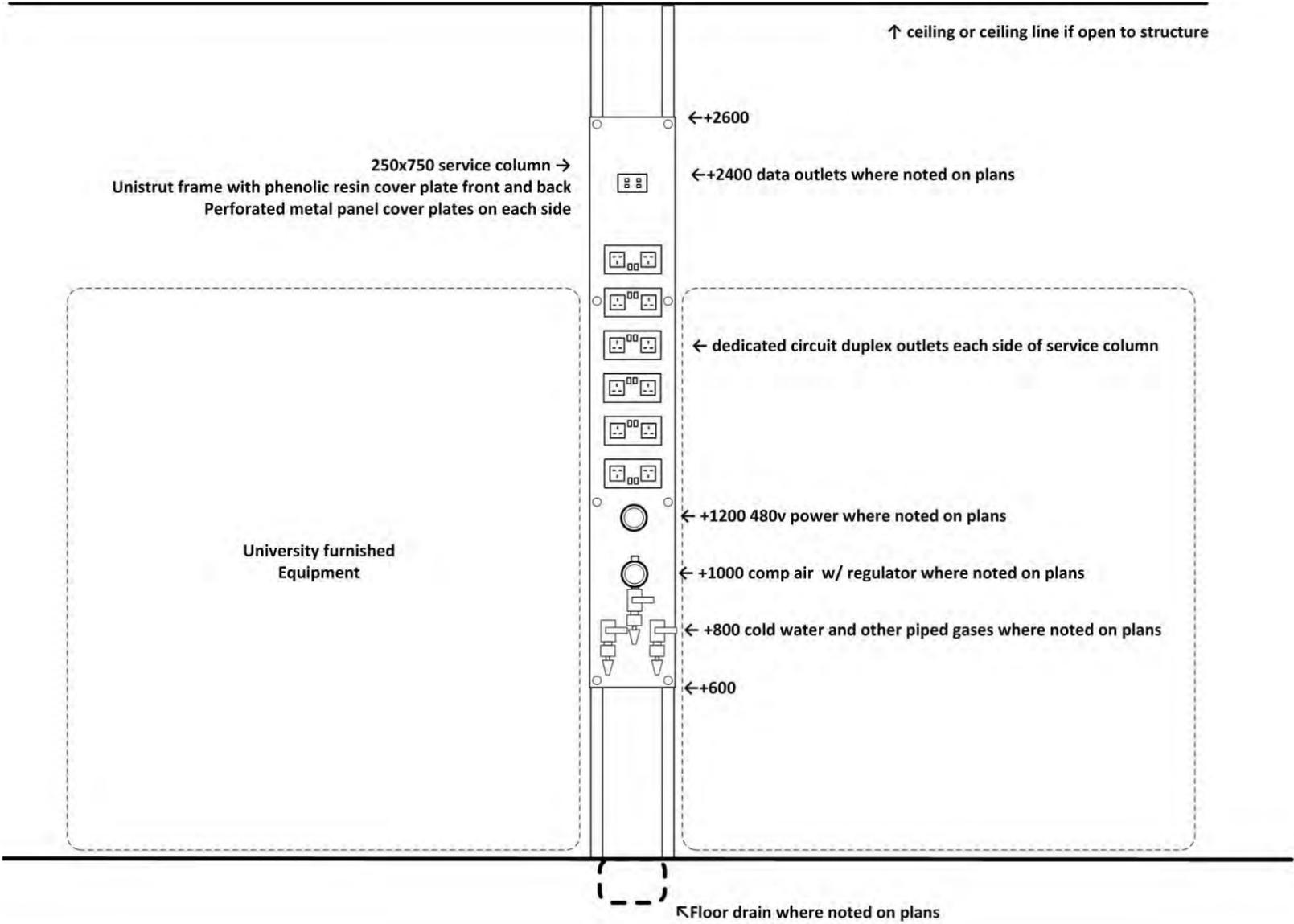
**Elevation**



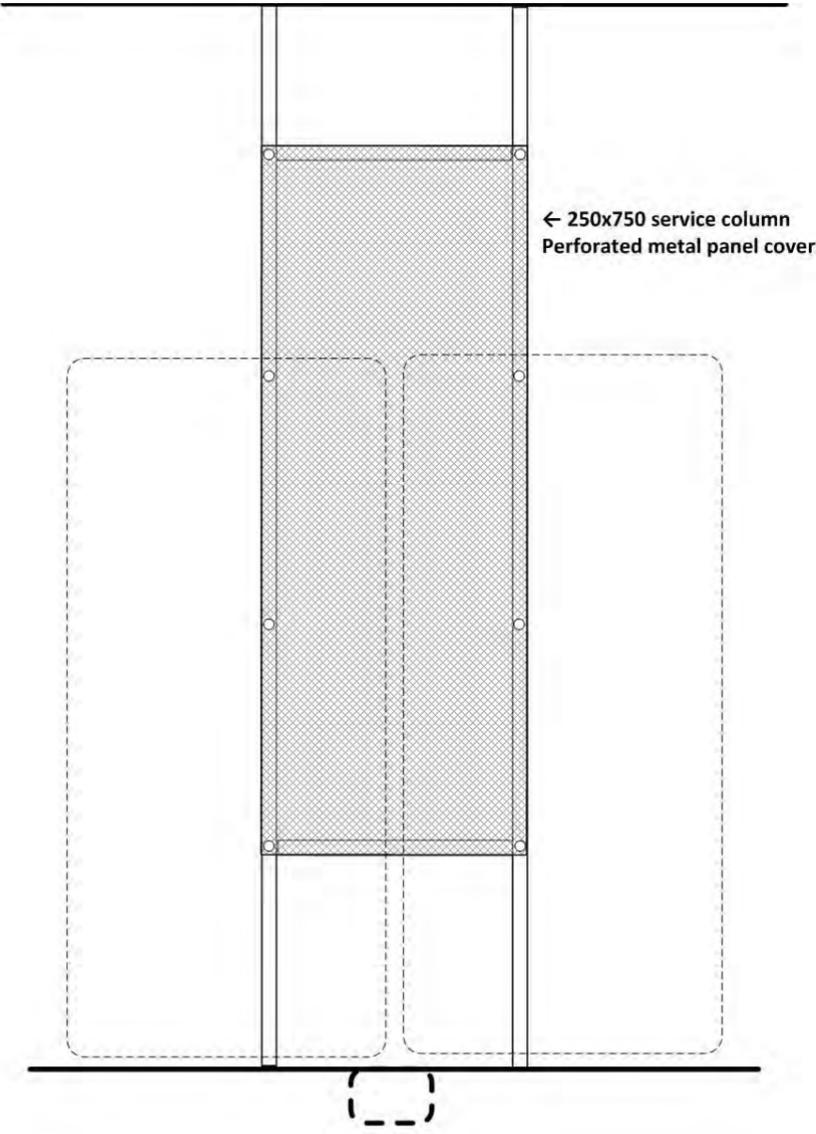
**Section**



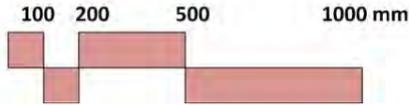
# SECTION DETAIL 7 EQUIPMENT ISLAND



Elevation

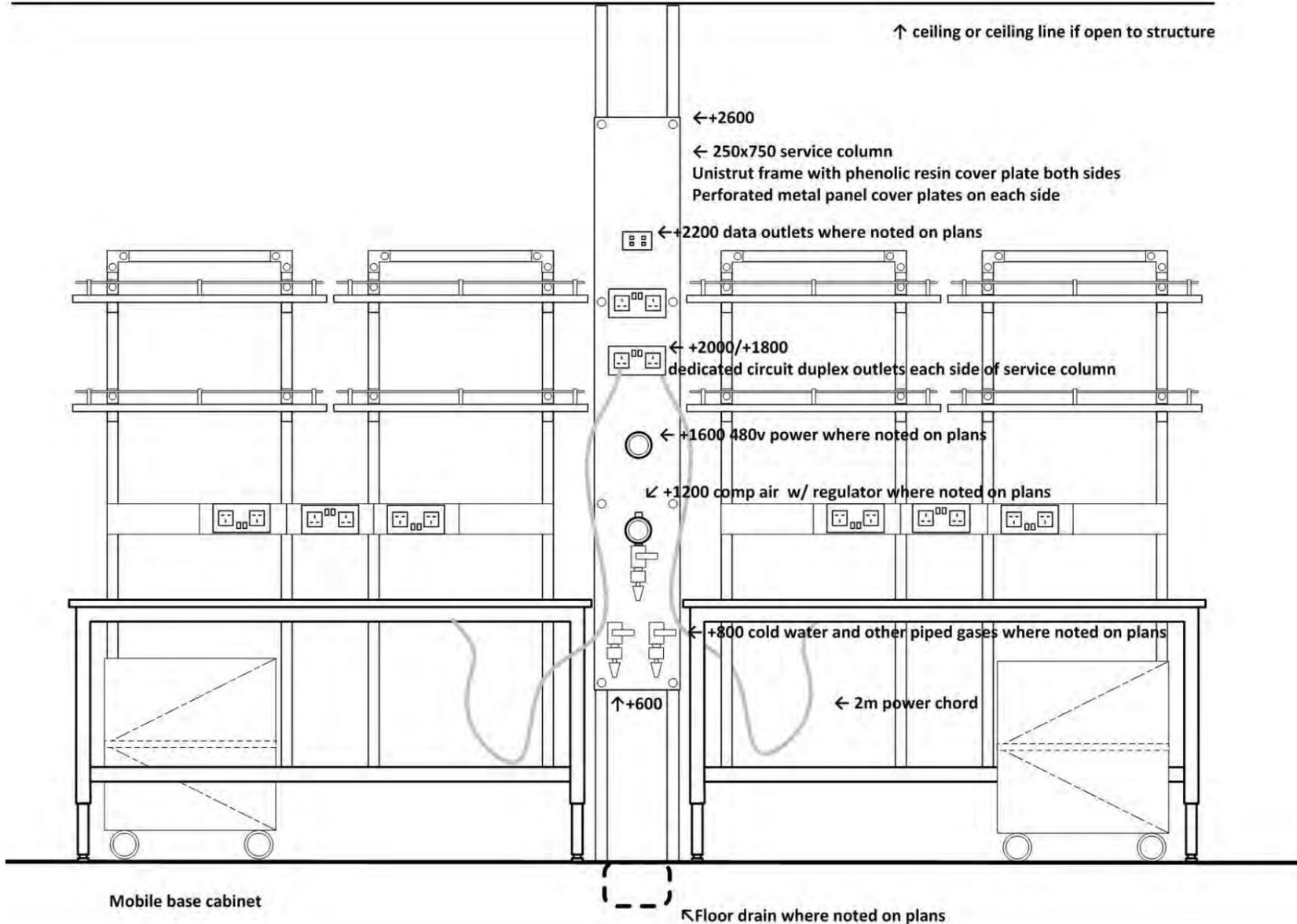


Section

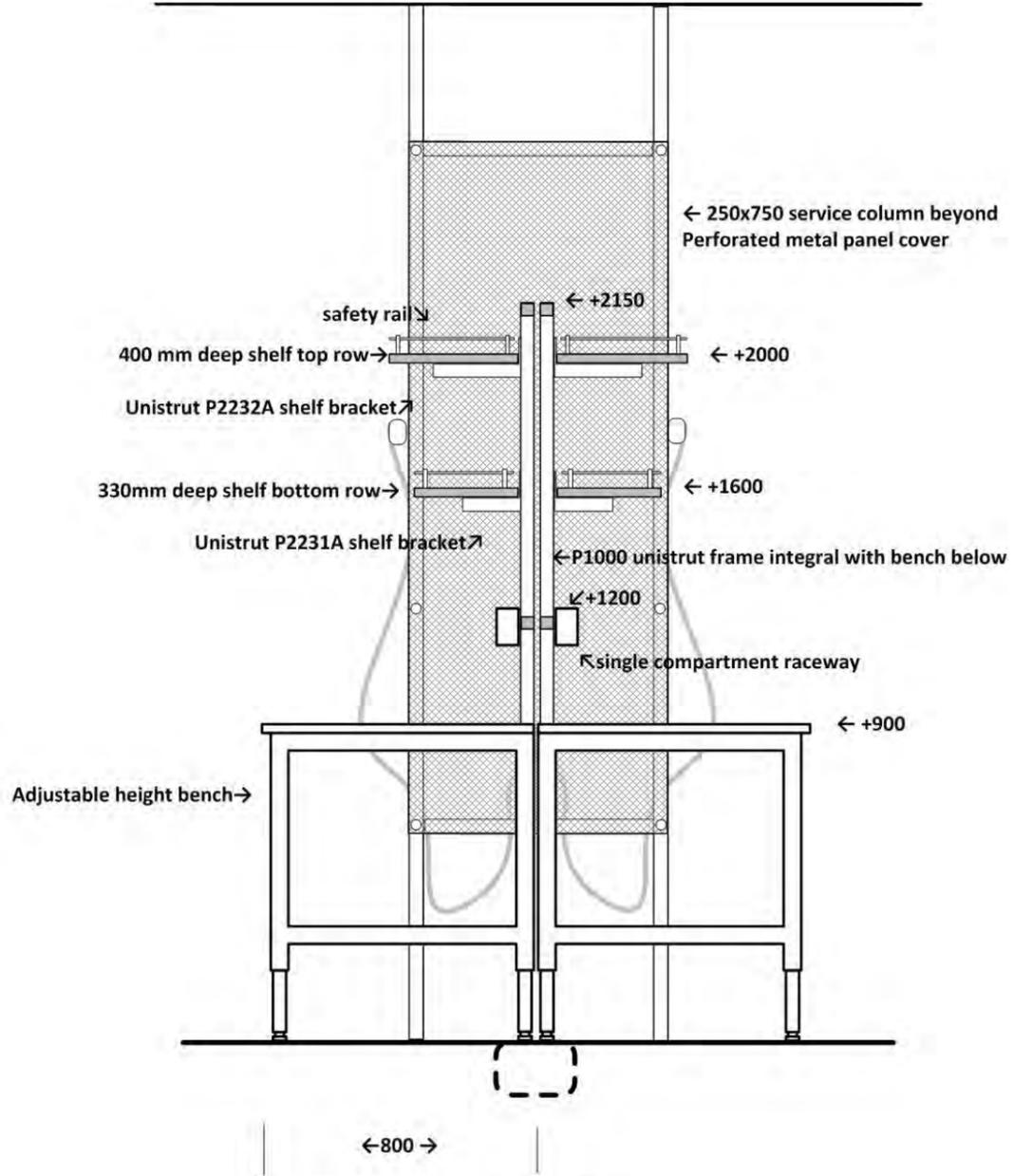


# SECTION DETAIL 10

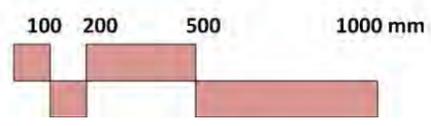
## MOBILE LAB BENCH ISLAND



Elevation

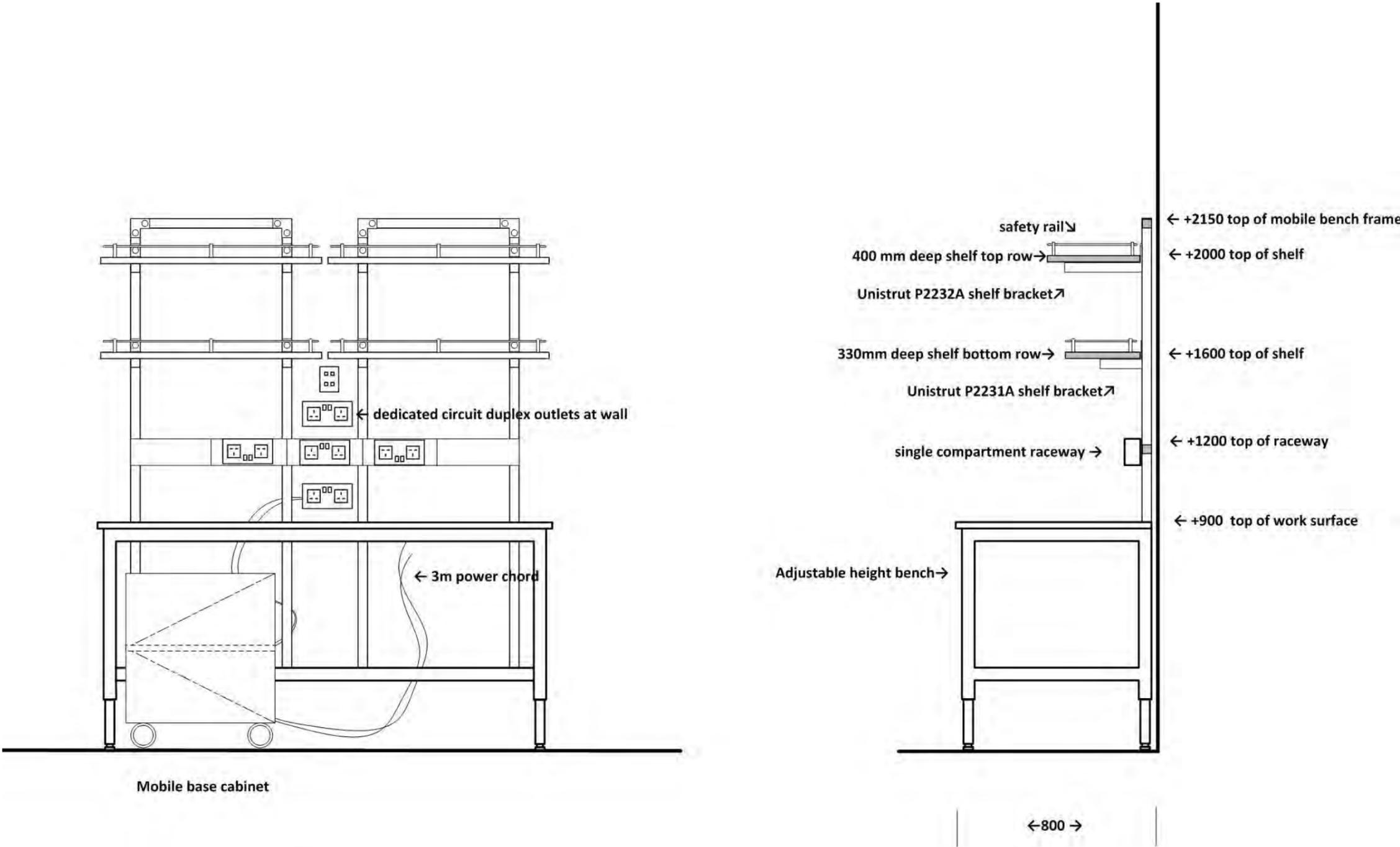


Section



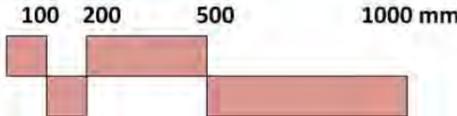
# SECTION DETAIL 11

## MOBILE LAB BENCH AT WALL



Elevation

Section





# PRODUCT DIMENSIONS

DOMESTIC SIZES

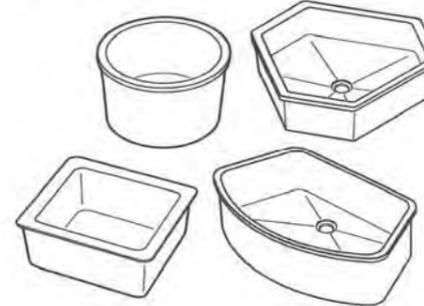
## SINK CUT SHEET

STANDARD LAB SINK:  
D52: ~600x450x280

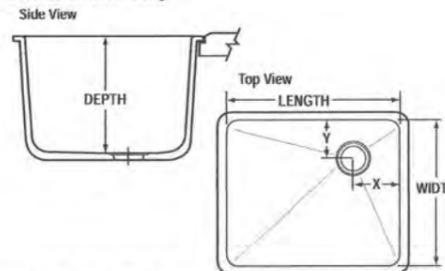
### Standard Dropln® Sinks

| Sink No. | Outlet | Wgt (lb) | Dimensions (in) |       |       |                 |        |
|----------|--------|----------|-----------------|-------|-------|-----------------|--------|
|          |        |          | Inside Bowl     |       |       | Outlet Location |        |
|          |        |          | Length          | Width | Depth | X               | Y      |
| D01C     | Center | 9        | 9.0             | 6.0   | 5.8   | 4.5             | 3.0    |
| D03C     | Center | 16       | 12.0            | 8.0   | 5.8   | 6.0             | 4.0    |
| A05      | Corner | 18       | 14.0            | 10.0  | 5.0   | 3.5             | 3.5    |
| D05      | Corner | 22       | 14.0            | 10.0  | 6.2   | 3.5             | 3.5    |
| D05C     | Center | 24       | 14.0            | 10.0  | 6.2   | 7.0             | 5.0    |
| D10      | End    | 20       | 16.0            | 8.0   | 6.8   | 4.5             | 4.0    |
| D10C     | Center | 22       | 16.0            | 8.0   | 6.8   | 8.0             | 4.0    |
| D15      | Corner | 30       | 16.0            | 12.0  | 8.0   | 3.5             | 3.5    |
| D15C     | Center | 31       | 16.0            | 12.0  | 8.0   | 8.0             | 6.0    |
| D19      | Corner | 42       | 16.0            | 16.0  | 9.6   | 3.5             | 3.5    |
| D20      | Corner | 32       | 16.0            | 16.0  | 7.5   | 3.5             | 3.5    |
| D22C     | Center | 30       | 18.0            | 6.5   | 6.8   | 9.0             | 3.3    |
| D24(C)   | Center | 30       | 18.0            | 14.0  | 10.5  | 9.0             | 6.8    |
| A25      | Corner | 35       | 18.0            | 15.0  | 5.0   | 3.5             | 3.5    |
| D25      | Corner | 39       | 18.0            | 15.0  | 7.9   | 3.5             | 3.5    |
| D30      | Corner | 53       | 18.0            | 15.0  | 11.0  | 3.5             | 3.5    |
| D30C     | Center | 50       | 18.0            | 15.0  | 10.8  | 9.0             | 7.5    |
| D33E     | End    | 59       | 21.0            | 17.0  | 9.8   | 4.5             | 8.5    |
| D45      | Corner | 64       | 21.5            | 15.5  | 11.0  | 3.5             | 3.5    |
| D50C     | Center | 48       | 24.0            | 16.0  | 8.0   | 12.0            | 8.0    |
| D52      | Corner | 77       | 24.0            | 18.0  | 11.0  | 3.5             | 3.5    |
| A55      | Corner | 47       | 25.0            | 15.0  | 4.8   | 3.5             | 3.5    |
| D55      | Corner | 61       | 25.0            | 15.0  | 10.0  | 3.5             | 3.5    |
| D59      | Corner | 61       | 28.0            | 15.0  | 11.8  | 3.5             | 3.5    |
| DRS12    | Center | 18       | 12.0            | Round | 7.8   | Center          | Center |

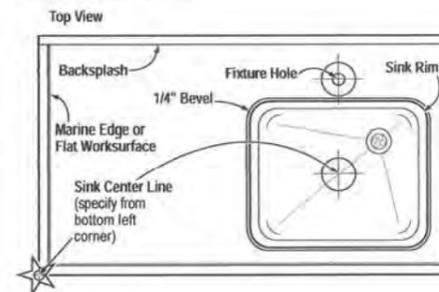
### Dropln® Sink Styles



### Dimensions Key



### Installation Detail



### Special Order Dropln® Sinks

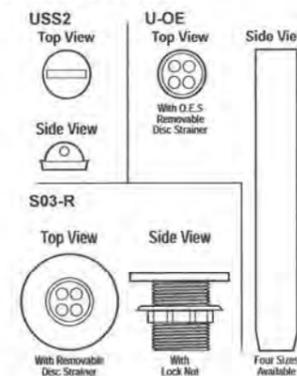
| Sink No. | Outlet | Wgt (lb) | Dimensions (in) |             |       |                 |        |
|----------|--------|----------|-----------------|-------------|-------|-----------------|--------|
|          |        |          | Inside Bowl     |             |       | Outlet Location |        |
|          |        |          | Length          | Width       | Depth | X               | Y      |
| D06*     | Center | 34       | 12.0            | 12.0        | 12.0  | 6.0             | 6.0    |
| A07*     | Corner | 24       | 14.0            | 14.0        | 5.0   | 3.5             | 3.5    |
| D08*     | Corner | 25       | 15.0            | 8.0         | 6.0   | 3.5             | 3.5    |
| D09*     | Corner | 25       | 15.0            | 8.0         | 10.8  | 3.5             | 3.5    |
| D21*     | Corner | 58       | 16.0            | 16.0        | 15.0  | 3.5             | 3.5    |
| A26*     | Corner | 39       | 18.0            | 15.0        | 5/11  | 4.5             | 5.5    |
| D32      | Corner | 49       | 18.0            | 15.0        | 15.8  | 3.5             | 3.5    |
| D51*     | Corner | 60       | 24.0            | 16.0        | 9.6   | 3.5             | 3.5    |
| D54*     | Corner | 45       | 25.0            | 15.0        | 8.0   | 3.5             | 3.5    |
| D57*     | Corner | 71       | 25.0            | 15.0        | 13.6  | 3.5             | 3.5    |
| D58*     | Corner | 79       | 25.0            | 15.0        | 17.8  | 3.5             | 3.5    |
| D61      | End    | 94       | 30.0            | 16.0        | 17.8  | 4.5             | 7.5    |
| D65C*    | Center | 98       | 35.5            | 19.5        | 9.8   | 17.8            | 9.8    |
| D68**    | End    | 70       | 30.0            | 16.0        | 10.0  | 4.75            | 8.0    |
| D70C*    | Center | 95       | 24.0            | 16.0        | 15.5  | 8.0             | 12.0   |
| D100**   | Center | 29       | 22.5            | Hexagon     | 5.0   | Center          | Center |
| D200**   | End    | 64       | 30.9            | Hexagon     | 7.0   | 15.5            | 8.0    |
| DRS10*   | Center | 14       | 10.0            | Round       | 7.8   | Center          | Center |
| DHC20*   | End    | 82       | 30.0            | Hexagon     | 7.0   | Center          | Center |
| D99*     | End    | 56       | 32.0            | Semi-Circle | 10.0  | 11.5            | 4.5    |

All sinks are available at both plants unless they are Special Order Sinks, available as noted:  
 \* Available only from Taylor, TX, plant (colors: Black Onyx, Gray, Graphite, Tan, Forest Green and Steel Blue).  
 \*\* Available only from Canton, MI, plant (colors: Black Onyx, Gray and Alpine White)

ADA compliant sinks are designated by this symbol.

All Dimensions are nominal. Exterior dimensions vary by MFG location. Cutsheets available upon request.

### Outlets & Accessories



WWW.DURCON.COM

206 Allison Drive • Taylor, TX 76574 • Phone: 512.595.8000 • Fax: 512.595.8400 • E-mail: sales@durcon.com

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Rev. 03/08

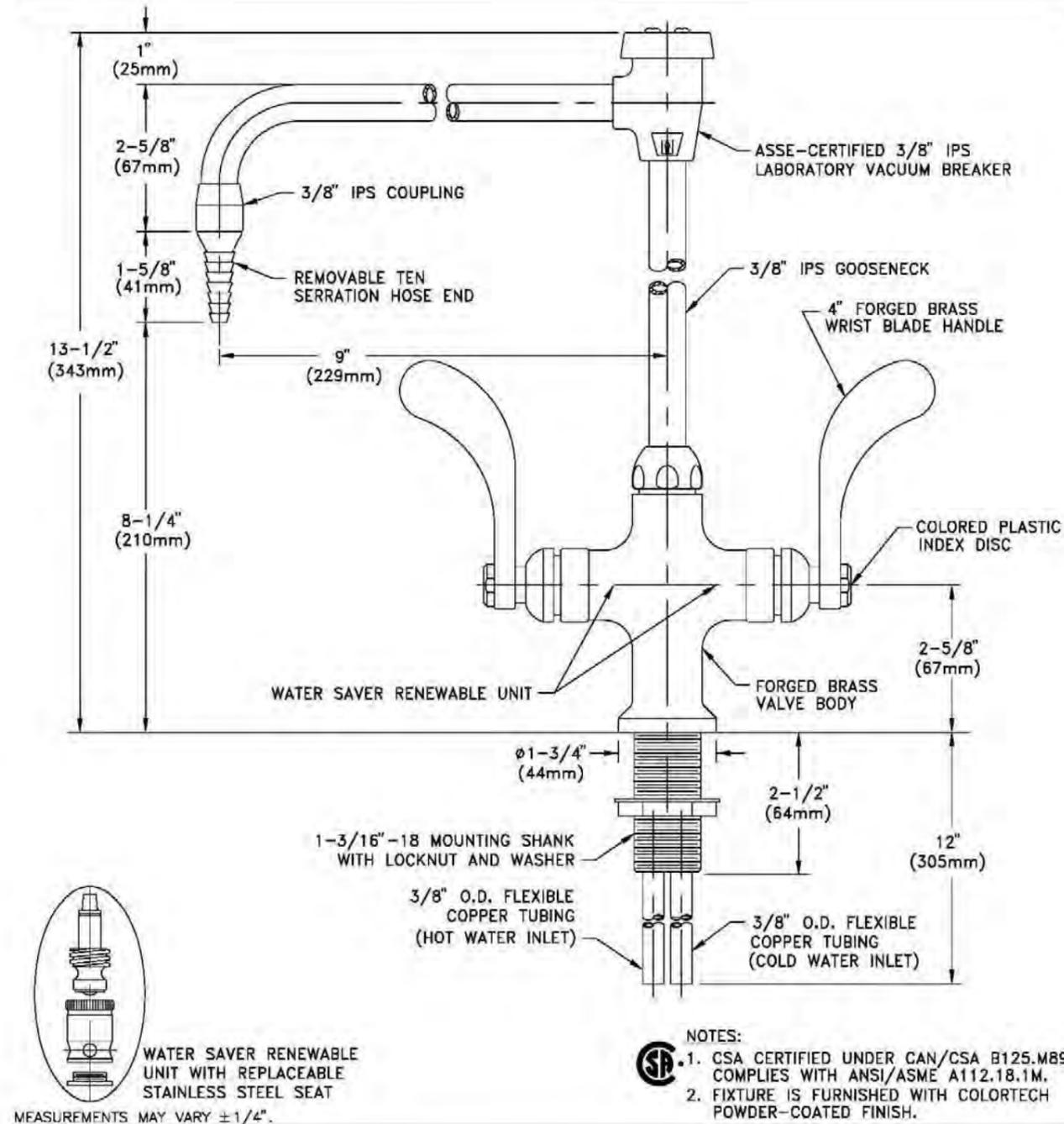
# HOT/COLD WATER FAUCET CUT SHEET

## COLORTECH

701 West Erie Street Phone 312 666 5500  
Chicago, Illinois 60610 Fax 312 666 8597

Laboratory Service Fixtures by  
WaterSaver Faucet Co.

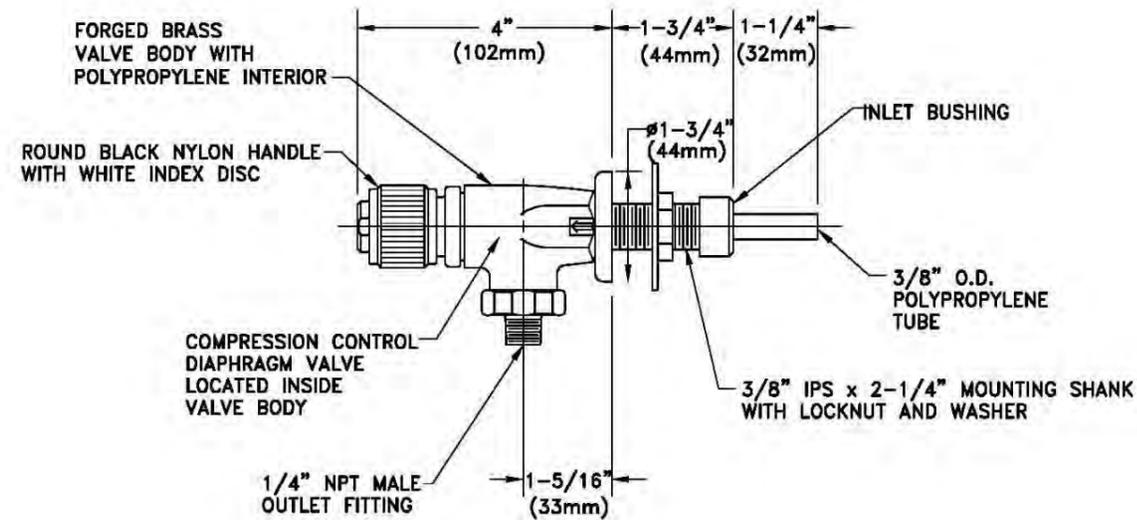
CT414-9VB-BH  
LABORATORY MIXING FAUCET, DECK MOUNTED, 9" RIGID/SWING VACUUM BREAKER GOOSENECK, WRIST BLADE HANDLES



Drawing Number: \_\_\_\_\_

Revision Number: 031803-KJS

**L7844-1/4**  
PANEL MOUNTED PURE WATER FIXTURE WITH ALL-POLYPROPYLENE INTERNAL CONSTRUCTION AND  
1/4" NPT MALE OUTLET FITTING



**NOTES:**

1. MAXIMUM WORKING PRESSURE IS 50 PSI.
2. ALL COMPONENTS IN CONTACT WITH PURE WATER ARE POLYPROPYLENE.
3. FIXTURE INLET HAS 3/8" O.D. POLYPROPYLENE TUBE. IF REQUIRED, SPECIFY ADAPTER WHEN ORDERING.
4. PROVIDE 3/4" HOLE FOR MOUNTING.

MEASUREMENTS MAY VARY  $\pm 1/4"$ .

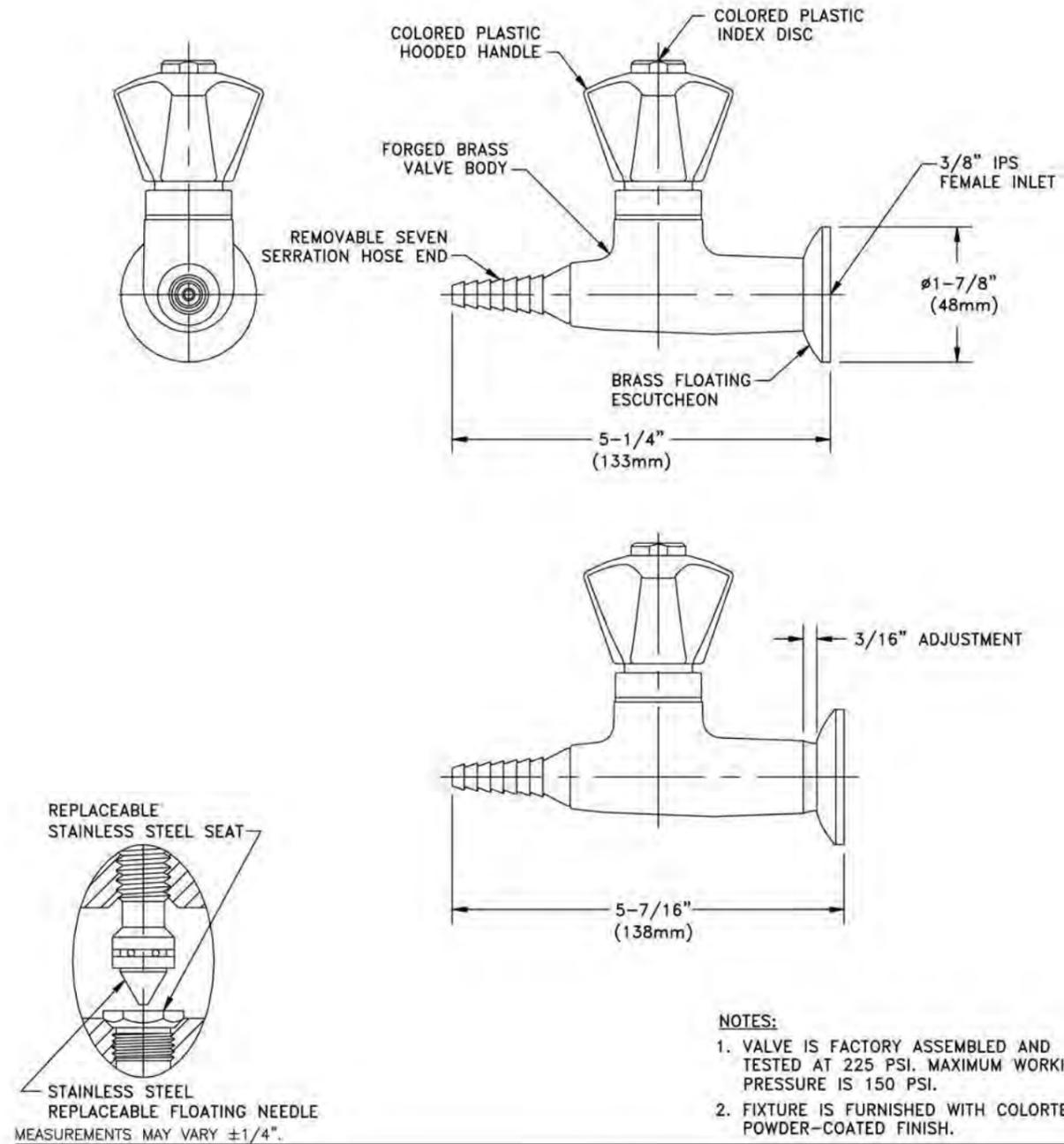
Drawing Number: \_\_\_\_\_

Revision Number: 012204-DWC

Laboratory Service Fixtures by  
WaterSaver Faucet Co.

CT4880FT-325

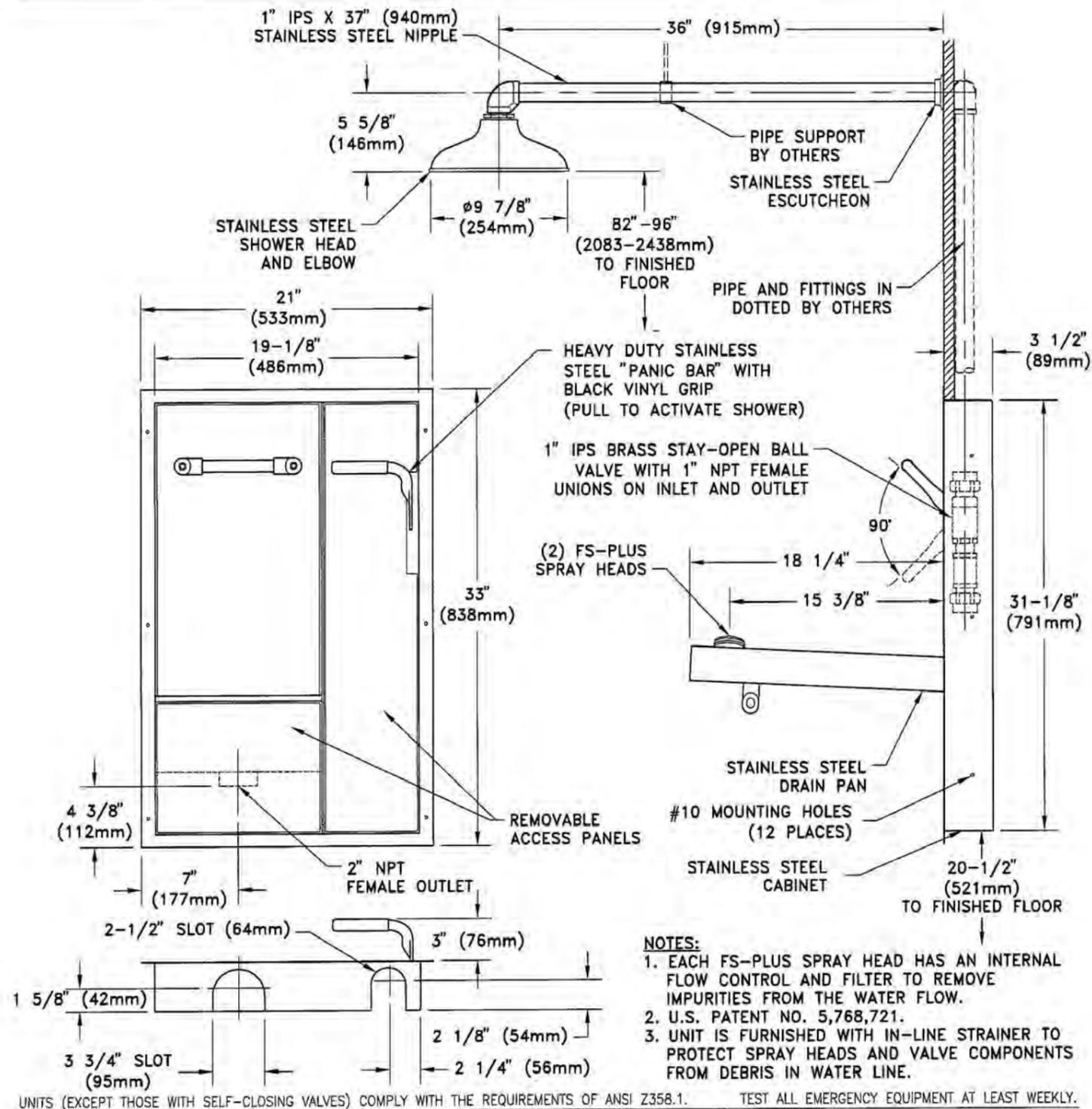
LABORATORY NEEDLE VALVE ASSEMBLY, WALL MOUNTED, FLOATING ESCUTCHEON



Drawing Number: \_\_\_\_\_

Revision Number: 060807-SJP

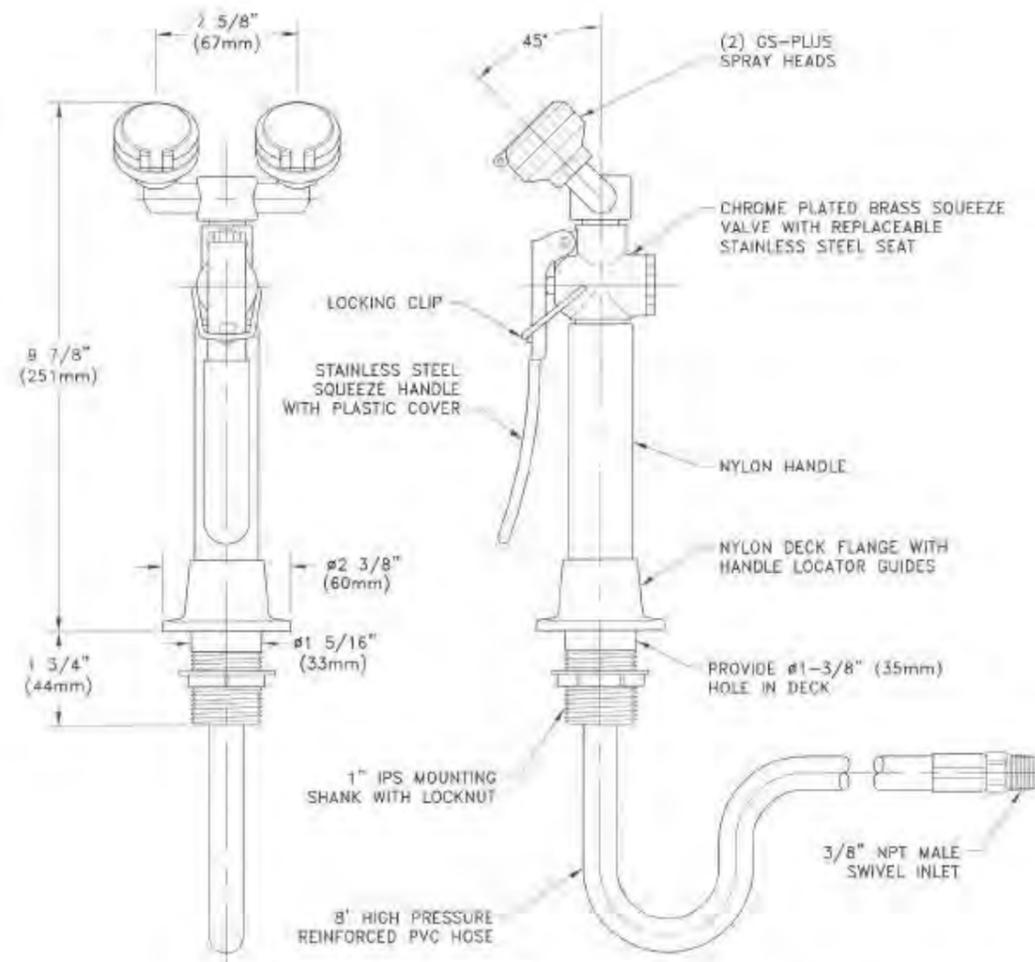
**SSBF2170**  
RECESSED SAFETY STATION WITH DRAIN PAN



# WaterSaver

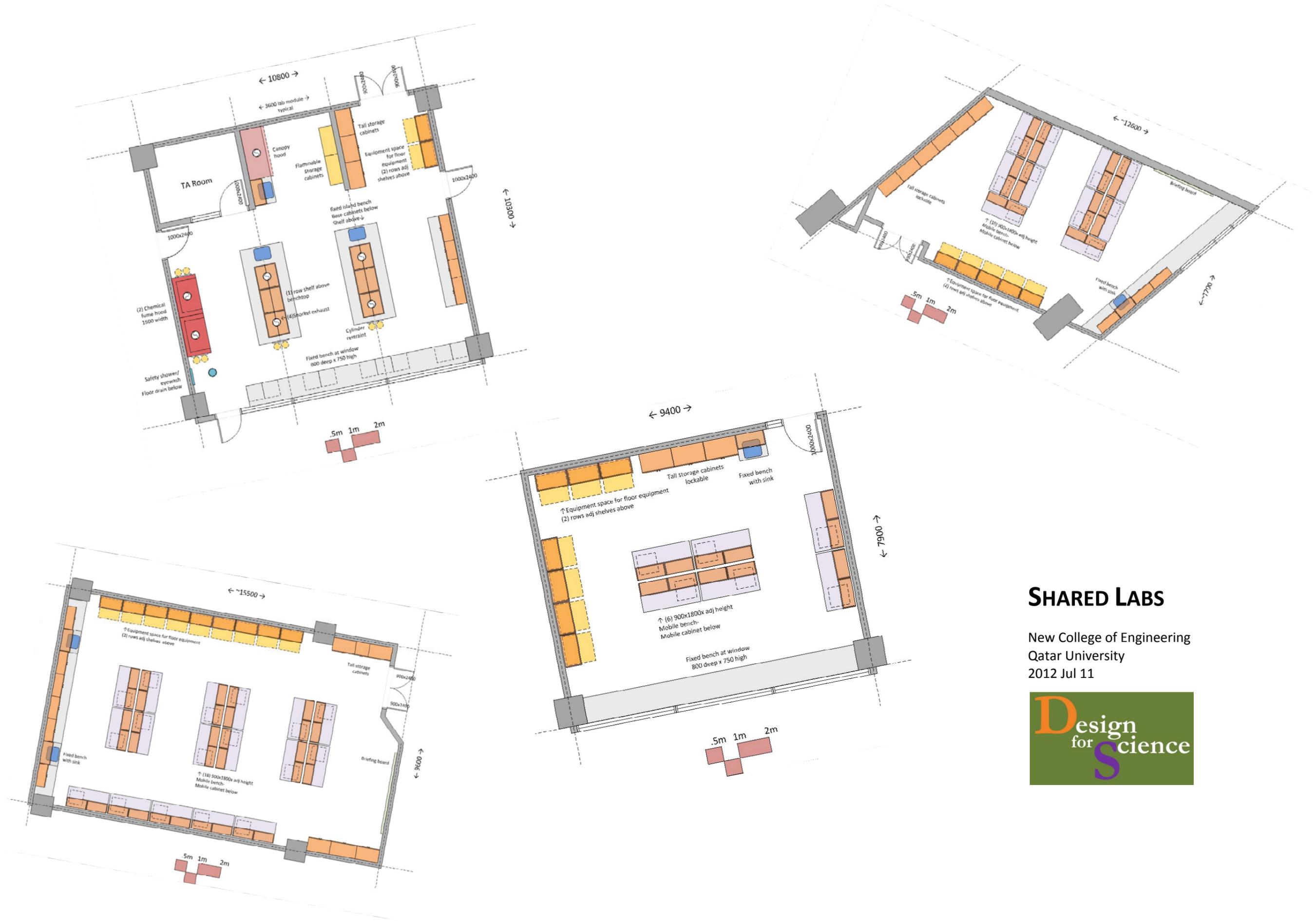
## EW1022

Eye Wash/Drench Hose Unit, Deck Mounted



- NOTES:
1. EACH GS-PLUS SPRAY HEAD HAS A "FLIP-TOP" DUST COVER, INTERNAL FLOW CONTROL AND FILTER TO REMOVE IMPURITIES FROM THE WATER FLOW.
  2. HOSE SHOULD NOT BE USED IN APPLICATIONS WHERE WATER PRESSURE EXCEEDS 90 PSI. HOSE SHOULD BE INSPECTED PERIODICALLY FOR DETERIORATION.

**WaterSaver Faucet Company** 701 West Erie Street Chicago, Illinois 60610 312.666.5500 Phone 312.666.8597 Fax watersaverfaucet.com

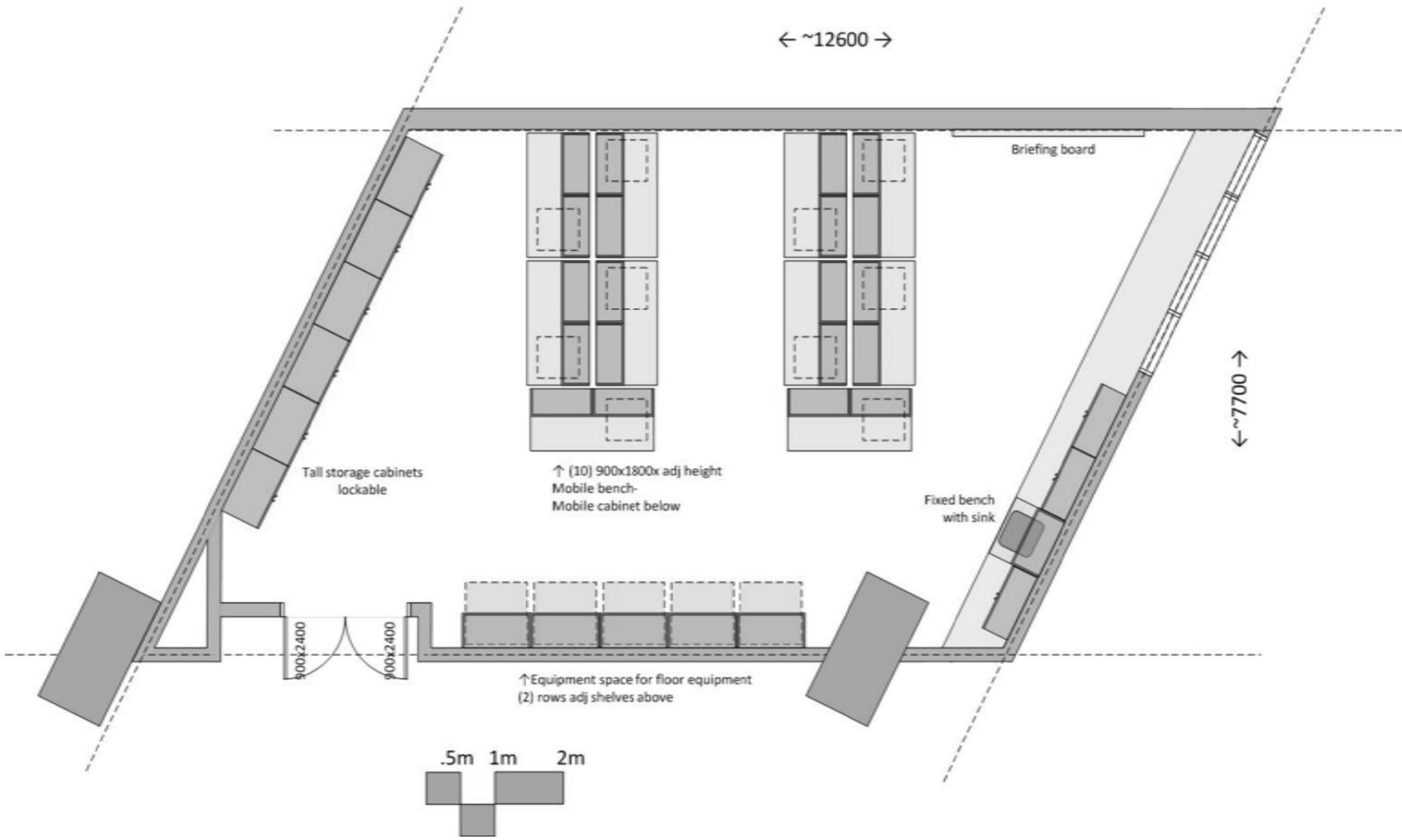


# SHARED LABS

New College of Engineering  
 Qatar University  
 2012 Jul 11

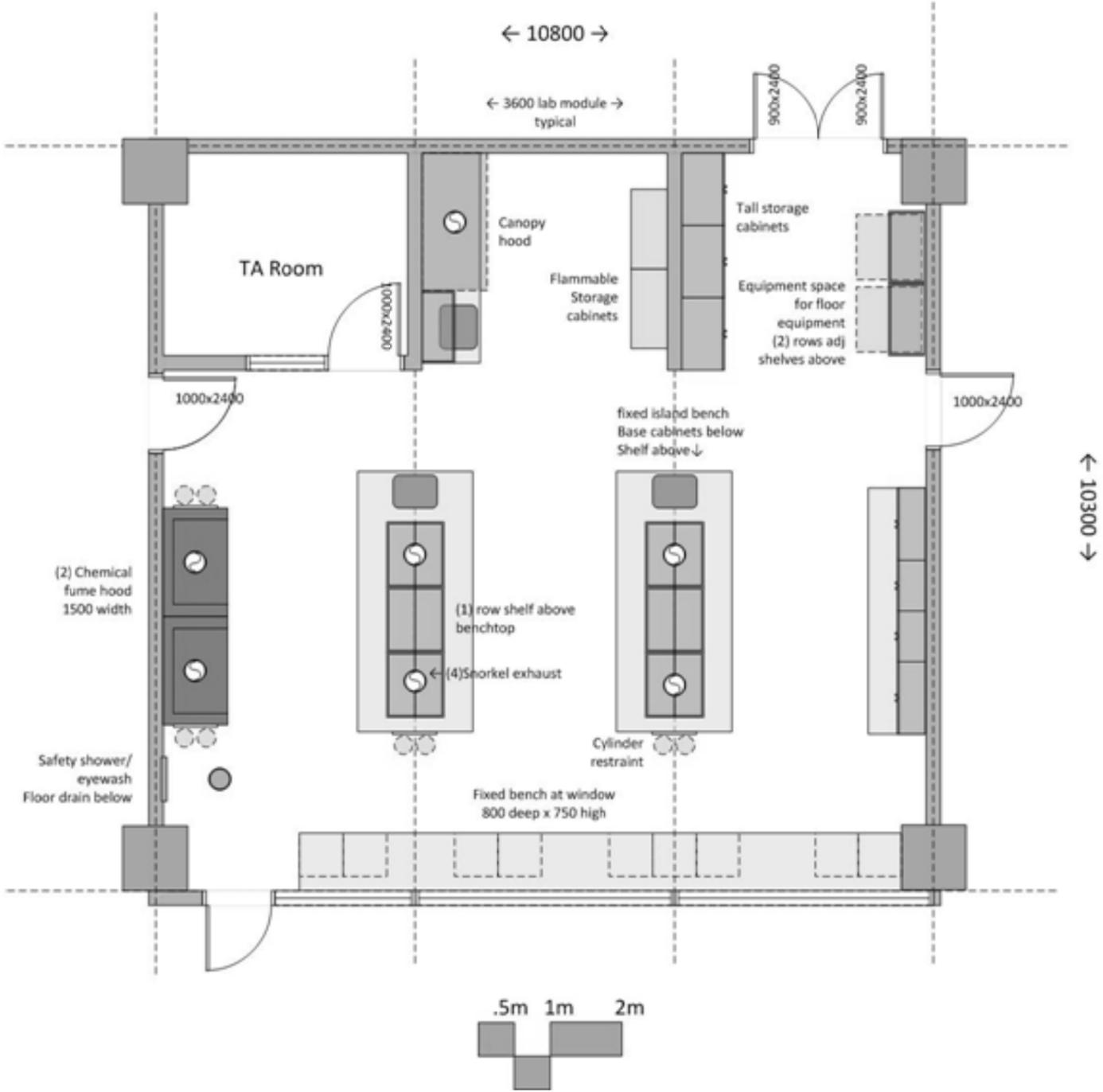


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# SUMMARY



This second edition (revised) sketchbook comprises the shared labs that are not assigned to any particular department. These include shared project labs and shared research labs. It includes basic plan diagrams with equipment and furnishings noted. All electrical and plumbing outlets have been noted. Section details are included which illustrate lab casework and furnishings system components.

Glen Berry, AIA  
 Laboratory Consultant to Mimar  
 glenberry@designforscience.com



**SYMBOL LEGEND**  
**PLUMBING & ELECTRICAL SYMBOLS**

 **240v duplex electrical**  
 Dedicated circuit at equipment space  
 Standby power at equipment space

 **415v 3phase 60 amp electrical**  
 With quick disconnect switch

 **HW/CW** Hot/Cold water faucet with vacuum breaker

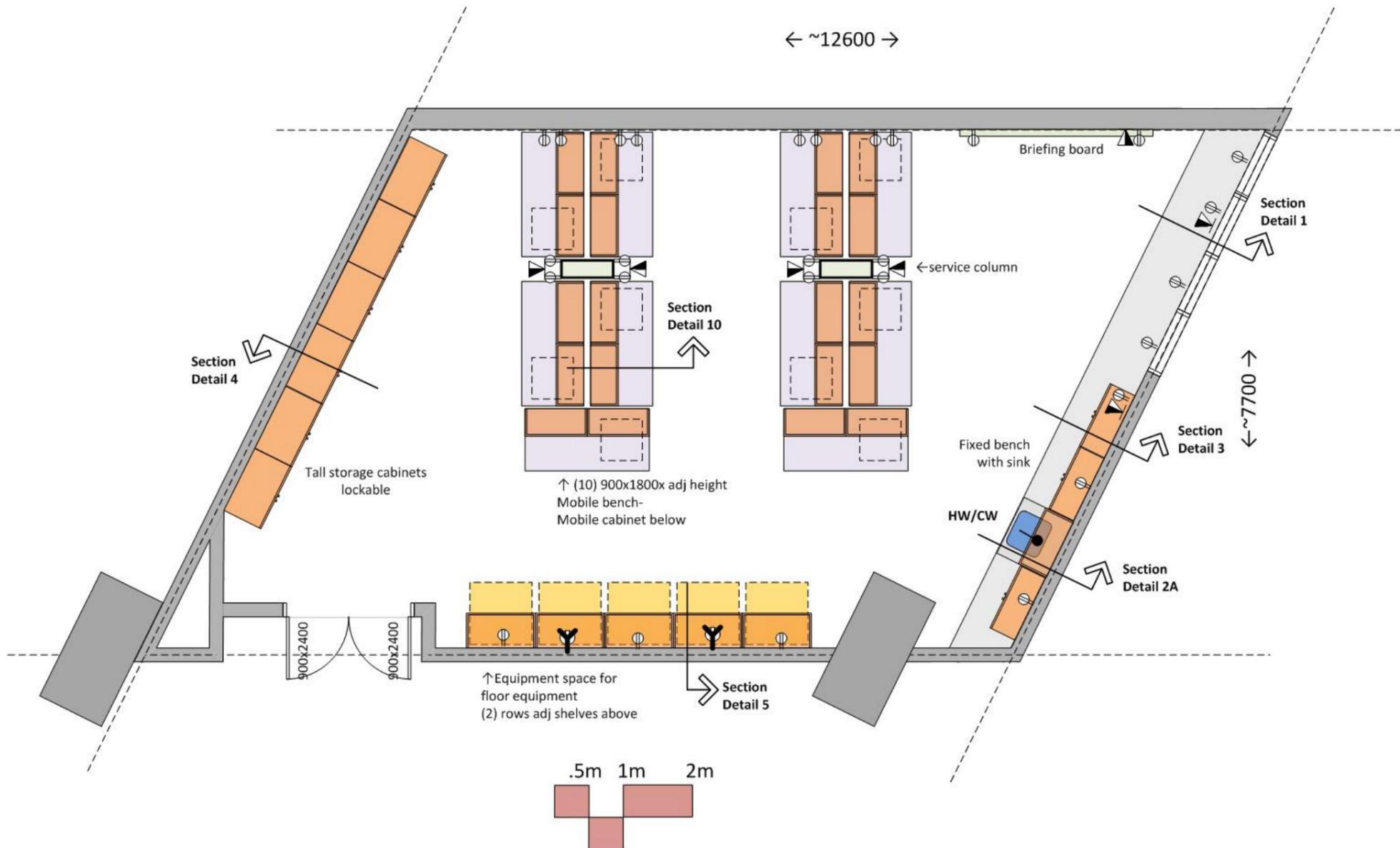
 **SW** Soft water at point-of-use water polisher

 **Elec/data service column floor to ceiling**  
 Dedicated circuits for each 240v duplex

 **Data/phone box**

# PROJECT LAB

**SECOND FLOOR**  
SIMILAR FOR (2) OTHER LABS SECOND FLOOR



**ARCHITECTURAL**

Floor: sealed, ground concrete  
 Walls: cmu with plaster & paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 50 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

**MECHANICAL**

Temperature: 22 deg. C +/- 1 deg. C  
 Recirc air within lab zone- do not recirc to non-lab spaces such as offices, classrooms  
 Equipment heat gain: 250btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

**PLUMBING**

hot/cold water at lab sinks

**ELECTRICAL**

240v outlets  
 415v3ph outlets  
 Dedicated circuits at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

**CONTRACTOR FURNISHED EQUIPMENT**

Lab casework, sinks, tops, fittings  
 mobile benches

**COLLEGE FURNISHED EQUIPMENT**

scientific equipment  
 Instruments

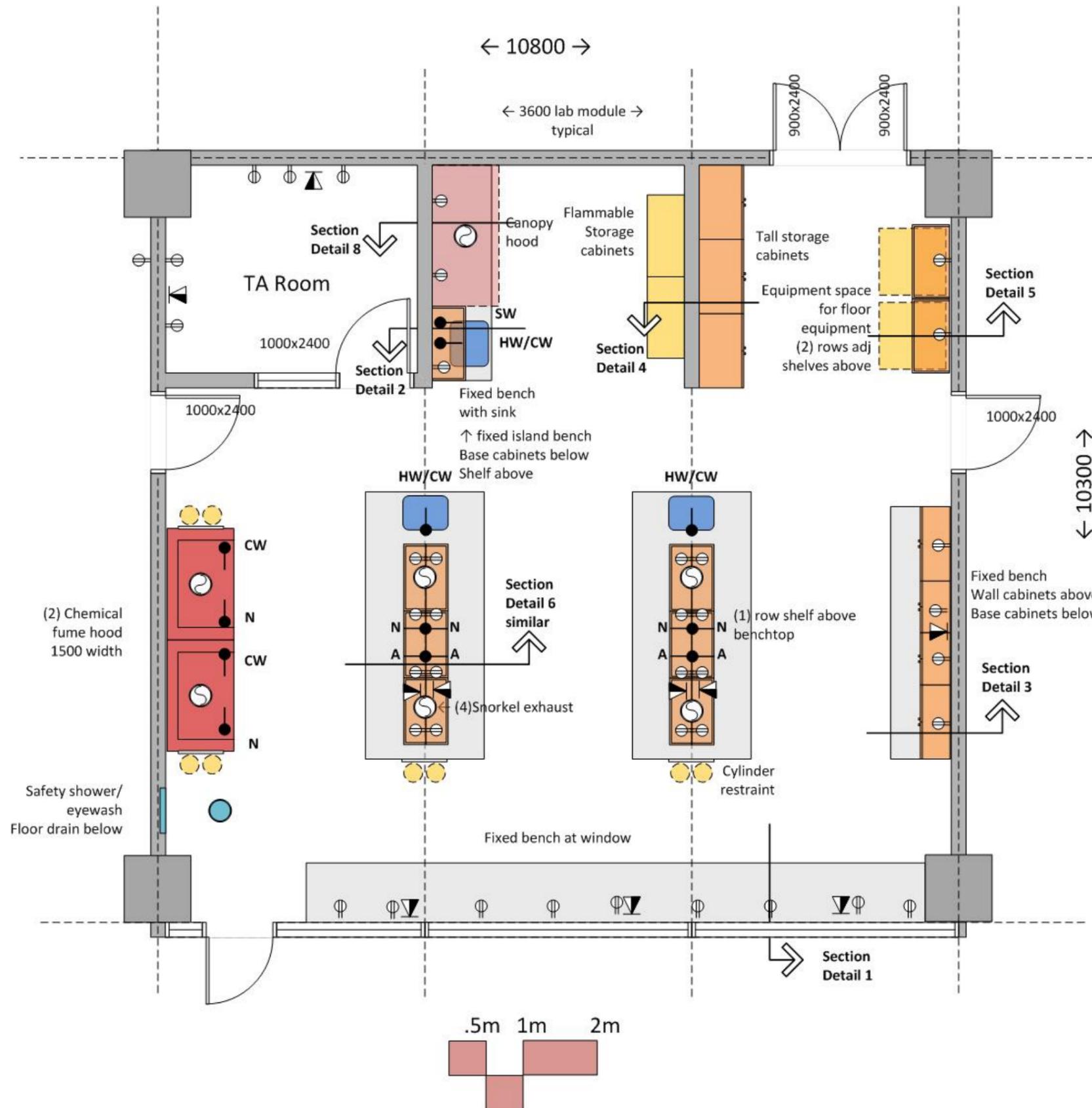
# PROJECT LAB

KEY PLAN- SECOND FLOOR



# RESEARCH LAB

## SECOND FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster, paint  
 Ceiling: acoustic tile at 3 m  
 Doors with vision panels  
 Vibration attenuation: 25 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 100% exhaust: 6 air changes per hour minimum occupied  
 4 air changes per hour unoccupied  
 (air change rate may be higher due to equipment heat gain)  
 Equipment heat gain: 500-750 btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

hot/cold water at lab sink  
 Pure water at lab sink via point-of-use water polisher  
 Domestic cold water at safety shower/eyewash  
 Floor drain at safety shower  
 compressed air at islands  
 nitrogen gas at islands  
 cold water, compressed air and nitrogen at fume hoods  
 cylinder restraints at end of islands and fume hoods

### ELECTRICAL

240v receptacles at benchtop and equipment  
 415v3ph at equipment space  
 Dedicated circuits at equipment spaces  
 Standby power (emergency) at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 Chemical fume hoods- VAV 20 c.m.m.  
 Canopy exhaust for heat generating equipment  
 Flammable storage cabinets  
 Briefing board, screen, projector

### COLLEGE FURNISHED EQUIPMENT

Scientific benchtop equipment  
 Floor equipment

# RESEARCH LAB

KEY PLAN- SECOND FLOOR



# RESEARCH LAB

## FIRST FLOOR

### SIMILAR FOR (1) OTHER LAB FIRST FLOOR

#### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster & paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 50 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

#### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 Recirc air within lab zone- do not recirc to non-lab spaces such as offices, classrooms  
 Equipment heat gain: 250btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

#### PLUMBING

hot/cold water at lab sink

#### ELECTRICAL

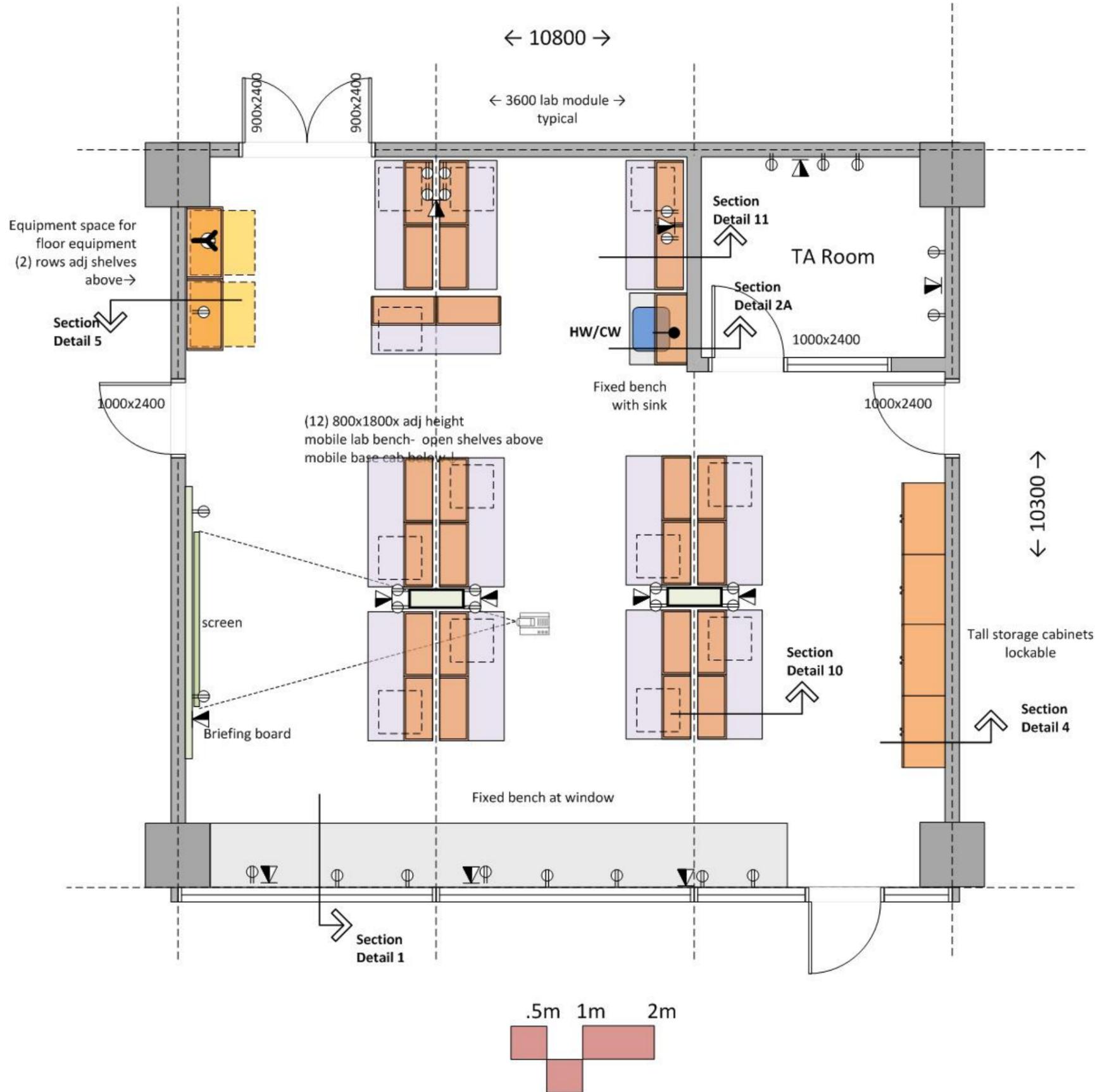
240v outlets  
 415v3ph outlets  
 Dedicated circuits at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

#### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 mobile benches

#### COLLEGE FURNISHED EQUIPMENT

scientific equipment  
 Instruments



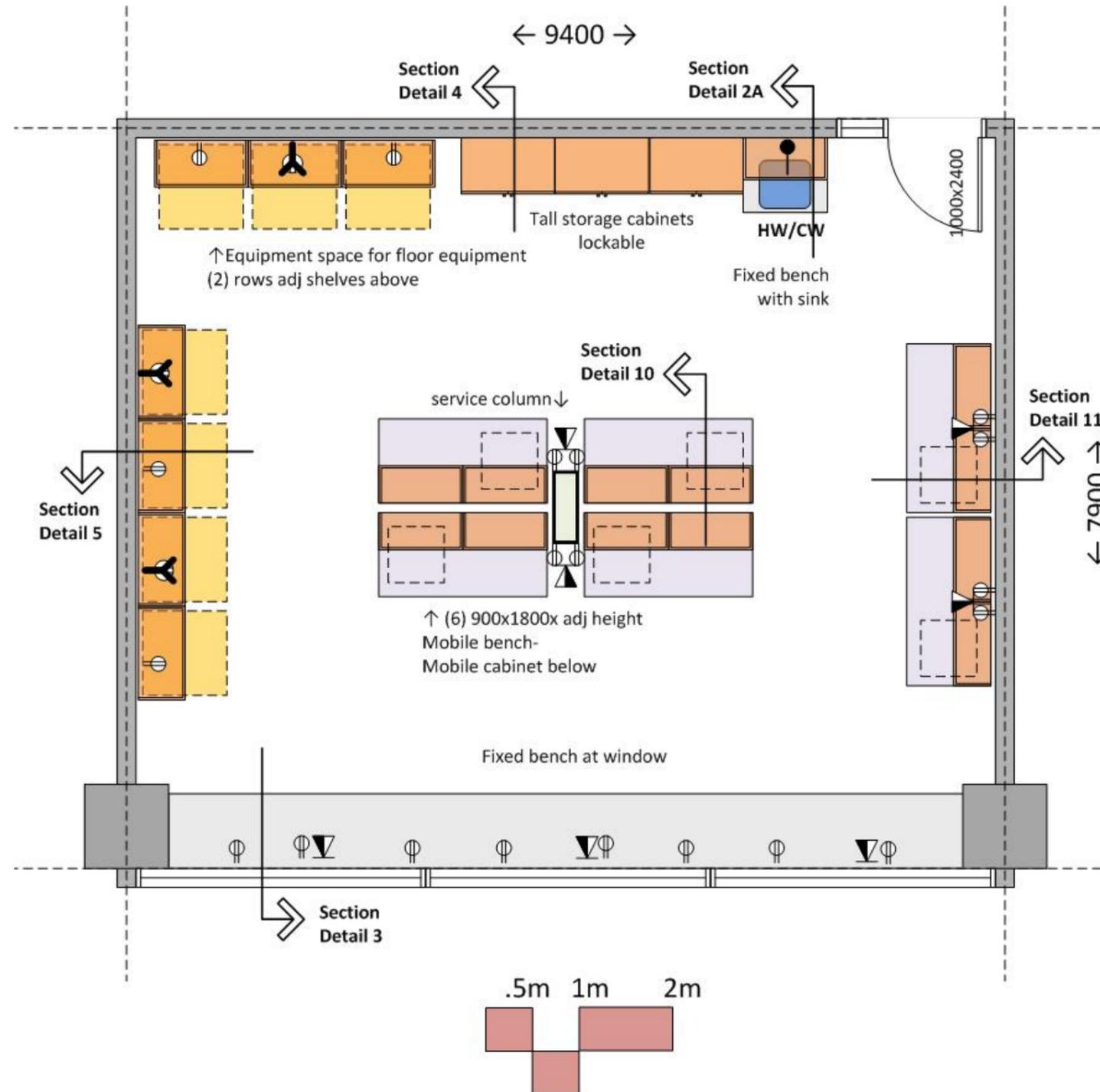
# RESEARCH LAB

KEY PLAN- FIRST FLOOR



# PROJECT LAB

GROUND FLOOR  
SIMILAR FOR (2) OTHER LABS GROUND FLOOR



## ARCHITECTURAL

Floor: sealed, ground concrete  
Walls: cmu with plaster & paint  
Ceiling: open to structure  
Doors with vision panels  
Vibration attenuation: 50 micrometers/second or less  
Sound attenuation: NC 45 or less  
Light attenuation: at exterior windows with exterior sun shade

## MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
Recirc air within lab zone- do not recirc to non-lab spaces such as offices, classrooms  
Equipment heat gain: 250btuh/square meter  
Humidity: 30-50% relative  
Pressure: negative

## PLUMBING

hot/cold water at lab sink

## ELECTRICAL

240v outlets  
415v3ph outlets  
Dedicated circuits at equipment spaces  
Data junction boxes at perimeter and islands  
Wireless data connection  
Lighting: indirect fluorescent at 60 f.c.

## CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
mobile benches

## COLLEGE FURNISHED EQUIPMENT

scientific equipment  
Instruments

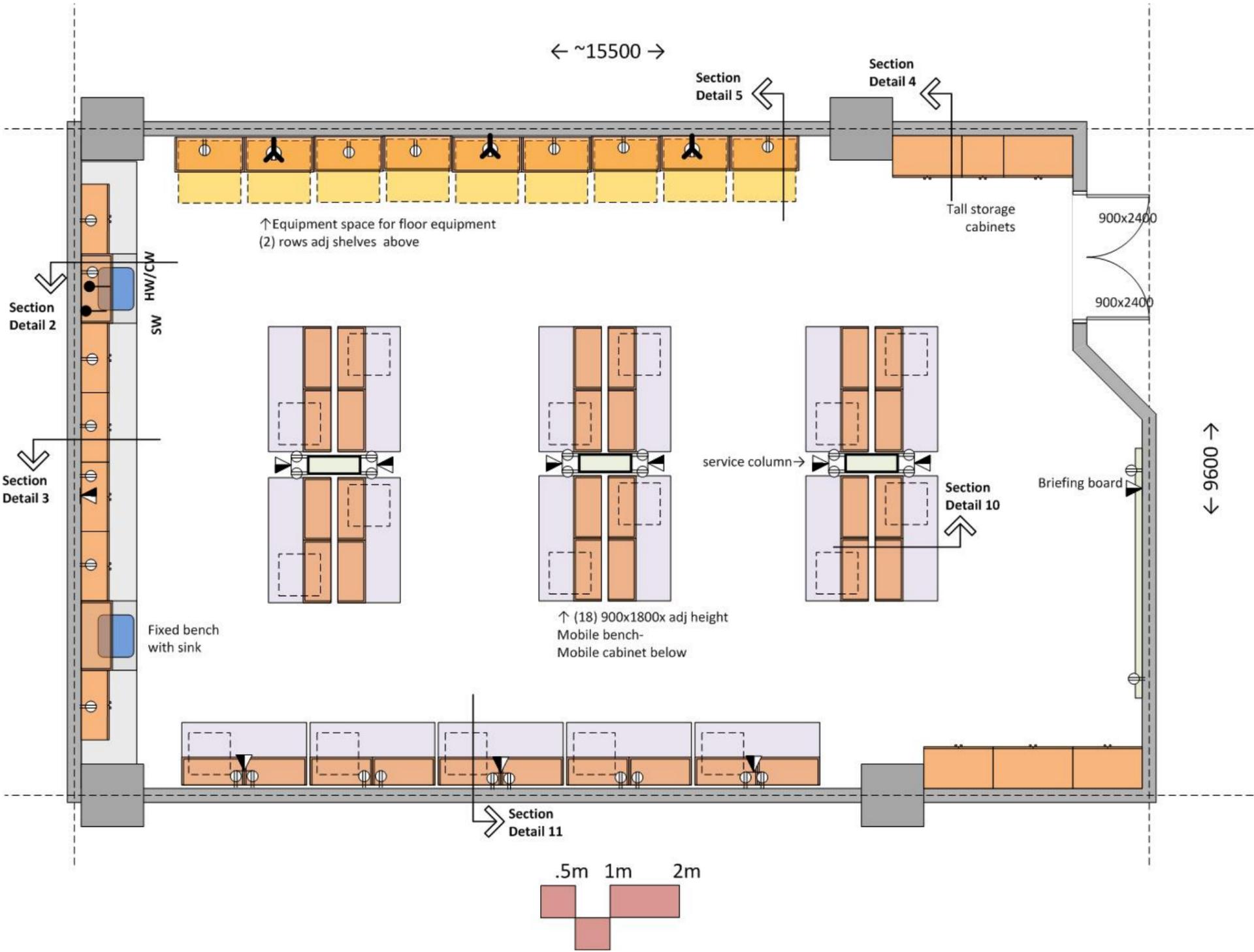
# PROJECT LAB

## KEY PLAN- GROUND FLOOR



# RESEARCH LAB

## BASEMENT FLOOR



### ARCHITECTURAL

Floor: sealed, ground concrete  
 Walls: cmu with plaster & paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 50 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

### MECHANICAL

Temperature: 22 deg. C +/- 1 deg. C  
 Recirc air within lab zone- do not recirc to non-lab spaces such as offices, classrooms  
 Equipment heat gain: 250btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

### PLUMBING

hot/cold water at lab sinks

### ELECTRICAL

240v outlets  
 415v3ph outlets  
 Dedicated circuits at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

### CONTRACTOR FURNISHED EQUIPMENT

Lab casework, sinks, tops, fittings  
 mobile benches

### COLLEGE FURNISHED EQUIPMENT

scientific equipment  
 Instruments

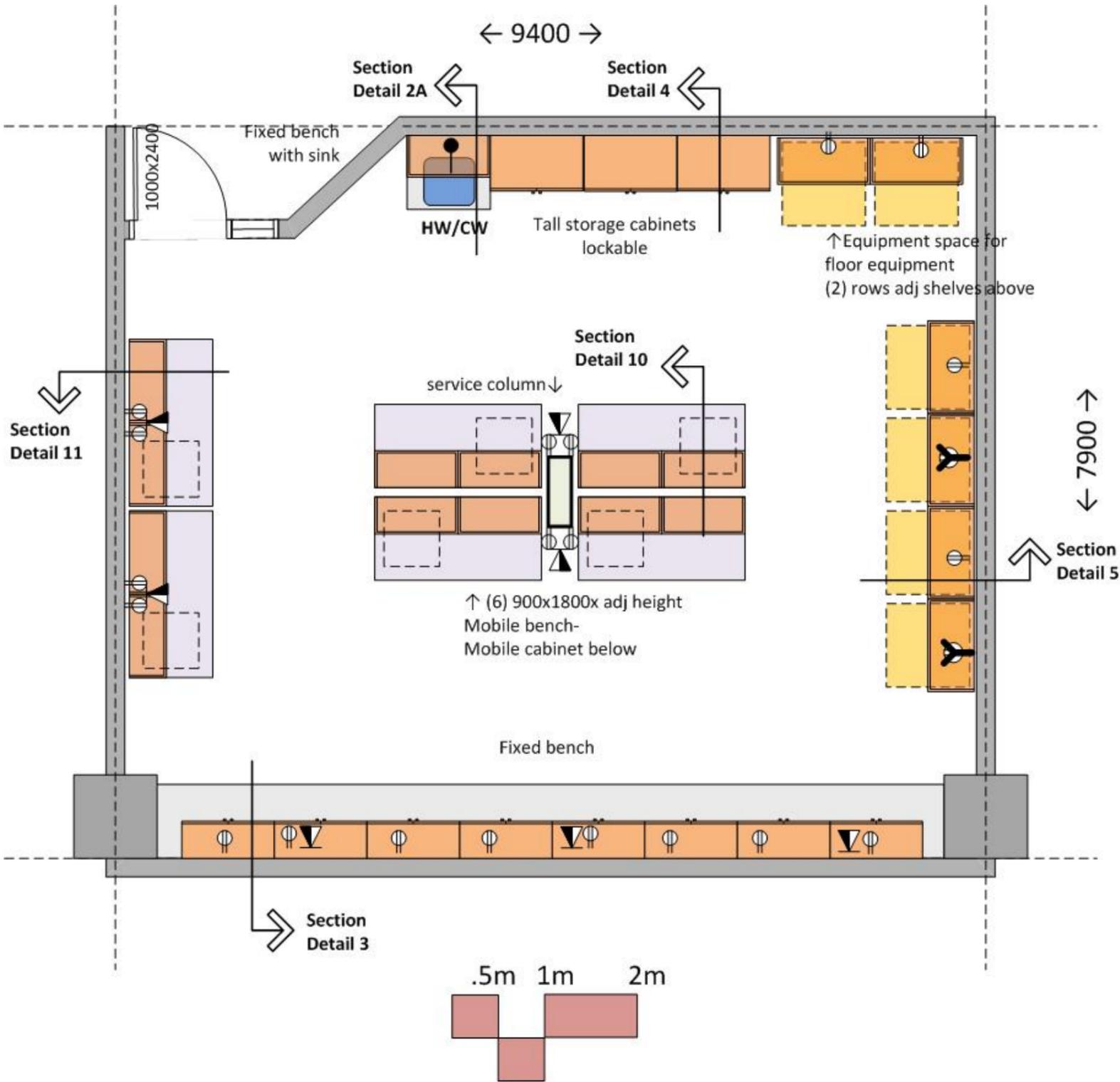
# RESEARCH LAB

KEY PLAN- BASEMENT FLOOR



# PROJECT LAB

**BASEMENT FLOOR**  
SIMILAR FOR (2) OTHER LABS BASEMENT FLOOR



**ARCHITECTURAL**  
 Floor: sealed, ground concrete  
 Walls: cmu with plaster & paint  
 Ceiling: open to structure  
 Doors with vision panels  
 Vibration attenuation: 50 micrometers/second or less  
 Sound attenuation: NC 45 or less  
 Light attenuation: at exterior windows with exterior sun shade

**MECHANICAL**  
 Temperature: 22 deg. C +/- 1 deg. C  
 Recirc air within lab zone- do not recirc to non-lab spaces such as offices, classrooms  
 Equipment heat gain: 250btuh/square meter  
 Humidity: 30-50% relative  
 Pressure: negative

**PLUMBING**  
 hot/cold water at lab sink

**ELECTRICAL**  
 240v outlets  
 415v3ph outlets  
 Dedicated circuits at equipment spaces  
 Data junction boxes at perimeter and islands  
 Wireless data connection  
 Lighting: indirect fluorescent at 60 f.c.

**CONTRACTOR FURNISHED EQUIPMENT**  
 Lab casework, sinks, tops, fittings  
 mobile benches

**COLLEGE FURNISHED EQUIPMENT**  
 scientific equipment  
 Instruments

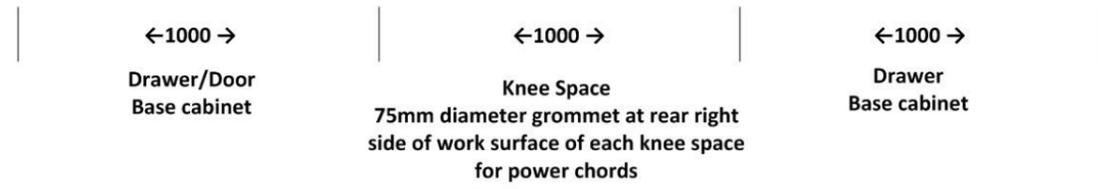
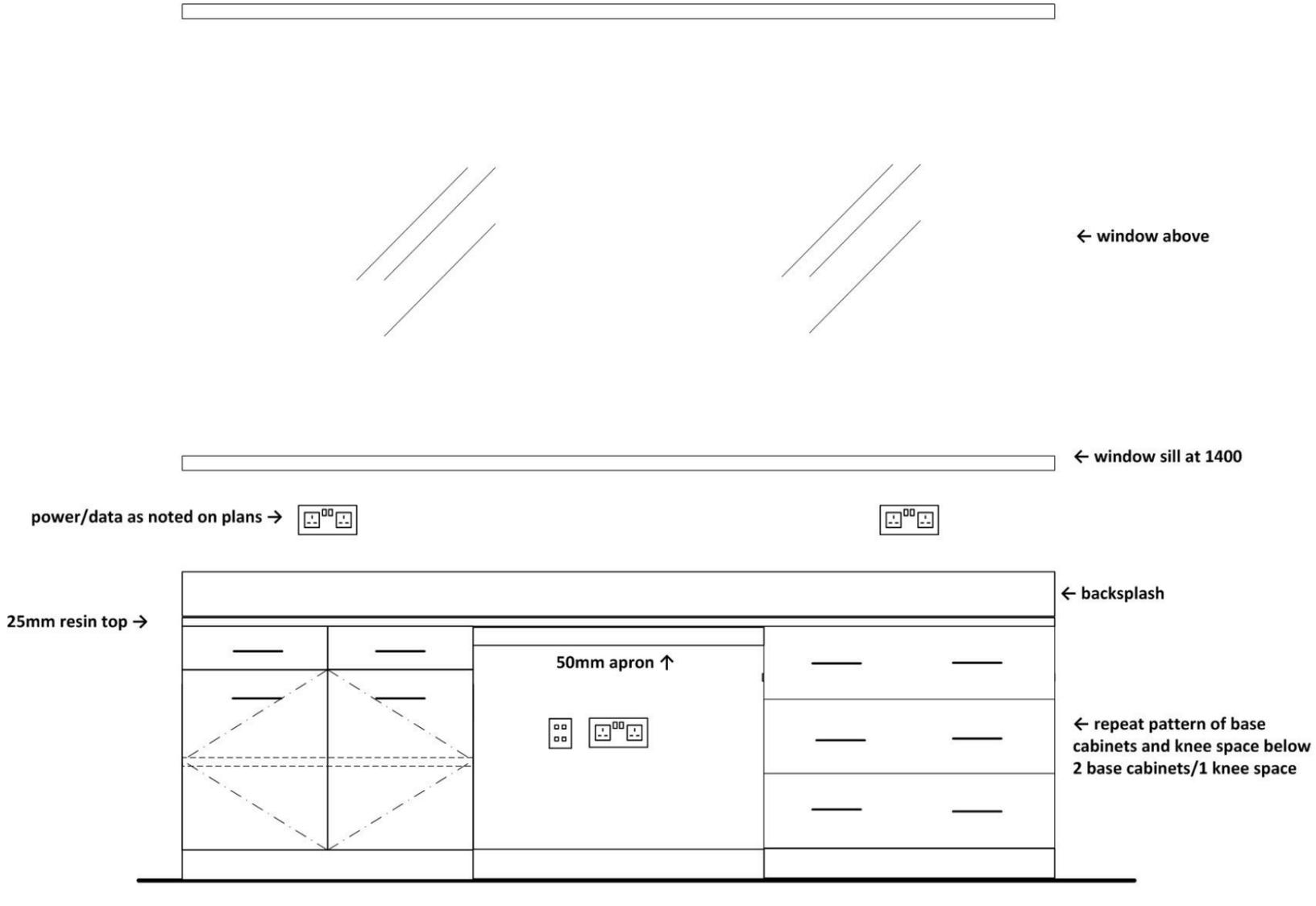
# PROJECT LAB

KEY PLAN- BASEMENT FLOOR

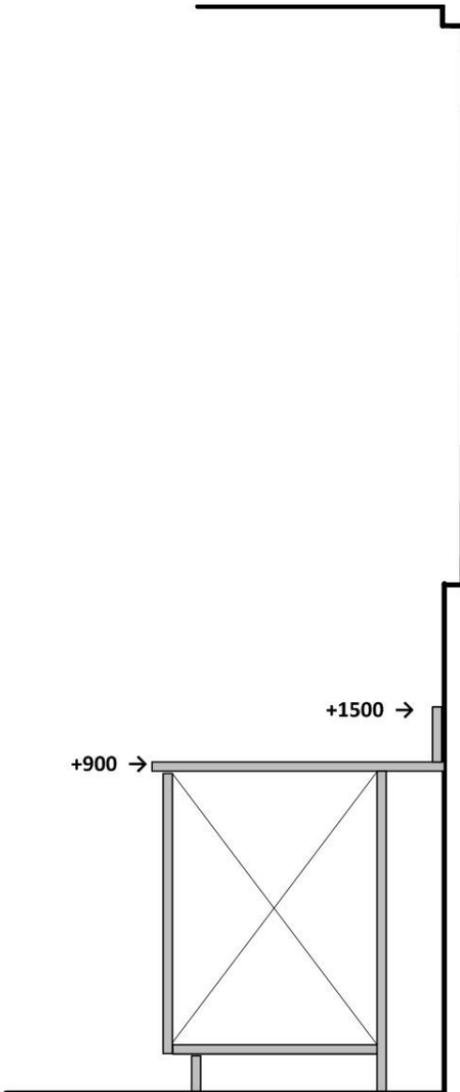


# SECTION DETAIL 1

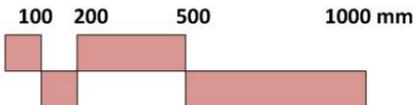
## WINDOW BENCH



**Elevation**

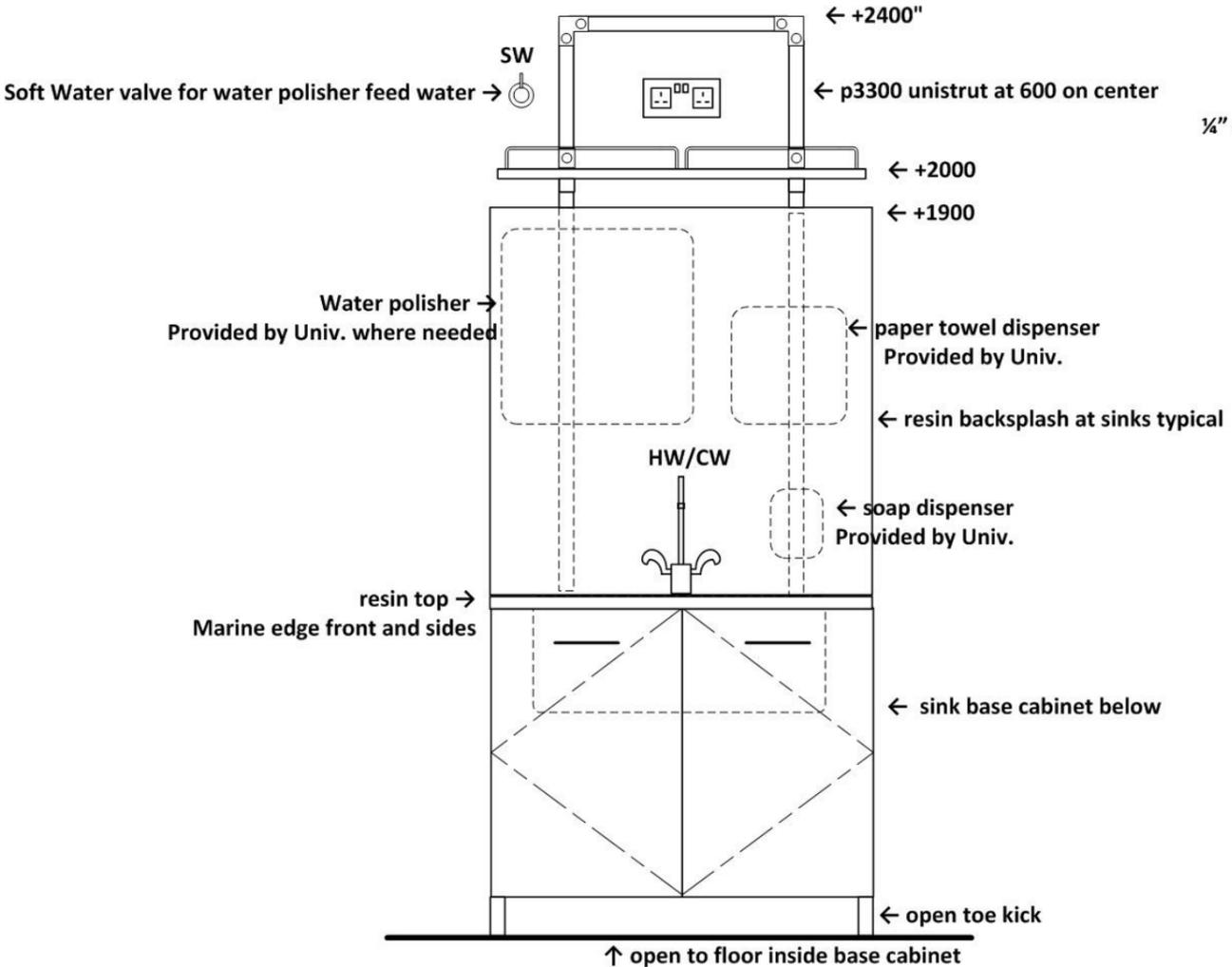


**Section**



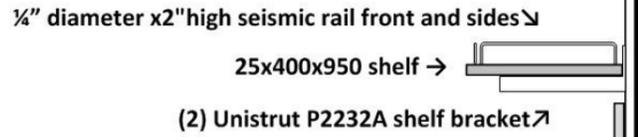
# SECTION DETAIL 2

## SINK WITH WATER POLISHER



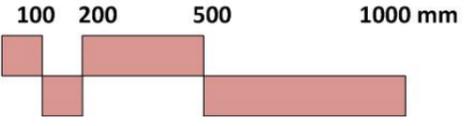
←1000→  
Sink base cabinet

**Elevation**



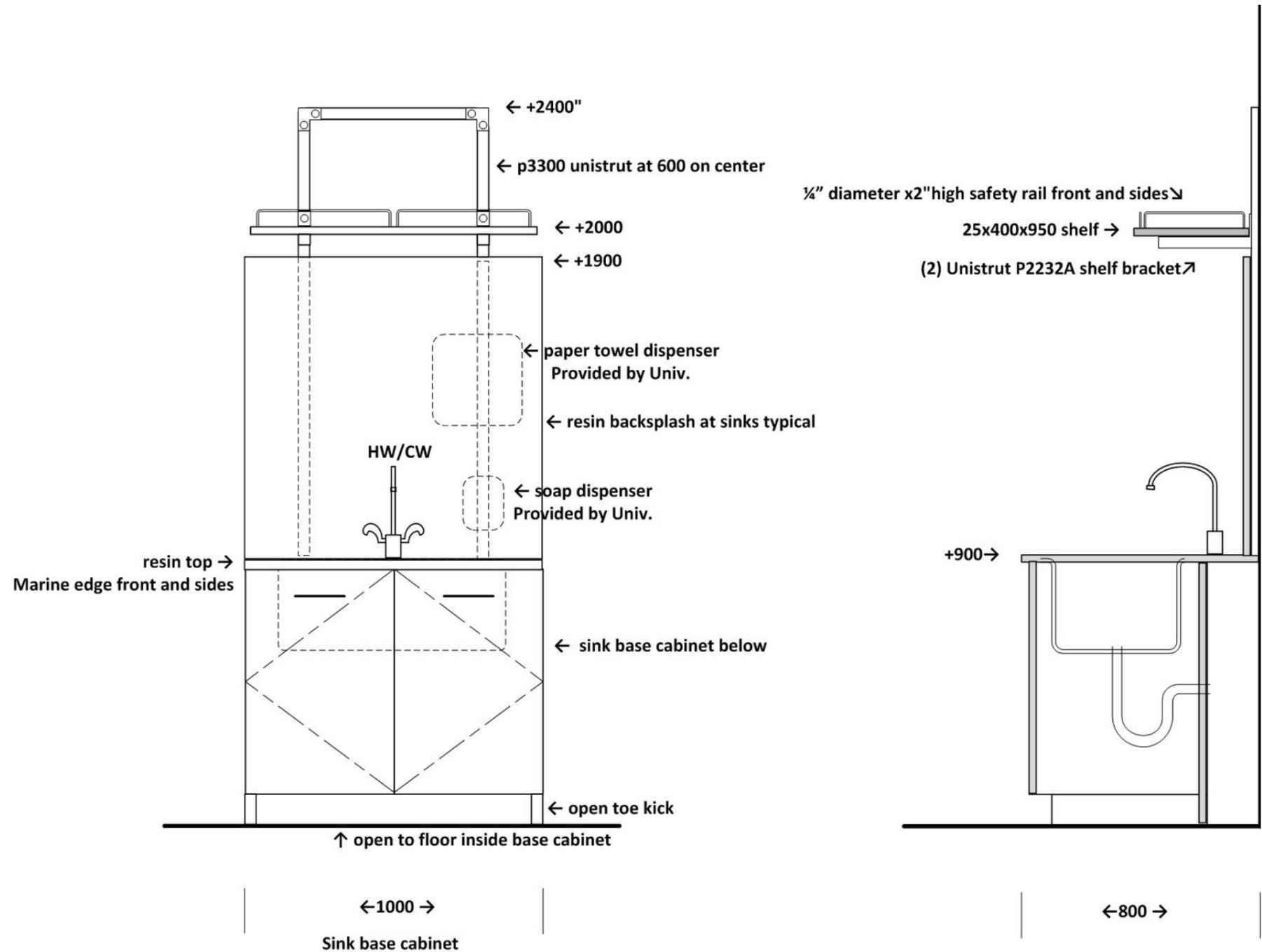
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**Section**



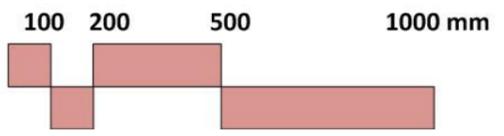
# SECTION DETAIL 2A

## SINK WITHOUT WATER POLISHER

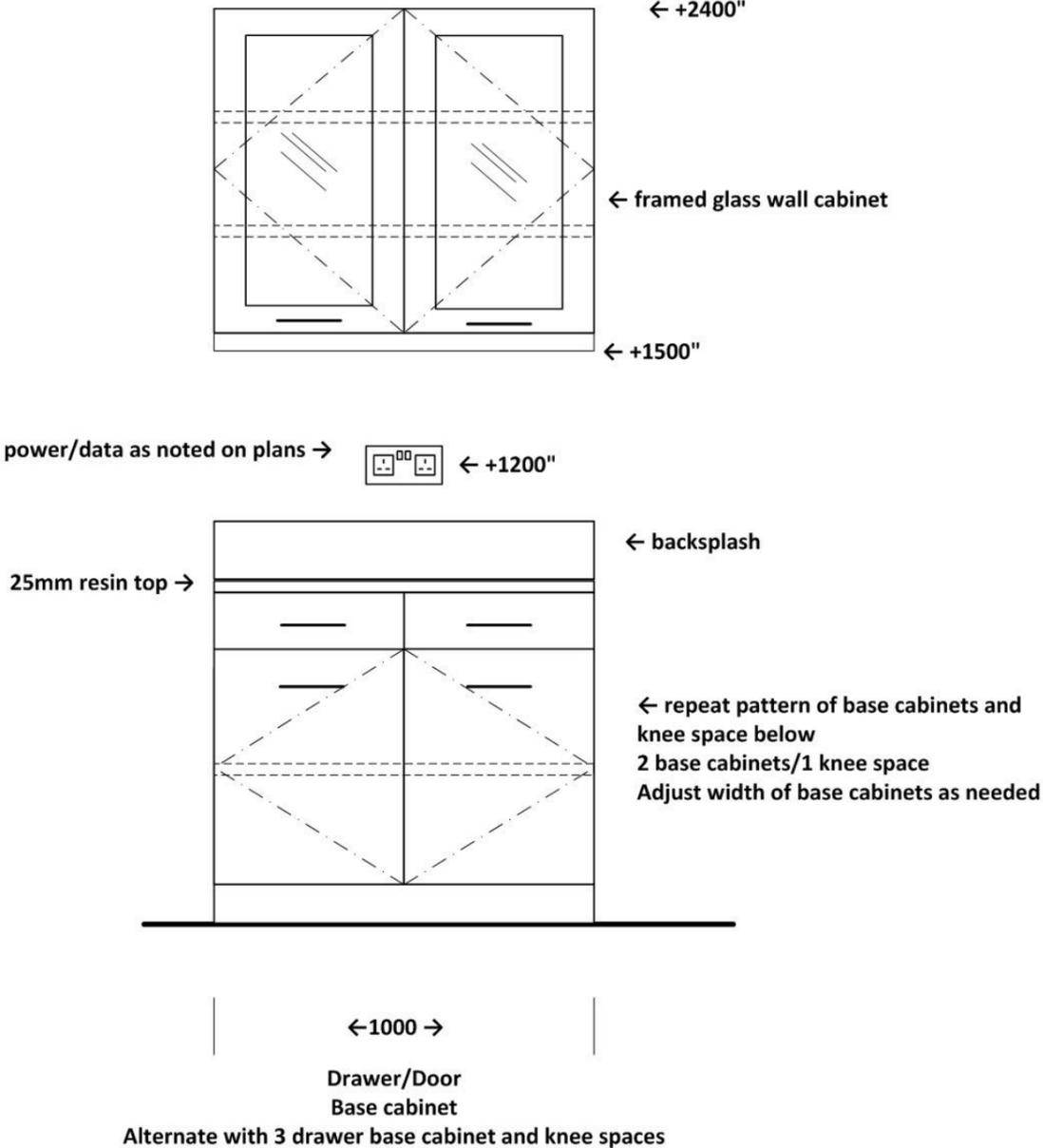


**Elevation**

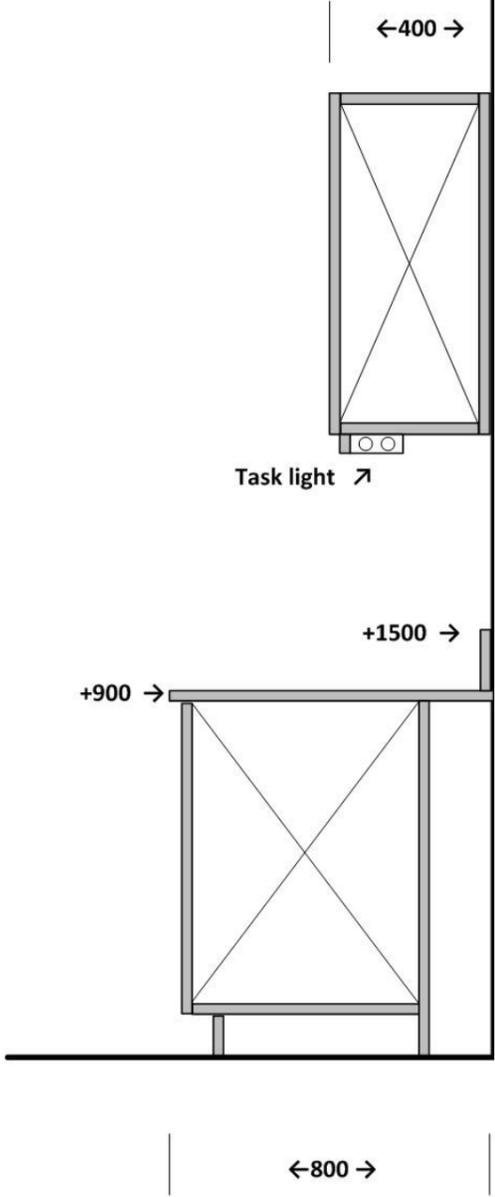
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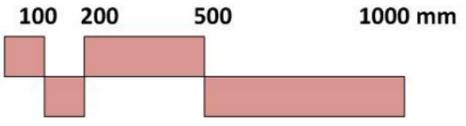
**SECTION DETAIL 3**  
**WALL CABINET ABOVE**  
**BASE CABINET BELOW**



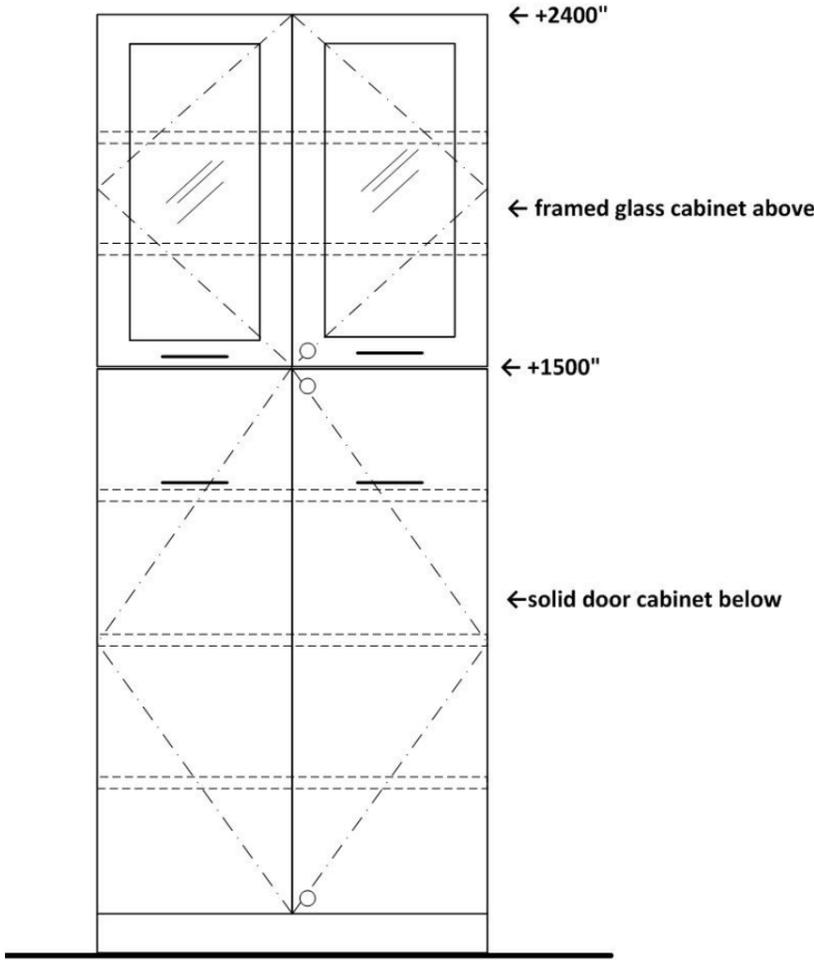
**Elevation**



**Section**



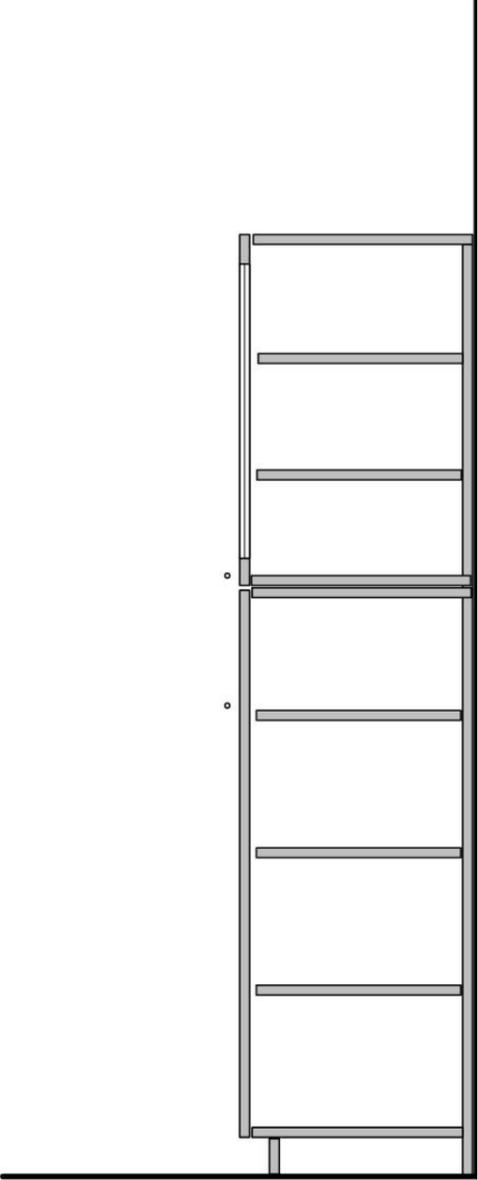
**SECTION DETAIL 4**  
**TALL STORAGE CABINET**



←1000→

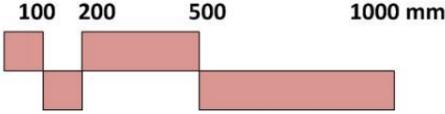
Tall Storage Cabinet  
With lockable doors

**Elevation**

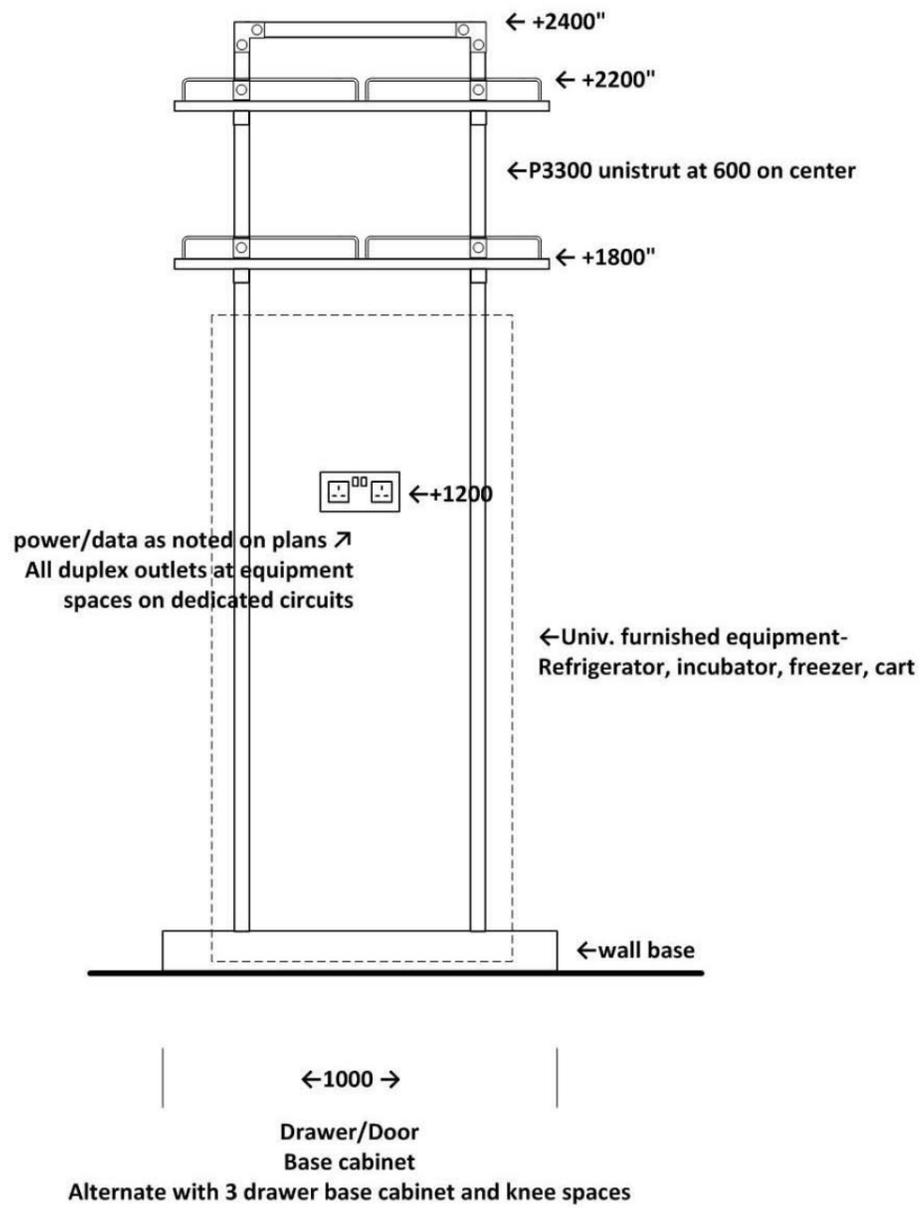


←600→

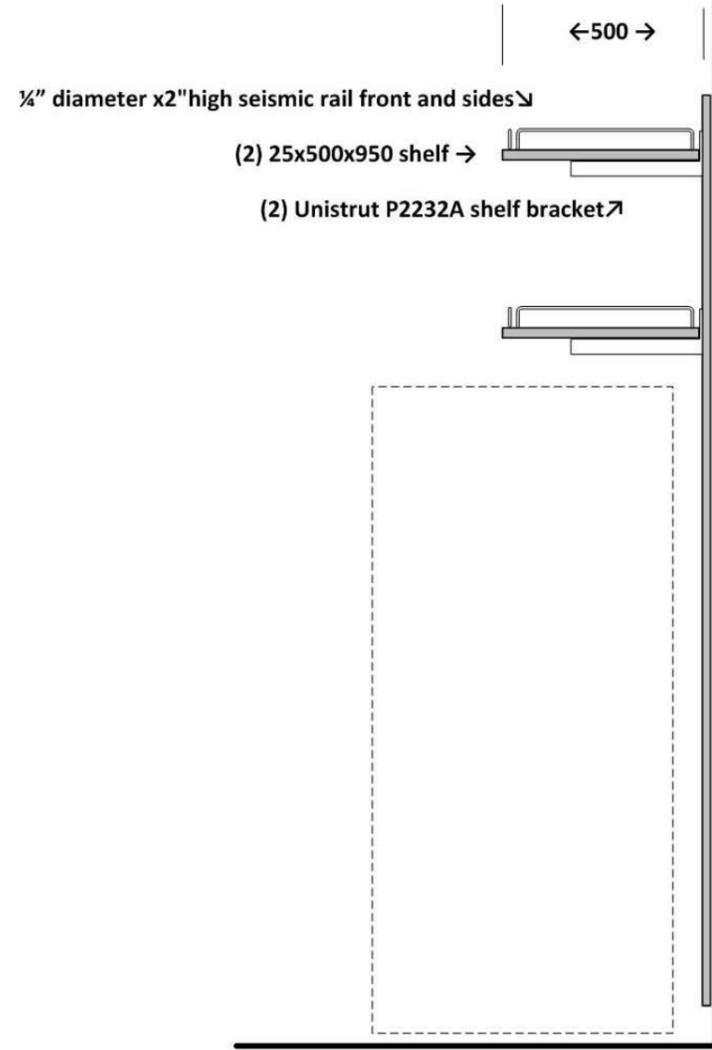
**Section**



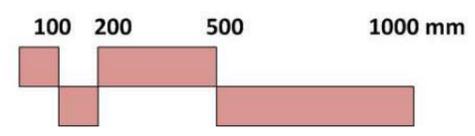
# SECTION DETAIL 5 EQUIPMENT SPACE



**Elevation**



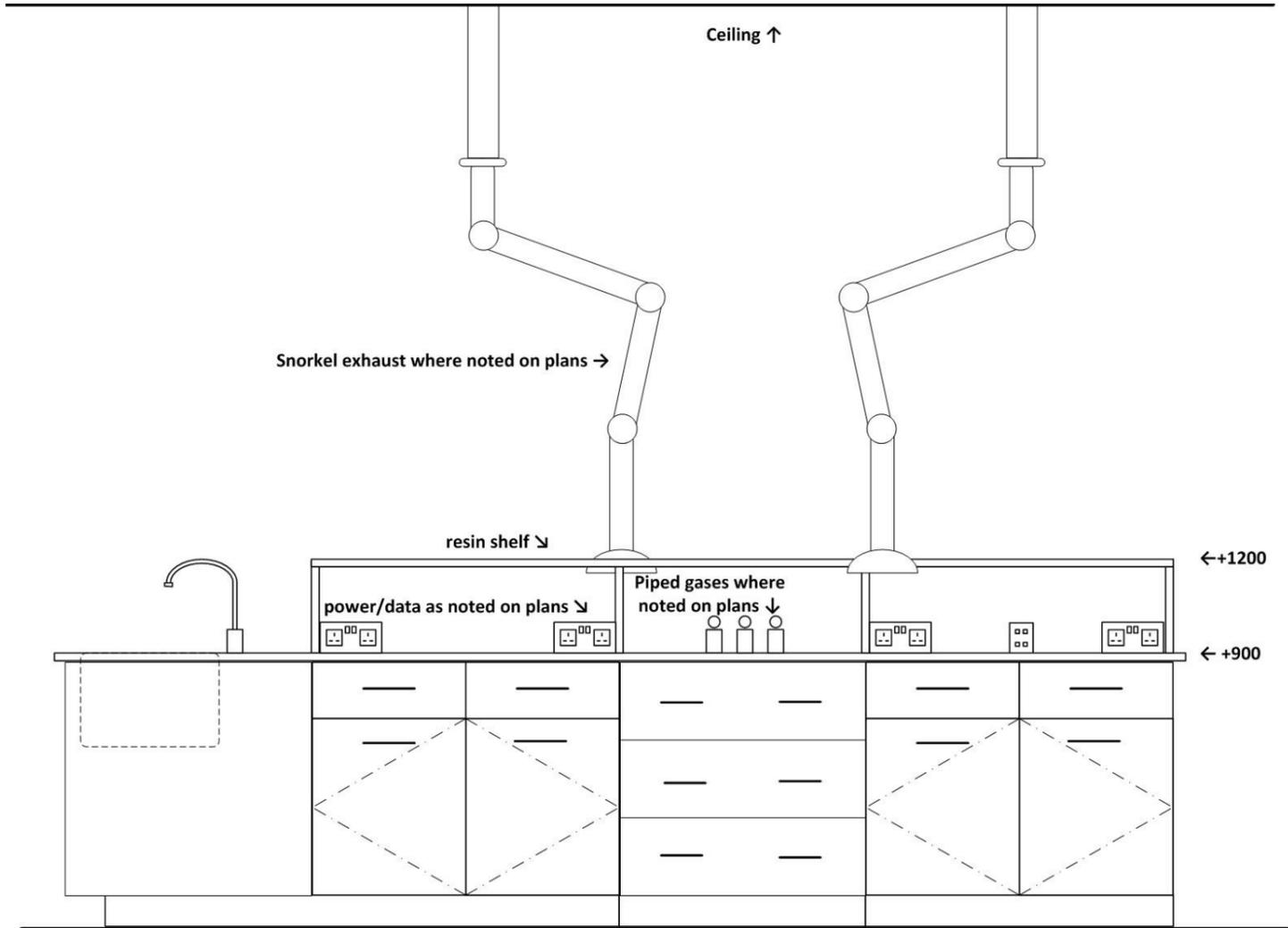
**Section**



# SECTION DETAIL 6

## ISLAND BENCH

Note: Not all features indicated occur in lab- see plan for specific items to be provided



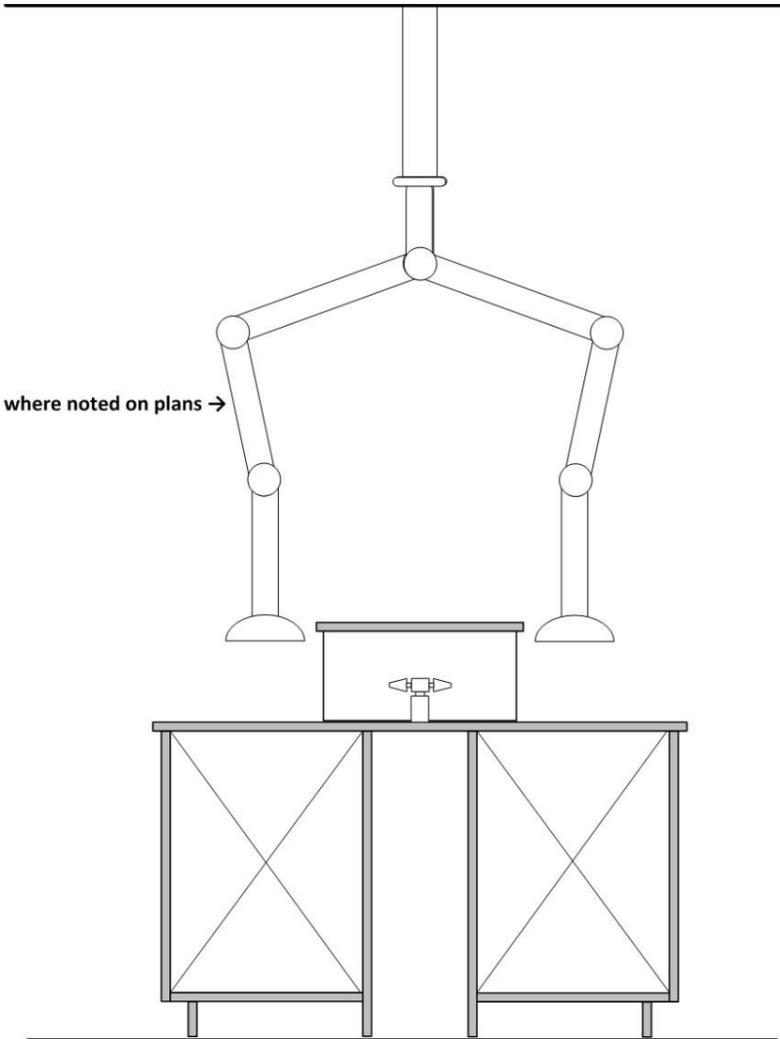
←800→

←1000→  
Drawer/Door  
Base cabinet

←800→  
Drawer  
Base Cabinet

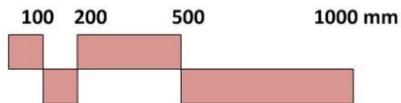
←1000→  
Drawer/Door  
Base cabinet

Elevation



←1500→

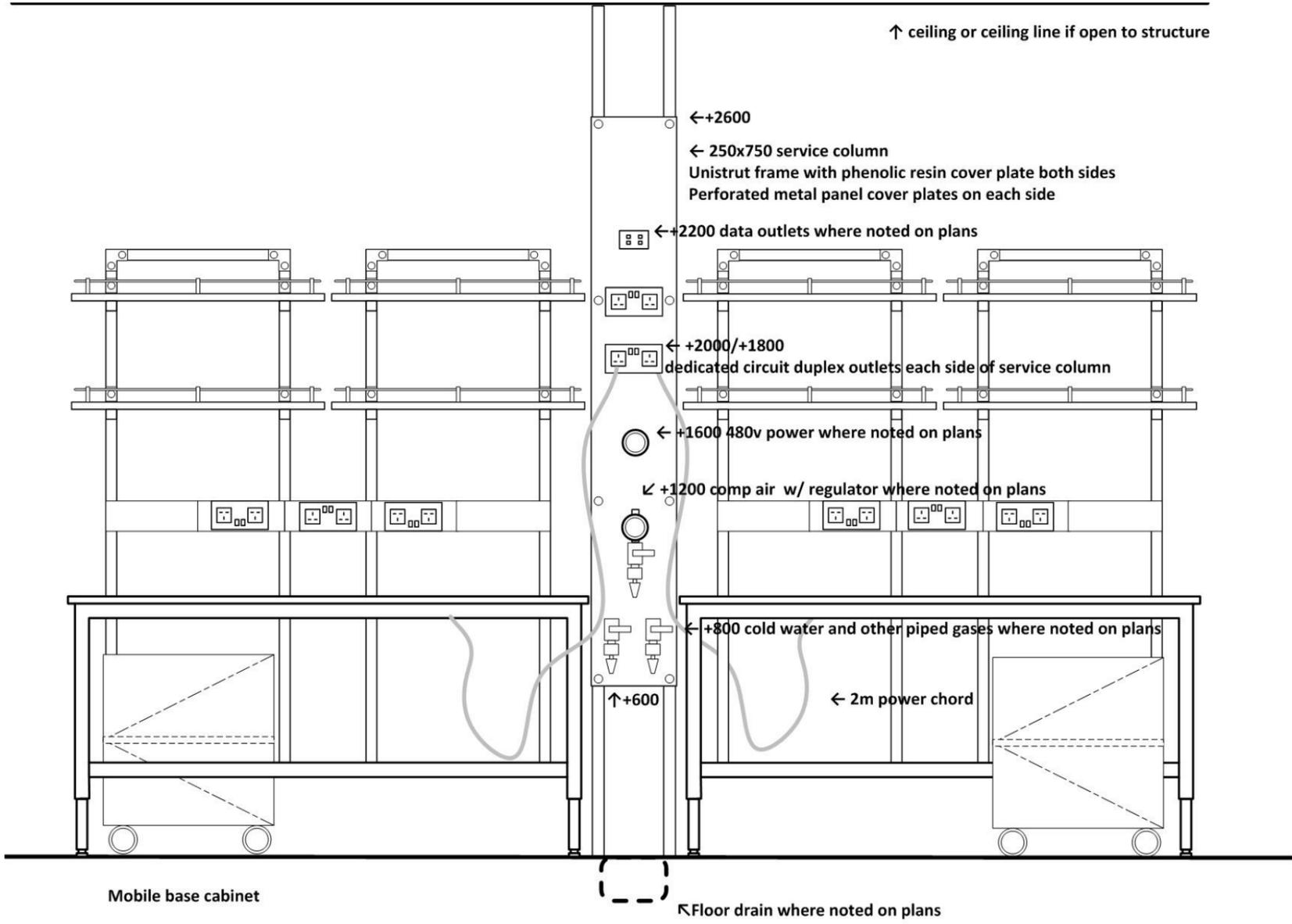
Section



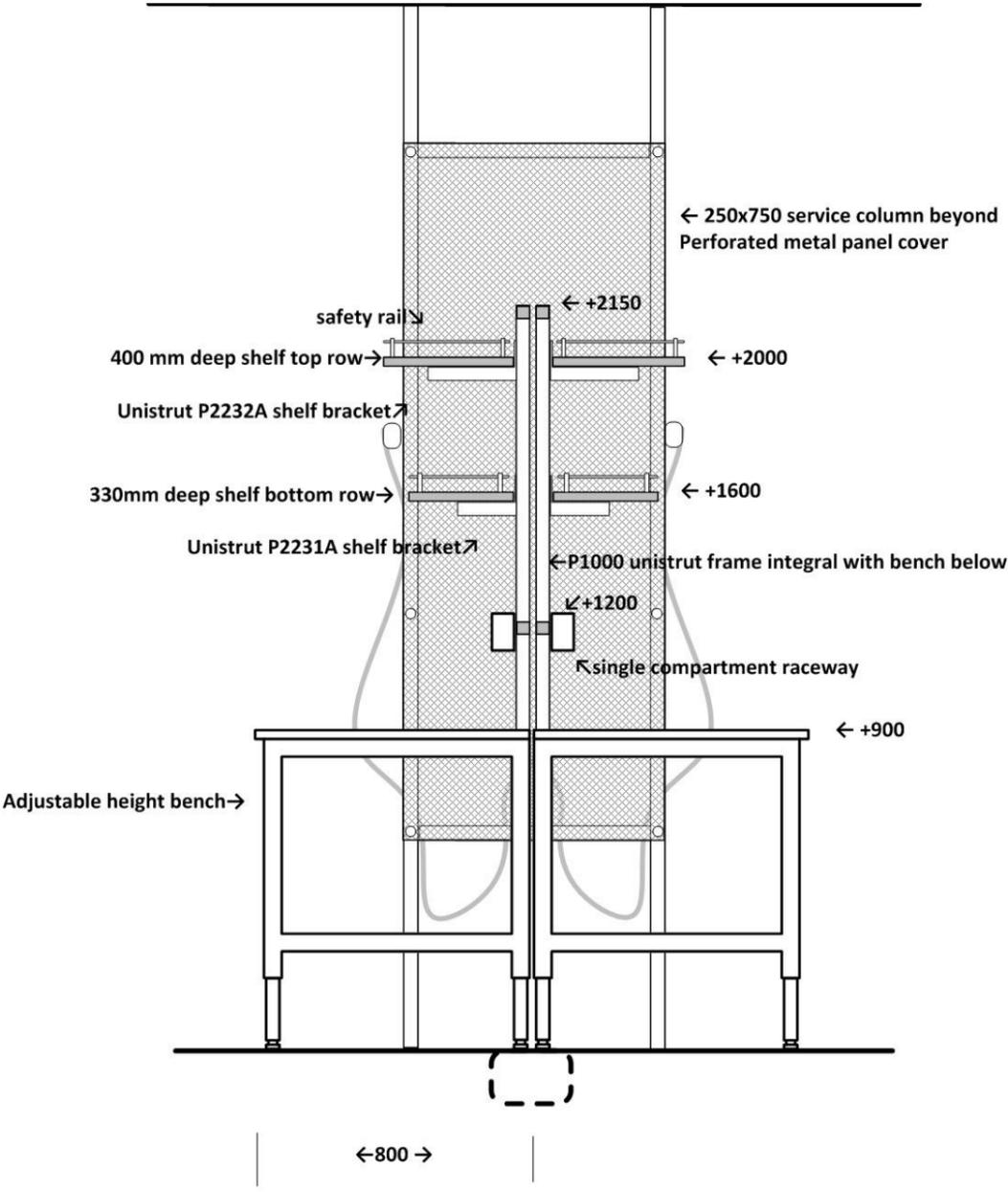
# SECTION DETAIL 10

## MOBILE LAB BENCH ISLAND

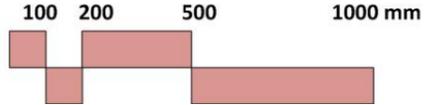
Note: Not all plumbing and electrical services shown occur at each island. Refer to plans for actual services to be provided



Elevation

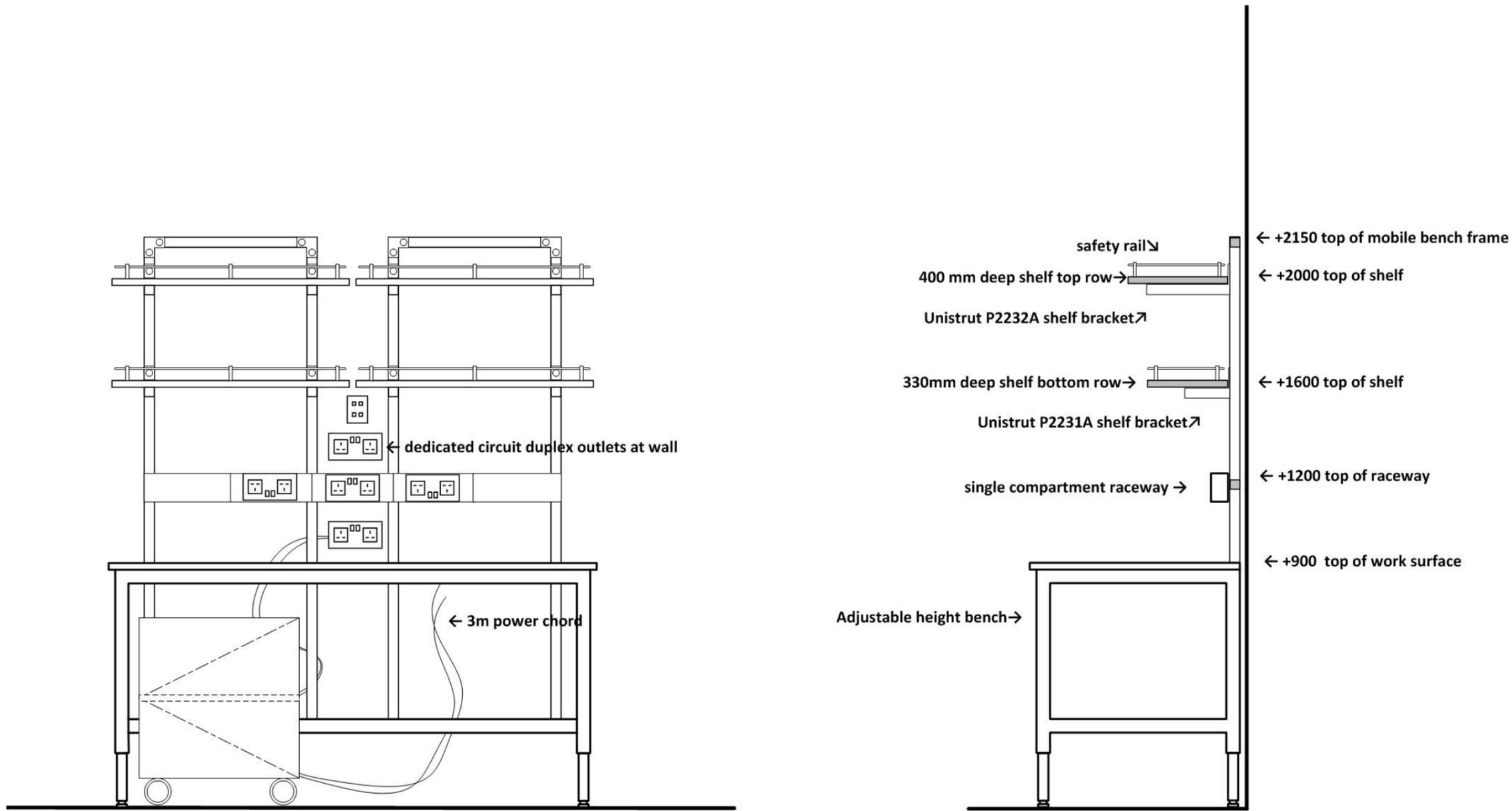


Section



# SECTION DETAIL 11

## MOBILE LAB BENCH AT WALL



Mobile base cabinet

Elevation

Section



## Protector® XStream™ Laboratory Hoods



Protector XStream Laboratory Hood 9840600 is shown with Spill Stopper Work Surface 9849800, Protector Acid Storage Cabinet 9901100 and Protector Standard Storage Cabinet 9900100. Blower, ductwork, work surface and base cabinets must be ordered separately.

All models conform to the following regulations and standards:

- SEFA 1-2002
- NFPA 45-2000
- ASTM E84-01
- ASHRAE 110-95
- ANSI Z9.5-1993
- UL 3101-1/61010-1
- CAN/CSA C22.2 No. 1010.1
- UL 1805
- CE Conformity Marking (230 volt models)†

Fixed models feature:

- Two pre-plumbed service fixtures with forged brass valves, lower right side with brass tubing for gas and lower left side with copper tubing for cold water. Components for converting either or both fixtures to air and vacuum are provided. **Inlet tubing is not provided.**
- One pre-wired 115 volt, 20 amp electrical duplex receptacle on lower right side.

All models require (not included):

- **Remote Blower.** See back pocket.
- **Ductwork.** See back pocket.
- **Work Surface.** See pages 92-95.
- **Base Cabinet or Stand.** See pages 96-106.

Optional accessories for on-site installation include:

- **Service Fixture Kits.** See page 107.
- **Electrical Duplex Kits.** See page 108.
- **Guardian Jr. and Digital Airflow Monitor Kits.** See page 108.
- **Distillation Grid Kits.** See page 110.
- **Sash Stop Kits.** See page 108.
- **Snuffer Fire Extinguishers.** See page 110.
- **Ceiling Enclosure and Rear Finish Panel Kits.** See page 109.

\* U.S. Patent No. 6,461,233

† pending

‡ Heights of switches, electrical receptacle and service fixtures meet requirements of ADA.

■ Exclusive Feature

All models feature:

- Modified by-pass airflow design.
- Ergonomic air foil with aerodynamic Clean-Sweep\* airflow openings.
- Upper Dilution Air Supply.\*
- Glacier white, dry powder epoxy-coated steel exterior.
- Chemical-resistant, fiberglass-reinforced, composite panel liner and pre-set Rear Downflow Dual Baffle System\* with flame spread less than 25 per ASTM E-84
- 3/16" thick tempered safety glass vertical-rising sash with epoxy-coated aluminum sash handle with large radius and perforations.\*

- Removable front and side panels and front and interior service access panels for access to plumbing and electrical wiring.
- Pre-wired T8 fluorescent lighting, ADA-compliant light and blower switches for 115 volt, 60 Hz operation.
- Sash stop located at 18" sash opening position.
- Epoxy-coated stainless steel, 12.81" ID exhaust connection(s).

Contact Labconco at **800-821-5525** or **816-333-8811** for ordering information on explosion-proof lighting and other sash configurations and for blower sizing assistance.

## Ordering Information

Protector® XStream™ Laboratory Hoods

ASHRAE 110-95 tests show less than 0.05 ppm leak rate when tested at 4.0 fpm; at OSHA-approved 60, 80, and 100 fpm face velocity and sash positions of 18" and 28". To ensure performance at 60 fpm, Labconco engineers challenged the Protector XStream Hood at less

than ideal conditions such as 30 fpm cross drafts, modified ASHRAE test procedures and average face velocities lower than 60 fpm. Contact Labconco for a technical paper with complete ASHRAE test data.

Total Exhaust CFM and Static Pressure @ 18" Sash Opening (60% open)

| Nominal Width | 100 fpm |       | 80 fpm |       | 60 fpm |       | CFM Savings at 60 fpm vs. 100 fpm | Total Average Annual Dollar Savings at 60 fpm vs. 100 fpm* |
|---------------|---------|-------|--------|-------|--------|-------|-----------------------------------|--|
|               | s.p.    |       | s.p.   |       | s.p.   |       |                                   |  |
| 4 feet        | 470     | 0.11" | 380    | 0.07" | 280    | 0.04" | 190                               | \$760  |
| 5 feet        | 610     | 0.13" | 490    | 0.08" | 370    | 0.05" | 240                               | \$960  |
| 6 feet        | 750     | 0.15" | 600    | 0.10" | 450    | 0.06" | 300                               | \$1,200  |
| 8 feet        | 1060    | 0.12" | 850    | 0.08" | 640    | 0.04" | 420                               | \$1,680  |

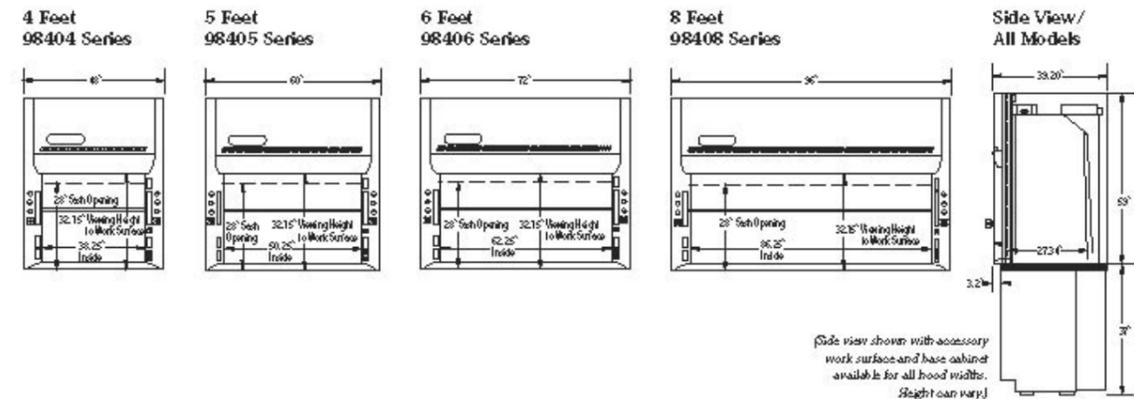
Total Exhaust CFM and Static Pressure @ 28" Sash Opening (100% open)

| Nominal Width | 100 fpm |       | 80 fpm |       | 60 fpm |       | CFM Savings at 60 fpm vs. 100 fpm | Total Average Annual Dollar Savings at 60 fpm vs. 100 fpm* |
|---------------|---------|-------|--------|-------|--------|-------|-----------------------------------|--|
|               | s.p.    |       | s.p.   |       | s.p.   |       |                                   |  |
| 4 feet        | 730     | 0.25" | 590    | 0.13" | 440    | 0.08" | 290                               | \$1,160  |
| 5 feet        | 960     | 0.30" | 770    | 0.19" | 580    | 0.11" | 380                               | \$1,520  |
| 6 feet        | 1190    | 0.36" | 940    | 0.23" | 710    | 0.13" | 470                               | \$1,880  |
| 8 feet        | 1660    | 0.28" | 1330   | 0.18" | 1000   | 0.10" | 660                               | \$2,640  |

\*Based on average annual dollars per CFM usage of \$4.00; fume hood operating 24 hours a day and 5 days per week (6240 hours per year).

| Catalog Number | Nominal Width | Electrical Requirements | Exterior Depth | Interior Working Depth | Fluorescent Lamps | Service Fixtures | Electrical Duplex | Exhaust Collar(s) | Shipping Wt. lbs./kg |
|----------------|---------------|-------------------------|----------------|------------------------|-------------------|------------------|-------------------|-------------------|----------------------|
| 9840400        | 4 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | None             | None              | 12.81" ID         | 400/181              |
| 9840401        | 4 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | 2                | 1                 | 12.81" ID         | 400/181              |
| 9840402**      | 4 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | None             | None              | 12.81" ID         | 400/181              |
| 9840403**      | 4 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 25 watt       | 2                | None              | 12.81" ID         | 400/181              |
| 9840500        | 5 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 460/209              |
| 9840501        | 5 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | 1                 | 12.81" ID         | 460/209              |
| 9840502**      | 5 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 460/209              |
| 9840503**      | 5 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | None              | 12.81" ID         | 460/209              |
| 9840600        | 6 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 520/236              |
| 9840601        | 6 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | 1                 | 12.81" ID         | 520/236              |
| 9840602**      | 6 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | None             | None              | 12.81" ID         | 520/236              |
| 9840603**      | 6 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (2) 32 watt       | 2                | None              | 12.81" ID         | 520/236              |
| 9840800        | 8 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | None             | None              | (2) 12.81" ID     | 700/318              |
| 9840801        | 8 feet        | 115 volts, 60 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | 2                | 1                 | (2) 12.81" ID     | 700/318              |
| 9840802**      | 8 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | None             | None              | (2) 12.81" ID     | 700/318              |
| 9840803**      | 8 feet        | 230 volts, 50 Hz        | 39.20"         | 27.3"                  | (4) 25 watt       | 2                | None              | (2) 12.81" ID     | 700/318              |

\*\*International electrical configuration



Side view shown with accessory work surface and base cabinet available for all hood widths. Height can vary.



# PRODUCT DIMENSIONS

DOMESTIC SIZES

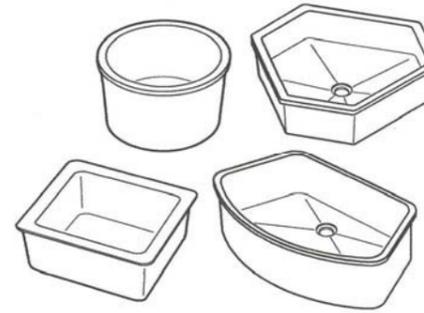
## SINK CUT SHEET

STANDARD LAB SINK:  
D52: ~600x450x280

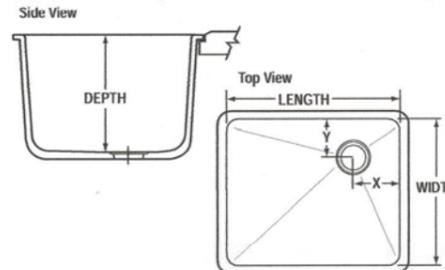
### Standard Dropln® Sinks

| Sink No. | Outlet | Wgt (lb) | Dimensions (in) |       |       |                 |     |
|----------|--------|----------|-----------------|-------|-------|-----------------|-----|
|          |        |          | Inside Bowl     |       |       | Outlet Location |     |
|          |        |          | Length          | Width | Depth | X               | Y   |
| D01C     | Center | 9        | 9.0             | 6.0   | 5.8   | 4.5             | 3.0 |
| D03C     | Center | 16       | 12.0            | 8.0   | 5.8   | 6.0             | 4.0 |
| A05      | Corner | 18       | 14.0            | 10.0  | 5.0   | 3.5             | 3.5 |
| D05      | Corner | 22       | 14.0            | 10.0  | 6.2   | 3.5             | 3.5 |
| D05C     | Center | 24       | 14.0            | 10.0  | 6.2   | 7.0             | 5.0 |
| D10      | End    | 20       | 16.0            | 8.0   | 6.8   | 4.5             | 4.0 |
| D10C     | Center | 22       | 16.0            | 8.0   | 6.8   | 8.0             | 4.0 |
| D15      | Corner | 30       | 16.0            | 12.0  | 8.0   | 3.5             | 3.5 |
| D15C     | Center | 31       | 16.0            | 12.0  | 8.0   | 8.0             | 6.0 |
| D19      | Corner | 42       | 16.0            | 16.0  | 9.6   | 3.5             | 3.5 |
| D20      | Corner | 32       | 16.0            | 16.0  | 7.5   | 3.5             | 3.5 |
| D22C     | Center | 30       | 18.0            | 6.5   | 6.8   | 9.0             | 3.3 |
| D24(C)   | Center | 30       | 18.0            | 14.0  | 10.5  | 9.0             | 6.8 |
| A25      | Corner | 35       | 18.0            | 15.0  | 5.0   | 3.5             | 3.5 |
| D25      | Corner | 39       | 18.0            | 15.0  | 7.9   | 3.5             | 3.5 |
| D30      | Corner | 53       | 18.0            | 15.0  | 11.0  | 3.5             | 3.5 |
| D30C     | Center | 50       | 18.0            | 15.0  | 10.8  | 9.0             | 7.5 |
| D33E     | End    | 59       | 21.0            | 17.0  | 9.8   | 4.5             | 8.5 |
| D45      | Corner | 64       | 21.5            | 15.5  | 11.0  | 3.5             | 3.5 |
| D50C     | Center | 48       | 24.0            | 16.0  | 8.0   | 12.0            | 8.0 |
| D52      | Corner | 77       | 24.0            | 18.0  | 11.0  | 3.5             | 3.5 |
| A55      | Corner | 47       | 25.0            | 15.0  | 4.8   | 3.5             | 3.5 |
| D55      | Corner | 61       | 25.0            | 15.0  | 10.0  | 3.5             | 3.5 |
| D59      | Corner | 61       | 28.0            | 15.0  | 11.8  | 3.5             | 3.5 |
| DRS12    | Center | 18       | 12.0            | Round | 7.8   | Center          |     |

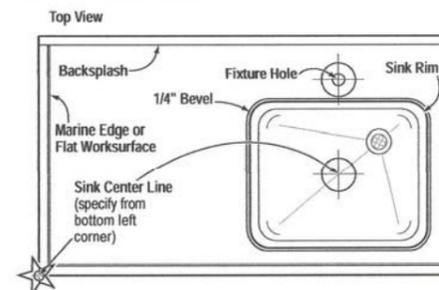
### Dropln® Sink Styles



### Dimensions Key



### Installation Detail

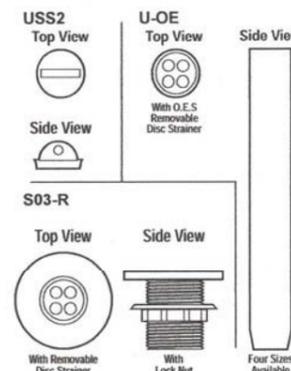


### Special Order Dropln® Sinks

| Sink No. | Outlet | Wgt (lb) | Dimensions (in) |             |       |                 |      |
|----------|--------|----------|-----------------|-------------|-------|-----------------|------|
|          |        |          | Inside Bowl     |             |       | Outlet Location |      |
|          |        |          | Length          | Width       | Depth | X               | Y    |
| D06*     | Center | 34       | 12.0            | 12.0        | 12.0  | 6.0             | 6.0  |
| A07*     | Corner | 24       | 14.0            | 14.0        | 5.0   | 3.5             | 3.5  |
| D08*     | Corner | 25       | 15.0            | 8.0         | 6.0   | 3.5             | 3.5  |
| D09*     | Corner | 25       | 15.0            | 8.0         | 10.8  | 3.5             | 3.5  |
| D21*     | Corner | 58       | 16.0            | 16.0        | 15.0  | 3.5             | 3.5  |
| A26*     | Corner | 39       | 18.0            | 15.0        | 5/11  | 4.5             | 5.5  |
| D32      | Corner | 49       | 18.0            | 15.0        | 15.8  | 3.5             | 3.5  |
| D51*     | Corner | 60       | 24.0            | 16.0        | 9.6   | 3.5             | 3.5  |
| D54*     | Corner | 45       | 25.0            | 15.0        | 8.0   | 3.5             | 3.5  |
| D57*     | Corner | 71       | 25.0            | 15.0        | 13.6  | 3.5             | 3.5  |
| D58*     | Corner | 79       | 25.0            | 15.0        | 17.8  | 3.5             | 3.5  |
| D61      | End    | 94       | 30.0            | 16.0        | 17.8  | 4.5             | 7.5  |
| D65C*    | Center | 98       | 35.5            | 19.5        | 9.8   | 17.8            | 9.8  |
| D68**    | End    | 70       | 30.0            | 16.0        | 10.0  | 4.75            | 8.0  |
| D70C*    | Center | 95       | 24.0            | 16.0        | 15.5  | 8.0             | 12.0 |
| D100**   | Center | 29       | 22.5            | Hexagon     | 5.0   | Center          |      |
| D200**   | End    | 64       | 30.9            | Hexagon     | 7.0   | 15.5            | 8.0  |
| DRS10*   | Center | 14       | 10.0            | Round       | 7.8   | Center          |      |
| DHC20*   | End    | 82       | 30.0            | Hexagon     | 7.0   | Center          |      |
| D99*     | End    | 56       | 32.0            | Semi-Circle | 10.0  | 11.5            | 4.5  |

All sinks are available at both plants unless they are Special Order Sinks, available as noted:  
 \* Available only from Taylor, TX, plant (colors: Black Onyx, Gray, Graphite, Tan, Forest Green and Steel Blue).  
 \*\* Available only from Canton, MI, plant (colors: Black Onyx, Gray and Alpine White)  
 ♿ ADA compliant sinks are designated by this symbol.  
 All Dimensions are nominal. Exterior dimensions vary by MFG location. Cutsheets available upon request.

### Outlets & Accessories



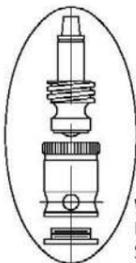
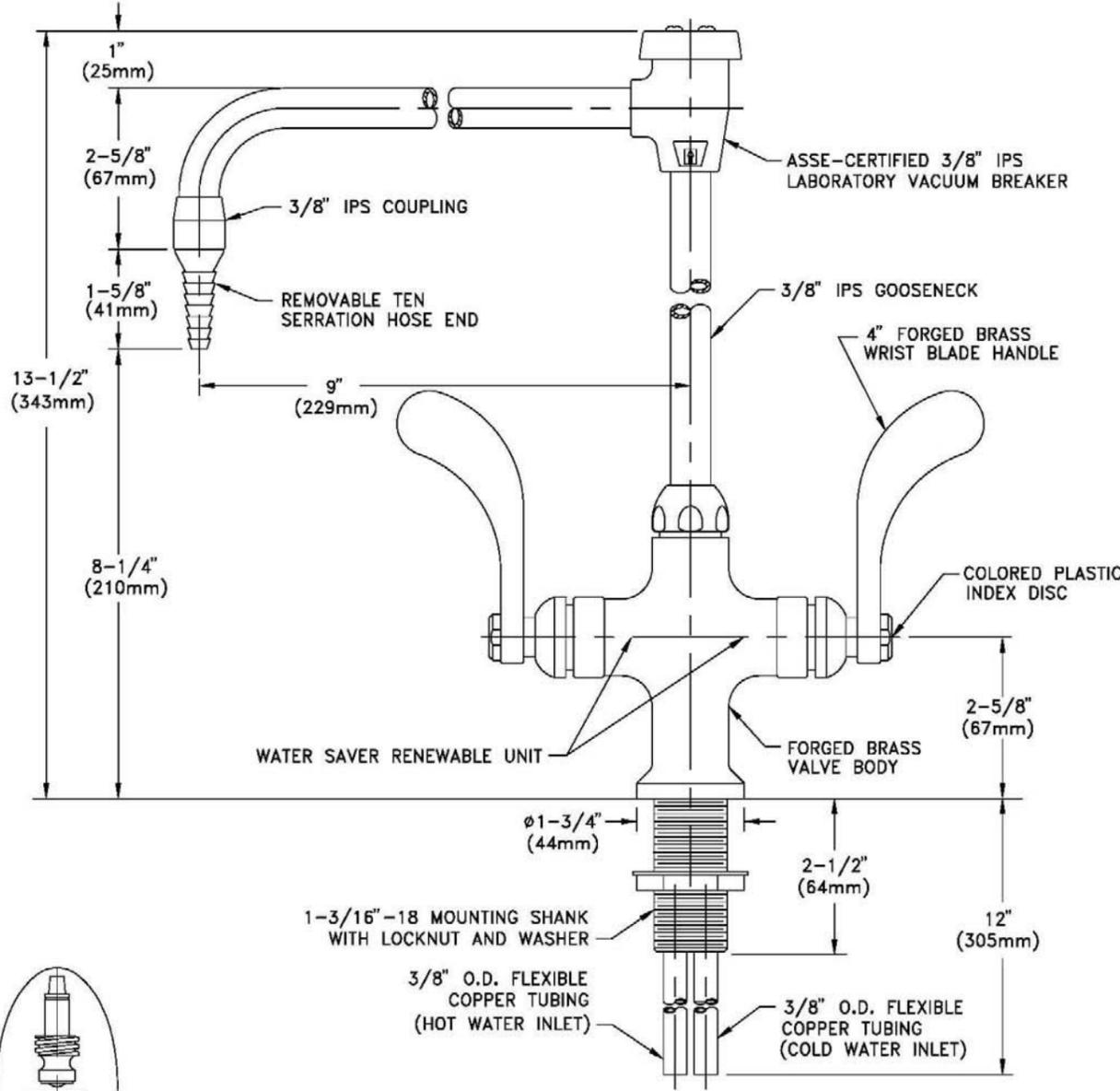
# HOT/COLD WATER FAUCET CUT SHEET

## COLORTECH

701 West Erie Street Phone 312 666 5500  
Chicago, Illinois 60610 Fax 312 666 8597

Laboratory Service Fixtures by  
WaterSaver Faucet Co.

CT414-9VB-BH  
LABORATORY MIXING FAUCET, DECK MOUNTED, 9" RIGID/SWING VACUUM BREAKER GOOSENECK, WRIST BLADE HANDLES



WATER SAVER RENEWABLE UNIT WITH REPLACEABLE STAINLESS STEEL SEAT

MEASUREMENTS MAY VARY ±1/4".



- NOTES:
1. CSA CERTIFIED UNDER CAN/CSA B125.M89. COMPLIES WITH ANSI/ASME A112.18.1M.
  2. FIXTURE IS FURNISHED WITH COLORTECH POWDER-COATED FINISH.

Drawing Number: \_\_\_\_\_

Revision Number: 031803-KJS

**SSBF2170**  
 RECESSED SAFETY STATION WITH DRAIN PAN

