UNIVERSITY of CALIFORNIA Riverside

APPENDIX A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

ENGINEERING BUILDING UNIT 3
DETAILED PROJECT PROGRAM

DPP

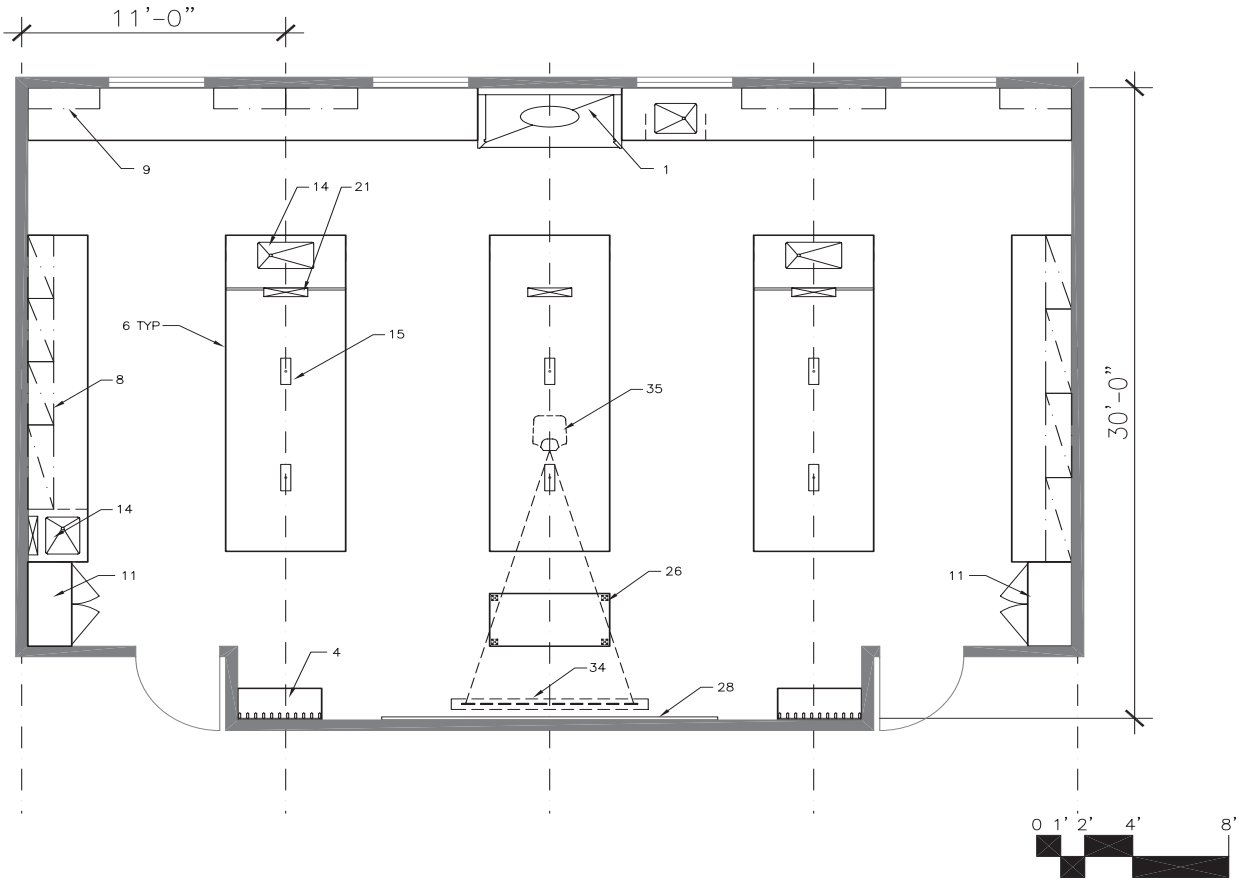
CO ARCHITECTS

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Instructional**
SPACE NAME: **Teaching Laboratory – Bioengineering**
SPACE ID: **A1**
AREA: **1,320 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Book / Bag Storage
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Vented Corrosive Storage Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Instructional
SPACE NAME: Teaching Laboratory – Bioengineering
SPACE ID: A1
AREA: 1,320 ASF

UTILIZATION	
Hours of Use	
14 hours/day	●
24 hours/day	
Hours of Operation	
14 hours/day	●
24 hours/day	

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	●
4°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	6-12
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	●
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	●
Compressed Air, 100 psig	A	
Laboratory Gas	LG	●
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	●
Deionized Water	DI	●
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	
Safety Shower/Eyewash	SS	●
Eyewash	EW	●
Floor Drain	FD	
Floor Sink	FS	

ELECTRICAL	
120V, 20A, 1 phase	●
208V, 30A, 1 phase	●
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	
Standby Power	
Telephone Outlet	●
LAN/WAN Outlet	●
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT	
Vibration Sensitive	●
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE	
Flammables	●
Corrosives	●
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS	
Wood Casework	●
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	
Stainless Steel Tops	
Solid Phenolic	●
Epoxy Resin Sinks	
Stainless Steel Sinks	

REMARKS

SECURITY	
Pushbutton Combination Lock	

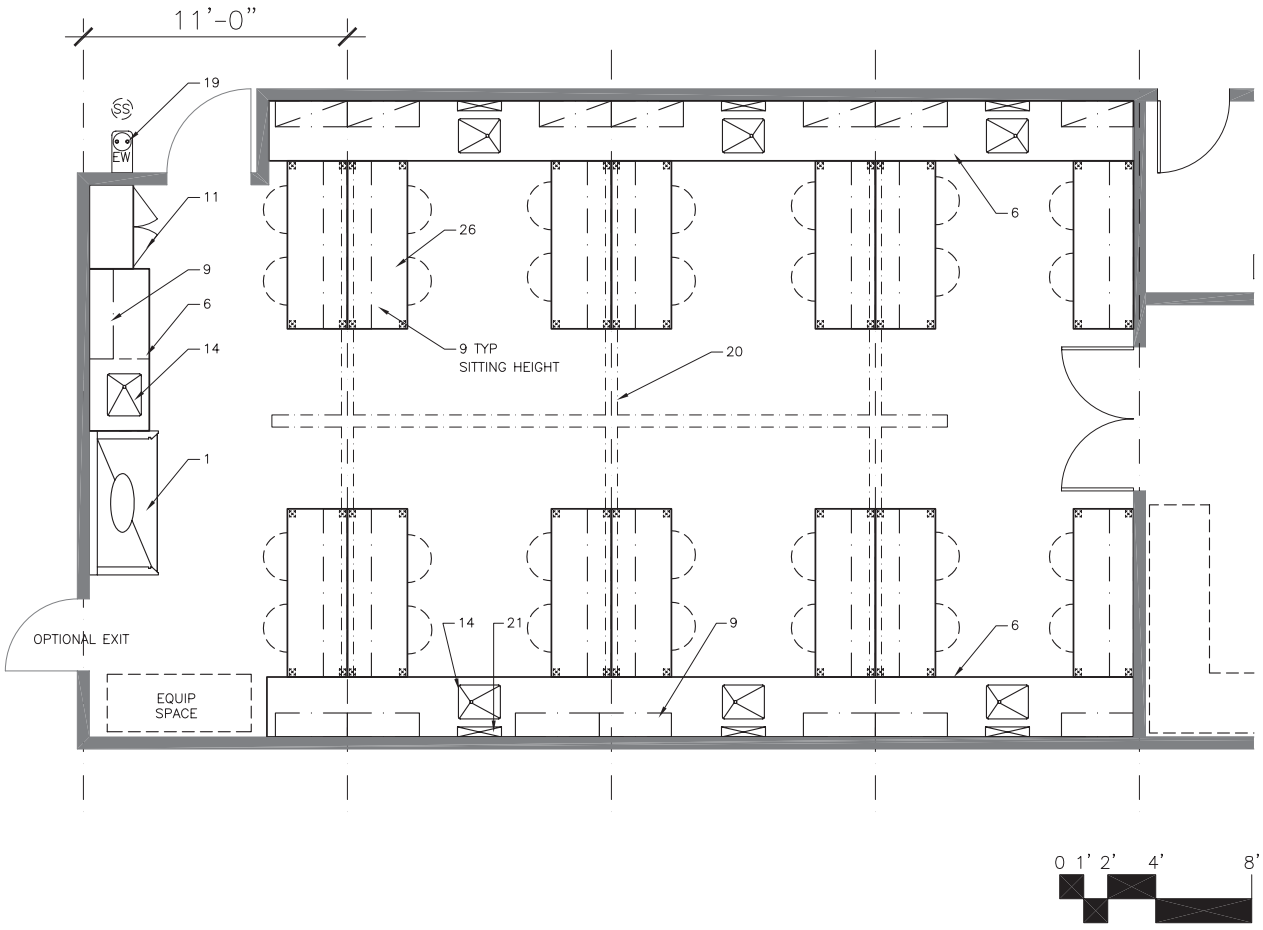
INTERIORS	
Floor	
Vinyl Composition Tile	
Welded Sheet Vinyl	●
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	
Resilient	●
Other	
Partitions	
Gypsum Board, Paint	●
Gypsum Board, Epoxy Paint	
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	●
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	●
3'-0" x 7'-0"	
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Instructional**
SPACE NAME: **Teaching Laboratory – Bioinstrumentation**
SPACE ID: **A2**
AREA: **1,320 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



FURNISHINGS

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33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Instructional
SPACE NAME: Teaching Laboratory – Bioinstrumentation
SPACE ID: A2
AREA: 1,320 ASF

UTILIZATION	
Hours of Use	
14 hours/day	●
24 hours/day	
Hours of Operation	
14 hours/day	●
24 hours/day	

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	●
4°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	6-12
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	●
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	●
Compressed Air, 100 psig	A	●
Laboratory Gas	LG	●
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	●
Deionized Water	DI	●
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	
Safety Shower/Eyewash	SS	●
Eyewash	EW	●
Floor Drain	FD	
Floor Sink	FS	

ELECTRICAL	
120V, 20A, 1 phase	●
208V, 30A, 1 phase	●
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	
Standby Power	
Telephone Outlet	●
LAN/WAN Outlet	●
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT	
Vibration Sensitive	
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE	
Flammables	●
Corrosives	●
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS	
Wood Casework	●
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	
Stainless Steel Tops	
Solid Phenolic	●
Epoxy Resin Sinks	
Stainless Steel Sinks	

REMARKS

SECURITY	
Pushbutton Combination Lock	

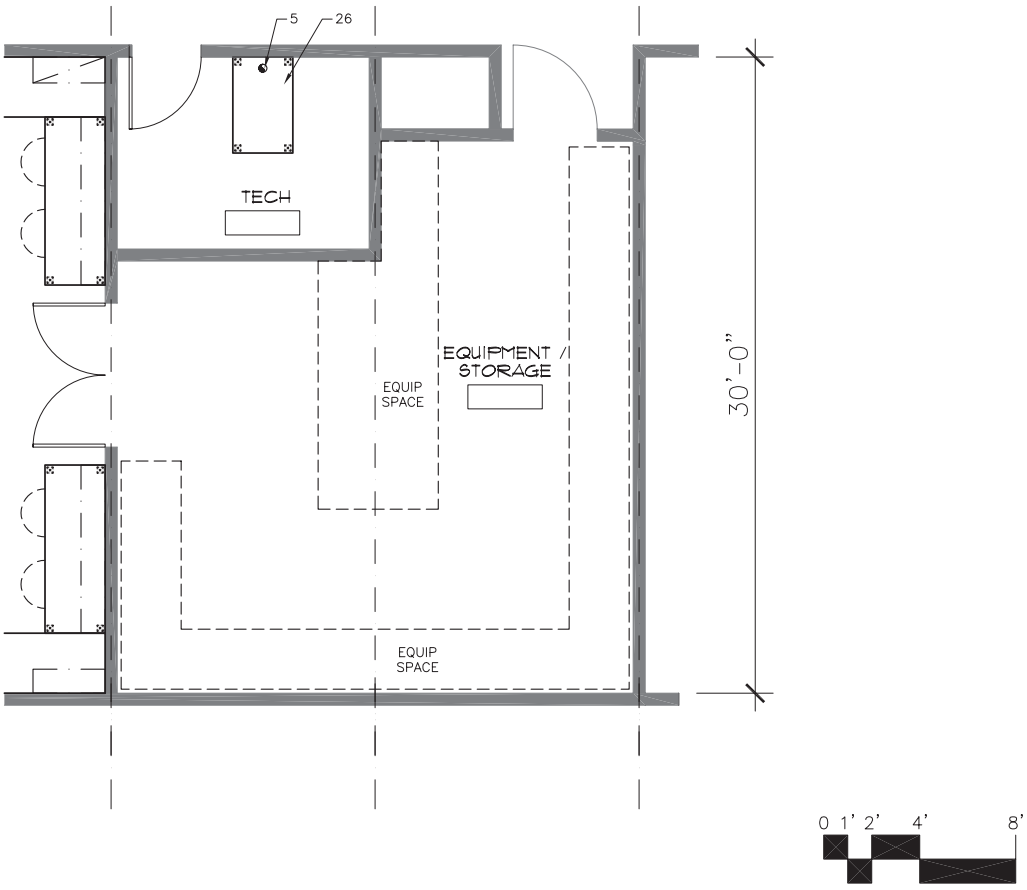
INTERIORS	
Floor	
Vinyl Composition Tile	
Welded Sheet Vinyl	●
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	
Resilient	●
Other	
Partitions	
Gypsum Board, Paint	●
Gypsum Board, Epoxy Paint	
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	●
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	●
3'-0" x 7'-0"	
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Instructional**
SPACE NAME: **Teaching Laboratory – Support**
SPACE ID: **A3**
AREA: **660 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



FURNISHINGS

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28. White Markerboard
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32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Instructional
SPACE NAME: Teaching Laboratory – Support
SPACE ID: A3
AREA: 660 ASF

UTILIZATION	
Hours of Use	
14 hours/day	●
24 hours/day	
Hours of Operation	
14 hours/day	●
24 hours/day	

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	●
4°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	6-12
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	
Compressed Air, 100 psig	A	
Laboratory Gas	LG	
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	
Deionized Water	DI	
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	
Safety Shower/Eyewash	SS	
Drench Hose	DH	
Floor Drain	FD	
Floor Sink	FS	

ELECTRICAL	
120V, 20A, 1 phase	●
208V, 30A, 1 phase	●
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	
Standby Power	
Telephone Outlet	●
LAN/WAN Outlet	●
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT	
Vibration Sensitive	
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE	
Flammables	
Corrosives	
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS	
Wood Casework	
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	
Stainless Steel Tops	
Solid Phenolic	
Epoxy Resin Sinks	
Stainless Steel Sinks	

REMARKS

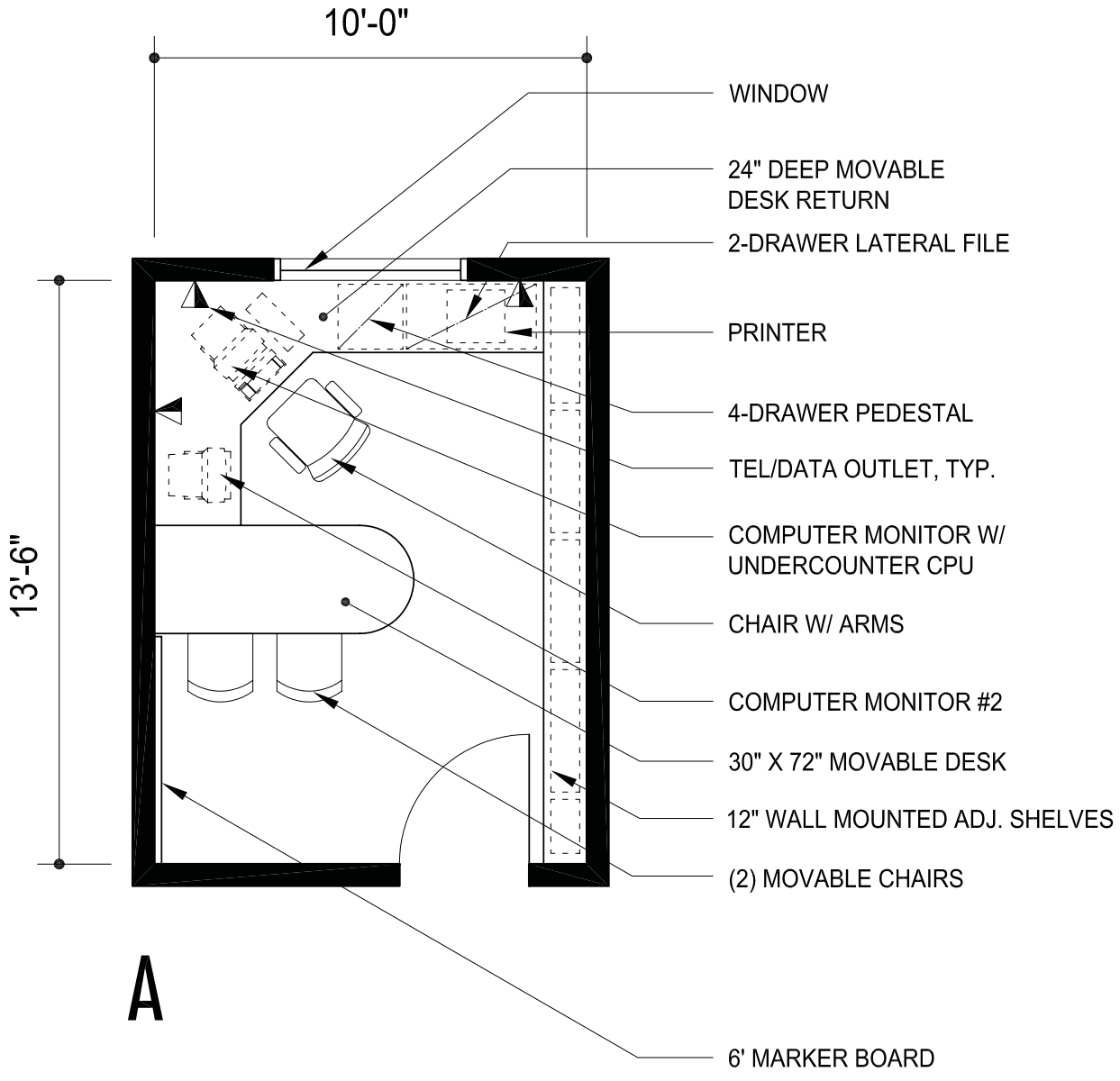
SECURITY	
Pushbutton Combination Lock	

INTERIORS	
Floor	
Vinyl Composition Tile	
Welded Sheet Vinyl	●
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	
Resilient	●
Other	
Partitions	
Gypsum Board, Paint	●
Gypsum Board, Epoxy Paint	
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	●
3'-0" x 7'-0"	
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

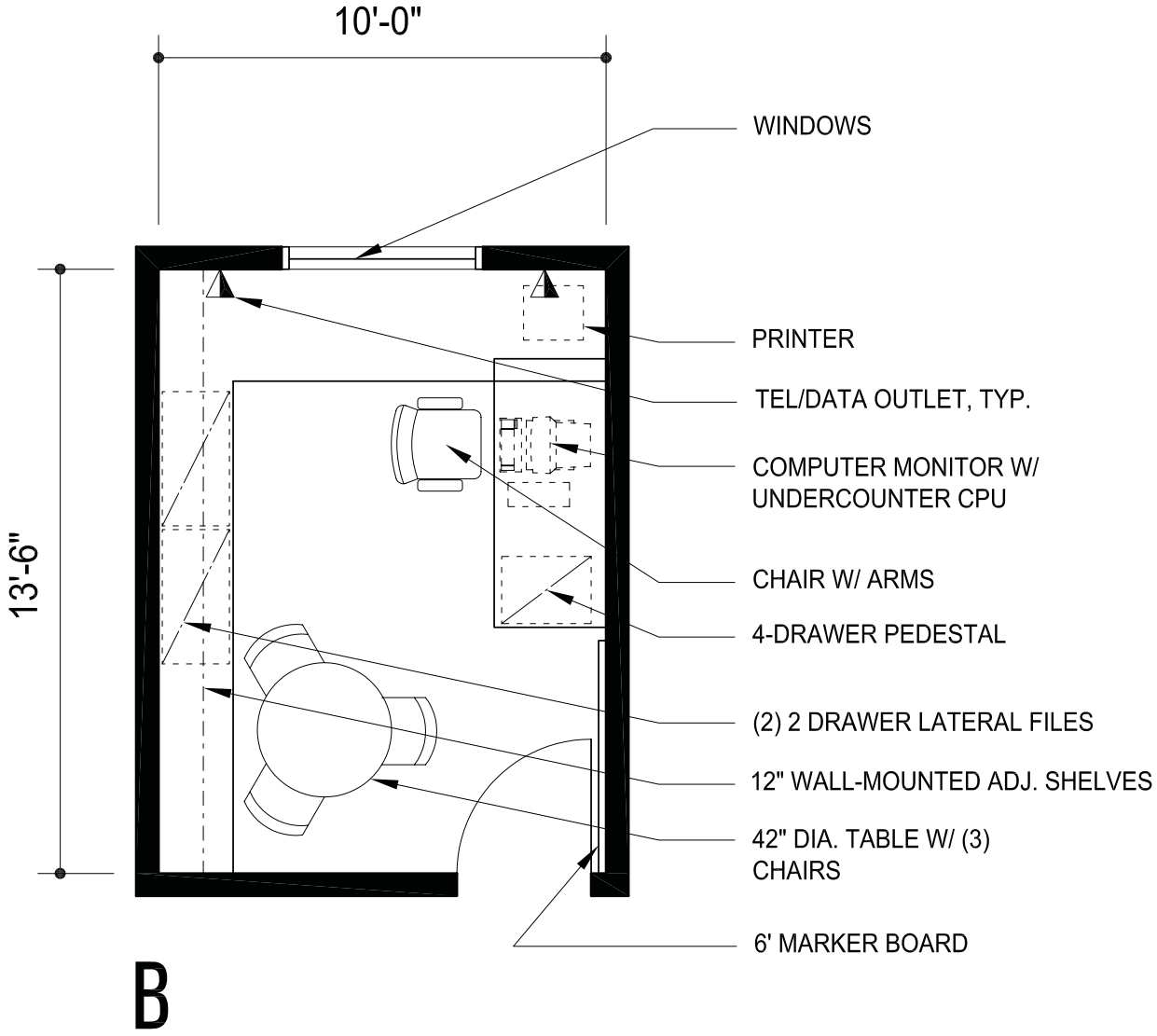
DEPARTMENT: **Offices**
SPACE NAME: **Faculty Offices, Option A**
SPACE ID: **B1**
AREA: **20 @ 135 ASF = 2,700 ASF**



A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Faculty Offices, Option B**
SPACE ID: **B1**
AREA: **20 @ 135 ASF = 2,700 ASF**



B

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Offices
SPACE NAME: Faculty Offices
SPACE ID: B1
AREA: 20 @ 135 ASF = 2,700 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
General office space for one faculty member including space for 1-2 computer workstations, desk, file storage, books and reference material shelves, and room for meetings with 2-3 others.

QUANTITY: (20)

ASF: 135 ASF

OCCUPANCY: (1)

UTILIZATION: 24 hours per day.

ADJACENCIES: Student Offices
Research Labs
Conference Room

ROOM DIMENSIONS: 9'-0" minimum ceiling height.

NATURAL LIGHT: Windows are required. Provide shades for sun control.

ROOM FINISHES:
- **Floor:** Carpet.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0" with vision panel.

ACOUSTICS: Acoustic isolation for Private Offices. See Acoustic Design Criteria. Provide floor to floor partitions.

SIGHTLINES: No requirements.

SIGNAGE: Room number and name of occupant.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72°F +/- 2°F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air.

AIR CHANGES: 4 AC/Hr.

LIGHTING LEVELS: Fluorescent, 75fc at work surface.

POWER: 110V, 60A, 1 phase.

DATA: (3) ethernet data ports distributed in space to allow versatility in furniture arrangement.

TELECOMMUNICATIONS: (3) phone outlets.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: No requirements.

SECURITY: Lockable doors.

ROOM CONTENTS

GROUP I:

Built-in Equipment:
- (1) Markerboard.
- (1) Coat hook.
- (1) 24" deep wall-mounted desk return.
- (1) 20” deep wall-mounted work surface.
- (1) Built-in bookshelves to ceiling.

GROUP II:

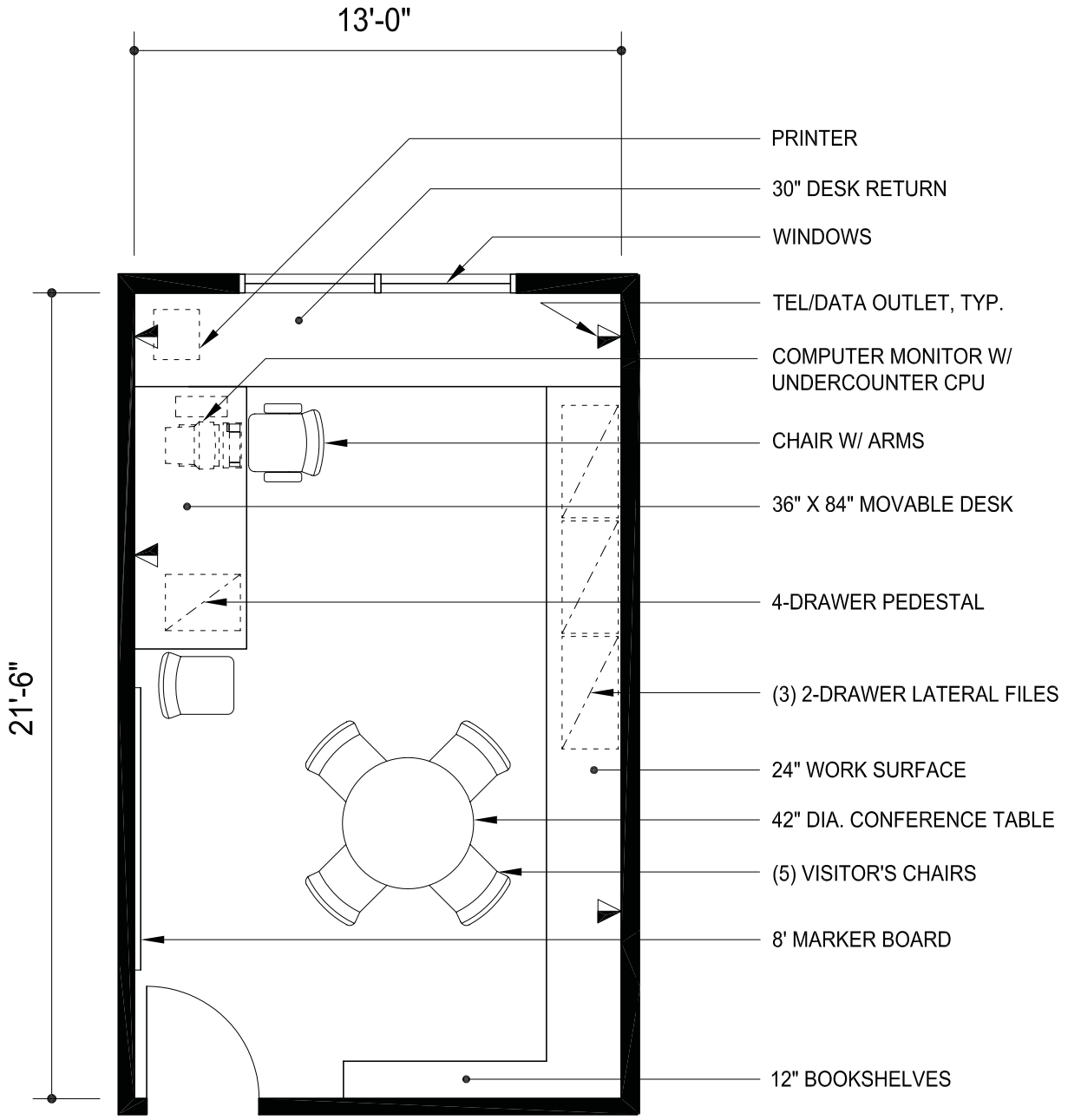
Movable Equipment: No requirements

Furnishings:
- (1) 30" x 72" movable desk.
- (1) Chair with arms.
- (4) Visitor chairs (no arms).
- (2) 42” dia. conference table.
- (3) Lateral files, 2-drawer.
- (1) 4-drawer pedestal.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Director/ Chair Office, Option A**
SPACE ID: **C1**
AREA: **280 ASF**



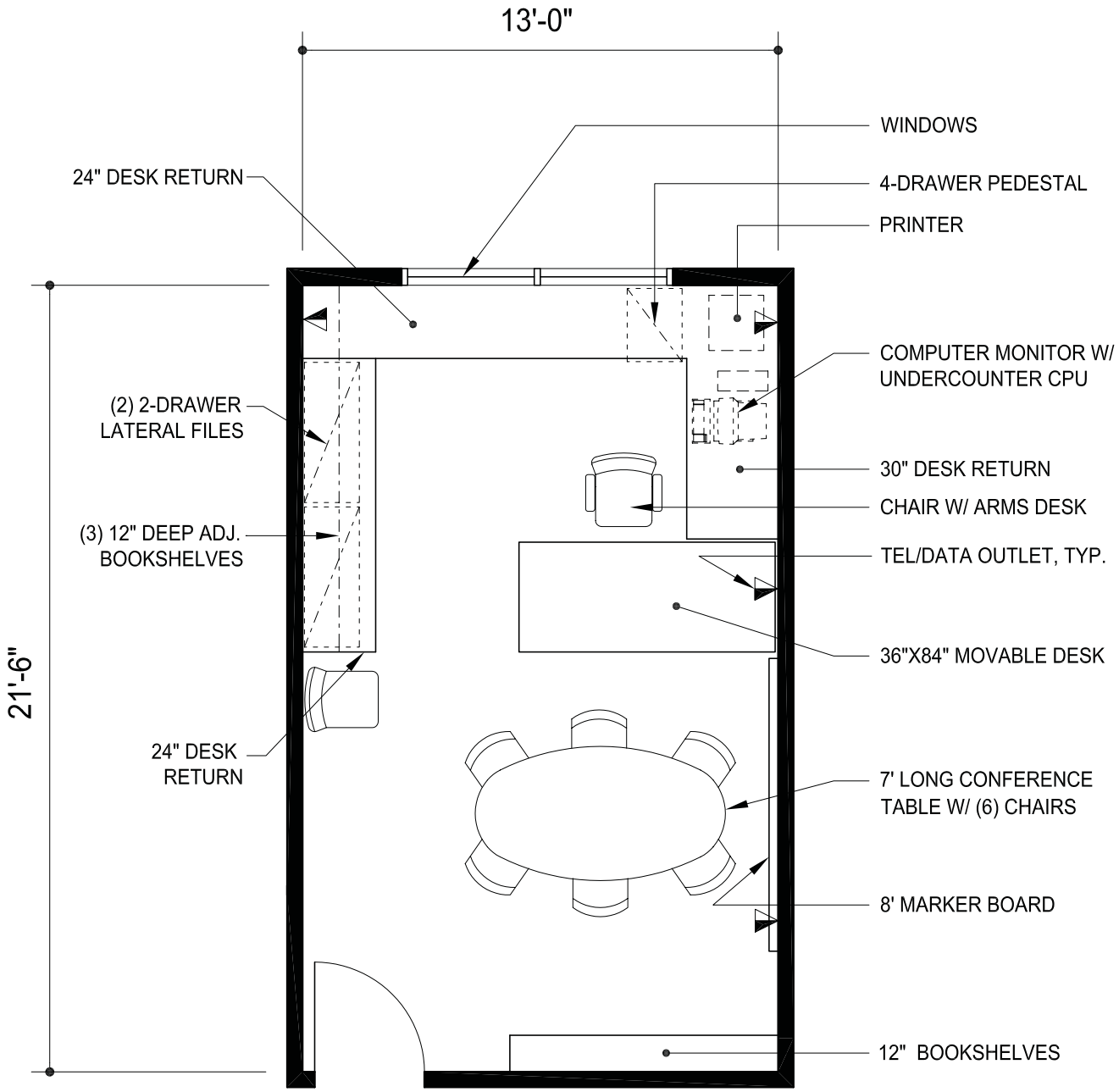
A

0' 1' 5'

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Director/ Chair Office, Option B**
SPACE ID: **C1**
AREA: **280 ASF**



B

0' 1' 5'

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Offices
SPACE NAME: Director/ Chair Office
SPACE ID: C1
AREA: 280 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
General office space for the Department Chair including space for 2 computer workstations, desk, file storage, books and reference material shelves, and room for meetings with 4 others.

QUANTITY: (1)

ASF: 280 ASF

OCCUPANCY: (1)

UTILIZATION: 24 hours per day.

ADJACENCIES: Dept. Chair Assistant
Conference Room
Reception Area

ROOM DIMENSIONS: 9'-0" minimum ceiling height.

NATURAL LIGHT: Windows are required. Provide shades for sun control.

ROOM FINISHES:
Floor: Carpet.
Base: 4" rubber base.
Ceiling: Acoustic Tile.
Partitions: Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0" with vision panel.

ACOUSTICS: Acoustic isolation for Private Offices. See Acoustic Design Criteria. Provide floor to floor partitions.

SIGHTLINES: No requirements.

SIGNAGE: Room number and name of occupant.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72°F +/- 2°F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air.

AIR CHANGES: 6 AC/Hr.

LIGHTING LEVELS: Fluorescent, 75fc at work surface.

POWER: 110V, 60A, 1 phase.

DATA: (4) ethernet data ports distributed in space to allow versatility in furniture arrangement.

TELECOMMUNICATIONS: (4) phone outlets.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: No requirements.

SECURITY: Lockable doors w/ alarm.

ROOM CONTENTS

GROUP I:
Built-in Equipment:
(1) Markerboard.
(1) Coat hook.
(1) Built-in bookshelves.
(1) 24" deep wall-mounted desk return.
(1) 20” deep work surface with base cabinets below.

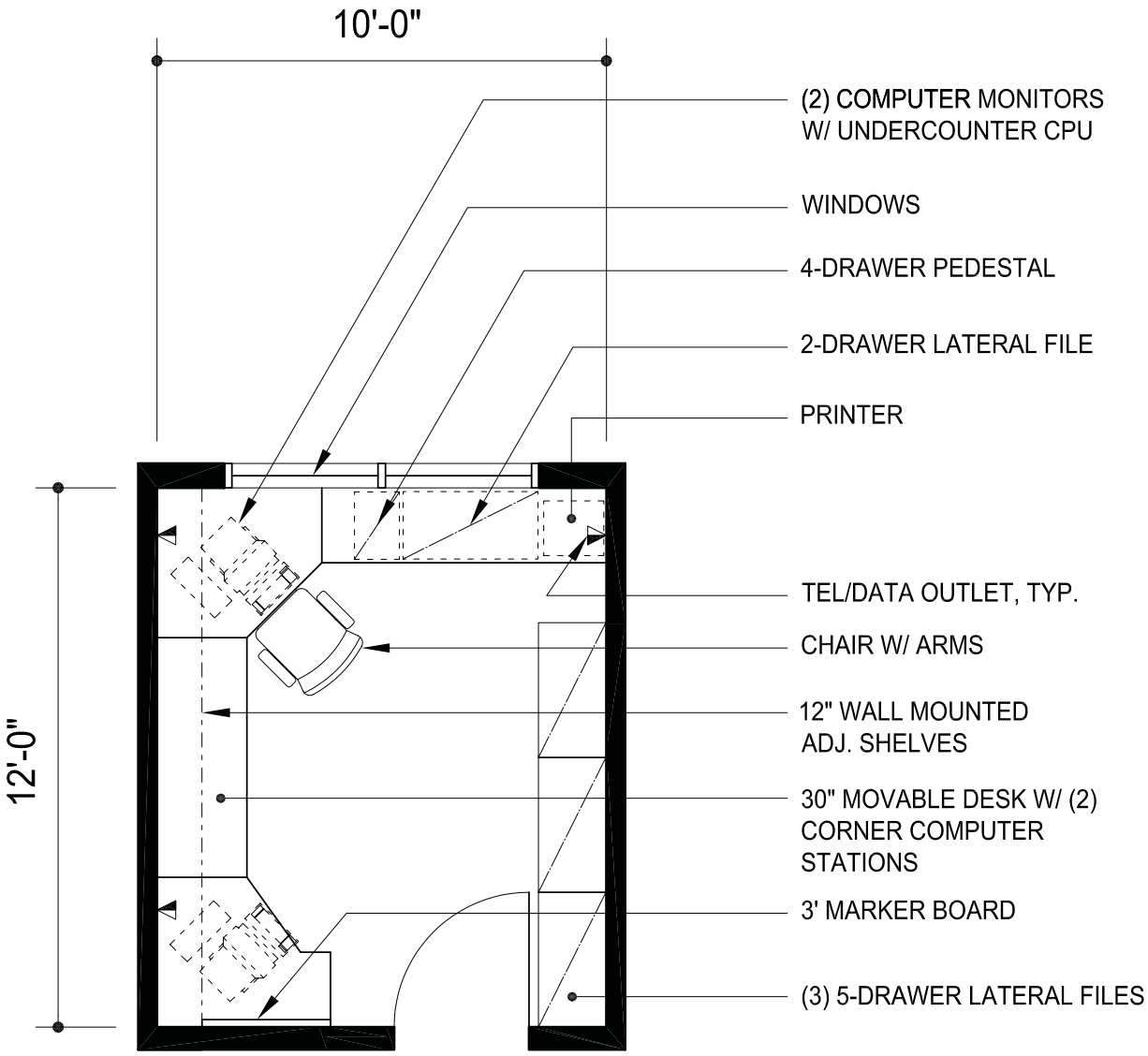
GROUP II:
Movable Equipment: No requirements

Furnishings:
(1) 30" x 72" movable desk.
(1) Chair with arms.
(5) Chair without arms.
(1) 42” dia. conference table.
(3) Lateral files, 2-drawer.
(1) 4-drawer pedestal.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Administrator Office, Option A**
SPACE ID: **C2**
AREA: **6 @ 120 ASF = 720 ASF**



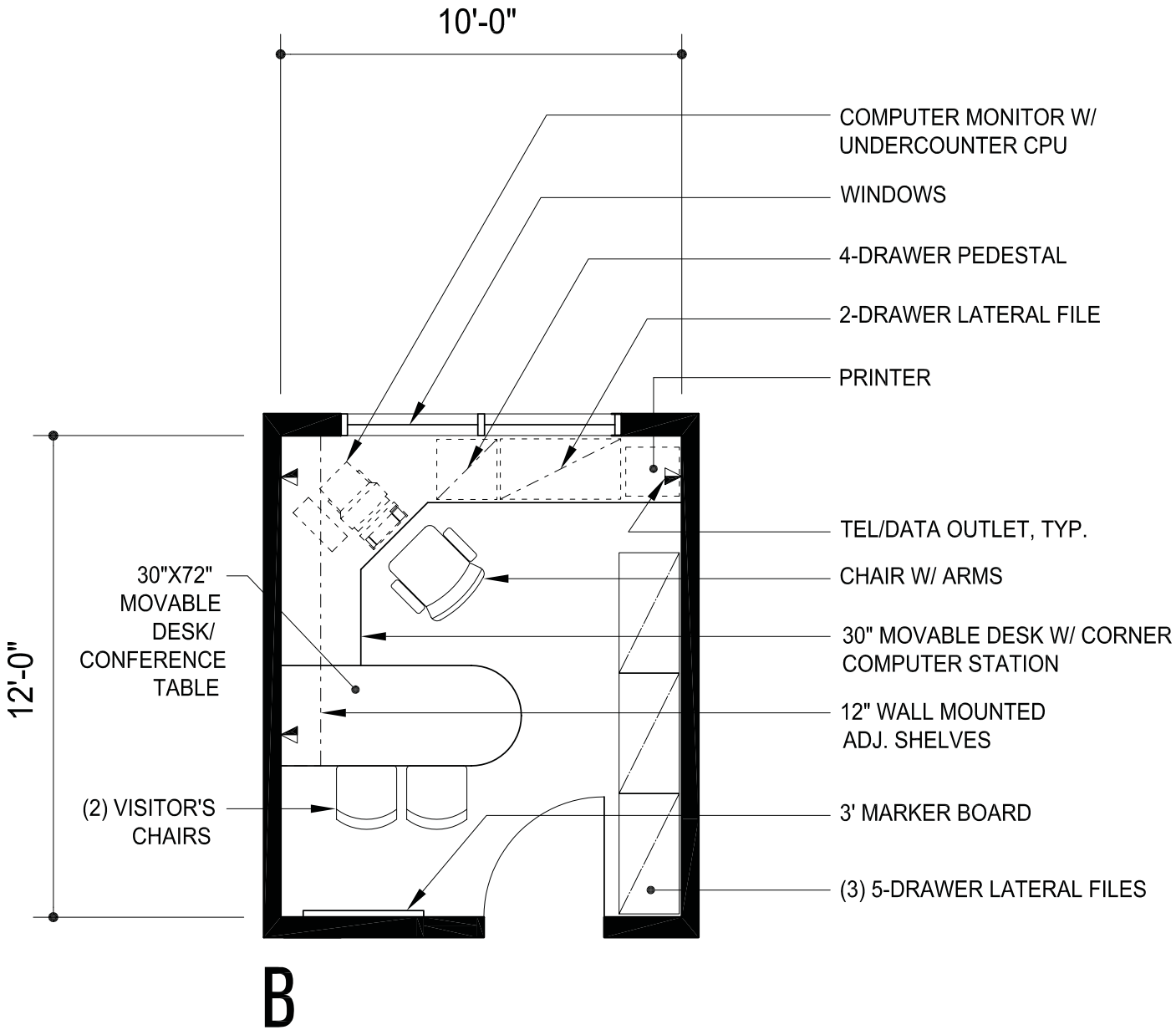
A

0' 1' 5'

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Administrator Office, Option B**
SPACE ID: **C2**
AREA: **6 @ 120 ASF = 720 ASF**



B

0' 1' 5'

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Administrator Office**
SPACE ID: **C2**
AREA: **6 @ 120 ASF = 720 ASF**

SPACE DESCRIPTION

Private office space for one Administrative Staff including space for 1 computer workstation, desk, file storage, books and reference material shelves, and room for meetings with 2-3 others.

QUANTITY: (6)

ASF: 120 ASF

OCCUPANCY: (1)

UTILIZATION: 14 hours per day.

ADJACENCIES:
Open Office Areas
File Storage
Conference Room
Reception Area

ROOM DIMENSIONS: 9'-0" minimum ceiling height.

NATURAL LIGHT: Windows are required. Provide shades for sun control.

ROOM FINISHES:
- **Floor:** Carpet.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0" with vision panel.

ACOUSTICS: Acoustic isolation for Private Offices. See Acoustic Design Criteria. Provide floor to floor partitions.

SIGHTLINES: No requirements.

SIGNAGE: Room number and name of occupant.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72°F +/- 2°F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air.

AIR CHANGES: 6 AC/Hr.

POWER: 110V, 60A, 1 phase.

DATA: (3) ethernet data ports distributed in space to allow versatility in furniture arrangement.

TELECOMMUNICATIONS: (3) phone outlets.

AUDIOVISUAL: No requirements.
LIGHTING LEVELS: Fluorescent, 75fc at work surface.

VIDEO: No requirements.

PIPED SERVICES: No requirements.

SECURITY: Lockable doors w/ alarm.

ROOM CONTENTS

GROUP I:
Built-in Equipment:
(1) Markerboard.
(1) Coat hook.

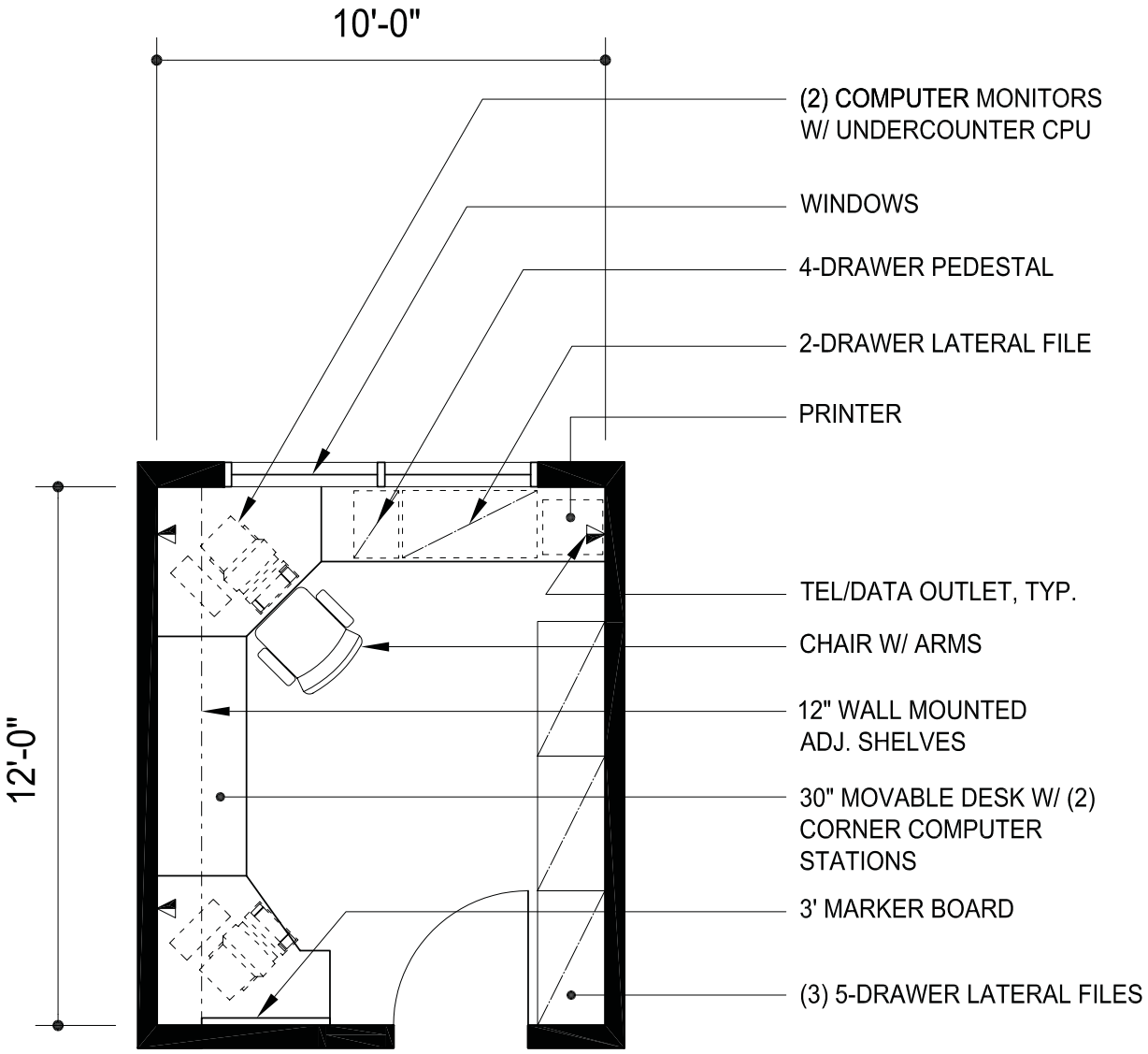
GROUP II:
Movable Equipment: No requirements

Furnishings:
(1) 30” deep movable desk w/ corner computer station.
(1) 24" deep movable desk return.
(1) 30” x 72” movable desk/conference table.
(1) Chair with arms.
(3) Visitor chairs (no arms).
(1) Lateral file, 2-drawer.
(1) 4-drawer pedestal.
(3) Movable bookshelves, 4’ long x 6’ high

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Systems Administrator Office**
SPACE ID: **C3**
AREA: **120 ASF**



NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Offices
SPACE NAME: Systems Administrator Office
SPACE ID: C3
AREA: 120 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
General office space for one IT Administrator including space for 1 computer workstation, desk, file storage, books and reference material shelves, and room for meetings with 2-3 others.

QUANTITY: (1)

ASF: 120 ASF

OCCUPANCY: (1)

UTILIZATION: 24 hours per day.

ADJACENCIES: Administrative Office Suite
Server Room
Conference Room

ROOM DIMENSIONS: 9'-0" minimum ceiling height.

NATURAL LIGHT: Windows are required. Provide shades for sun control.

ROOM FINISHES:
- **Floor:** Carpet.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0" with vision panel.

ACOUSTICS: Acoustic isolation for Private Offices. See Acoustic Design Criteria. Provide floor to floor partitions.

SIGHTLINES: No requirements.

SIGNAGE: Room number and name of occupant.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72°F +/- 2°F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air.

AIR CHANGES: 6 AC/Hr.

LIGHTING LEVELS: Fluorescent, 75fc at work surface.

POWER: 110V, 60A, 1 phase.

DATA: (3) ethernet data ports distributed in space to allow versatility in furniture arrangement.

TELECOMMUNICATIONS: (3) phone outlets.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: No requirements.

SECURITY: Lockable doors.

ROOM CONTENTS

GROUP I:
Built-in Equipment:
- (1) Markerboard.
- (1) Coat hook.

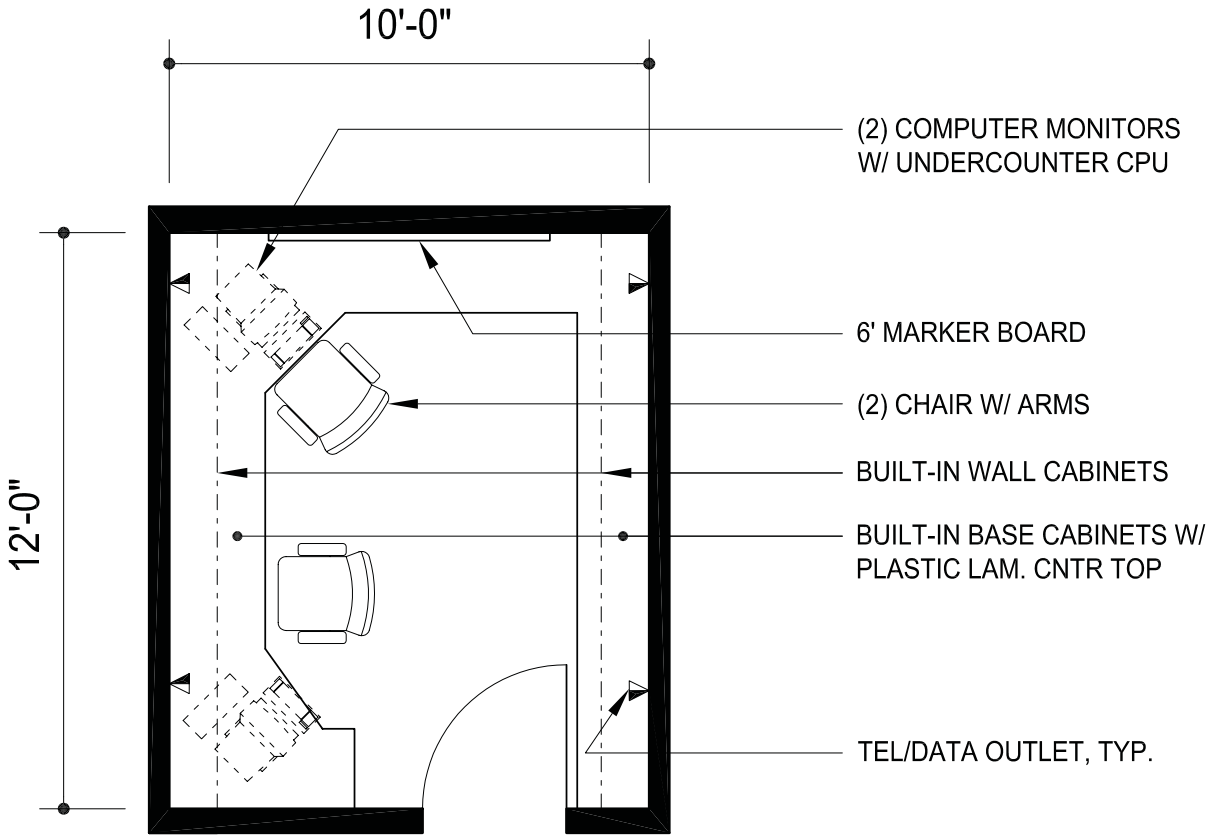
GROUP II:
Movable Equipment: No requirements

Furnishings:
- (2) 30” deep movable desk w/ corner computer station.
- (1) 24" deep movable desk return.
- (1) Chair with arms.
- (1) Lateral file, 2-drawer.
- (1) 4-drawer pedestal.
- (2) Wall mounted bookshelves.
- (1) Fireproof media storage cabinet.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Systems Server Room**
SPACE ID: **C4**
AREA: **120 ASF**



NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Offices
SPACE NAME: Systems Server Room
SPACE ID: C4
AREA: 120 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:

The space will house the primary servers for the facility and will serve as computer repair and maintenance workroom.

QUANTITY: (1)

ASF: 120 ASF

OCCUPANCY: (1)

UTILIZATION: 24 hours per day.

ADJACENCIES: Systems Administrator

ROOM DIMENSIONS: 9'-0" minimum ceiling height.

NATURAL LIGHT: No requirements.

ROOM FINISHES:
- **Floor:** Resilient flooring.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0"

ACOUSTICS: Sound insulation at walls to adjacent private spaces. Floor to floor partitions.

SIGHTLINES: No requirements.

SIGNAGE: Room name and number.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirc. Air. Plus equipment heat load.

AIR CHANGES: 6 AC/hr

LIGHTING LEVELS: Fluorescent, 75fc at work surface.

POWER: 110V, 60A, 1 phase and power

TELECOMMUNICATIONS: (2) phone outlet. for copier.

DATA: (4) ethernet data.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: No requirements.

SECURITY: Lockable doors, possibly card key access.

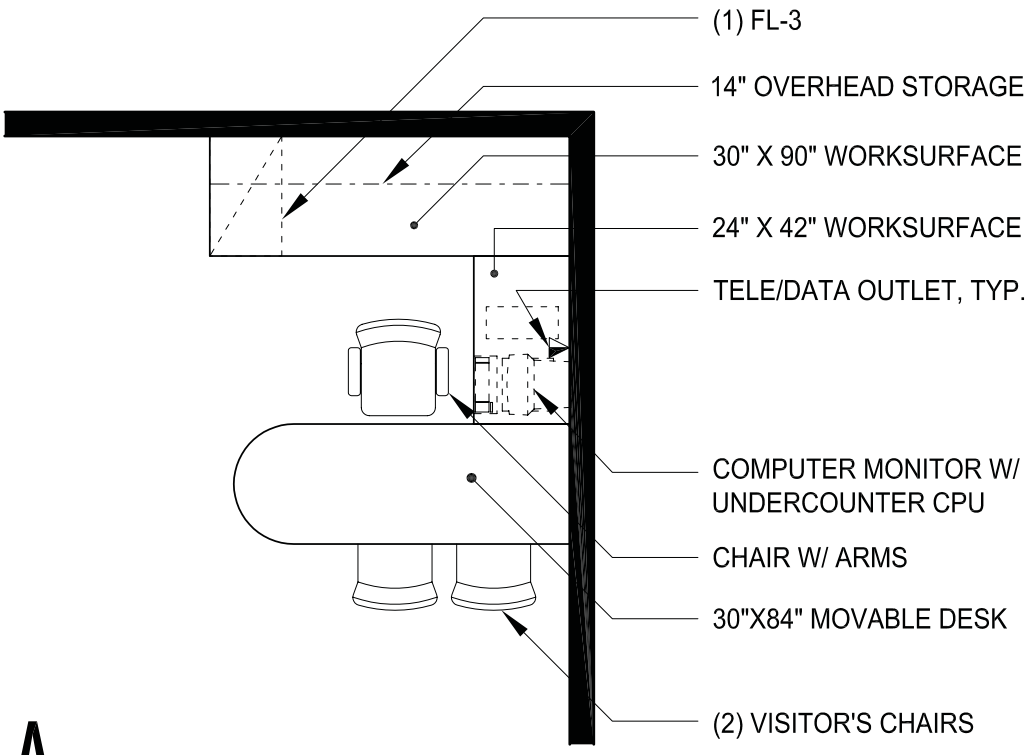
ROOM CONTENTS

GROUP I:
- **Built-in Equipment:**
  - (1) Built-in wall and base cabinets with plastic laminate counter top work surfaces.
  - (1) Markerboard

GROUP II:
- **Movable Equipment:** No requirements.
- **Furnishings:** (2) Chairs w/ arms

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Open Office Space, Option A**
SPACE ID: **C5**
AREA: **6 @ 65 ASF = 390 ASF**



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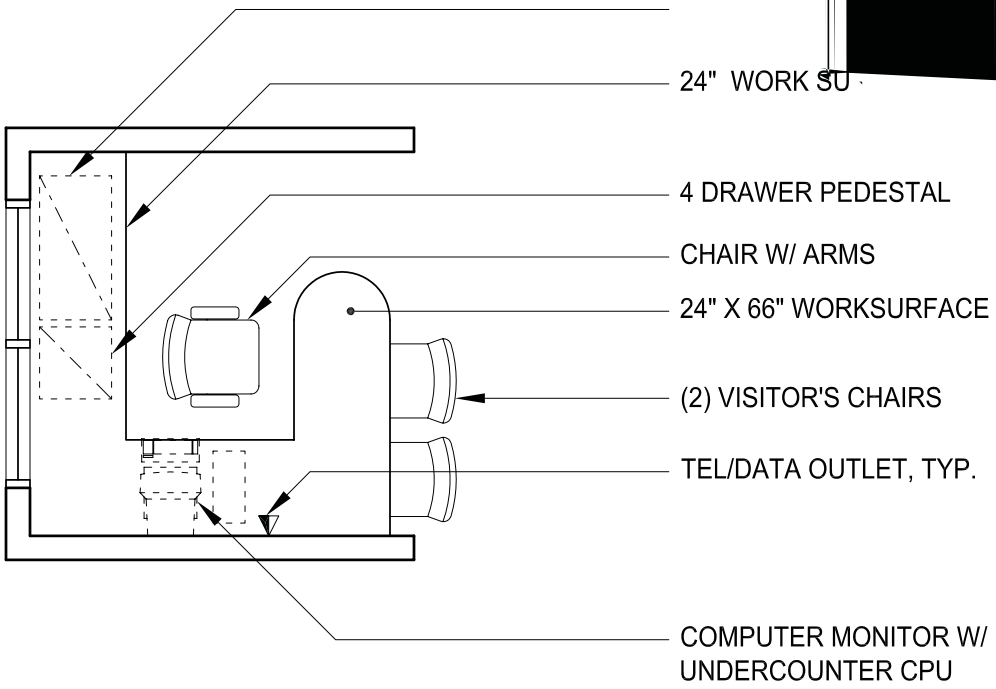
A1.0
DETAILED SPACE REQUIREMENTS AN

NOTE: DIAGRAMS ARE FOR REFERENCE

DEPARTMENT: **Offices**
SPACE NAME: **Open Office Space, Optio**
SPACE ID: **C5**
AREA: **6 @ 65 ASF = 390 ASF**



B

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Offices
SPACE NAME: Open Office Space
SPACE ID: C5
AREA: 6 @ 65 ASF = 390 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
Open office space for Administrative staff personnel to be located adjacent to the private staff offices and should include space for a computer work station, desk, file storage, and books and reference material shelves.

QUANTITY: (10)

ASF: 65 ASF

OCCUPANCY: (1)

UTILIZATION: 14 hours per day.

ADJACENCIES:
Private Staff Offices
File Storage
Reception Area
Conference Room

ROOM DIMENSIONS: 9'-0" minimum ceiling height.

NATURAL LIGHT: Natural Light is desirable.

ROOM FINISHES:
- **Floor:** Carpet.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile.
- **Partitions:** Gypsum Board, Pain & Acoustic Panels

DOORS: No requirements.

ACOUSTICS: No requirements (open office).

SIGHTLINES: No requirements.

SIGNAGE: No requirements.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72°F +/- 2°F

HUMIDITY: 50% +/-20%

VENTILATION: 20+ CFM/person. Recirculated Air.

AIR CHANGES: 6 AC/Hr.

LIGHTING LEVELS: Fluorescent, 75fc at work surface.

POWER: 110V, 60A, 1 phase.

DATA: (2) ethernet data ports.

TELECOMMUNICATIONS: (1) phone outlet.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: No requirements.

SECURITY: Lockable file cabinets.

ROOM CONTENTS

GROUP I:
Built-in Equipment: Office system furniture.

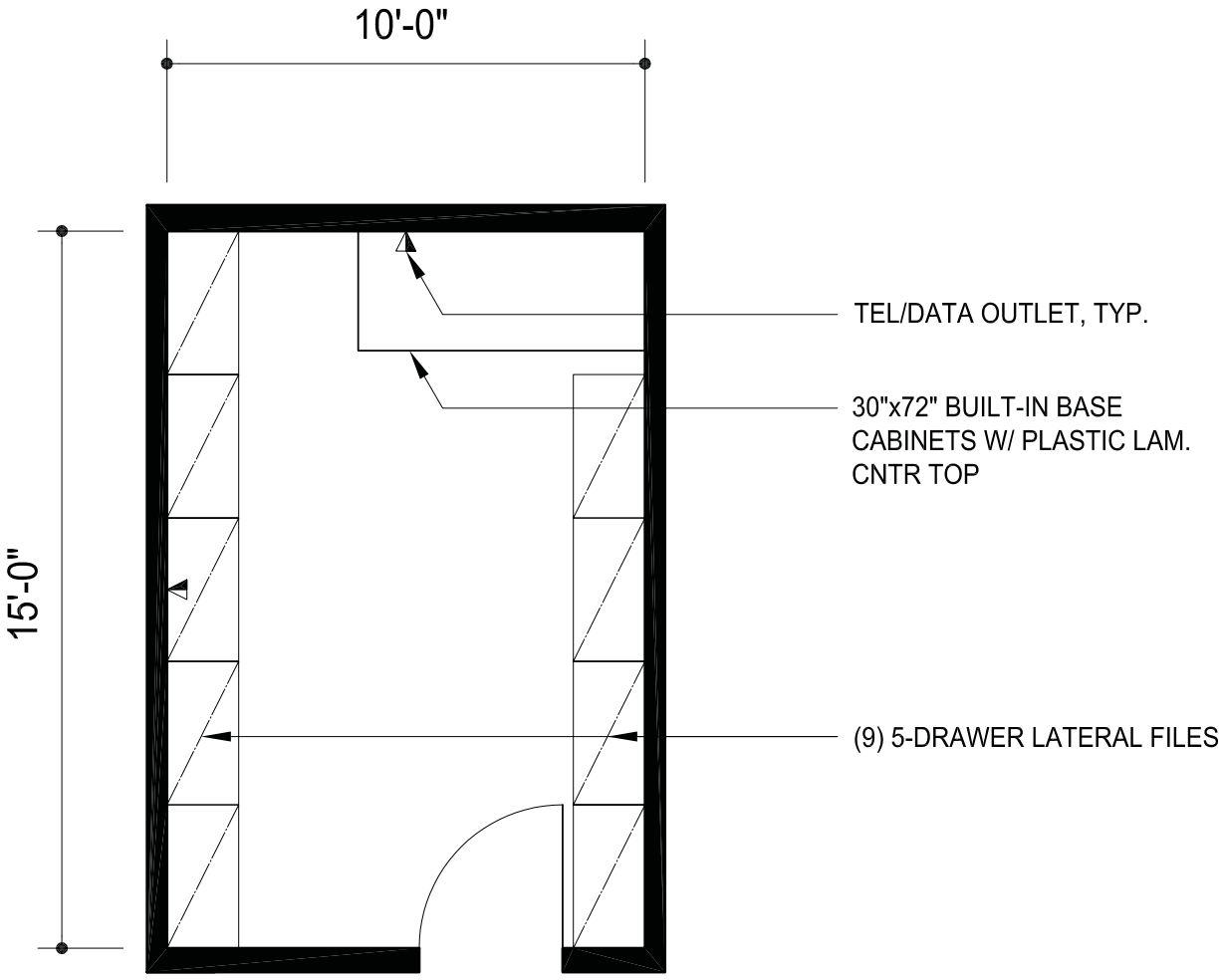
GROUP II:
Movable Equipment: No requirements

Furnishings:
(1) 54" high acoustic partitions surrounding work stations with lower partitions between work stations.
(1) 30" x 72" movable desk.
(1) 24" x 72" desk return.
(1) 24" x 72" credenza.
(2) Overhead storage shelves.
(1) Chair with arms.
(2) Lateral files, 2-drawer.
(1) 4-drawer pedestal.
(1) visitors chair.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **File Storage**
SPACE ID: **C6**
AREA: **2 @ 150 ASF = 300 ASF**



NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Offices
SPACE NAME: File Storage
SPACE ID: C6
AREA: 2 @ 150 ASF = 300 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
General file storage with lockable, 5-drawer lateral file cabinets and storage shelves above. Space should include fixed base cabinets for storage of office supplies with a 30" wide top to serve as a general work surface. File storage should be directly accessible from the open office areas.

QUANTITY: (2)

ASF: 150 ASF

OCCUPANCY: N/A

UTILIZATION: 14 hours per day.

ADJACENCIES: Open Offices
Private Staff Offices
Mailroom

ROOM DIMENSIONS: 9'-0" minimum ceiling height.

NATURAL LIGHT: No requirements.

ROOM FINISHES:
- **Floor:** Carpet.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0"

ACOUSTICS: No requirements.

SIGHTLINES: No requirements.

SIGNAGE: Room name and number.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirc. Air.

AIR CHANGES: 6 AC/hr

LIGHTING LEVELS: Fluorescent, 75fc at work surface.

POWER: 110V, 60A, 1 phase and power for copier.

DATA: (2) ethernet data.

TELECOMMUNICATIONS: (1) phone outlet.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: No requirements.

SECURITY: Lockable file cabinets.

ROOM CONTENTS

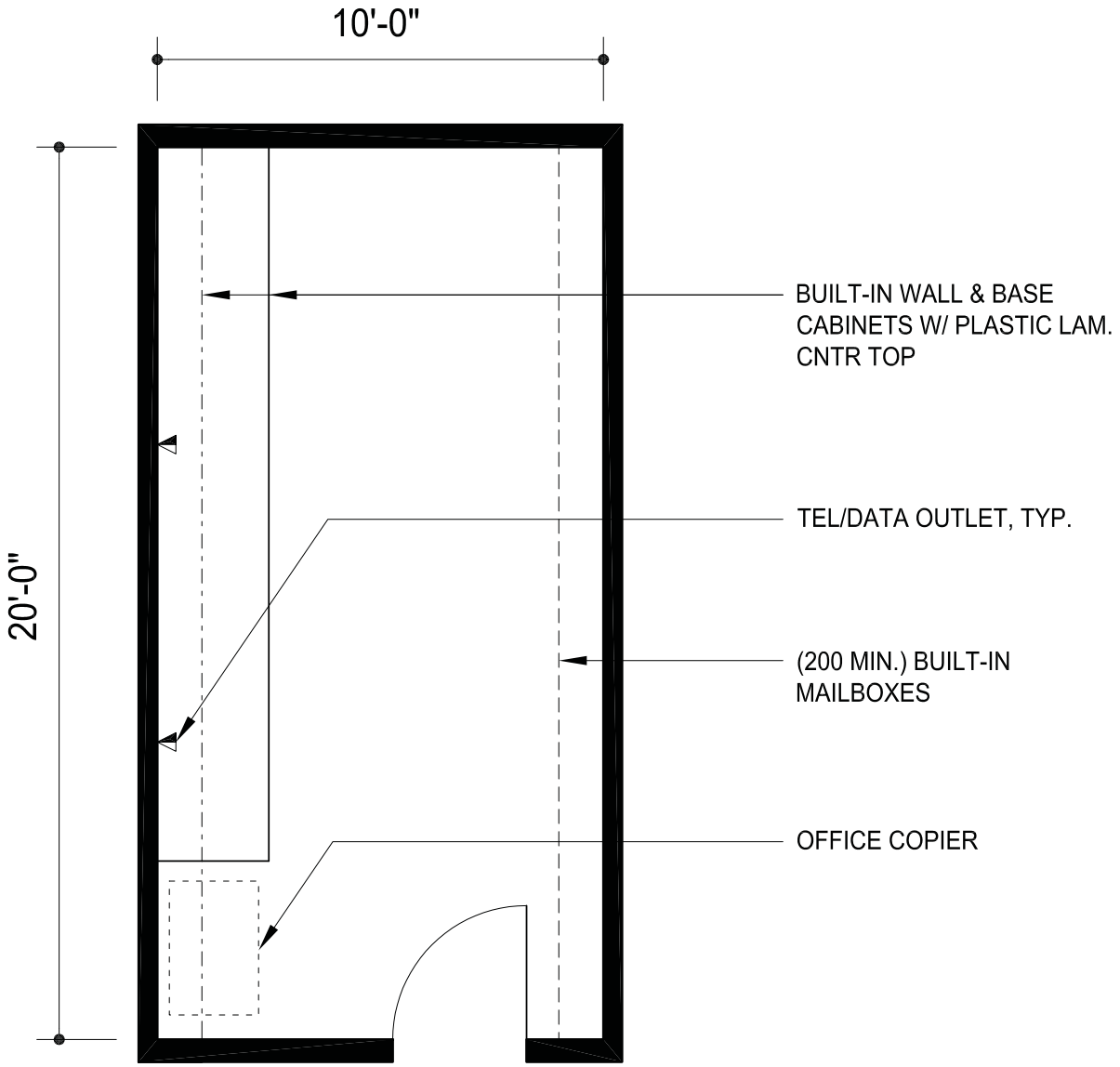
GROUP I:
- **Built-in Equipment:** (1) 30" x 72" Built-in base cabinets with plastic laminate countertop work surfaces.

GROUP II:
- **Movable Equipment:** No requirements.
- **Furnishings:** (9) Lateral files, 5-drawer.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Mailroom/ Copy Center**
SPACE ID: **C7**
AREA: **200 ASF**



NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Offices
SPACE NAME: Mailroom/ Copy Center
SPACE ID: C7
AREA: 200 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
General access mailroom and workroom is intended to serve all occupants of the building. Space should include mailboxes for building occupants, copying and fax equipment, office supplies and other general office equipment. The space should be accessed internally from the Administrative Office Suite as well as from a public corridor for general access.

QUANTITY: (1)

ASF: 200 ASF

OCCUPANCY: 6

UTILIZATION: 24 hours per day.

ADJACENCIES: Administrative Offices
Prefunction area

ROOM DIMENSIONS: 9'-0" minimum ceiling height.

NATURAL LIGHT: No requirements.

ROOM FINISHES:
- **Floor:** Resilient flooring.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0"

ACOUSTICS: Sound insulation at walls to adjacent private spaces. Floor to floor partitions.

SIGHTLINES: No requirements.

SIGNAGE: Room name and number.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirc. Air. Plus equipment heat load.

AIR CHANGES: 6 AC/hr

LIGHTING LEVELS: Fluorescent, 75fc at work surface.

POWER: 110V, 60A, 1 phase and power for copier.

DATA: (2) ethernet data.

TELECOMMUNICATIONS: (1) phone outlet.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: No requirements.

SECURITY: Lockable doors, possibly card key access.

ROOM CONTENTS

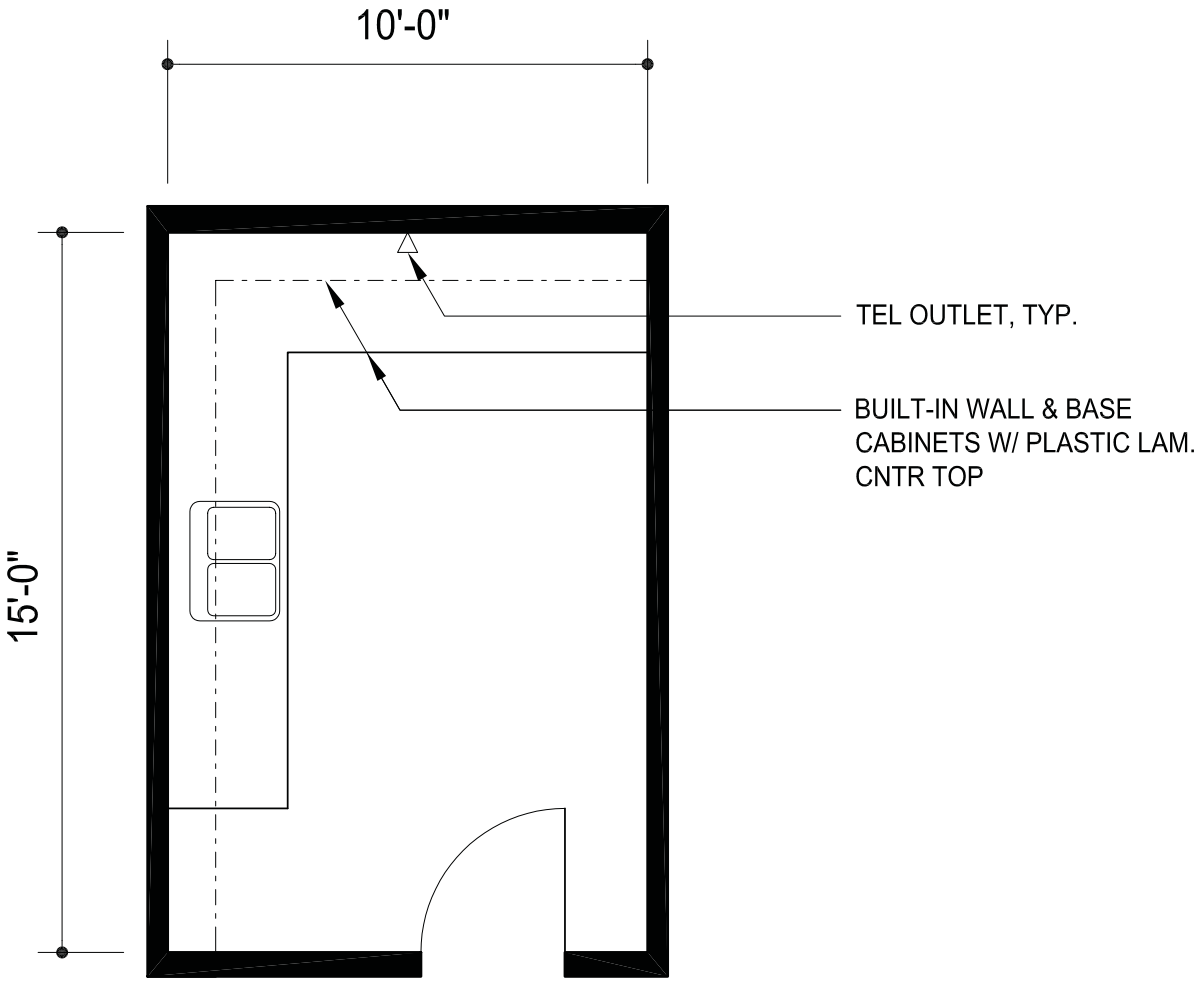
GROUP I:
- **Built-in Equipment:**
  - (1) Built-in wall and base cabinets with plastic laminate countertop work surfaces.
  - (1) Built-in mailboxes,200 min.

GROUP II:
- **Movable Equipment:** (1) Office Copier
- **Furnishings:** No requirements.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Kitchenette**
SPACE ID: **C8**
AREA: **150 ASF**



NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Offices
SPACE NAME: Kitchenette
SPACE ID: C8
AREA: 150 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
General access kitchen facility to serve all occupants of the building. Provide with built-in wall and base cabinets, refrigerator, microwave and sink. Locate adjacent to Conference Room in Administrative Office Suite.

QUANTITY: (1)

ASF: 150 ASF

OCCUPANCY: (4)

UTILIZATION: 24 hours per day.

ADJACENCIES: Administrative Office Suite
Conference Room
Seminar Room

ROOM DIMENSIONS: 8'-0" minimum ceiling height. Provide minimum clear floor area for wheelchair access.

NATURAL LIGHT: No requirements.

ROOM FINISHES:
- **Floor:** Resilient Flooring.
- **Base:** 4" rubber base.
- **Ceiling:** Gypsum Board, Paint.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0"

ACOUSTICS: No special requirements.

SIGHTLINES: No special requirements.

SIGNAGE: Room name and number.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F

HUMIDITY: 50% +/- 20%

VENTILATION: 20 CFM/person, Recirc. Air

AIR CHANGES: 5 AC/hr

LIGHTING LEVELS: Fluorescent, 75fc at work surface.

POWER: 110V, 60A, 1 phase.

DATA: No requirements.

TELECOMMUNICATIONS: (1) phone outlet.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: Double sink with hot and cold water and garbage disposer. Cold water for ice maker in refrigerator.

SECURITY: Lockable doors.

SPECIAL REQ'MENTS: No requirements.

ROOM CONTENTS

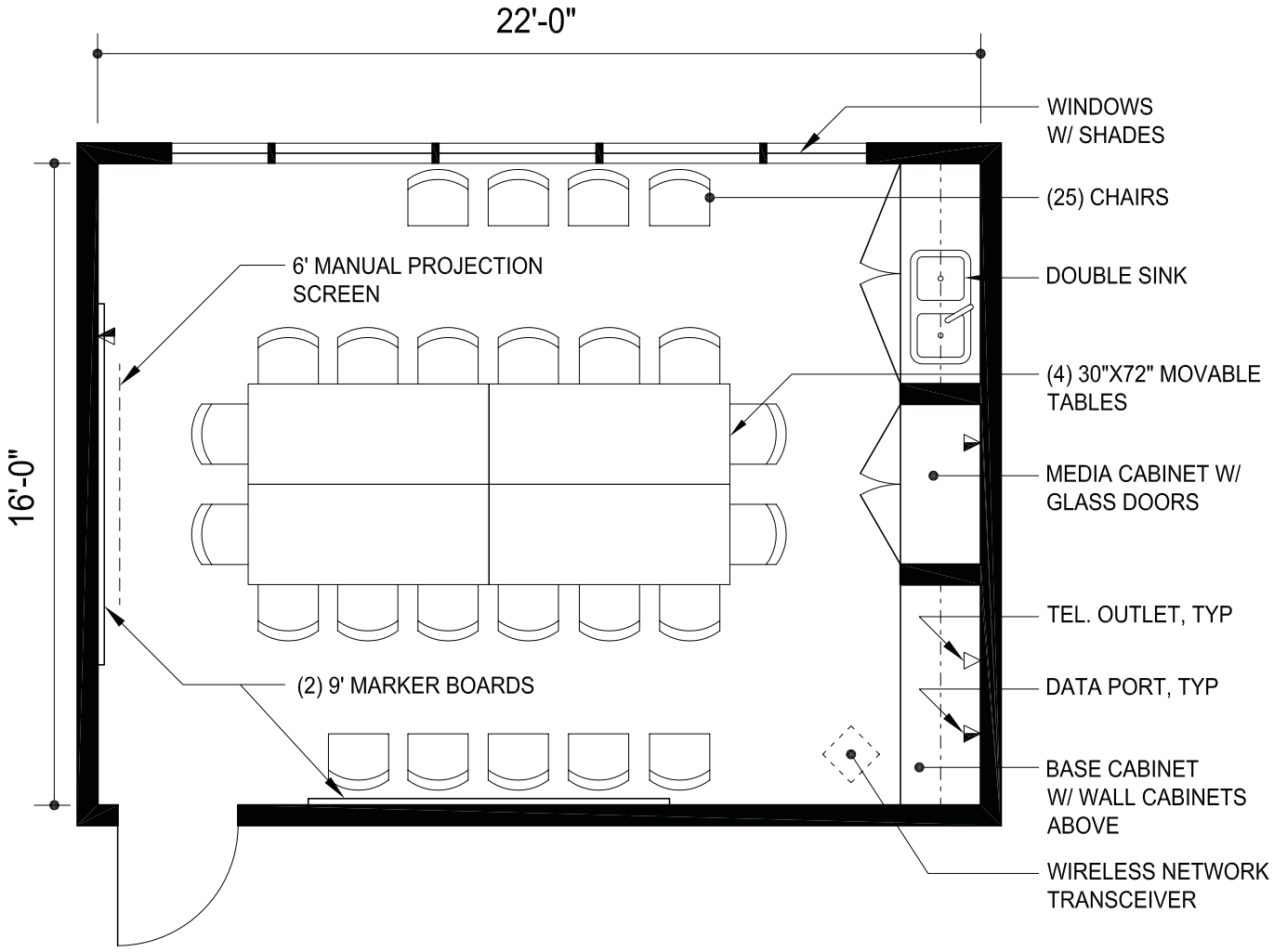
GROUP I:
- **Built-in Equipment:** (1) Built-in base and wall cabinets along 2 walls with openings for refrigerator and built-in microwave.
  (1) Built-in microwave.

GROUP II:
- **Movable Equipment:** (1) 62" high refrigerator / freezer with ice maker.
- **Furnishings:** No requirements.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Conference Room**
SPACE ID: **C9**
AREA: **3 @ 350 ASF = 1,050 ASF**



NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Offices
SPACE NAME: Conference Room
SPACE ID: C9
AREA: 3 @ 350 ASF = 1,050 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
General purpose meeting space used for conferences, presentations, instruction and seminars. Locate near research offices and laboratories.

QUANTITY: (3)

ASF: 350 ASF

OCCUPANCY: (25)

UTILIZATION: 14 hours per day.

ADJACENCIES: Research Offices
Research Laboratories
Toilet Rooms

ROOM DIMENSIONS: Conference Room should be designed for versatility in table and chair arrangement. Room should be rectangular with markerboard and projection screen at one end.
9'-0" minimum ceiling height.

NATURAL LIGHT: Windows are desirable.
Provide shades for sun control.

ROOM FINISHES:
Floor: Carpet.
Base: 4" rubber base.
Ceiling: Acoustic Tile / Gyp. Bd, Paint.
Partitions: Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0"

ACOUSTICS: Acoustic isolation for Conference Room. Provide floor to floor partitions. See Acoustic Design Criteria.

SIGHTLINES: Design space to allow clear views to markerboards and projection screen.

SIGNAGE: Room name and number.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air.

AIR CHANGES: 4 AC/hr

LIGHTING LEVELS: Fluorescent, 75fc at work surface, dimmable to 5fc.

POWER: 110V, 60A, 1 phase.

DATA: (1) ethernet data port at computer workstation and (1) ethernet data port located near projection screen.

TELECOMMUNICATIONS: (1) phone outlet.

AUDIOVISUAL:
1. Data projection from media cabinet.
2. Overhead projection.
3. Slide projection from media cabinet.

VIDEO: Video/data projection from media cabinet.

PIPED SERVICES: Sink with hot and cold water and garbage disposer.

SECURITY: Lockable doors.

SPECIAL REQ'MENTS: No requirements.

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Conference Room**
SPACE ID: **C9**
AREA: **3 @ 350 ASF = 1,050 ASF**

ROOM CONTENTS

GROUP I:

Built-in Equipment:
(2) Markerboards
(1) Manual Projection Screen
(1) Built-in base and wall cabinets for coffee service.
(1) Built-in base cabinets and wall cabinets for storage; provide knee opening for computer workstation.
(1) Built-in Media Cabinet for remote audiovisual equipment; glass doors for slide projection cabinet.

GROUP II:

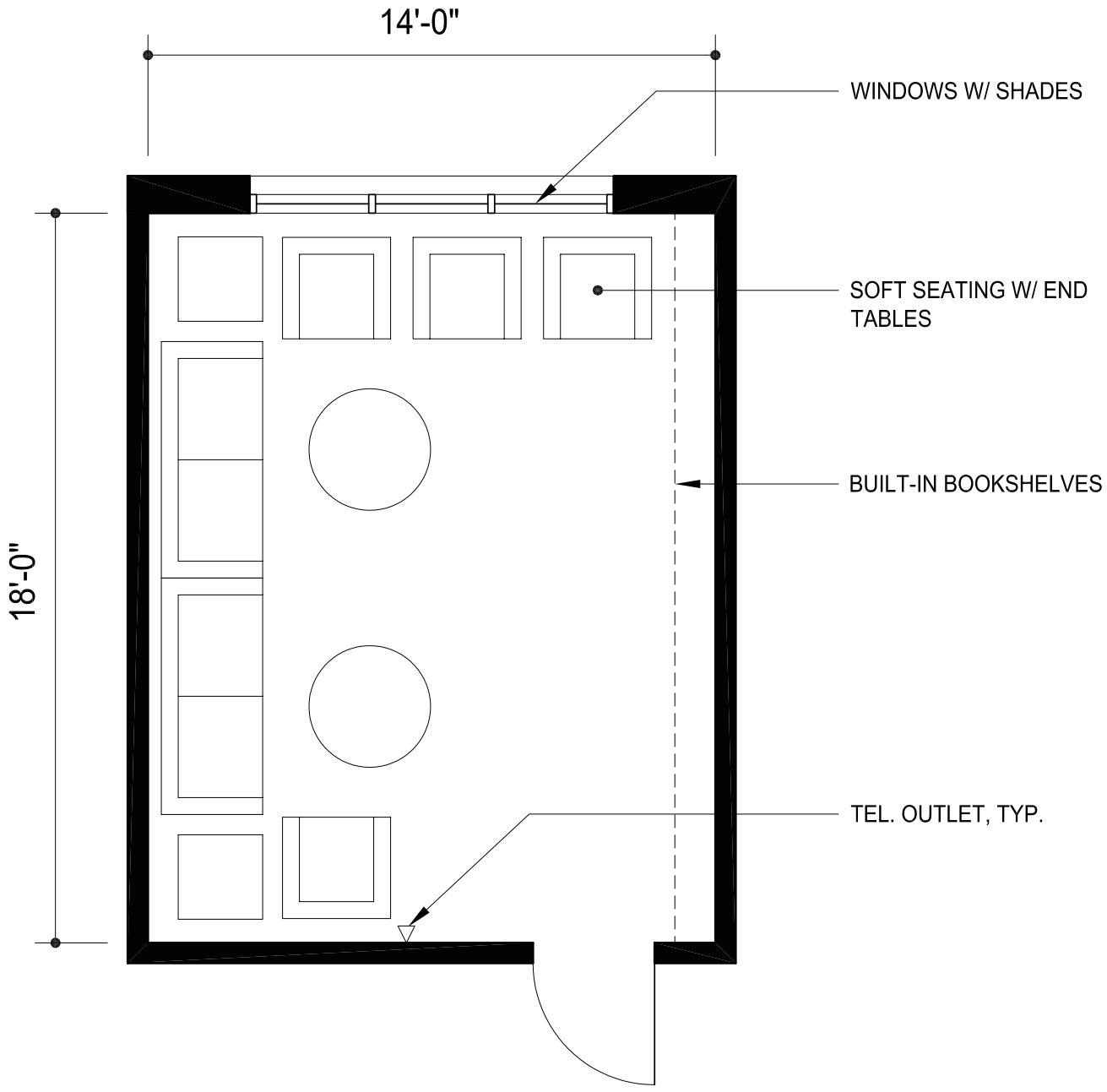
Movable Equipment: No requirements

Furnishings:
(6) 2'6" x 5'-0" movable tables.
(25) Chairs.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Offices**
SPACE NAME: **Reception Area**
SPACE ID: **C10**
AREA: **250 ASF**



A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Offices
SPACE NAME: Reception Area
SPACE ID: C10
AREA: 250 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
The Administrative Office Suite will require two separate Reception Areas to serve the Business Office and the Student Affairs Office. The spaces will function as the primary interface with both students and faculty for the Bioengineering Department. Each space should incorporate an open office space programmed for the suite to serve as the receptionist. The spaces should also include a waiting area with comfortable seating and built-in shelves for periodicals, informational pamphlets, and books.

QUANTITY: (1)

ASF: 250 ASF

OCCUPANCY: (10)

UTILIZATION: 10 hours per day.

ADJACENCIES:
Lobby
Conference Room
Toilet Rooms

ROOM DIMENSIONS: The Reception Areas should be designed for movable upholstered seating but provide ample space for occupant traffic patterns. 10'-0" minimum ceiling height.

NATURAL LIGHT: Natural light is desirable. Provide shades for sun control.

ROOM FINISHES:
- **Floor:** Carpet.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile / Gyp. Bd, Paint.
- **Partitions:** Gypsum Board, Paint .

DOORS: 3'-0" x 7'-0"

ACOUSTICS: Acoustic isolation for Library, see Acoustic Design Criteria.

SIGHTLINES: No requirements

SIGNAGE: Room name and number.

SPECIAL REQ'MENTS: No requirements.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air

AIR CHANGES: 6 AC/hr

POWER: 110V, 60A, 1 phase.

DATA: No requirements.

TELECOMMUNICATIONS: (1) phone outlet.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: No requirements.

SECURITY: Locking doors.

SPECIAL REQ'MENTS: No requirements.

ROOM CONTENTS

GROUP I:
Built-in Equipment: (1) Built-in bookshelves for periodicals, pamphlets, etc.

GROUP II:
Movable Equipment: No requirements.

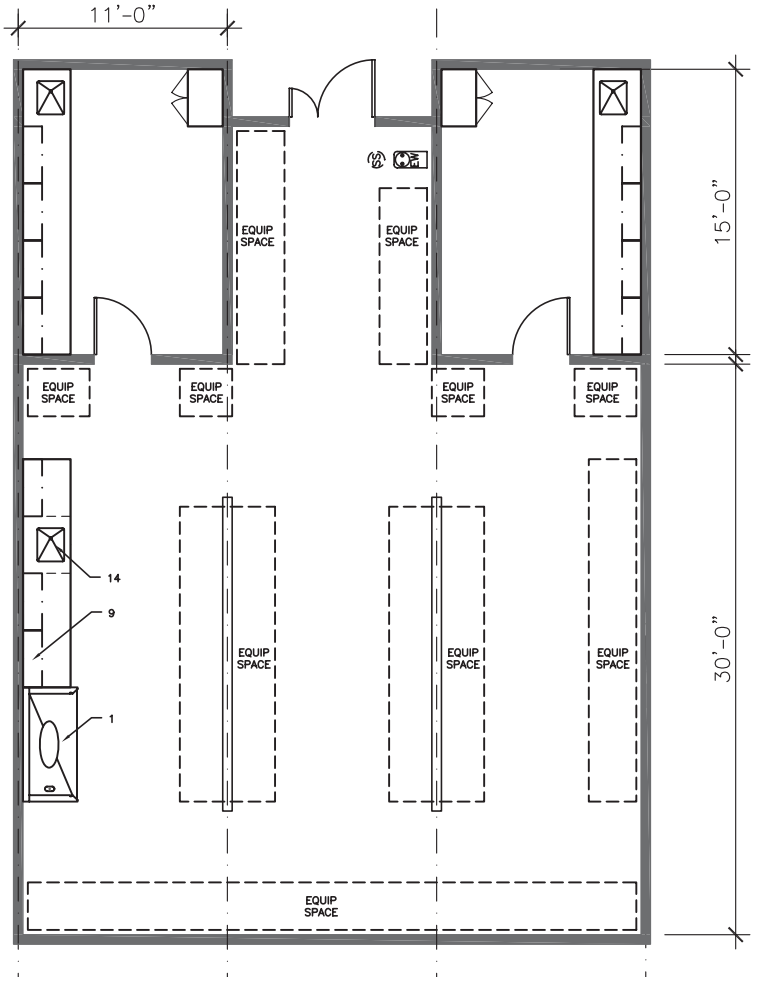
Furnishings:
(2) Sofas
(2) Side tables.
(4) Chairs.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Research**
SPACE NAME: **Research Laboratory – Bioengineering**
SPACE ID: **D1A**
AREA: **10 @ 1,320 ASF = 13,200 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



NOT TO SCALE

FURNISHINGS

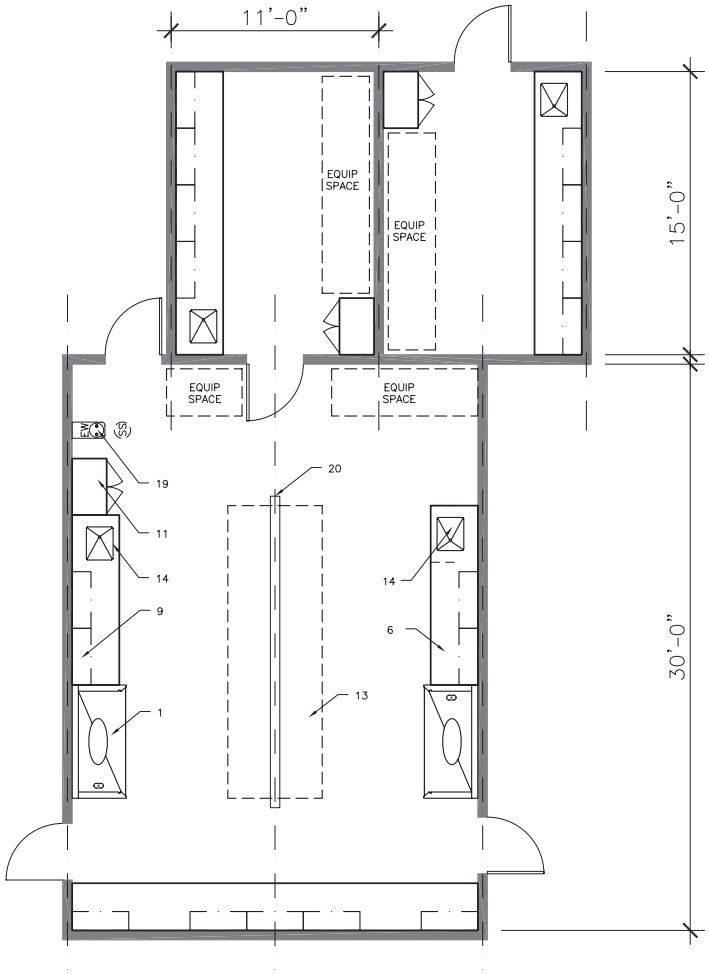
1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Vented Workstation
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Vented Corrosive Storage Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Research**
SPACE NAME: **Research Laboratory – Bioengineering**
SPACE ID: **D1B**
AREA: **2 @ 990 ASF = 1,980 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



NOT TO SCALE

FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Vented Workstation
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Vented Corrosive Storage Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Research
SPACE NAME: Research Laboratory – Bioengineering
SPACE ID: D1
AREA: 10 @ 1,320 ASF + 2 @ 990 ASF = 15,180 ASF

UTILIZATION	
Hours of Use	
14 hours/day	
24 hours/day	●
Hours of Operation	
14 hours/day	
24 hours/day	●

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	●
4°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	6-12
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	●
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	●
Compressed Air, 100 psig	A	●
Laboratory Gas	LG	●
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	●
Deionized Water	DI	●
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	●
Safety Shower/Eyewash	SS	●
Eyewash	EW	●
Floor Drain	FD	
Floor Sink	FS	

ELECTRICAL	
120V, 20A, 1 phase	●
208V, 30A, 1 phase	●
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	●
Standby Power	●
Telephone Outlet	●
LAN/WAN Outlet	●
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT	
Vibration Sensitive	●
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE	
Flammables	●
Corrosives	●
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	●
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS	
Wood Casework	●
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	●
Stainless Steel Tops	
Solid Phenolic	
Epoxy Resin Sinks	●
Stainless Steel Sinks	

REMARKS

SECURITY	
Pushbutton Combination Lock	

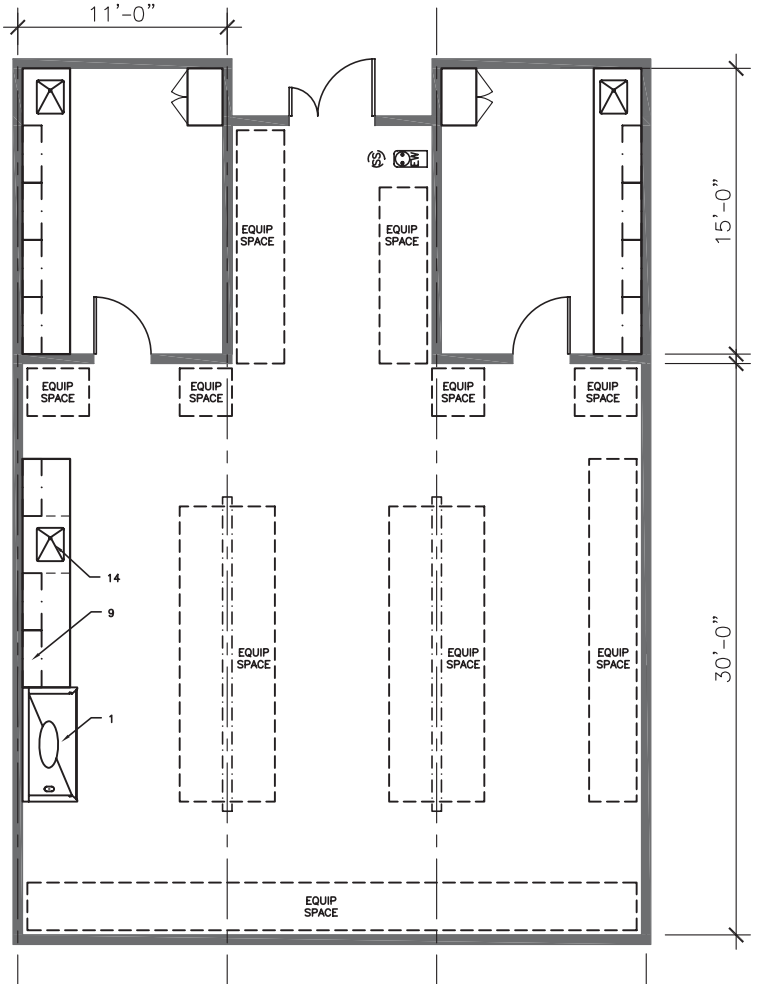
INTERIORS	
Floor	
Vinyl Composition Tile	●
Welded Sheet Vinyl	
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	
Resilient	●
Other	
Partitions	
Gypsum Board, Paint	●
Gypsum Board, Epoxy Paint	
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	●
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	●
3'-0" x 7'-0"	
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Research**
SPACE NAME: **Research Laboratory – Bioinstrumentation**
SPACE ID: **D2A**
AREA: **6 @ 1,320 ASF = 7,920 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



NOT TO SCALE

FURNISHINGS

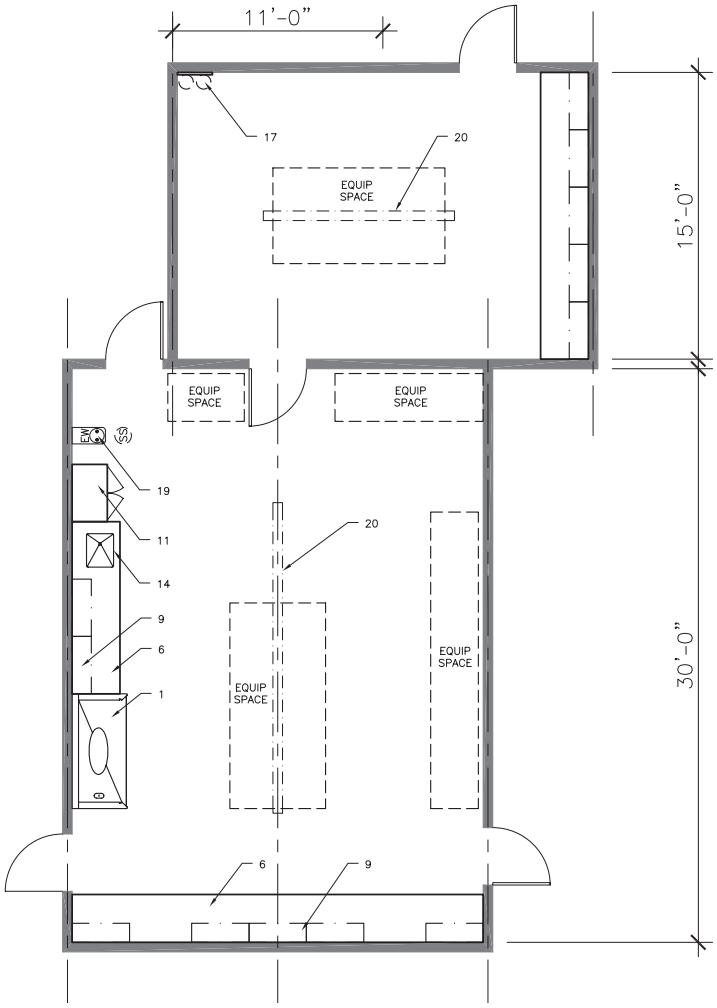
1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Vented Workstation
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Vented Corrosive Storage Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Research**
SPACE NAME: **Research Laboratory – Bioinstrumentation**
SPACE ID: **D2B**
AREA: **990 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



NOT TO SCALE

FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Vented Workstation
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Vented Corrosive Storage Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Research
SPACE NAME: Research Laboratory – Bioinstrumentation
SPACE ID: D2
AREA: 6 @ 1,320 ASF + 990 ASF = 8,910 ASF

UTILIZATION	
Hours of Use	
14 hours/day	
24 hours/day	●
Hours of Operation	
14 hours/day	
24 hours/day	●

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	●
4°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	6-12
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	●
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	●
Compressed Air, 100 psig	A	●
Laboratory Gas	LG	●
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	●
Deionized Water	DI	●
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	●
Safety Shower/Eyewash	SS	●
Eyewash	EW	●
Floor Drain	FD	
Floor Sink	FS	

ELECTRICAL	
120V, 20A, 1 phase	●
208V, 30A, 1 phase	●
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	●
Standby Power	●
Telephone Outlet	●
LAN/WAN Outlet	●
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT	
Vibration Sensitive	●
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE	
Flammables	●
Corrosives	●
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	●
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS	
Wood Casework	●
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	●
Stainless Steel Tops	
Solid Phenolic	
Epoxy Resin Sinks	●
Stainless Steel Sinks	

REMARKS

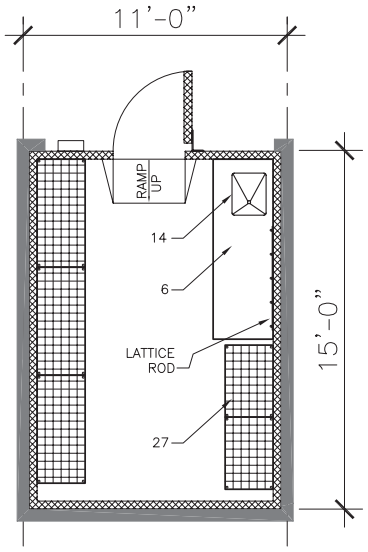
SECURITY	
Pushbutton Combination Lock	

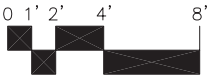
INTERIORS	
Floor	
Vinyl Composition Tile	●
Welded Sheet Vinyl	
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	
Resilient	●
Other	
Partitions	
Gypsum Board, Paint	●
Gypsum Board, Epoxy Paint	
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	●
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	●
3'-0" x 7'-0"	
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Research**
SPACE NAME: **Shared Lab Support – Cold/ Environmental Rm**
SPACE ID: **D3**
AREA: **2 @ 165 ASF = 330 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.





FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Book / Bag Storage
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Vented Corrosive Storage Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Research
SPACE NAME: Shared Lab Support – Cold/ Environmental Rm
SPACE ID: D3
AREA: 2 @ 165 ASF = 330 ASF

UTILIZATION	
Hours of Use	
14 hours/day	
24 hours/day	●
Hours of Operation	
14 hours/day	
24 hours/day	●

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	
4°C - 37°C	●
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	
Positive Air Pressure	
Negative Air Pressure	
100% Outside Supply Air	
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	
Compressed Air, 100 psig	A	
Laboratory Gas	LG	
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	●
Deionized Water	DI	
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	
Safety Shower/Eyewash	SS	
Drench Hose	DH	
Floor Drain	FD	
Floor Sink	FS	

ELECTRICAL	
120V, 20A, 1 phase	●
208V, 30A, 1 phase	
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	
Standby Power	
Telephone Outlet	
LAN/WAN Outlet	
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT	
Vibration Sensitive	
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE	
Flammables	
Corrosives	
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS	
Wood Casework	
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	
Stainless Steel Tops	●
Solid Phenolic	
Epoxy Resin Sinks	
Stainless Steel Sinks	●

REMARKS

Pre-Fabricated room.

SECURITY	
Pushbutton Combination Lock	

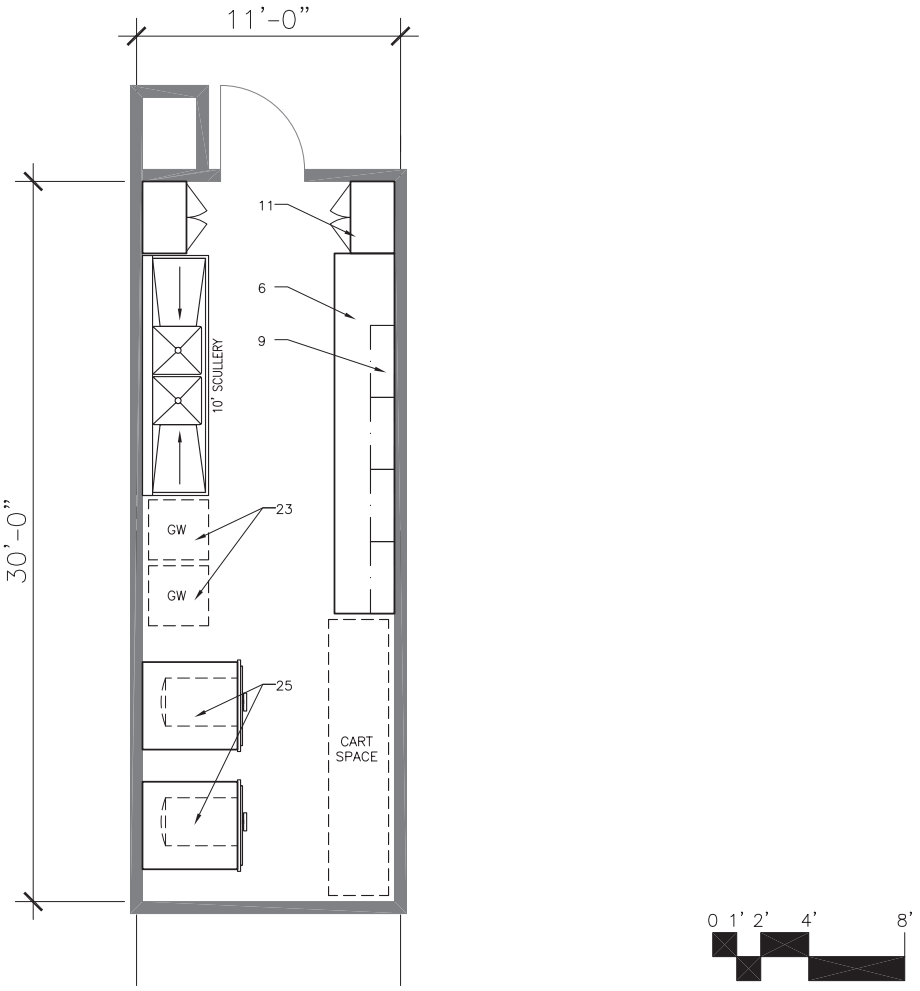
INTERIORS	
Floor	
Vinyl Composition Tile	
Welded Sheet Vinyl	
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	●
Base	
Integral with Floor	
Resilient	
Other	●
Partitions	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	●
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	●
Doors	
3'-6" x 7'-0"	
3'-0" x 7'-0"	●
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	●

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Research**
SPACE NAME: **Shared Lab Support – Autoclave/ Glassware**
SPACE ID: **D4**
AREA: **220 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Book / Bag Storage
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Vented Corrosive Storage Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Research
SPACE NAME: Shared Lab Support – Autoclave/ Glassware
SPACE ID: D4
AREA: 220 ASF

UTILIZATION	
Hours of Use	
14 hours/day	
24 hours/day	●
Hours of Operation	
14 hours/day	
24 hours/day	●

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	●
4°C - 37°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	6-12
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	●
Compressed Air, 100 psig	A	●
Laboratory Gas	LG	
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	●
Deionized Water	DI	●
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	
Safety Shower/Eyewash	SS	
Drench Hose	EW	●
Floor Drain	FD	
Floor Sink	FS	●

ELECTRICAL	
120V, 20A, 1 phase	●
208V, 30A, 1 phase	●
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	
Standby Power	
Telephone Outlet	●
LAN/WAN Outlet	●
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT	
Vibration Sensitive	
Light Sensitive	
Vibration Producing	
Heat Producing	●
Noise Producing	

HAZARDOUS STORAGE	
Flammables	
Corrosives	
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS	
Wood Casework	
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	
Stainless Steel Tops	●
Solid Phenolic	
Epoxy Resin Sinks	
Stainless Steel Sinks	●

REMARKS

Exhaust grill over autoclaves

SECURITY	
Pushbutton Combination Lock	

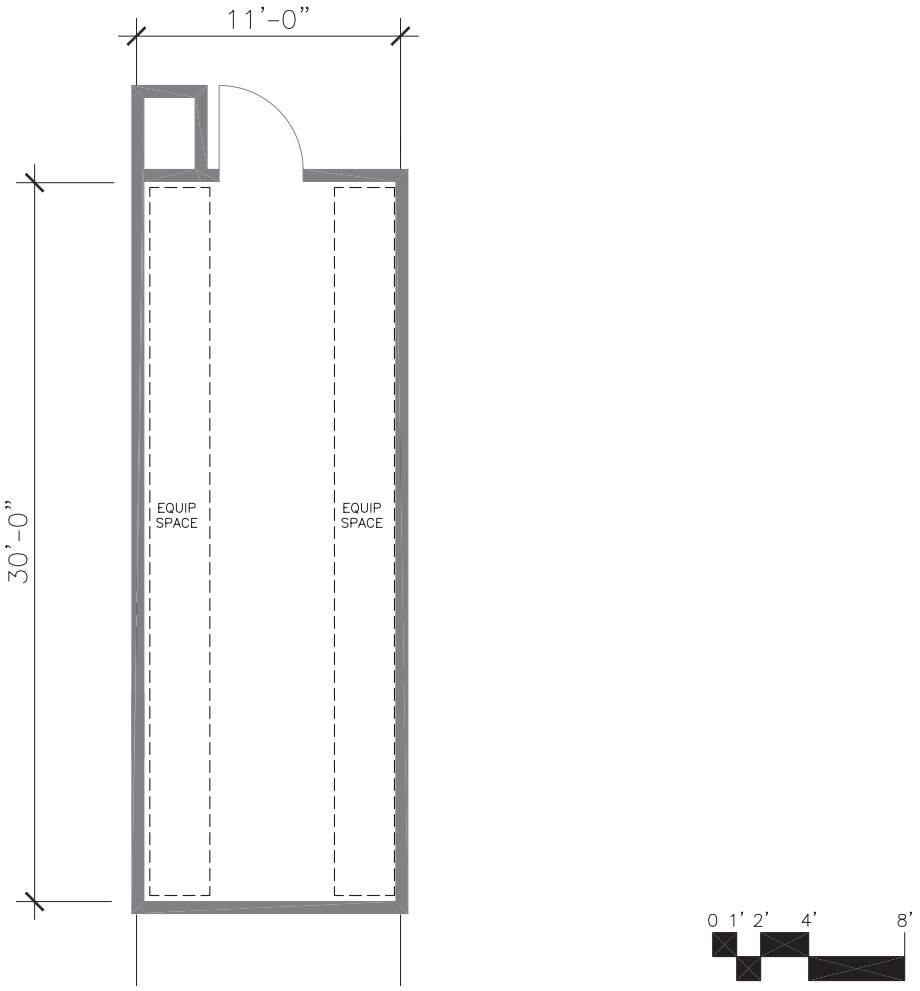
INTERIORS	
Floor	
Vinyl Composition Tile	
Welded Sheet Vinyl	●
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	●
Resilient	
Other	
Partitions	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	●
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	●
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	●
3'-0" x 7'-0"	
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Research**
SPACE NAME: **Shared Lab Support – Equipment Room**
SPACE ID: **D5**
AREA: **2 @ 220 ASF = 440 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Book / Bag Storage
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Vented Corrosive Storage Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Research
SPACE NAME: Shared Lab Support – Equipment Room
SPACE ID: D5
AREA: 2 @ 220 ASF = 440 ASF

UTILIZATION	
Hours of Use	
14 hours/day	
24 hours/day	●
Hours of Operation	
14 hours/day	
24 hours/day	●

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	●
4°C - 37°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	6-12
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	
Compressed Air, 100 psig	A	
Laboratory Gas	LG	
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	
Deionized Water	DI	
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	
Safety Shower/Eyewash	SS	
Drench Hose	EW	
Floor Drain	FD	
Floor Sink	FS	

ELECTRICAL	
120V, 20A, 1 phase	●
208V, 30A, 1 phase	●
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	●
Standby Power	
Telephone Outlet	●
LAN/WAN Outlet	●
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT	
Vibration Sensitive	
Light Sensitive	
Vibration Producing	
Heat Producing	●
Noise Producing	

HAZARDOUS STORAGE	
Flammables	
Corrosives	
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS	
Wood Casework	
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	
Stainless Steel Tops	
Solid Phenolic	
Epoxy Resin Sinks	
Stainless Steel Sinks	

REMARKS

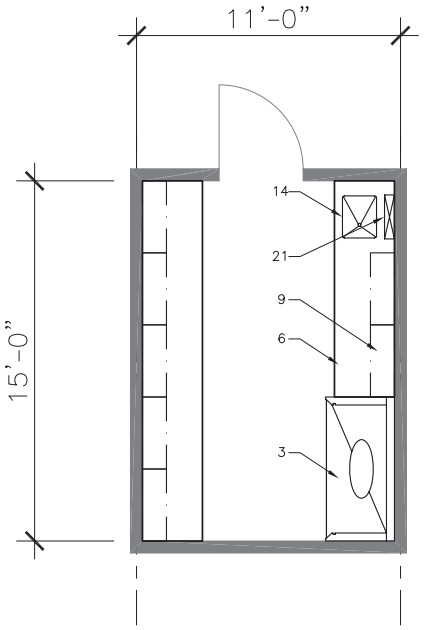
SECURITY	
Pushbutton Combination Lock	

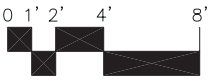
INTERIORS	
Floor	
Vinyl Composition Tile	●
Welded Sheet Vinyl	
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	
Resilient	●
Other	
Partitions	
Gypsum Board, Paint	●
Gypsum Board, Epoxy Paint	
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	●
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	●
3'-0" x 7'-0"	
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Research**
SPACE NAME: **Shared Lab Support – Radioisotope Room**
SPACE ID: **D6**
AREA: **165 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.





FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Book / Bag Storage
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Vented Corrosive Storage Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Research
SPACE NAME: Shared Lab Support – Radioisotope Room
SPACE ID: D6
AREA: 165 ASF

Hours of Use	
14 hours/day	
24 hours/day	●
Hours of Operation	
14 hours/day	
24 hours/day	●

MECHANICAL

Temperature	
71°F-76°F ± 2°F	●
4°C - 37°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	6-12
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	●

EXHAUST/CLEAN AIR DEVICES

Chemical Fumehood	
Radioisotope Fumehood	●
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING

Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	●
Compressed Air, 100 psig	A	
Laboratory Gas	LG	
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	●
Deionized Water	DI	
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	
Safety Shower/Eyewash	SS	
Drench Hose	EW	●
Floor Drain	FD	
Floor Sink	FS	

120V, 20A, 1 phase	●
208V, 30A, 1 phase	
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	
Standby Power	
Telephone Outlet	●
LAN/WAN Outlet	●
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT

Vibration Sensitive	
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE

Flammables	
Corrosives	
Toxics	
Carcinogens	
Radioisotopes	●
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS

Wood Casework	
Metal Casework	●
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	
Stainless Steel Tops	●
Solid Phenolic	
Epoxy Resin Sinks	
Stainless Steel Sinks	●

SECURITY

Pushbutton Combination Lock	

INTERIORS

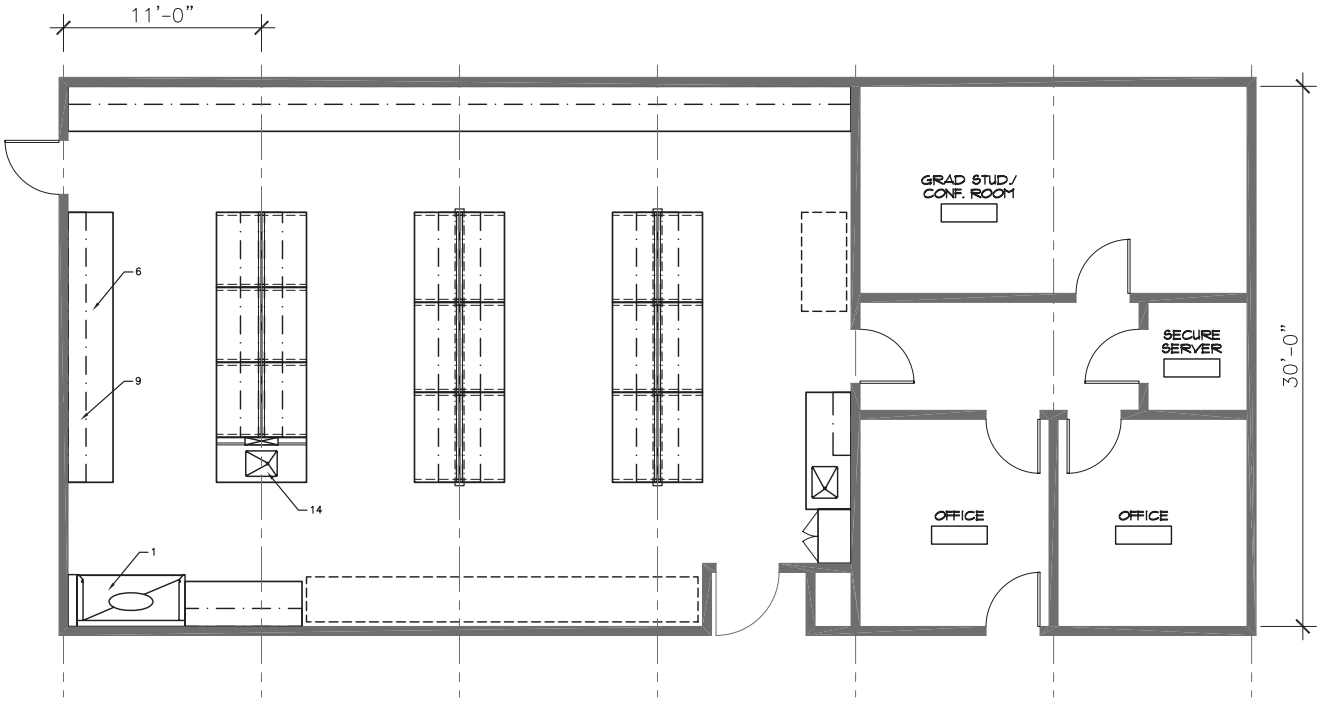
Floor	
Vinyl Composition Tile	
Welded Sheet Vinyl	●
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	●
Resilient	
Other	
Partitions	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	●
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	
Vinyl-faced Panel	●
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	●
3'-0" x 7'-0"	
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Research
SPACE NAME: Research Center, Option A
SPACE ID: D7
AREA: 1,980 ASF

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



FURNISHINGS

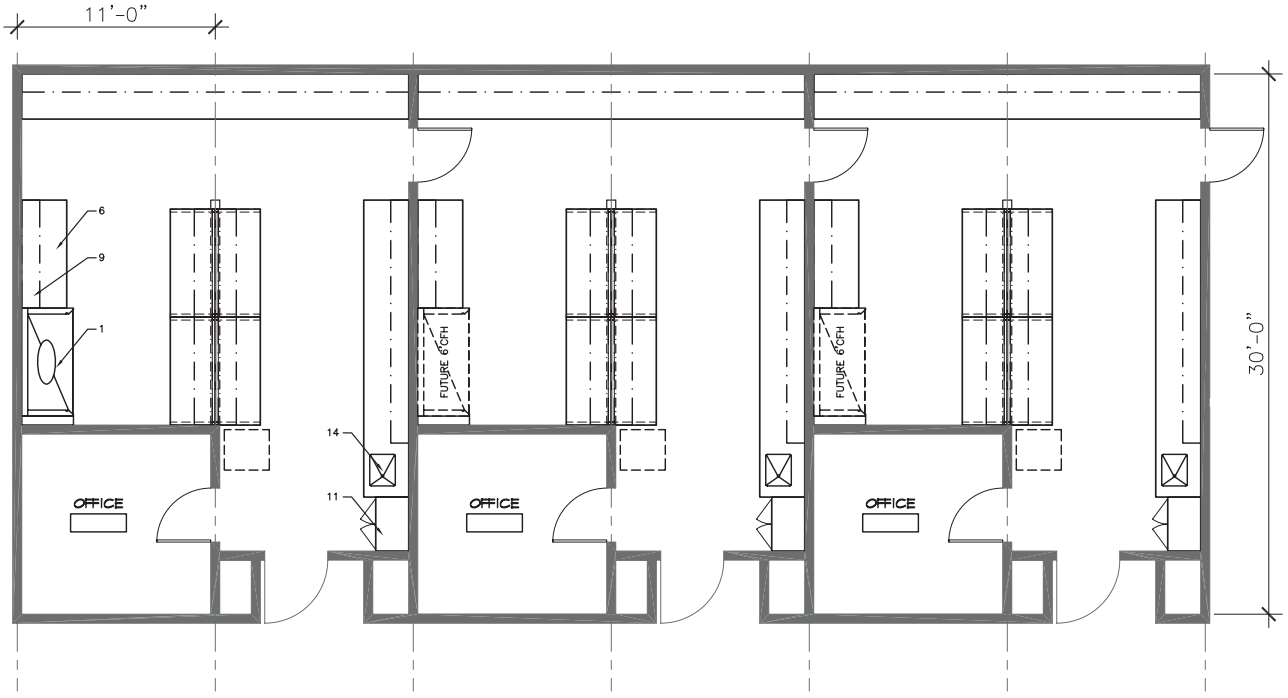
1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Vented Workstation
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Vented Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Gas Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Research**
SPACE NAME: **Research Center, Option B**
SPACE ID: **D7**
AREA: **1,980 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Vented Workstation
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
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13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Gas Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Research
SPACE NAME: Research Center
SPACE ID: D7
AREA: 1,980 ASF

UTILIZATION	
Hours of Use	
14 hours/day	
24 hours/day	●
Hours of Operation	
14 hours/day	
24 hours/day	●

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	●
4°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	6-12
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	●
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	●
Compressed Air, 100 psig	A	●
Laboratory Gas	LG	●
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	●
Deionized Water	DI	●
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	●
Safety Shower/Eyewash	SS	●
Eyewash	EW	●
Floor Drain	FD	
Floor Sink	FS	

ELECTRICAL	
120V, 20A, 1 phase	●
208V, 30A, 1 phase	●
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	●
Standby Power	●
Telephone Outlet	●
LAN/WAN Outlet	●
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT	
Vibration Sensitive	●
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE	
Flammables	●
Corrosives	●
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	●
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS	
Wood Casework	●
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	●
Stainless Steel Tops	
Solid Phenolic	
Epoxy Resin Sinks	●
Stainless Steel Sinks	

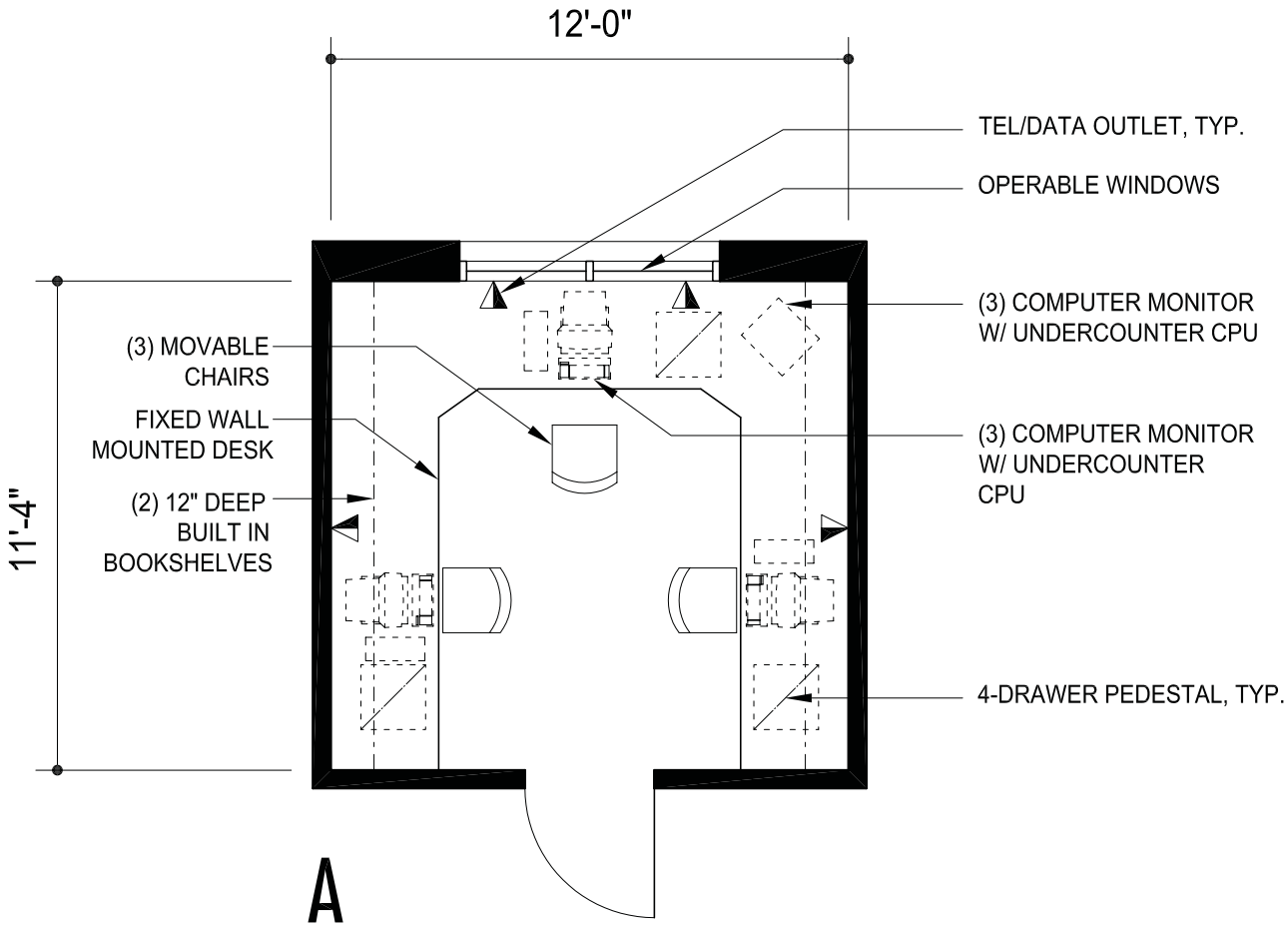
REMARKS

SECURITY	
Pushbutton Combination Lock	

INTERIORS	
Floor	
Vinyl Composition Tile	
Welded Sheet Vinyl	●
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	
Resilient	●
Other	
Partitions	
Gypsum Board, Paint	●
Gypsum Board, Epoxy Paint	
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	●
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	●
3'-0" x 7'-0"	
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

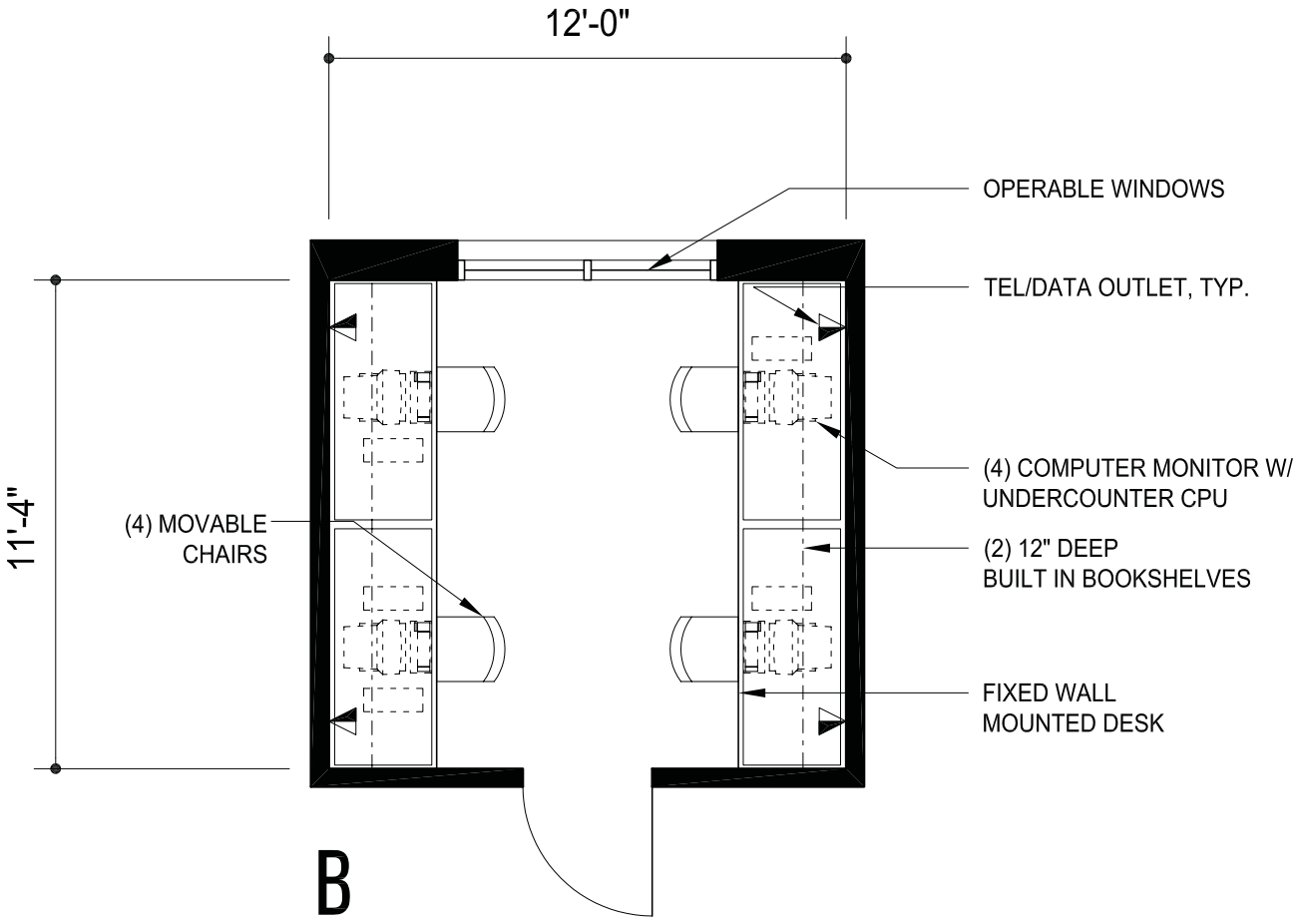
DEPARTMENT: **Research**
SPACE NAME: **Graduate Student Office, Option A**
SPACE ID: **D8**
AREA: **18 @ 270 ASF = 4,860 ASF**



A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Research**
SPACE NAME: **Graduate Student Office, Option B**
SPACE ID: **D8**
AREA: **18 @ 270 ASF = 4,860 ASF**



A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Research
SPACE NAME: Graduate Student Office
SPACE ID: D8
AREA: 18 @ 270 ASF = 4,860 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
General office space for three to four Graduate Students including space for computer workstations, desks, file storage, books and reference material shelves, and room for meetings with 1-2 others.

QUANTITY: (36)

ASF: 135 ASF

OCCUPANCY: (3)

UTILIZATION: 24 hours per day.

ADJACENCIES:
Faculty Office
Research Offices
Research Labs
Conference Room

ROOM DIMENSIONS: 9'-0" minimum ceiling height.

NATURAL LIGHT: Windows are required. Provide shades for sun control.

ROOM FINISHES:
- **Floor:** Carpet.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0" with vision panel.

ACOUSTICS: Acoustic isolation for Private Offices. See Acoustic Design Criteria. Provide floor to floor partitions.

SIGHTLINES: No requirements.

SIGNAGE: Room number and names of occupants.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72°F +/- 2°F

HUMIDITY: 50% +/-20%

VENTILATION: 20+ CFM/person, Recirculated Air.

AIR CHANGES: 6 AC/Hr.

LIGHTING LEVELS: Fluorescent, 75fc at work surface.

POWER: 110V, 60A, 1 phase.

DATA: (3) ethernet data ports distributed in space to allow versatility in furniture arrangement.

TELECOMMUNICATIONS: (3) phone outlets.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: No requirements.

SECURITY: Lockable doors.

ROOM CONTENTS

GROUP I:
Built-in Equipment:
(1) Markerboard.
(2) Built-in bookshelves.

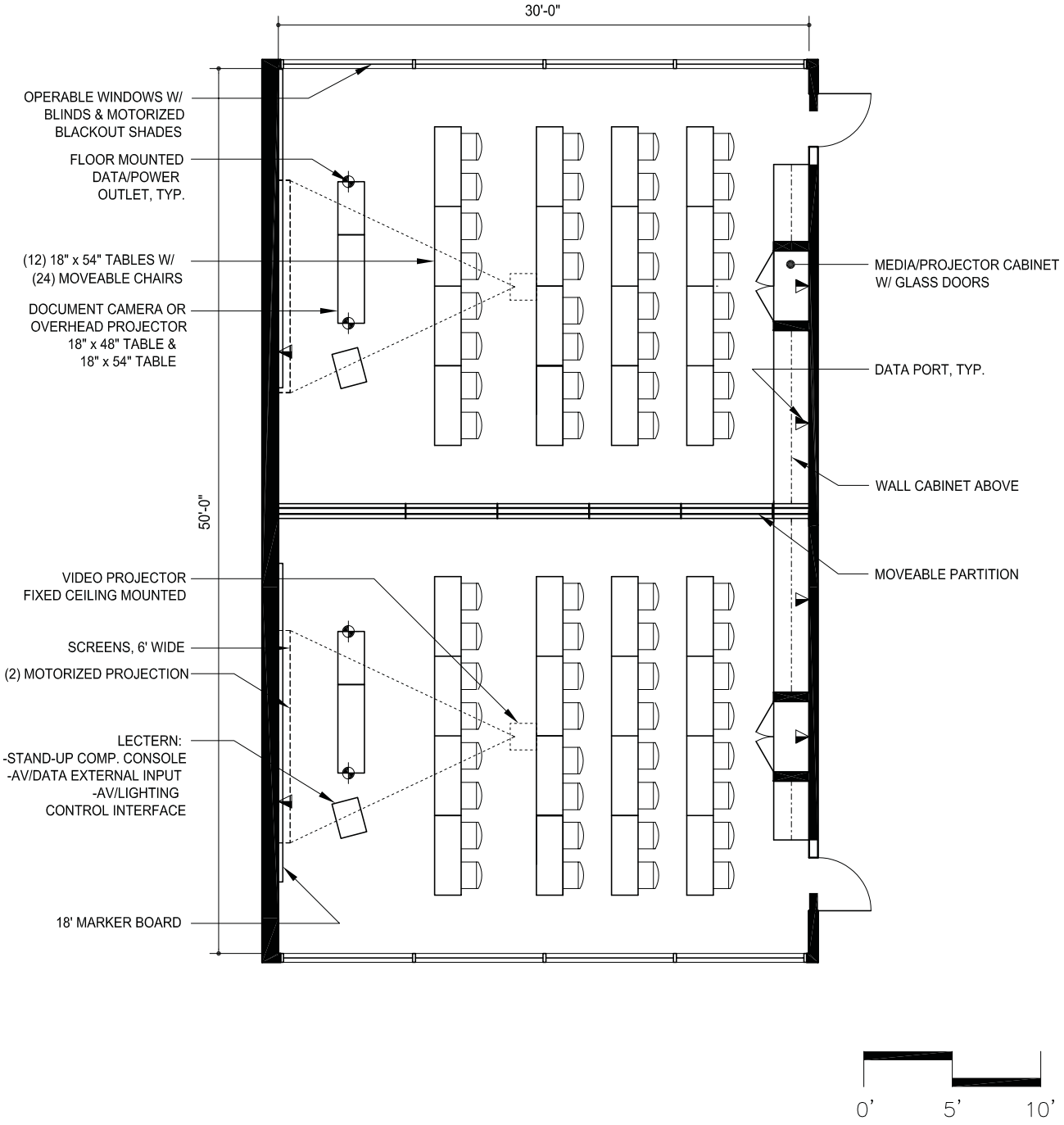
GROUP II:
Movable Equipment: No requirements

Furnishings:
(2) 30” deep movable workstations.
(2) Chairs with arms.
(1) Chair without arms.
(2) Lateral Files, 2-drawer.
(2) 4-drawer pedestals.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Scholarly Activity**
SPACE NAME: **Seminar Room**
SPACE ID: **E1**
AREA: **2,200 ASF**



NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Scholarly Activity**
SPACE NAME: **Seminar Room**
SPACE ID: **E1**
AREA: **2,200 ASF**

SPACE DESCRIPTION

GENERAL DESCRIPTION:
General purpose instructional and meeting space. The space will serve a variety of functions including instruction, conferences, research group meetings, seminars, banquets and trade show functions. The seminar room should provide state of the art audiovisual capabilities and should be adaptable to advances in A/V technology in the future.

QUANTITY: (1)

ASF: 2200 ASF

OCCUPANCY: (80)

UTILIZATION: 14 hours per day.

ADJACENCIES: Access is critical; should have direct access to campus pedestrian and bicycle paths. Provide sound isolation between prefunction areas and otheradjacent spaces.

Other adjacencies include:
Toilet Rooms

ROOM DIMENSIONS: Flat floor design to accommodate multiple uses and functions.
12' - 14'-0" minimum ceiling height.
Removable partitions to create a subdivided space.

NATURAL LIGHT: Natural light is desirable. Provide shades for sun control and blackout shades for room darkening.

SPACE DESCRIPTION

ROOM FINISHES:

- **Floor:** Carpet. Material selection should be chosen for durability and acoustic dampening.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile / Gyp. Bd, Paint.
- **Partitions:** Gypsum Board, Paint and acoustically absorptive material. Movable Partition.

DOORS: 3'-0" x 7'-0" double doors with panic hardware.

ACOUSTICS: Design for sound reinforcement system. Acoustic isolation for Lecture Hall, see Acoustic Design Criteria.

SIGHTLINES:

SIGNAGE: Room name and number.

SPECIAL REQ'MENTS: Lecture Hall should be accessible to the exterior of building 24 hours per day.

A/V closet at back of room.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air.

ZONED LIGHTING:

Zones:
1. General audience lighting.
2. Presentation area lighting.
3. Markerboard lighting.
4. Media cabinet lighting.

Lighting Levels:
1. 50fc dimmable to 5fc
2. 70fc dimmable to 5fc
3. 90fc
4. 50fc focusable on equipment.

Lighting Controls:
Provide lighting controls for 4 settings in the: following locations

POWER: 110V, 60A, 1 phase.

Audience Area:
Provide quad outlets at 10' on center around perimeter of seating areas and (2) quad floor outlets at center of audience areas.

Media Cabinet/Media Closet:
Provide sufficient outlets to accommodate audiovisual equipment.

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Scholarly Activity**
SPACE NAME: **Seminar Room**
SPACE ID: **E1**
AREA: **2,200 ASF**

BUILDING SYSTEM REQUIREMENTS

DATA: Provide data outlets as follows to accommodate data projection, student displays and trade show configuration:
1. Provide (3) data outlets at rear of stage.
2. Provide data outlets at 10' on center around perimeter of audience areas.
3. Provide (2) floor data outlets near center of audience floor area.

TELECOMMUNICATIONS: (1) phone outlet.

AUDIOVISUAL: Audiovisual systems should be designed to accommodate the following requirements
1. Data projection from movable cart.
2. Overhead projection.
3. Slide projection.
4. Sound amplification system including: microphone and line inputs, remote volume controls, mixer/amplifier, feedback eliminator and speakers at 1 per 25 occ.

VIDEO:
1. Video and data projection from retractable, ceiling mounted projector.

PIPED SERVICES: No requirements.

SECURITY: Locking doors.

SPECIAL REQ'MENTS: Design HVAC system to dampen noise from air supply/return.

ROOM CONTENTS

GROUP I:

Built-in Equipment:
(3) Markerboards
(2) Motorized Projection Screens
(1) Media Cabinet for remote audiovisual equipment.
(1) Built-in storage area for chairs, tables and media carts.

GROUP II:

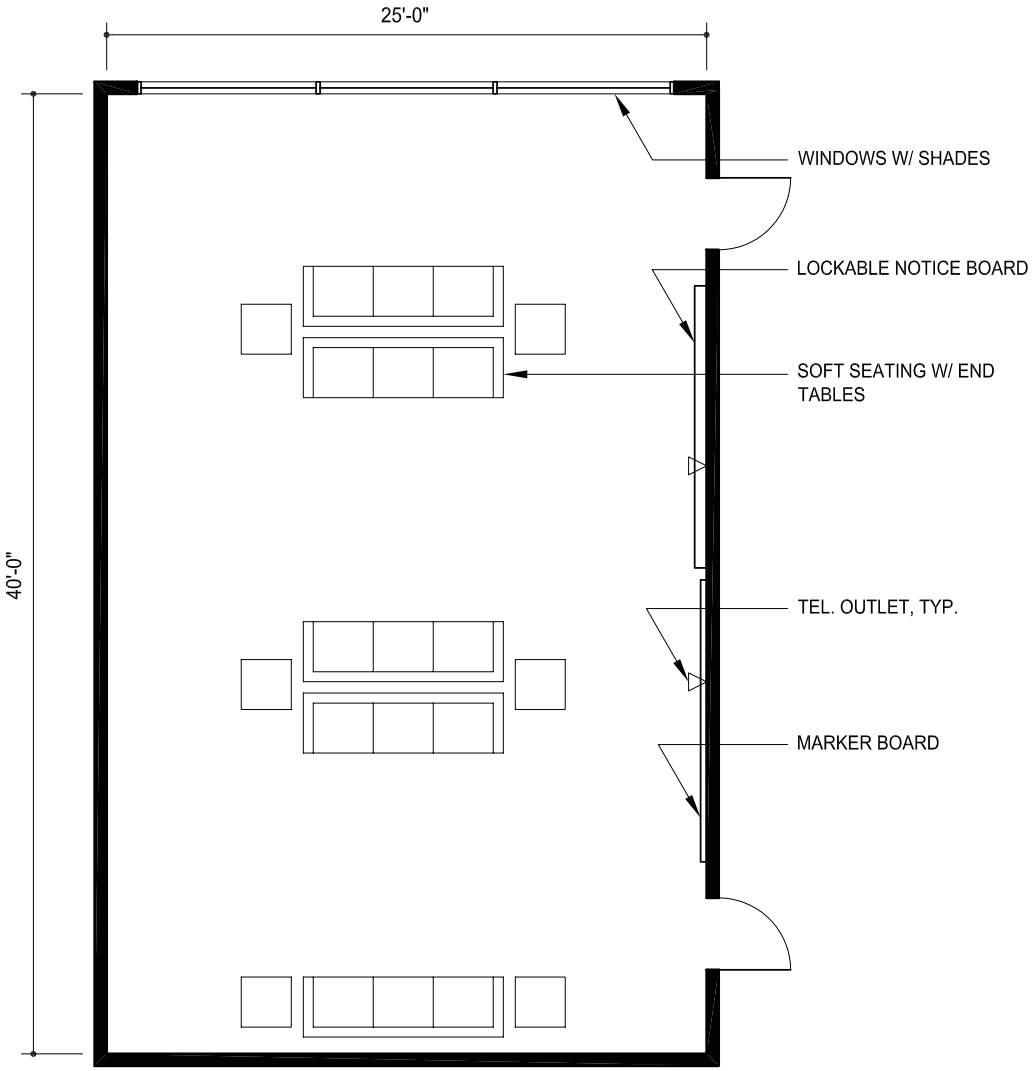
Movable Equipment:
(1) Instructor workstation, standing height with floor outlets for power and data.
(1) Media cart.

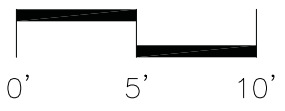
Furnishings:
(1) Adjustable chair for Instructor workstation.
(146) Stackable chairs.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Scholarly Activity**
SPACE NAME: **Seminar Support/ Prefunction Space**
SPACE ID: **E2**
AREA: **1,000 ASF**





NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Scholarly Activity
SPACE NAME: Seminar Support/ Prefunction Space
SPACE ID: E2
AREA: 1,000 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
The Engineering Building Unit 3 should be provided with a Seminar Support and Prefunction space that helps to create a unique identity for the Department of Bioengineering. The space should provide direct access to the Seminar Room and the main public building entrance as well as other student oriented functions such as the Instructional Labs. The space should be easily identifiable from the exterior and should be provided with comfortable seating areas. The space should be suitable for periodic exhibits of up to (30) poster boards.

QUANTITY: (1)

ASF: 1000 ASF

OCCUPANCY: N/A

UTILIZATION: 14 hours per day.

ADJACENCIES:
Administrative Office Suite
Seminar Room
Elevators and Stairs
Toilet Rooms

ROOM DIMENSIONS: The space should be designed for movable upholstered seating but provide ample space for occupant traffic patterns. 14'-0" minimum ceiling height.

NATURAL LIGHT: Natural light is required. Provide shades for sun control.

ROOM FINISHES:
- **Floor:** Stone or tile.
- **Base:** 4" stone or tile base.
- **Ceiling:** Metal ceiling / Gyp. Bd, Paint.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0"

ACOUSTICS: Acoustic isolation from adjacent spaces, see Acoustic Design Criteria for adjacent spaces.

SIGHTLINES: No requirements.

SIGNAGE: Building Directory, directional signage.

SPECIAL REQ'MENTS: No requirements.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air

AIR CHANGES: 4 AC/hr

POWER: 110V, 60A, 1 phase.

DATA: No requirements.

TELECOMMUNICATIONS: (2) public phones.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: No requirements.

SECURITY: Locking doors.

SPECIAL REQ'MENTS: No requirements.

ROOM CONTENTS

GROUP I:
Built-in Equipment:
(1) Lockable notice board.
(1) Marker Board

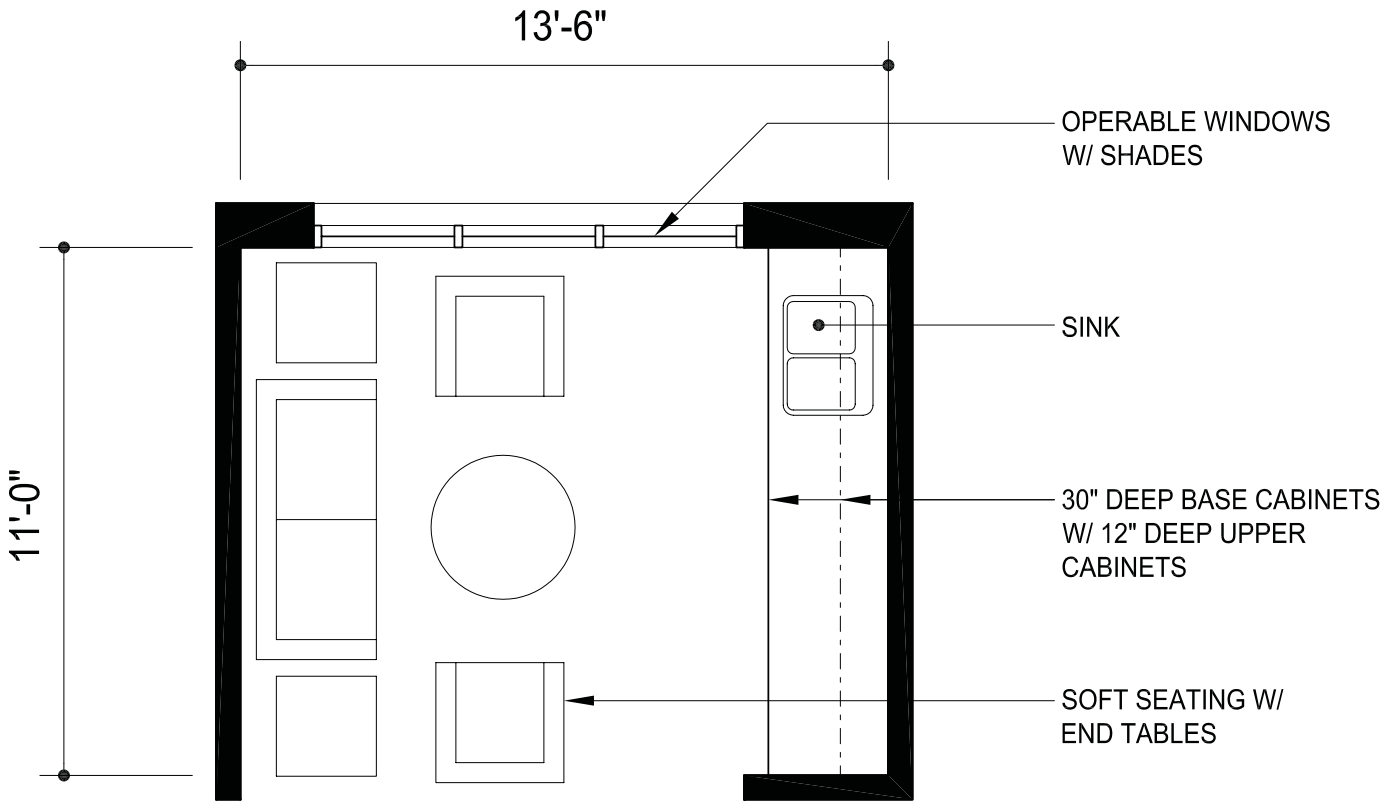
GROUP II:
Movable Equipment: No requirements.

Furnishings:
(5) Upholstered sofas.
(6) Side tables.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Scholarly Activity**
SPACE NAME: **Student Study/ Interactive Space**
SPACE ID: **E3**
AREA: **6 @ 150 ASF = 900 ASF**



A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Scholarly Activity
SPACE NAME: Student Study/ Interactive Space
SPACE ID: E3
AREA: 6 @ 150 ASF = 900 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
The Engineering Building Unit 3 should be provided with student study/interactive spaces adjacent to public corridor spaces that encourage interaction and socialization amongst building occupants. The spaces should be centrally located and provided with comfortable seating.

QUANTITY: (6)

ASF: 150 ASF

OCCUPANCY: (8)

ADJACENCIES:
Research Offices
Research Labs
Conference Room
Toilet Rooms

ROOM DIMENSIONS: Open lounge areas should be designed for movable upholstered seating but provide ample space for occupant traffic patterns. 10'-0" minimum ceiling height.

NATURAL LIGHT: Natural light is desirable. Provide shades for sun control.

ROOM FINISHES:
- **Floor:** Carpet.
- **Base:** 4" tile base.
- **Ceiling:** Acoustic Tile / Gyp. Bd, Paint.
- **Partitions:** Gypsum Board, Paint.

DOORS: No requirements

UTILIZATION: 24 hours per day.
.

ACOUSTICS: Acoustic isolation from adjacent spaces, see Acoustic Design Criteria for adjacent spaces.

SIGHTLINES: No requirements.

SIGNAGE: No requirements.

SPECIAL REQ'MENTS: No requirements.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air

AIR CHANGES: 4 AC/hr

POWER: 110V, 60A, 1 phase.

DATA: No requirements.

TELECOMMUNICATIONS: No requirements.

AUDIOVISUAL: No requirements.

VIDEO: No requirements.

PIPED SERVICES: Sink.

SECURITY: No requirements.

SPECIAL REQ'MENTS: No requirements.

ROOM CONTENTS

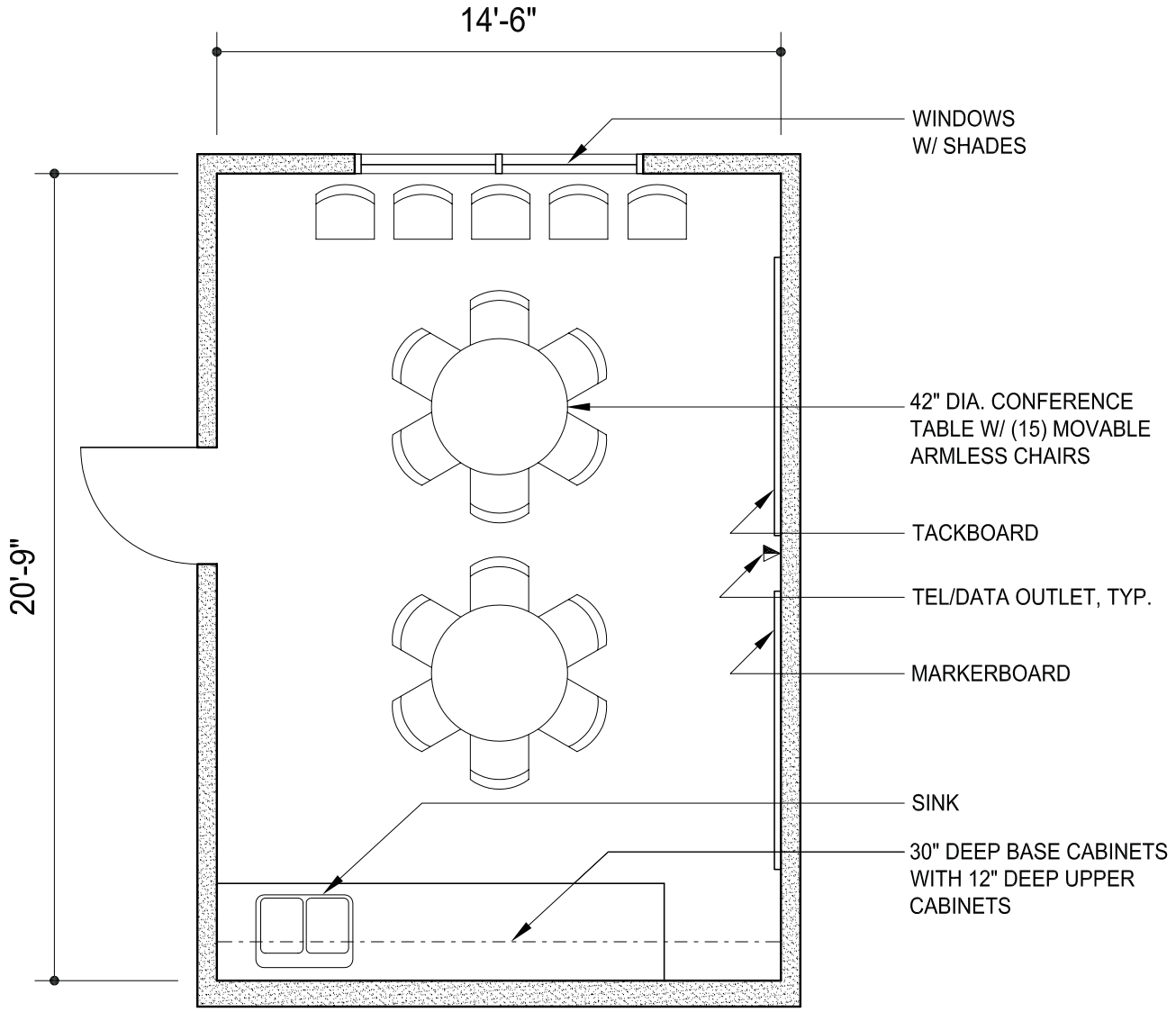
GROUP I:
- **Built-in Equipment:** Base and upper cabinets

GROUP II:
- **Movable Equipment:** No requirements.
- **Furnishings:** (3) Upholstered sofas.
  (3) Side tables.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Scholarly Activity**
SPACE NAME: **Research Group Meeting Room**
SPACE ID: **E4**
AREA: **2 @ 300 ASF = 600 ASF**



NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Scholarly Activity
SPACE NAME: Research Group Meeting Room
SPACE ID: E4
AREA: 2 @ 300 ASF = 600 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
General workroom intended to provide unassigned work space, study carrels and conference tables for Faculty, Research Staff, and doctoral students. Locate large Research Group meeting rooms on ground floor and smaller meeting rooms on research floors.

QUANTITY: (2)

ASF: 300 ASF/150 ASF

OCCUPANCY: (15)/(6)

UTILIZATION: 24 hours per day.

ADJACENCIES: Faculty Offices
Administration Suite
Toilet Rooms

ROOM DIMENSIONS: Should be designed to accommodate 2) round conference/work Room should be rectangular.
9'-0" minimum ceiling height.

NATURAL LIGHT: Windows are desirable.
Provide shades for sun control.

ROOM FINISHES:
- **Floor:** Carpet.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile / Gyp. Bd, Paint.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0"

ACOUSTICS: Acoustic isolation for Conference Room. See Acoustic Design Criteria.
Provide floor to floor partitions.

SIGHTLINES: Design space to allow clear views to markerboard.

SIGNAGE: Room name and number.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F
HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air.

AIR CHANGES: 4 AC/hr

LIGHTING LEVELS: Fluorescent, 75fc at work surface.

POWER: 110V, 60A, 1 phase.

DATA: (1) ethernet data port.

TELECOMMUNICATIONS: (1) phone outlet.

AUDIOVISUAL: No requirements.

VIDEO: No requirements

PIPED SERVICES: Sink w/ hot & cold water.

SECURITY: Lockable doors.

ROOM CONTENTS

GROUP I:
Built-in Equipment:
(1) Markerboard.
(1) Tackboard.
(1) Built-in base and wall cabinets.

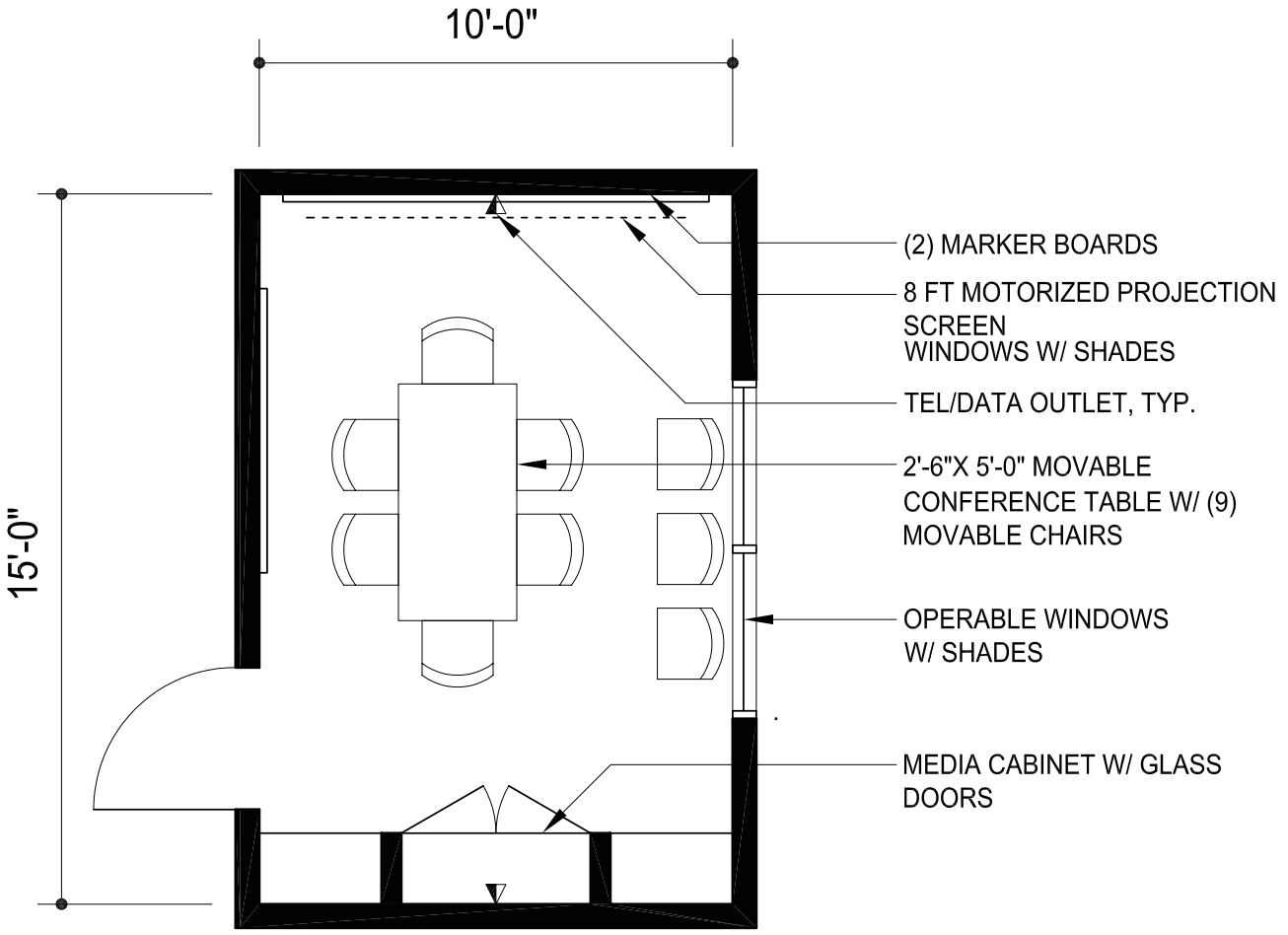
GROUP II:
Movable Equipment: No requirements

Furnishings:
(2) Round work tables.
(15) Chairs.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Scholarly Activity**
SPACE NAME: **Design Rooms**
SPACE ID: **E5**
AREA: **3 @ 150 ASF = 450 ASF**



A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Scholarly Activity
SPACE NAME: Design Rooms
SPACE ID: E5
AREA: 3 @ 150 ASF = 450 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
General purpose meeting space used for small conferences and presentations. Locate near research offices and laboratories.

QUANTITY: (3)

ASF: 150 ASF

OCCUPANCY: (9)

UTILIZATION: 14 hours per day.

ADJACENCIES: Research Offices
Research Laboratories
Toilet Rooms

ROOM DIMENSIONS: Design Room should be designed for versatility in table and chair arrangement. Room should be rectangular with markerboard at one end.
9'-0" minimum ceiling height.

NATURAL LIGHT: Windows are desirable.
Provide shades for sun control.

ROOM FINISHES:
- **Floor:** Carpet.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile / Gyp. Bd, Paint.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0"

ACOUSTICS: Acoustic isolation for Conference Room. Provide floor to floor partitions. See Acoustic Design Criteria.

SIGHTLINES: Design space to allow clear views to markerboards and projection screen.

SIGNAGE: Room name and number.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air.

AIR CHANGES: 4 AC/hr

LIGHTING LEVELS: Fluorescent, 75fc at work surface, dimmable to 5fc.

POWER: 110V, 60A, 1 phase.

DATA: (1) ethernet data port at computer workstation and (1) ethernet data port located near projection screen.

TELECOMMUNICATIONS: (1) phone outlet.

AUDIOVISUAL:
1. Data projection from media cabinet.
2. Overhead projection.
3. Slide projection from media cabinet.

VIDEO: Video/data projection from media cabinet.

PIPED SERVICES: Sink with hot and cold water and garbage disposer.

SECURITY: Lockable doors.

SPECIAL REQ'MENTS: No requirements.

ROOM CONTENTS

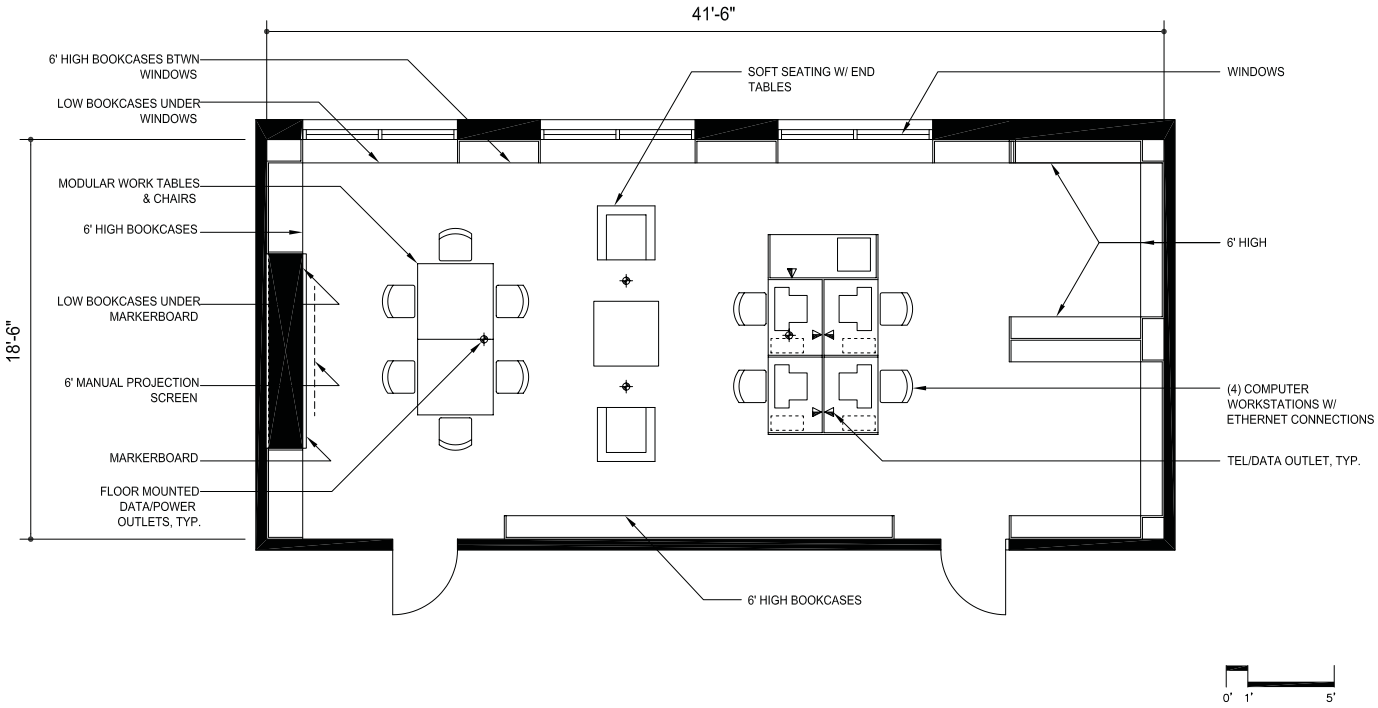
GROUP I:
- **Built-in Equipment:** (2) Markerboards
  Built-in base cabinets and wall cabinets for storage; provide knee opening for computer workstation

GROUP II:
- **Movable Equipment:** No requirements
- **Furnishings:** (1) 2'6" x 5'-0" movable tables.
  (9) Chairs.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Scholarly Activity
SPACE NAME: Library
SPACE ID: E6
AREA: 750 ASF



A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Scholarly Activity
SPACE NAME: Library
SPACE ID: E6
AREA: 750 ASF

SPACE DESCRIPTION

GENERAL DESCRIPTION:
Library, multi-purpose instructional, meeting and informal gathering space to accommodate up to 30 occupants. The space will serve a variety of functions including instruction, seminars, study and research as well as serving as a eating area for research students and faculty. The Library/Workroom should provide facilities for A/V presentations, study carrels with data ports, library shelving for periodicals and reference materials, and a lounge area.

QUANTITY: (1)

ASF: 750 ASF

OCCUPANCY: (30)

UTILIZATION: 24 hours per day.

ADJACENCIES: Research Offices
Toilet Rooms

ROOM DIMENSIONS: Library/Workroom should be designed for versatility in table and chair arrangement. Room should be rectangular with markerboard and projection screen at one end.
10'-0" minimum ceiling height.

NATURAL LIGHT: Windows are desirable. Provide shades for sun control and blackout shades for room darkening.

ROOM FINISHES:
- **Floor:** Carpet.
- **Base:** 4" rubber base.
- **Ceiling:** Acoustic Tile / Gyp. Bd, Paint.
- **Partitions:** Gypsum Board, Paint.

DOORS: 3'-0" x 7'-0"

ACOUSTICS: Acoustic isolation for Library/Workroom. See Acoustic Design Criteria. Provide floor to floor partitions.

SIGHTLINES: Design space to allow clear views to markerboard and projection screen.

SIGNAGE: Room name and number.

BUILDING SYSTEM REQUIREMENTS

TEMPERATURE: 72° F +/- 2° F

HUMIDITY: 50% +/- 20%

VENTILATION: 20+ CFM/person, Recirculated Air.

AIR CHANGES: 4 AC/hr

LIGHTING LEVELS: Fluorescent, 75fc at work surface, dimmable to 5fc.

POWER: 110V, 60A, 1 phase.

DATA: (3) ethernet data ports at each computer workstation.

TELECOMMUNICATIONS: (1) phone outlet.

AUDIOVISUAL:
1. Video/data projection from media cabinet.
2. Overhead projection.
3. Slide projection media cabinet.

VIDEO: Video projection from media cart.

PIPED SERVICES:

SECURITY: Lockable doors, Card-key access.

ROOM CONTENTS

GROUP I:

Built-in Equipment:
- (1) Markerboard.
- (1) Lockable notice board.
- (1) Manual Projection Screen
- (2) Built-in shelving for books and periodicals.
- (3) Built-in computer workstations.

GROUP II:

Movable Equipment: (1) Media Cart.

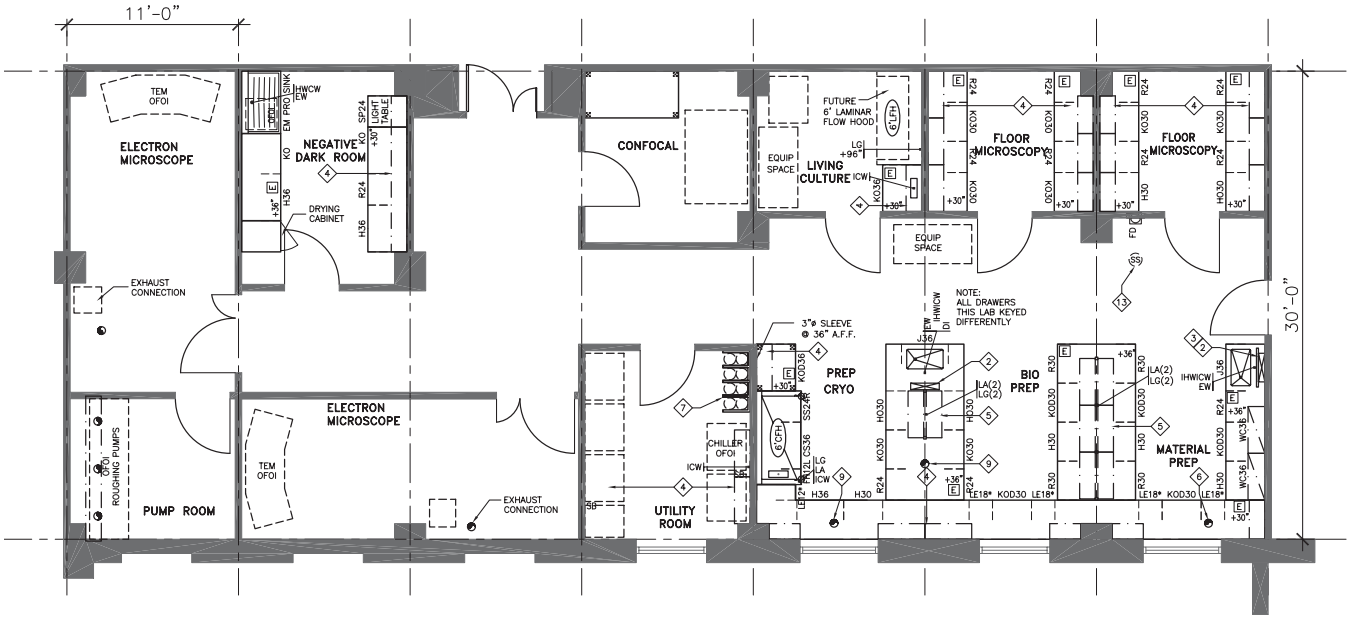
Furnishings:
- (12) Modular work tables.
- (56) Chairs.
- (2) Upholstered sofas.
- (2) Upholstered chairs.
- (3) Movable side tables.
- (1) Instructor work station, standing height.

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Core Facilities/ Building Support
SPACE NAME: Imaging/ Instrumentation Core Facility
SPACE ID: F1
AREA: 2,310 ASF

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



0 1' 2' 4' 8'

FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Book / Bag Storage
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Vented Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Gas Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Core Facilities/ Building Support
SPACE NAME: Imaging/ Instrumentation Core Facility
SPACE ID: F1
AREA: 2,310 ASF

UTILIZATION	
Hours of Use	
14 hours/day	
24 hours/day	●
Hours of Operation	
14 hours/day	
24 hours/day	●

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	●
4°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	6-12
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	●
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	●
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	●
Compressed Air, 100 psig	A	●
Laboratory Gas	LG	●
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	●
Deionized Water	DI	●
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	●
Safety Shower/Eyewash	SS	●
Eyewash	EW	●
Floor Drain	FD	●
Floor Sink	FS	●

ELECTRICAL	
120V, 20A, 1 phase	●
208V, 30A, 1 phase	●
208V, 30A, 3 phase	●
480V, 100A, 3 phase	●
Isolated Ground Outlet	
Dedicated Circuit	●
Standby Power	●
Telephone Outlet	●
LAN/WAN Outlet	●
In-Use Light	●
Safe Light	
Lighting Level (fc)	70-80
Darkenable	●

EQUIPMENT	
Vibration Sensitive	●
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE	
Flammables	●
Corrosives	●
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	●
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS	
Wood Casework	●
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	●
Stainless Steel Tops	
Solid Phenolic	
Epoxy Resin Sinks	●
Stainless Steel Sinks	

REMARKS

SECURITY	
Pushbutton Combination Lock	

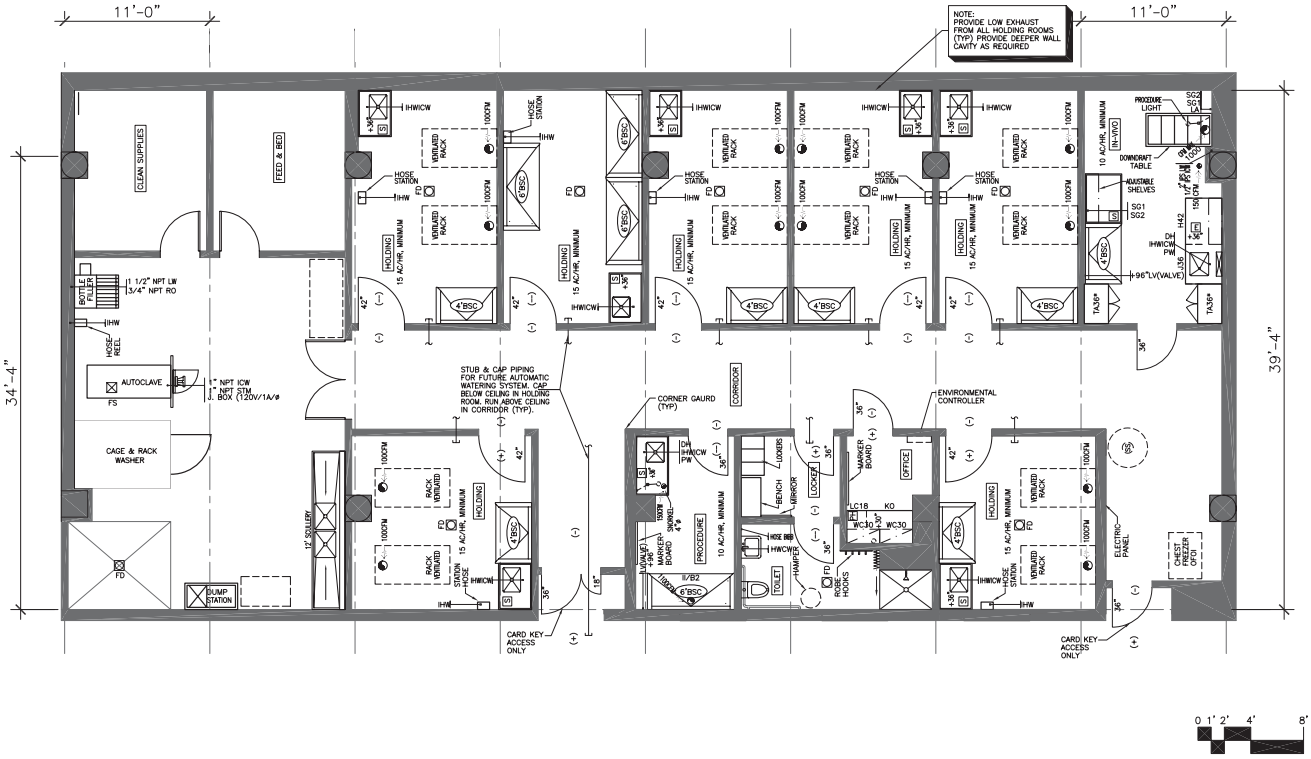
INTERIORS	
Floor	
Vinyl Composition Tile	●
Welded Sheet Vinyl	
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	
Resilient	●
Other	
Partitions	
Gypsum Board, Paint	●
Gypsum Board, Epoxy Paint	
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	●
Wall Protection	
Ceiling	
Suspended Acoustic Panel	●
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	
3'-0" x 7'-0"	●
1'-6" x 7'-0"	●
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Core Facilities/ Building Support**
SPACE NAME: **Vivarium Facility**
SPACE ID: **F2**
AREA: **3,300 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.



FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Book / Bag Storage
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Vented Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Gas Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Ballance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Core Facilities/ Building Support
SPACE NAME: Vivarium Facility
SPACE ID: F2
AREA: 3,300 ASF

UTILIZATION

Hours of Use	
14 hours/day	
24 hours/day	●
Hours of Operation	
14 hours/day	
24 hours/day	●

MECHANICAL

Temperature	
71°F-76°F ± 2°F	
4°C	
Other	●
Humidity Ambient	
Humidity Controlled	●
Min. Air Changes/Hour	15
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES

Chemical Fumehood	
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	●
Exhaust Manifold Connection	
Biological Safety Cabinet	●
Low Slotted Exhaust	

PLUMBING

Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	●
Compressed Air, 100 psig	A	●
Laboratory Gas	LG	●
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	●
Industrial Water	ICW, IHW	●
Deionized Water	DI	●
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	
Safety Shower/Eyewash	SS	●
Eyewash	EW	●
Floor Drain	FD	
Floor Sink	FS	●

ELECTRICAL

120V, 20A, 1 phase	●
208V, 30A, 1 phase	●
208V, 30A, 3 phase	●
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	●
Standby Power	●
Telephone Outlet	●
LAN/WAN Outlet	●
In-Use Light	
Safe Light	
Lighting Level (fc)	30
Darkenable	

EQUIPMENT

Vibration Sensitive	●
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE

Flammables	
Corrosives	
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	
Radioisotope Waste	
Biological Waste	

FIXED/LABORATORY MATERIALS

Wood Casework	
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	●
Epoxy Resin Tops	●
Stainless Steel Tops	●
Solid Phenolic	
Epoxy Resin Sinks	
Stainless Steel Sinks	

REMARKS

Case washer, rack washdown, autoclave
Refer to design criteria on animal area for further information.

SECURITY

Pushbutton Combination Lock	

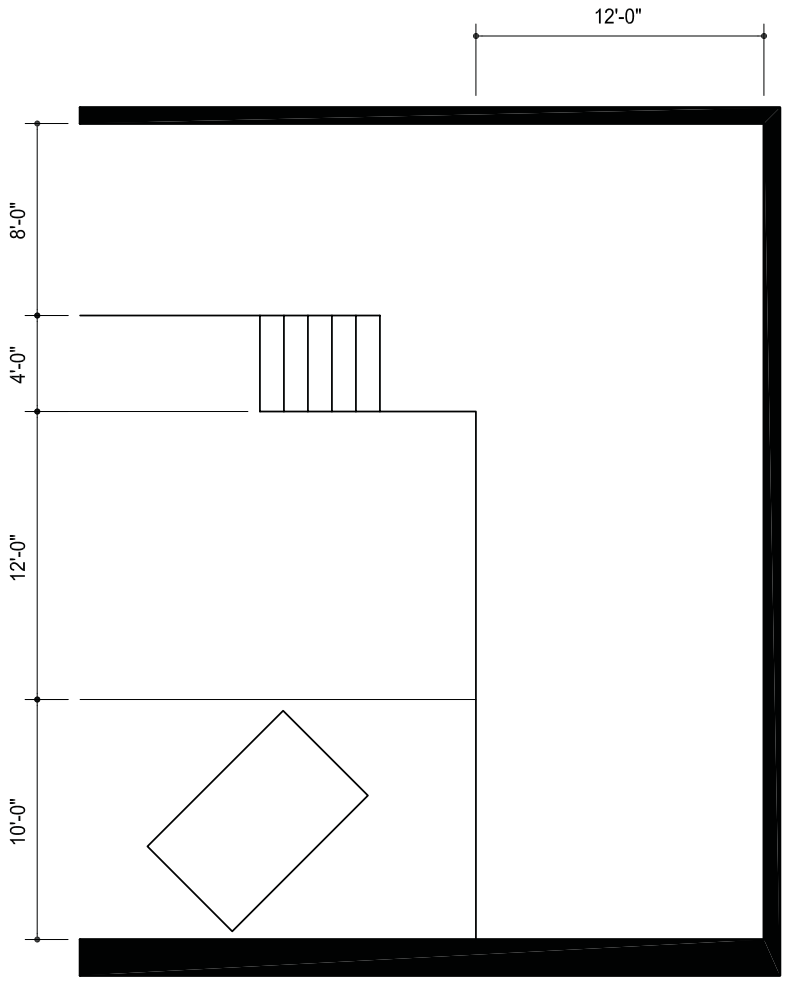
INTERIORS

Floor	
Vinyl Composition Tile	
Welded Sheet Vinyl	
Resinous, Troweled	●
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	●
Resilient	
Other	
Partitions	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	●
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	●
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	●
3'-0" x 7'-0"	●
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

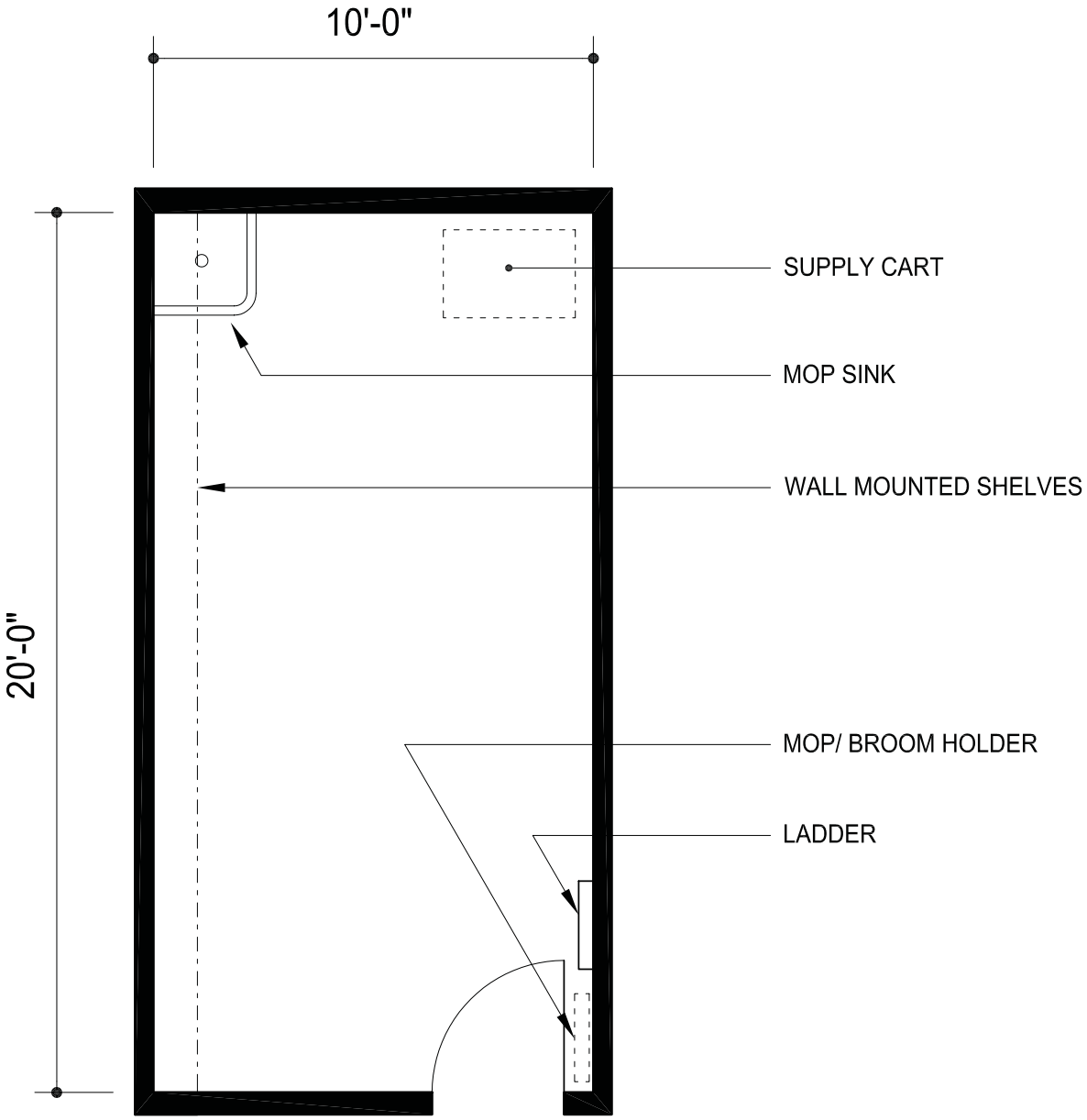
DEPARTMENT: Core Facilities/ Building Support
SPACE NAME: Loading Dock
SPACE ID: F3
AREA: 325 ASF



A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Core Facilities/ Building Support**
SPACE NAME: **Housekeeping Storage**
SPACE ID: **F4**
AREA: **200 ASF**

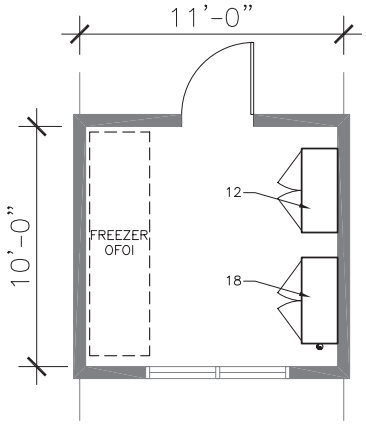


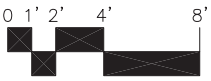
A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Core Facilities/ Building Support**
SPACE NAME: **Hazardous Material**
SPACE ID: **F5**
AREA: **2 @ 100 ASF = 200 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.





FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Book / Bag Storage
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Vented Corrosive Storage Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Core Facilities/ Building Support
SPACE NAME: Hazardous Material
SPACE ID: F5
AREA: 2 @ 100 ASF = 200 ASF

UTILIZATION	
Hours of Use	
14 hours/day	
24 hours/day	●
Hours of Operation	
14 hours/day	
24 hours/day	●

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	●
4°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	
Compressed Air, 100 psig	A	
Laboratory Gas	LG	
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	
Deionized Water	DI	
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	
Safety Shower/Eyewash	SS	
Drench Hose	DH	
Floor Drain	FD	
Floor Sink	FS	

ELECTRICAL	
120V, 20A, 1 phase	
208V, 30A, 1 phase	
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	
Standby Power	
Telephone Outlet	
LAN/WAN Outlet	
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT	
Vibration Sensitive	
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE	
Flammables	●
Corrosives	●
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	●
Radioisotope Waste	
Biological Waste	●

FIXED/LABORATORY MATERIALS	
Wood Casework	
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	
Stainless Steel Tops	
Solid Phenolic	
Epoxy Resin Sinks	
Stainless Steel Sinks	

REMARKS

SECURITY	
Pushbutton Combination Lock	

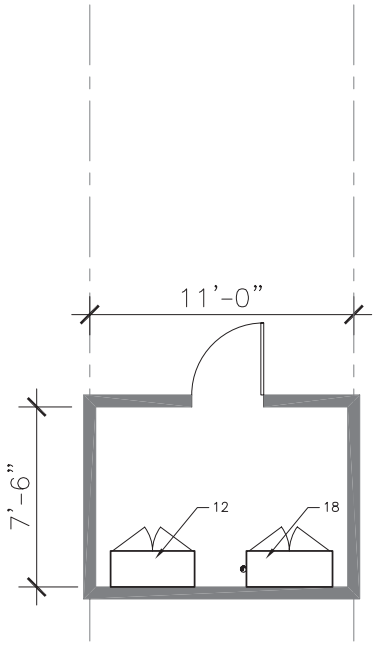
INTERIORS	
Floor	
Vinyl Composition Tile	
Welded Sheet Vinyl	●
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	●
Resilient	
Other	
Partitions	
Gypsum Board, Paint	●
Gypsum Board, Epoxy Paint	
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	●
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	
3'-0" x 7'-0"	●
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

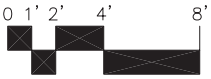
A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: **Core Facilities/ Building Support**
SPACE NAME: **Hazardous Waste Storage**
SPACE ID: **F6**
AREA: **100 ASF**

This diagram is conceptual and is provided only to indicate required furnishings, equipment, and general room proportions. The actual room design may change.





FURNISHINGS

1. Chemical Fume Hood
2. Biological Safety Cabinet
3. Radioisotope Hood
4. Book / Bag Storage
5. Snorkel Exhaust
6. Laboratory Bench, Standing Height
7. Laboratory Bench, Sitting Height
8. Wall Cabinet
9. Adjustable Wall Shelves
10. Island Bench Shelves
11. Tall Storage Cabinet
12. Flammable Storage Cabinet
13. Equipment Space
14. Laboratory Sink
15. Cupsink
16. Processing Sink
17. Cylinder Rack
18. Vented Corrosive Storage Cabinet
19. Safety Shower/Eyewash
20. Overhead Service Carrier
21. Pipe Drop Enclosure
22. Movable Demonstration Bench
23. Glassware Washer
24. Glassware Dryer
25. Autoclave
26. Movable Laboratory Table
27. Wire Shelving
28. White Markerboard
29. Black Chalkboard
30. Tackboard
31. Desk
32. Balance Table
33. Writing Table
34. A/V Screen
35. Multi-media Projector (Ceiling Mount)
36. File Cabinet

A1.0
DETAILED SPACE REQUIREMENTS AND DIAGRAMS

NOTE: DIAGRAMS ARE FOR REFERENCE ONLY

DEPARTMENT: Core Facilities/ Building Support
SPACE NAME: Hazardous Waste Storage
SPACE ID: F6
AREA: 100 ASF

UTILIZATION	
Hours of Use	
14 hours/day	
24 hours/day	●
Hours of Operation	
14 hours/day	
24 hours/day	●

MECHANICAL	
Temperature	
71°F-76°F ± 2°F	●
4°C	
Other	
Humidity Ambient	
Humidity Controlled	
Min. Air Changes/Hour	
Positive Air Pressure	
Negative Air Pressure	●
100% Outside Supply Air	●
Recirculated Supply Air	
HEPA Filter Supply Air	
HEPA Filter Exhaust Air	

EXHAUST/CLEAN AIR DEVICES	
Chemical Fumehood	
Radioisotope Fumehood	
Canopy	
Snorkel Exhaust	
Laminar Flow Hood	
Exhaust Manifold Connection	
Biological Safety Cabinet	
Low Slotted Exhaust	

PLUMBING		
Laboratory Vacuum	LV	
Laboratory Air, 15 psig	LA	
Compressed Air, 100 psig	A	
Laboratory Gas	LG	
Carbon Dioxide	CO2	
Cylinder Gas, Inert		
Cylinder Gas, Toxic/Flammable		
Potable Water	CW, HW	
Industrial Water	ICW, IHW	
Deionized Water	DI	
Steam, Condensate	MPS, CD	
Cooling Water	CWS/R	
Safety Shower/Eyewash	SS	
Drench Hose	DH	
Floor Drain	FD	
Floor Sink	FS	

ELECTRICAL	
120V, 20A, 1 phase	
208V, 30A, 1 phase	
208V, 30A, 3 phase	
480V, 100A, 3 phase	
Isolated Ground Outlet	
Dedicated Circuit	
Standby Power	
Telephone Outlet	
LAN/WAN Outlet	
In-Use Light	
Safe Light	
Lighting Level (fc)	70-80
Darkenable	

EQUIPMENT	
Vibration Sensitive	
Light Sensitive	
Vibration Producing	
Heat Producing	
Noise Producing	

HAZARDOUS STORAGE	
Flammables	●
Corrosives	●
Toxics	
Carcinogens	
Radioisotopes	
Explosives	
Unstable materials	
Water reactive materials	
Chemical Waste	●
Radioisotope Waste	
Biological Waste	●

FIXED/LABORATORY MATERIALS	
Wood Casework	
Metal Casework	
Stainless Steel Casework	
Plastic Laminate Casework	
Epoxy Resin Tops	
Stainless Steel Tops	
Solid Phenolic	
Epoxy Resin Sinks	
Stainless Steel Sinks	

REMARKS

SECURITY	
Pushbutton Combination Lock	

INTERIORS	
Floor	
Vinyl Composition Tile	
Welded Sheet Vinyl	●
Resinous, Troweled	
Concrete, Paint/Seal	
Carpet	
Ceramic Tile	
Other	
Base	
Integral with Floor	●
Resilient	
Other	
Partitions	
Gypsum Board, Paint	●
Gypsum Board, Epoxy Paint	
Gypsum Board, Wallcover	
CMU, Paint	
Ceramic Tile	
Other	
Acoustical Insulation	
Wall Protection	
Ceiling	
Suspended Acoustic Panel	●
Vinyl-faced Panel	
Gypsum Board, Paint	
Gypsum Board, Epoxy Paint	
Underside of Structure, Paint	
Other	
Doors	
3'-6" x 7'-0"	
3'-0" x 7'-0"	●
1'-6" x 7'-0"	
Other	
Light-tight Rotating Door	
Vision Panel	
Gasketing	
Natural Daylight	
View Windows to:	

UNIVERSITY of CALIFORNIA Riverside

APPENDIX A2.0
MEETING MINUTES

ENGINEERING BUILDING UNIT 3
DETAILED PROJECT PROGRAM

DPP

CO ARCHITECTS

Meeting Minutes

Meeting Date:	October 27, 2005	**File:**	5.06
Meeting Number:	#1	**Attendees:**	**UCR Attendees:** Luis Carrazana, APB Dan Rockholt, UCR Mark Matsumoto, CoE Dennis Rice, CoE Jerome Schultz, CoE
Purpose:	Programming Kick-off		
Location:	UCR EBU2 - Seminar Room		
Project:	Engineering Building Unit 3		
CO Job Number:	25009.00		**A/E Team Attendees** Jay Hughey, CO Paul Zajfen, CO Joana Escalas-Forteza, CO
UCR Job Number:			
Prepared By:	Jay Hughey		
Date Prepared:	January 23, 2006		
Distribution:	Attendees		

UCR Engineering Building Unit 3

Programming Strategy Meeting

1 The purpose of the meeting is to establish the vision and major goals of the College of Engineering for the new Engineering Building Unit 3.
2 Add sink

End of Meeting Minutes

Participants are asked to respond with corrections or additions to these minutes within one week of receipt, otherwise CO Architects will consider this to be an accurate record of the meeting.

Meeting Minutes

Meeting Date: **February 3, 2006**

Meeting Number: 6

Purpose: DPP Review with BCoE Dean and UCR Vice Chancellor

Location: Hinderaker Hall, G. Bolar's Office

Project: Engineering Building Unit 3

CO Job Number: 25009.00

UCR Job Number:

Prepared By: Jay Hughey

Date Prepared: March 11, 2006

Distribution: Attendees

File: 5.06 5.06

Attendees:

UCR Attendees:
Gretchen Bolar, V.C., APB
Luis Carrazana, CPP
Dan Rockholt, CPP

A/E Team Attendees
Scott Kelsey, CO
Jay Hughey, CO

Item	Summary	Action By	Due Date
1.	The purpose of the meeting is review the progress to date on the Detailed Project Program for the BCOE Engineering Building Unit 3 with the Vice Chancellor for Academic Planning and Budgets and with the Dean of Bourns College of Engineering, Reza Abbaschian. Jay Hughey and Scott Kelsey of CO Architects presented graphic planning diagrams and space program data along with the draft Budget Cost Plan prepared by Cumming LLC.		
2.	Space Program: Jay Hughey reviewed the primary goals, planning strategies and programming assumptions that affect the EBU3 program. The major driving factors for EBU3 program planning include the projections for growth in BCoE faculty and student populations, the creation of the new Department of Bioengineering which will be the major building occupant, and the result of the planning team's space inventory analysis for the BCOE, which indicates that the College needs to increase the quantities of wet research and wet teaching laboratories. The Space Program includes a total of 54,000 of assignable square feet. The planning Team has established 59% as the goal for building efficiency which results in an overall building size of 91,525 gross square feet. Major components of the space program include: • Instructional Teaching Laboratories and Support – 6.1% • Faculty and Graduate Student Offices – 14% • Academic Support Space – 6.6% • Research Laboratoriess and Support – 50% • Scholarly Activity Space – 11%		

	• Core Facilities and Building Support – 12%		
3.	Campus and Site Planning Issues: Scott Kelsey reviewed campus and site planning influences such as major pedestrian and vehicle pathways as well the servicing access requirements. The planning criteria established through meetings with Campus Planning and with BCoE Program Committee suggest that the major point of entry for the building will be at the second floor, from Aberdeen Street at the east side of the building. The building will also respond to the major campus pedestrian axis created by the Commons Mall and the entry to the Material Science and Engineering Building which will serve as a secondary means of pedestrian approach and entry. The building should form a terminus to this axis. A third minor entry is needed at the north side of the building along a new service road and pedestrian link running east-west. This site element will ultimately connect the building to the nearest parking area, Lot 24 to the west. Both three and four story building footprints have been tested on the site. It was determined early in the planning process that a three story building was not an effective use of the available land area on the site. Due to planning constraints unique to laboratory buildings, the building would extend much farther to the west than is indicated on the Masterplan drawings for this district of the campus. Gretchen suggested that because this is one of a very few sites left available for expansion of the BCoE, the EBU3 project should maximize site density and leave as much land area to the west undeveloped and available for future projects. Gretchen further suggested that it would be wise to consider increasing the height of EBU3 to five stories, thus increasing floor area by ~25%. UCR to pursue potential funding sources for an increase in scope and building area for the project	UCR	
4.	Program Organization Concepts: Jay Hughey reviewed organizational and adjacency concepts developed in conjunction with the Dean and other members of the BCoE Program Committee which resulted in concepts that locate both student and faculty offices together and in relatively close proximity to the research labs. Laboratory support spaces are divided into two categories: Shared Lab Support spaces which will be grouped together to form centralized facilities at each lab floor and Dedicated Lab Support which will be incorporated into a support zone between the labs and corridors. Publicly accessible functions such as the Seminar Room, Teaching Laboratories, Administration Suite and Faculty Lounge/Workroom will be located at the first and second floor nearest to main entries to allow ease of student access and to prevent high traffic functions from disturbing research functions. Core facilities will be located at the ground floor for reasons of servicing, vibration control and relative privacy from more public functions.		
5.	Building Concepts Jay Hughey and Scott Kelsey reviewed a broad range of building organization concepts that were developed and presented to the BCoE Program Committee. Each diagrammatic scenario represents a different set of organizational relationships between the various program elements. After incorporating input from the various participants in the process CO Architects developed a subsequent organizational concept that assimilates and reconciles the various goals and parameters for the project.	CO/RFD	
6.	Budget Cost Plan: Jay Hughey and Luis Carrazana review the most recent draft of the Budget Cost Plan for EBU3 developed based upon the detailed program data developed over the course of the DPP Phase. The construction cost estimate is well in excess of the planned budget when escalation is taken into account. Various strategies for reconciling the budget deficit were discussed as follows:	UCR/CO	

	a. A reduction in programmed assignable square feet is not an acceptable means of reconciling the budget deficit. b. The Planning Team should endeavor to maximize the building envelope and the efficiency that are allowed by the building concept. c. Complete shelling of space within the building is not an acceptable approach to reducing cost and scope; however, the Planning Team should study the minimum needs for the development of laboratory fit-out within Teaching and Research Labs, as these elements are often renovated immediately upon occupancy of the building due to changing need and personnel. d. CO Architects will investigate every possibility for reducing the scope of the project, without reducing program area.		

End of Meeting Minutes

Participants are asked to respond with corrections or additions to these minutes within one week of receipt, otherwise CO Architects will consider this to be an accurate record of the meeting.

Meeting Minutes

Meeting Date: **February 3, 2006**

Meeting Number: 4

Purpose: Bioengineering Faculty Focus Group Workshop

Location: UCR EBU2 - Conference Room

Project: Engineering Building Unit 3

CO Job Number: 25009.00

UCR Job Number:

Prepared By: Jay Hughey

Date Prepared: March 8, 2006

Distribution: Attendees

File: 5.06 5.06

Attendees:

UCR Attendees:
Luis Carrazana, CPP
Dan Rockholt, CPP
Mark Matsumoto, BCoE
Dennis Rice, BCoE
Jerome Schultz, Bioengineering
Jiayu Liau, Bioengineering
Dimitrios Morikil, Bioengineering
Victor Rodgers, Bioengineering
Valentine Vulia, Bioengineering

A/E Team Attendees
Jay Hughey, CO
Terry Brown, RFD

Item	Summary	Action By	Due Date
1.	The purpose of the focus group workshop is to review the current space program allocations, space diagrams and detailed space requirements with Bioengineering Faculty representatives. The intention is to gain specific insights and information from researchers representing the broad variety of disciplines and methodologies that must be accommodated in EBU3. CO Architects and RFD presented research space types and related organizational concepts that had been developed to date in the DPP process.		
2.	The participating faculty representatives related some specific focus areas for research that will be supported within the facility as follows: a. Biophysiology b. Computational Biology c. Chemical Engineering d. Biomedical Research e. Biophotonics f. Cell Biology		
3.	Terry Brown reviewed current Teaching Laboratory diagrams including associated support lab space. Two basic lab types are provided in the program including a 4-module Wet Bioengineering Lab and 4-module Bioinstrumentation Teaching Lab. The two labs are supported by 2 modules of Teaching Laboratory Support that will provide space for equipment, instrumentation and prep space for the class labs. Comments are as follows: a. Provisions should be considered to accommodate specialized teaching needs such as spectroscopy used for teaching in the	CO/RFD	

	processes of characterization. b. Provisions should be considered to accommodate instruction in computer modeling techniques. c. The Teaching Labs will be used primarily for instruction, but should also be designed to accommodate student projects as well as research activities when classes are not in session.		
4.	Research Laboratory Space: Terry Brown reviewed current Research Laboratory diagrams including provisions for support lab space. The average research lab size has been determined to be 4 modules or 1,320 asf and includes area for potential spaces needed for specialized support labs. Such space is currently provided in the form of integral, dedicated support labs that are indicated in the diagrams as customized divisions of space within each lab. Two basic lab types are provided in the program including 4-module Wet Bioengineering Research Labs and 4-module Bioinstrumentation Research Labs. This basic lab planning strategy depends upon customization in individual labs where specialized support lab functions are required. The unique and varied methodologies employed in the diverse fields of Chemical Engineering, Bioengineering and Materials Sciences were discussed at length in order to determine the best approach to lab planning for EBU3 research space. Comments and recommendations are as follows: a. A general concern was expressed by many participants regarding the necessity for customization to provide specialized lab support that is required with the current planning approach. Alternative planning concepts were discussed that could provide pre-planned lab support spaces adjacent to the main research labs. These include: • Zoned spaces for shared or dedicated lab support that are located across the corridor and not contiguous with main research labs. • Zoned spaces for shared or dedicated lab support that are integral with the main labs and are located in between individual labs. • Flexible lab support modules located between the main lab and corridor spaces that can be dedicated to and accessed directly from the adjacent lab or can serve as shared support lab space accessed from the public corridor. b. Specific concerns regarding long-term flexibility were discussed as follows: • Customized spaces are less flexible and adaptable for future reassignment. • Research programs and groups need the ability to expand and contract over time. The lab planning strategy should allow for incremental reassignment of research space. • It is recommended that standardized or modular support lab spaces be incorporated into specific planned zones. This modular approach should allow specific lab support spaces to function as swing space such that they can be dedicated, shared or reassigned	CO/RFD	

5.	Laboratory Support Space: Terry Brown reviewed current Research Lab Support diagrams in order to confirm the type of support functions may be needed for the various research disciplines to be included in the building. Two general typologies for support functions were identified: shared support functions that should be accessible to all research groups and program and dedicated research support that are tailored to the individual needs of each research group. Shared functions will ideally be grouped together on each research lab floor to provide a "Shared Research Core". This space should be centrally located, easily accessible from the labs, and positioned in close proximity vertical transportation and the service elevator. Specific shared functions required are as follows: Shared Research Support Core • Environmental Laboratories - (2) @ 110 asf (may include the following types of Env. Rms.) o Cold Laboratory o Warm Laboratory o Constant Temperature Room • Glassware Washing/Autoclave Room – (1) @ 330 asf • Equipment Room – (2) @ 330 asf • Other? (TBD) Dedicated support lab spaces will typically range from 110 asf to 330 asf and should be designed to accommodate any of the following functions: Dedicated Research Support Lab • Tissue Culture Room • Cell Culture Room • Cell Histology • Animal Procedure • Microscopy • Instrumentation • Equipment Room • Bio Micro-Fabrication • Computer Modeling • Computational Lab	CO/RFD	
6.	Core Research Laboratories: Terry Brown reviewed space diagrams for the Imaging Core Facility and the Vivarium to relate the general approach and specific provisions within each facility. a. The imaging facility is programmed as space for three to five scanning electron microscopes, transmission electron microscopes or for confocal microscope use. There is also space for fluorescent microscopy with a prep area for use by personnel working with this instrumentation. Users identified a potential need for a small NMR for animal imaging. UCR and BCoE to confirm the need for this requirement. b. The planning approach to the vivarium core facility was described concerning its relationship to the campus animal care program as a whole. It was determined that this animal facility should be a "stand alone" entity and not try to rely on another campus animal facility to provide rack and cage washing functions. The animal facility is designed for rodents (mice & rats) as well as rabbits. No large animal use is anticipated, nor is any transgenic, barrier or BSL-3 use identified.	UCR	

End of Meeting Minutes

Participants are asked to respond with corrections or additions to these minutes within one week of receipt, otherwise CO Architects will consider this to be an accurate record of the meeting.

Meeting Minutes

Meeting Date: February 10, 2006

Meeting Number: #5

Purpose: Buiding Concept Presentation

Location: UCR EBU2 - Seminar Room

Project: Engineering Building Unit 3

CO Job Number: 25009.00

UCR Job Number:

Prepared By: Jay Hughey

Date Prepared: February 26, 2006

Distribution: Attendees

File: 5.06 **File:** 5.06

Attendees:

UCR Attendees:
Luis Carrazana, APB
Dan Rockholt, UCR
Mark Matsumoto, CoE
Dennis Rice, CoE
Jerome Schultz, CoE

A/E Team Attendees
Jay Hughey, CO
Paul Zajfen, CO
Joana Escalas-Forteza, CO

Item	Summary	Action By	Due Date
1.	CO Architects reviewed the latest revisions to the Space Program. Revisions include the following: a. Minor corrections to the number of modules for Teaching Laboratories with each Teaching Lab to be (4) 330 asf modules and (2) modules of Support. b. Revisions to the quantities and sizes of space included in the Administrative Suite. Administrative offices type C-2 is reduced from (6) to (5) offices. Open Office Spaces are reduced in size from 75 asf to 65 asf. c. The Research Space category includes the specific Shared Lab Support functions including (2) Cold Rooms, (1) Glassware Washing Room, (2) Equipment Rooms, and (1) Radioisotope Lab. These changes resulted in a net reduction in dedicated space for Research Labs. The Space Program now reflects (3) and (4) module lab prototypes in the categories of “ChemBio” and “Instrumentation”.		
2.	CO Architects reviewed a Campus district Plan in the area of the East Campus Entry prepared for the purpose of further analyzing campus planning issues affecting the decision-making for the EBU3 site. Major conclusions and comments include: a. The major pedestrian pathway connecting the EBU3 site to Bourns Hall and EBU2 will likely be along Aberdeen Drive with connections through the MS&E building being of a secondary nature. Primary pedestrian access from student housing areas will be from the north and east. It is desired that the main entry to the building be created on the Aberdeen Drive frontage. b. Pedestrian connections from the South That would be generated		

	from the Commons Mall and proceed through the MS&E Building should terminate at the EBU3 Building. Pedestrians should not be encouraged to pass through EBU3 to access the pedestrian route along the north Service Road. c. Primary access to EBU3 from the nearest parking (Lot 24 to the west) is will likely be from the new Service Road to be located just north of EBU3. A significant portion of this road will be created as a part of the project. A sidewalk connection should be considered along this nnorth edge of the site to complete the connection from the EBU3 portion of the Service Road to Parking Lot 24. d. EBU3 Loading should occur between EBU3 and future engineering building site to the west. Sufficient width should be provided to allow both loading bay spaces as well as space for pad-mounted electrical equipment such as transformers and emergency generator equipment. Trash bin space will also need to be accommodated in this area. Because the loading area is elevated on the site and will occur at the second floor level, consideration for visual screening and sound mitigation should be considered between this area and the landscaped open spaces areas in the naturalistic Arroyo.		
3.	CO Architects reviewed a list of Research Laboratory Support Space Types including spaces intended to be included in a Shared Research Support Core to be included on each major research lab floor (see next item for further description). Also reviewed were various types of Dedicated Research Support Lab spaces that may occur within any of the research labs. These spaces would be determined by individual researchers depending specific scientific themes or disciplines that need to be accommodated within each lab. It is highly recommended by the users that these spaces be accommodated in such a way that a minimal amount of customization is required in the labs over time.		
4.	CO Architects reviewed space relationship diagrams describing various relationship models between research labs and laboratory support space as well as relationships models between laboratories and offices. Major conclusions and comments include: a. Shared Laboratory Support spaces D-3 through D-6, described above and in the Space Program, should be combined into a single shared core space on both upper research floors. The spaces can function as a shared suite of space with a secured entry. Ideally the shared core space will be located centrally in the building to allow ease of access from all Research Labs on the floor. b. Dedicated Research Lab Support spaces should be accommodated in a dedicated support lab zone located between the laboratories and the corridor. The space should be subdividable to allow for each researcher to create and access more than one specialized support lab. This will also allow the space to be used as a single larger space that can accommodate larger equipment that cannot fit within a single 11' module width. The ideal dimensions for this support lab space were determined to be 22' wide by 15' deep. This ultimately will allow (2) ½-module specialized support spaces or a larger 1-module support space with a minimum dimension of 15' to provide walking and servicing access space around large equipment. c. Faculty Offices should be grouped together and should face north if possible to avoid heat gain and to take advantage of views to the north and east. Faculty offices should be in fairly close proximity to research laboratories although it is more important that they be grouped to promote collegiality and interaction. d. Graduate Student Offices should also be grouped together but do not necessarily need to be co-located with the faculty offices. It is not desirable for the grad. Student offices to be organized in open "bull pen" type arrangements in a suite with faculty offices. Grad. Student offices should be located as close to the labs as possible.		

5.	CO Architects presented Building Porosity diagrams to describe different approaches to the openness and accessibility of the building as it interfaces with pedestrian pathways and the areas adjacent to the site. The following comments and conclusions were discussed: a. The building should be highly open and accessible from Aberdeen Drive with high traffic functions such as Teaching Labs and Seminar Room easily accessible from this entry. b. The building will ideally open to the open landscape spaces of the Arroyo but should act as a terminus to the axis of the Commons Mall. c. Through traffic should be discouraged in the building. Secure access can be provide from the north to allow entry to building occupants, however, general traffic will be directed around the building.		
6.	CO Architects presented Building Organization Diagrams A, B, C and D including a discussion of Pros and Cons of each scheme. The following comments and conclusions were discussed: a. Building Organization Diagram A: This double-loaded corridor type organization is clearly the most efficient diagram, but may offer the less potential for architectural character and the development of a unique identity. b. Building Organization Diagram B: This diagram creates a significant courtyard type organization. It has a great deal of potential architecturally, however is very inefficient and is not likely to meet budgetary constraints. c. Building Diagrams C and D: These diagrams are variations of a similar organizational concept and are in effect a hybrid of the A and B concepts. While creating a smaller court type space opening onto the Arroyo, they also include major building areas in a doubl-loaded corridor configuration. The two diagrams differ in their arrangement of lab to office relationships. Diagram C positions the majority of office space directly across the corridor from the laboratories while Diagram D positions the majority of offices in a separate building element, farther from the labs. Diagram C is the preferred arrangement for lab to office relationship.		

End of Meeting Minutes

Participants are asked to respond with corrections or additions to these minutes within one week of receipt, otherwise CO Architects will consider this to be an accurate record of the meeting.

Meeting Minutes

Meeting Date: **February 3, 2006**

Meeting Number: 6

Purpose: DPP Review with BCoE Dean and UCR Vice Chancellor

Location: Hinderaker Hall, G. Bolar's Office

Project: Engineering Building Unit 3

CO Job Number: 25009.00

UCR Job Number:

Prepared By: Jay Hughey

Date Prepared: March 11, 2006

Distribution: Attendees

File: 5.06 5.06

Attendees:

UCR Attendees:
Gretchen Bolar, V.C., APB
Luis Carrazana, CPP
Dan Rockholt, CPP

A/E Team Attendees
Scott Kelsey, CO
Jay Hughey, CO

Item	Summary	Action By	Due Date
1.	The purpose of the meeting is review the progress to date on the Detailed Project Program for the BCOE Engineering Building Unit 3 with the Vice Chancellor for Academic Planning and Budgets and with the Dean of Bourns College of Engineering, Reza Abbaschian. Jay Hughey and Scott Kelsey of CO Architects presented graphic planning diagrams and space program data along with the draft Budget Cost Plan prepared by Cumming LLC.		
2.	Space Program: Jay Hughey reviewed the primary goals, planning strategies and programming assumptions that affect the EBU3 program. The major driving factors for EBU3 program planning include the projections for growth in BCoE faculty and student populations, the creation of the new Department of Bioengineering which will be the major building occupant, and the result of the planning team's space inventory analysis for the BCOE, which indicates that the College needs to increase the quantities of wet research and wet teaching laboratories. The Space Program includes a total of 54,000 of assignable square feet. The planning Team has established 59% as the goal for building efficiency which results in an overall building size of 91,525 gross square feet. Major components of the space program include: • Instructional Teaching Laboratories and Support – 6.1% • Faculty and Graduate Student Offices – 14% • Academic Support Space – 6.6% • Research Laboratoriess and Support – 50% • Scholarly Activity Space – 11%		

	• Core Facilities and Building Support – 12%		
3.	Campus and Site Planning Issues: Scott Kelsey reviewed campus and site planning influences such as major pedestrian and vehicle pathways as well the servicing access requirements. The planning criteria established through meetings with Campus Planning and with BCoE Program Committee suggest that the major point of entry for the building will be at the second floor, from Aberdeen Street at the east side of the building. The building will also respond to the major campus pedestrian axis created by the Commons Mall and the entry to the Material Science and Engineering Building which will serve as a secondary means of pedestrian approach and entry. The building should form a terminus to this axis. A third minor entry is needed at the north side of the building along a new service road and pedestrian link running east-west. This site element will ultimately connect the building to the nearest parking area, Lot 24 to the west. Both three and four story building footprints have been tested on the site. It was determined early in the planning process that a three story building was not an effective use of the available land area on the site. Due to planning constraints unique to laboratory buildings, the building would extend much farther to the west than is indicated on the Masterplan drawings for this district of the campus. Gretchen suggested that because this is one of a very few sites left available for expansion of the BCoE, the EBU3 project should maximize site density and leave as much land area to the west undeveloped and available for future projects. Gretchen further suggested that it would be wise to consider increasing the height of EBU3 to five stories, thus increasing floor area by ~25%. UCR to pursue potential funding sources for an increase in scope and building area for the project	UCR	
4.	Program Organization Concepts: Jay Hughey reviewed organizational and adjacency concepts developed in conjunction with the Dean and other members of the BCoE Program Committee which resulted in concepts that locate both student and faculty offices together and in relatively close proximity to the research labs. Laboratory support spaces are divided into two categories: Shared Lab Support spaces which will be grouped together to form centralized facilities at each lab floor and Dedicated Lab Support which will be incorporated into a support zone between the labs and corridors. Publicly accessible functions such as the Seminar Room, Teaching Laboratories, Administration Suite and Faculty Lounge/Workroom will be located at the first and second floor nearest to main entries to allow ease of student access and to prevent high traffic functions from disturbing research functions. Core facilities will be located at the ground floor for reasons of servicing, vibration control and relative privacy from more public functions.		
5.	Building Concepts Jay Hughey and Scott Kelsey reviewed a broad range of building organization concepts that were developed and presented to the BCoE Program Committee. Each diagrammatic scenario represents a different set of organizational relationships between the various program elements. After incorporating input from the various participants in the process CO Architects developed a subsequent organizational concept that assimilates and reconciles the various goals and parameters for the project.	CO/RFD	
6.	Budget Cost Plan: Jay Hughey and Luis Carrazana review the most recent draft of the Budget Cost Plan for EBU3 developed based upon the detailed program data developed over the course of the DPP Phase. The construction cost estimate is well in excess of the planned budget when escalation is taken into account. Various strategies for reconciling the budget deficit were discussed as follows:	UCR/CO	

	a. A reduction in programmed assignable square feet is not an acceptable means of reconciling the budget deficit. b. The Planning Team should endeavor to maximize the building envelope and the efficiency that are allowed by the building concept. c. Complete shelling of space within the building is not an acceptable approach to reducing cost and scope; however, the Planning Team should study the minimum needs for the development of laboratory fit-out within Teaching and Research Labs, as these elements are often renovated immediately upon occupancy of the building due to changing need and personnel. d. CO Architects will investigate every possibility for reducing the scope of the project, without reducing program area.		

End of Meeting Minutes

Participants are asked to respond with corrections or additions to these minutes within one week of receipt, otherwise CO Architects will consider this to be an accurate record of the meeting.

UNIVERSITY of CALIFORNIA Riverside

APPENDIX A3.0
DETAILED COST PLAN

ENGINEERING BUILDING UNIT 3
DETAILED PROJECT PROGRAM

DPP

CO ARCHITECTS

University of California, Riverside
Engineering Building Unit Three
Riverside, California

Detailed Project Program Cost Plan
April 20, 2006
CLLC Project No.05-791.00

660 S. FIGUEROA STREET, SUITE 1000 • LOS ANGELES • CALIFORNIA • 90017
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Detailed Project Program Cost Plan **April 20, 2006**

CONTENTS

Prepared by Cumming, LLC

Detailed Project Program Cost Plan **April 20, 2006**

BASIS OF ESTIMATE

1. Basis Of Estimate

This statement is based on conceptual floor plans, space distribution schemes, DSR's and space diagrams and design narratives from civil, structural and MEP.

2. Conditions of Construction

The pricing is based on the following general conditions of construction

Start date of construction July 2009

A construction period of 24 months

Construction contract procurement method is competative bid

Contractors performance bond is deemed to be included by the general contractor

Builders all risk insurance is deemed to be included by the general contractor

There are no phasing requirements

The general contractor will have full access to the site during normal business hours

3. Items Not Included Within Estimate

The following cost items are excluded from this estimate.

A Professional fees, inspections and testing.
B Cost escalation beyond the start date of construction
C Plan check fees and building permit fees.
D Furnishings, fixtures and equipment (FF&E), except built-in cabinets, counters and other casework indicated.
E Major site and building structures demolition unless noted in body of estimate.
F Costs of hazardous material surveys, abatements, and disposals unless noted in estimate.
G Costs of offsite construction unless noted in estimate.
H Premium for PSA Labor Agreements.
I Construction contingency costs.
J Blasting or excavation of rock.
K Excludes casework and equipment to laboratories as indicated in the body of the estimate

Detailed Project Program Cost Plan **April 20, 2006**

BASIS OF ESTIMATE

4. Notes

We recommend that the client review this statement, and that any interpretations contrary to those intended by the design documents be fully addressed. The statement is based upon a detailed measurement of quantities when possible, and reasonable allowances for items not clearly defined in the documents.

The statement reflects probable construction costs obtainable in a competitive and stable bidding market. This estimate is based upon a minimum of four (4) competitive bids from qualified general contractors, with bids from a minimum of three (3) subcontractors per trade. This statement is a determination of fair market value for the construction of the project and is not intended to be a prediction of low bid. Experience indicates that a fewer number of bidders may result in a higher bid amount, and more bidders may result in a lower bid result.

In accordance with Saylor Associates' analyses, they determined that the number of competitive bids obtained had the following effect:

I bidder	add	15% to 40%
2 to 3 bids	add	8% to 12%
4 to 5 bids		-4% to +4%
7 to 8 bids	deduct	5% to 7%

Detailed Project Program Cost Plan **April 20, 2006**

CONSTRUCTION COST SUMMARY

Section		DPP Cost Plan		Budget	
Building and Site Work March 2006					
Main Building		$430.28	$39,381,026		
Sitework		$30.92	$2,830,014		
		$461.20	**$42,211,040**	$421.74	**$38,600,000**
Escalation from March 2006 to July 2009					
April 2006 - January 2007	4.0%	$18.67	$1,708,650		
January 2007 - January 2008	7.0%	$33.59	$3,074,378		
January 2008 - January 2009	7.0%	$35.94	$3,289,585		
Janaury 2009 - July 2009 **(Start of Construction)**	4.0%	$21.98	$2,011,346		
TOTAL ESTIMATED BUILDING & SITEWORK CONSTRUCTION COST ESCALATED TO CONSTRUCTION START DATE		**$571.37**	**$52,295,000**		

OVERALL UC COMPONENT COST SUMMARY WORKSHEET

Element			Construction Cost with markups broken out $/OGSF	Construction Cost with markups broken out Cost ($x1,000)	Construction Cost with markups rolled up $/OGSF	Construction Cost with markups rolled up Cost ($x1,000)
1. Foundations			17.44	$1,596	27.20	$2,490
2. Vertical Structure			18.79	$1,720	29.32	$2,683
3. Floor & Roof Structures			40.91	$3,744	63.83	$5,842
4. Exterior Cladding			47.35	$4,334	73.87	$6,761
5. Roofing, Waterproofing & Skylights			6.24	$571	9.73	$890
A) Shell (1-5)			***130.73***	***$11,965***	***203.95***	***$18,666***
6. Interior Partitions, Doors & Glazing			21.20	$1,940	33.07	$3,027
7. Floor, Wall & Ceiling Finishes			14.57	$1,334	22.73	$2,081
B) Interiors (6-7)			***35.77***	***$3,274***	***55.81***	***$5,108***
8. Function Equipment & Specialties			20.74	$1,898	32.36	$2,962
9. Stairs & Vertical Transportation			5.07	$464	7.91	$724
C) Equipment and Vertical Transportation (8-9)			***25.81***	***$2,362***	***40.26***	***$3,685***
10. Plumbing Systems			16.94	$1,551	26.44	$2,420
11. Heating, Ventilating & Air Conditioning			90.11	$8,248	140.59	$12,867
12. Electric Lighting, Power & Communications			37.71	$3,452	58.84	$5,385
13. Fire Protection Systems			4.61	$422	7.19	$658
D) Mechanical and Electrical (10-13)			***149.38***	***$13,672***	***233.05***	***$21,330***
Total Building Construction (1-13)		(Sub 1)	**341.68**	**$31,273**	**533.07**	**$48,789**
14. Site Preparation & Demolition		(Sub 0)	4.76	$436	7.42	$680
15. Site Paving, Structures & Landscaping		(Sub 4)	12.12	$1,110	18.91	$1,731
16. Utilities on Site		(Sub 2)	7.67	$702	11.97	$1,096
Total Site Construction (14-16)			**24.55**	**$2,247**	**38.31**	**$3,506**
TOTAL BUILDING & SITE (1-16)			**366.24**	**$33,520**	**571.38**	**$52,295**
General Conditions		8.00%	29.30	**$2,682**		
Contractor's Fee		6.00%	23.73	**$2,172**		
Design Contingency		10.00%	41.93	**$3,837**		
Base budget as of date of estimate			**461.20**	**$42,211**		
Escalation from Date of Estimate to Start Date of Construction	Jul-09	23.89%	**110.18**	**$10,084**		
ESTIMATED CONSTRUCTION BUDGET			**571.38**	**$52,295**		

Detailed Project Program Cost Plan **April 20, 2006**

Main Building

Detailed Project Program Cost Plan **April 20, 2006**

SCHEDULE OF AREAS AND CONTROL QUANTITIES

Schedule of Areas	SF	SF
Enclosed Areas		
First Floor	22,200	
Second Floor	24,500	
Third Floor	22,200	
Fourth Floor	22,200	
Penthouses	425	
SUBTOTAL, Enclosed Areas		**91,525**
Covered Areas		
	0	
SUBTOTAL, Covered Areas	**0**	
Covered Areas@ 50%		**0**
TOTAL GROSS FLOOR AREA		**91,525**
Laboratory Assignable Areas		
Teaching Laboratories	3,300	
Research Laboratories	27,390	
Imaging/Instrumentation Core Facility	2,310	
Vivarium	3,300	
SUBTOTAL, Laboratory Assignable Areas		**36,300**
Non Laboratory Areas		
Office	2,700	
Academic Support	3,460	
Graduate Student Office	4,860	
Scholarly Activity	5,900	
Core Facilities (excluding imaging and vivarium)	780	
SUBTOTAL, Non Laboratory Areas		**17,700**

Detailed Project Program Cost Plan **April 20, 2006**

SCHEDULE OF AREAS AND CONTROL QUANTITIES

Control Quantities		Qty		Ratio to Gross Area
Number of stories		4	EA	0.044
Gross Area		91,525	SF	1.000
Enclosed Area		91,525	SF	1.000
Net Assignable Area		54,000	SF	0.590
Laboratory Assignable Area		36,300	SF	0.397
Warm shell space		26,070	SF	0.285
Covered Area		-	SF	0.000
Footprint Area		24,500	SF	0.268
Volume (gross)		1,507,100	CF	16.467
Gross Wall Area		64,068	SF	0.700
Retaining Wall Area		8,100	SF	0.089
Finished Wall Area		55,968	SF	0.612
Windows or Glazing Area	33.89%	18,968	SF	0.207
Roof Area - Flat		22,500	SF	0.246
Finished Area		91,525	SF	1.000
Elevators		2	EA	0.022
Plumbing Fixtures		82	EA	0.001

UC COMPONENT COST SUMMARY WORKSHEET

Element			Construction Cost with markups broken out $/OGSF	Construction Cost with markups broken out Cost ($x1,000)	Construction Cost with markups rolled up $/OGSF	Construction Cost with markups rolled up Cost ($x1,000)
1. Foundations			17.44	$1,596	27.20	$2,490
2. Vertical Structure			18.79	$1,720	29.32	$2,683
3. Floor & Roof Structures			40.91	$3,744	63.83	$5,842
4. Exterior Cladding			47.35	$4,334	73.87	$6,761
5. Roofing, Waterproofing & Skylights			6.24	$571	9.73	$890
A) Shell (1-5)			***130.73***	***$11,965***	***203.95***	***$18,666***
6. Interior Partitions, Doors & Glazing			21.20	$1,940	33.07	$3,027
7. Floor, Wall & Ceiling Finishes			14.57	$1,334	22.73	$2,081
B) Interiors (6-7)			***35.77***	***$3,274***	***55.81***	***$5,108***
8. Function Equipment & Specialties			20.74	$1,898	32.36	$2,962
9. Stairs & Vertical Transportation			5.07	$464	7.91	$724
C) Equipment and Vertical Transportation (8-9)			***25.81***	***$2,362***	***40.26***	***$3,685***
10. Plumbing Systems			16.94	$1,551	26.44	$2,420
11. Heating, Ventilating & Air Conditioning			90.11	$8,248	140.59	$12,867
12. Electric Lighting, Power & Communications			37.71	$3,452	58.84	$5,385
13. Fire Protection Systems			4.61	$422	7.19	$658
D) Mechanical and Electrical (10-13)			***149.38***	***$13,672***	***233.05***	***$21,330***
Total Building Construction (1-13)		(Sub 1)	**341.68**	**$31,273**	**533.07**	**$48,789**
14. Site Preparation & Demolition		(Sub 0)				
15. Site Paving, Structures & Landscaping		(Sub 4)				
16. Utilities on Site		(Sub 2)				
Total Site Construction (14-16)						
TOTAL BUILDING & SITE (1-16)			**341.68**	**$31,273**	**533.07**	**$48,789**
General Conditions		8.00%	27.33	**$2,502**		
Contractor's Fee		6.00%	22.14	**$2,026**		
Design Contingency		10.00%	39.12	**$3,580**		
Base budget as of date of estimate			**430.28**	**$39,381**		
Escalation from Date of Estimate to Start Date of Construction	Jul-09	23.89%	**102.79**	**$9,408**		
ESTIMATED CONSTRUCTION BUDGET			**533.07**	**$48,789**		

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT SUMMARY

Element			Subtotal	Total	Cost / SF	Cost / SF
A) Shell (1-5)				**$11,964,644**		**$130.73**
1	Foundations		$1,595,976		$17.44	
2	Vertical Structure		$1,719,830		$18.79	
3	Floor & Roof Structures		$3,744,416		$40.91	
4	Exterior Cladding		$4,333,688		$47.35	
5	Roofing & Waterproofing		$570,734		$6.24	
B) Interiors (6-7)				**$3,273,948**		**$35.77**
6	Interior Partitions, Doors & Glazing		$1,940,330		$21.20	
7	Floor, Wall & Ceiling Finishes		$1,333,618		$14.57	
C) Equipment and Vertical Transportation (8-9)				**$2,362,135**		**$25.81**
8	Function Equipment & Specialties		$1,898,279		$20.74	
9	Stairs & Vertical Transportation		$463,856		$5.07	
D) Mechanical and Electrical (10-13)				**$13,671,926**		**$149.38**
10	Plumbing Systems		$1,550,852		$16.94	
11	Heating, Ventilating & Air Conditioning		$8,247,548		$90.11	
12	Electric Lighting, Power & Communications		$3,451,606		$37.71	
13	Fire Protection Systems		$421,920		$4.61	
E) Site Construction (14-16)				**$0**		**$0.00**
14	Site Preparation & Demolition		$0		$0.00	
15	Site Paving, Structures & Landscaping		$0		$0.00	
16	Utilities on Site		$0		$0.00	
	Subtotal			**$31,272,653**		$341.68
	Gen'l Cond, Bonds and Insurance	8.00%		**$2,501,812**		$27.33
	Subtotal			**$33,774,465**		$369.02
	General Contractor's Fee	6.00%		**$2,026,468**		$22.14
	Subtotal			**$35,800,933**		$391.16
	Design Contingency	10.00%		**$3,580,093**		$39.12
	Subtotal			**$39,381,026**		$430.28
	Escalation to Start Date (July 2009)	23.89%		**$9,408,127**		$102.79
	TOTAL ESTIMATED CONSTRUCTION COST			**$48,789,153**		**$533.07**

Total Area: **91,525 SF**

Prepared by Cumming, LLC

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
1 Foundations				
Excavation				
Mass excavation	22,370	CY	$10.60	$237,122
Backfill	5,926	CY	$15.90	$94,223
Export, assume 10 mile round trip	16,444	CY	$18.02	$296,321
Piling				
Allowance for drilled cast in place concrete piles to an assumed depth not exceeding 30'	24,500	SF	$26.50	$649,250
Pile caps and grade beams				
Allowance for reinforced concrete pile caps and grade beams, top of footing maximum 2' below grade	24,500	SF	$10.60	$259,700
Miscellaneous				
Elevator pits	2	EA	$10,600.00	$21,200
Allowance for equipment pits and trench drains	1	LS	$12,720.00	$12,720
Perimeter drainage	800	LF	$31.80	$25,440
				$1,595,976
2 Vertical Structure				
Columns				
Reinforced concrete columns assumed size not exceeding 26" x 26"	91,525	SF	$7.05	$645,160
Retaining walls				
Reinforced concrete retaining walls, 12" thick	($49/SF)			
Concrete, 5000psi	300	CY	$217.30	$65,190
Formwork	16,200	SF	$16.01	$259,297
Reinforcement, assume 180lbs/cy	54,000	LB	$1.17	$62,964
Finish to walls	8,100	SF	$0.95	$7,727

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
Shear walls				
Reinforced concrete shear walls 16" thick interior only, assume 150 LF	($65/SF)			
Concrete, 5000psi	517	CY	$217.30	$112,344
Formwork	21,000	SF	$16.01	$336,126
Reinforcement, assume 350lbs/cy	180,950	LB	$1.17	$210,988
Finish to walls	21,000	SF	$0.95	$20,034
				$1,719,830
3 Floor and Roof Structure				
Slab on grade				
Reinforced concrete slab on grade, 5" thick, 3000psi, with 4" sand, 6" gravel and reinforcing	24,500	SF	$10.60	$259,700
Allowance for curbs	1	LS	$10,600.00	$10,600
Suspended floors				
Reinforced concrete flat slab, 16" thick	($33/SF)			
Concrete, 5000psi	3,302	CY	$217.30	$717,525
Formwork to soffit	67,025	SF	$11.66	$781,512
Formwork to slab edge	3,990	SF	$9.54	$38,065
Reinforcement, assume 8lbs/sf	536,200	LB	$1.17	$625,209
Finish and cure	67,025	SF	$0.95	$63,942
Flat roof				
Reinforced concrete flat slab, 14" thick	($32/SF)			
Concrete, 5000psi	1,059	CY	$217.30	$230,121
Formwork to soffit	24,500	SF	$11.66	$285,670
Formwork to slab edge	1,330	SF	$9.54	$12,688
Reinforcement, assume 8lbs/sf	196,000	LB	$1.17	$228,536
Finish and cure	24,500	SF	$0.95	$23,373
Concrete beams/drop panels				
Allowance for reinforced concrete beams or drop panels	91,525	SF	$1.70	$155,226

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
Miscellaneous				
Rough carpentry	91,525	SF	$0.53	$48,508
Miscellaneous metals including equipment support, elevator rails, etc.	91,525	SF	$2.65	$242,541
Allowance for mechanical equipment pads	1	LS	$21,200.00	$21,200
				$3,744,416
4 Exterior Cladding				
Wall framing, furring and insulation				
Metal stud framing, 6" 18 gauge	55,968	SF	$8.64	$483,508
Batt insulation	55,968	SF	$1.17	$65,259
Densglas sheathing	55,968	SF	$3.92	$219,506
Allowance for firesafing	1	LS	$10,600.00	$10,600
Applied exterior finish				
Brick veneer, air/vapor barrier	17,000	SF	33.92	$576,640
Cement plaster finish	9,500	SF	12.72	$120,840
Composite metal panels, Alucobond	10,500	SF	39.22	$411,810
Interior finish to exterior walls				
Metal furring	8,100	SF	$6.36	$51,516
Gypsum board finished	64,068	SF	$3.71	$237,692
Paint gypsum board	64,068	SF	$0.80	$50,934
Windows				
Aluminum window/storefront, vision glazing generic	18,968	SF	$68.90	$1,306,895
Exterior doors				
Allowance for exterior entrance doors	1	LS	$42,400.00	$42,400
Loading dock coiling door	1	EA	$7,420.00	$7,420
Fascias, bands, screens and trim, etc.				
Allowance for sunscreens and miscellaneous architectural trim	55,968	SF	$5.30	$296,630

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
Soffits				
Allowance for soffit finishes	1	LS	$42,400.00	$42,400
Balustrades, parapets and roof screens				
Parapets				
Gypsum board sheathing	3,500	SF	$3.92	$13,727
Cement plaster finish	3,500	SF	$11.66	$40,810
Allowance for exterior guardrails	1	LS	$21,200.00	$21,200
Allowance for mechanical roof screen including steel tube support	9,000	SF	$37.10	$333,900
				$4,333,688
5 Roofing & Waterproofing				
Waterproofing				
Elevator pits	2	EA	$848.00	$1,696
Retaining walls	8,100	SF	$7.10	$57,526
Allowance for waterproofing balconies and deck	1	LS	$31,800.00	$31,800
Insulation				
Rigid roof insulation	22,500	SF	$5.19	$116,865
Roofing				
Membrane roofing	22,500	SF	$7.95	$178,875
Roof or deck traffic surfaces				
Allowance for balcony/deck and roof walkway paving	1	LS	$53,000.00	$53,000
Flashing and counter flashings				
Allowance for parapet caps, wall flashings, etc.	91,525	SF	$1.06	$97,017
Miscellaneous				
Allowance for caulking and sealing	91,525	SF	$0.37	$33,956
				$570,734

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
6 Interior Partitions, Doors & Glazing				
Partitions and doors				
Allowance for metal stud framing, batt insulation, painted gypsum board lining, wood doors in hollow metal frames, interior balustrades and glazing	91,525	SF	$21.20	$1,940,330
				$1,940,330
7 Floor, Wall & Ceiling Finishes				
Floors				
Allowance for ceramic tile, carpet, epoxy, vinyl composition tile, welded sheet vinyl and sealed concrete	91,525	SF	$5.30	$485,083
Bases				
Ceramic tile, rubber	91,525	SF	$0.74	$67,912
Walls				
Ceramic tile, epoxy, acoustic tile	91,525	SF	$3.18	$291,050
Columns				
Allowance for sack and patch concrete columns	1	LS	$53,000.00	$53,000
Ceilings				
Allowance for ceiling finish primarily suspended acoustic and gypsum board including bulkheads	91,525	SF	$4.77	$436,574
				$1,333,618

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
8 Function Equipment & Specialties				
General building equipment				
Toilet partitions and accessories, code and room identification signage, fire extinguishers and cabinets, markerboards and tack boards, window blind and projection screens, casework, etc.	91,525	SF	$4.24	$388,066
Loading dock equipment	1	LS	$15,900.00	$15,900
Laboratory casework				
The following $ allowances reflect providing only 33% of the casework that would be typically designed for the research laboratory areas				
Instructional (Excluding support)				
Teaching laboratory - Bioengineering	1,320	SF	$63.60	$83,952
Teaching laboratory - Bioinstrumentation	1,320	SF	$42.40	$55,968
Research - 33% Only (Excluding support)				
Research laboratory - Bioengineering	15,180	SF	$21.20	$321,816
Research laboratory - Bioinstrumentation	8,910	SF	$15.90	$141,669
Shared lab support - Cold Rooms	1	EA	$42,400.00	$42,400
Research center	1,980	SF	$21.20	$41,976
Laboratory equipment				
Chemical fume hoods	20	EA	$14,416.00	$288,320
Biosafety cabinets, 6' (F6)				Excluded
Biosafety cabinets, 4' (F6)				Excluded
Radioisotope hood (D6)				Excluded
Autoclave small (D4)	1	EA	$63,600.00	$63,600
Glassware washer (D4)	1	EA	$41,340.00	$41,340
Corrosive storage cabinet (F4&F5)	2	EA	$3,498.00	$6,996
Vented flammable storage cabinet (F4&F5)	2	EA	$2,862.00	$5,724
Autoclave bulk clean cage wash (F6)	1	EA	$74,200.00	$74,200
Bedding dispenser with dust control (F6)	1	EA	$37,100.00	$37,100
Cage and rack wash (F6)	1	EA	$145,220.00	$145,220
Downdraft table and procedure light (F6)				Excluded
Bottle filler (F6)	1	EA	$15,900.00	$15,900
Miscellaneous laboratory equipment including gas outlets, snorkels, sinks and emergency eyewash/showers to 33% of the laboratory spaces	36,300	SF	$3.53	$128,132
				$1,898,279

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
9 Stairs & Vertical Transportation				
Stairs				
Exterior stair flights	8	Flts	$12,720.00	$101,760
Interior stair flights	4	Flts	$16,960.00	$67,840
Access stair at loading dock	1	EA	$6,360.00	$6,360
Ladders				
Elevator pit ladders	2	EA	$848.00	$1,696
Elevators				
Hydraulic 4-stop passenger	1	EA	$132,500.00	$132,500
Hydraulic 4-stop freight	1	EA	$153,700.00	$153,700
				$463,856
10 Plumbing Systems				
General Plumbing				
Sanitary Fixtures				
Water closet, wall, sensor fv	24	EA	$1,282.60	$30,782
Urinal, wall, sensor fv	8	EA	$1,134.20	$9,074
Lavatory, wall	32	EA	$792.88	$25,372
Service sink, floor	4	EA	$970.96	$3,884
Electric water cooler, dual	4	EA	$3,169.40	$12,678
Misc sinks	10	EA	$1,250.80	$12,508
Floor drain	10	EA	$235.32	$2,353
Floor sink	5	EA	$561.80	$2,809
Hose bibb, exterior	8	EA	$357.22	$2,858
General Plumbing Equipment				
Booster pump, triplex	1	EA	$39,538.00	$39,538
6" backflow preventer	1	EA	$7,027.80	$7,028
Domestic water heating equipment and connections	1	LS	$25,440.00	$25,440
Water softening	1	LS	$13,568.00	$13,568

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
Supply/Waste/Vent Rough-ins				
Complete rough-in per fixture	82	EA	$2,872.60	$235,553
Rough-in at floor sink or floor drain	15	EA	$1,102.40	$16,536
Runout to hose bibb	8	EA	$666.74	$5,334
Misc equipment connects	30	EA	$793.94	$23,818
Roof drainage	91,525	SF	$1.43	$130,972
Condensate drainage	91,525	SF	$0.38	$34,926
Natural gas, service and distribution - non-lab	1	LS	$19,080.00	$19,080
Lab Plumbing				
Animal watering system	1	LS	$101,760.00	$101,760
Water purification equipment	1	LS	$101,972.00	$101,972
Lab vacuum equipment				Excluded
Lab compressed air equipment	1	LS	$70,172.00	$70,172
Industrial water heating equipment and connections	1	LS	$25,440.00	$25,440
Acid waste neutralizing tank and sampling box				Excluded
Acid waste and vent piping/distribution	18,150	SF	$8.66	$157,183
Industrial hot/cold water piping/distribution	18,150	SF	$6.10	$110,624
Compressed air piping/distribution	18,150	SF	$3.55	$64,451
Vacuum piping/distribution				Excluded
Natural gas piping/distribution	18,150	SF	$4.00	$72,531
Purified water piping/distribution	18,150	SF	$3.13	$56,755
Special gases piping/distribution				Excluded
Rough-in/connect to lab fixtures and equipment	18,150	SF	$4.81	$87,345
Miscellaneous plumbing				
Allowance	91,525	SF	$0.53	$48,508
				$1,550,852

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
11 Heating, Ventilation & Air Conditioning				
Wet Side HVAC				
Chiller, air cooled, 60tns	1	EA	$38,160.00	$38,160
CHW pump, 50 hp	2	EA	$7,420.00	$14,840
CHW pump, 5.5 hp	2	EA	$5,300.00	$10,600
CHW pump, 1.5 hp	2	EA	$4,770.00	$9,540
VFD to CHW pump	2	EA	$9,010.00	$18,020
Heat exchangers including accessories and	1	LS	$63,600.00	$63,600
HW pump, 7.5 hp	3	EA	$5,300.00	$15,900
VFD to HW pump, 7.5 hp	3	EA	$5,734.60	$17,204
HW expansion tank	1	EA	$6,232.80	$6,233
HW air separator	1	EA	$2,575.80	$2,576
Steam equipment	1	LS	$63,600.00	$63,600
Chemical treatment	1	LS	$6,360.00	$6,360
CHW distribution	91,525	SF	$3.24	$296,870
HHW distribution	91,525	SF	$5.75	$525,829
Process steam distribution	1	LS	$127,200.00	$127,200
Air-Side Equipment	3.34	CFM/SF		
Air handlers, vav, semi custom	116,000	CFM	$5.63	$652,918
Lab exhaust fans, hi-plume induction type	160,000	CFM	$2.86	$457,920
General exhaust	29,500	CFM	$1.26	$37,211
Computer room air conditioner, split, 7.5 ton	1	EA	$33,390.00	$33,390
HEPA filters at specialty exhaust	2	EA	$16,218.00	$32,436
Humidifiers	4	EA	$7,791.00	$31,164
VAV box w/ reheat	70	EA	$860.72	$60,250
Reheat coil at Phoenix lab zones	110	EA	$601.02	$66,112
Duct sound attenuation	283,000	CFM	$0.27	$74,995
Air Distribution				
Ductwork, galvanized steel	200,000	LB	$9.32	$1,863,480
Ductwork, stainless steel, welded	56,000	LB	$22.26	$1,246,560
Duct insulation, wrap	87,000	SF	$2.82	$245,305
Allowance for 3M wrap	1	LS	$31,800.00	$31,800
Flexible duct, insulated, various sizes	2,195	LF	$16.96	$37,227
Combination fire / smoke damper	141	EA	$939.16	$132,187
Manual volume damper	1,200	EA	$79.82	$95,782
Supply grilles and diffusers	550	EA	$195.04	$107,272

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
Return/exhaust grilles	500	EA	$180.20	$90,100
Louvers	100	SF	$100.49	$10,049
HVAC Controls				
DDC controls and EMS	91,525	SF	$10.60	$970,165
Phoenix valves and control interface	36,300	SF	$16.79	$609,492
HVAC General				
Test / balance HVAC	91,525	SF	$1.38	$126,121
Commissioning				Excluded
Hoisting and rigging	1	LS	$19,080.00	$19,080
				$8,247,548
12 Electrical Lighting, Power & Communication				
Service and Distribution				
Mainswitchboard "MSA" 3000 amp 277/480V 3ph 4w	1	EA	$47,700.00	$47,700
TVSS unit 3 pole 100 amp	2	EA	$2,544.00	$5,088
Transformer 500 kva	1	EA	$39,750.00	$39,750
Panel "HQ6" 200 amp 277/480 volt	1	EA	$2,385.00	$2,385
Elevator connection	2	EA	$318.00	$636
Elevator disconnect 200 amp 480 volt	2	EA	$1,961.00	$3,922
Distribution panel "DB1" 800 amp 120/208v 3ph 4w	1	EA	$12,720.00	$12,720
Distribution panel "LDB2" 800 amp 120/208v 3ph 4w	1	EA	$12,720.00	$12,720
Distribution panel "LDB3" 800 amp 120/208v 3ph 4w	1	EA	$12,720.00	$12,720
Distribution panel "LDB4" 800 amp 120/208v 3ph 4w	1	EA	$12,720.00	$12,720
Distribution panel "LDB5" 800 amp 120/208v 3ph 4w	1	EA	$12,720.00	$12,720
Panel "L1A,B,C,D,E,F" 200 amp 120/208v 3ph 4w	6	EA	$2,385.00	$14,310
Panel "L2A,B,C,D,E,F" 200 amp 120/208v 3ph 4w	6	EA	$2,385.00	$14,310
Panel "L3A,B,C,D,E,F" 200 amp 120/208v 3ph 4w	6	EA	$2,385.00	$14,310
Panel "L4A,B,C,D,E,F" 200 amp 120/208v 3ph 4w	6	EA	$2,385.00	$14,310
Panel "L5A,B,C,D,E,F" 200 amp 120/208v 3ph 4w	6	EA	$2,385.00	$14,310
Panel "LBA" 200 amp 120/208v 3ph 4w	1	EA	$2,385.00	$2,385
Distribution panel "LDB6" 400 amp 120/208v 3ph 4w	1	EA	$5,936.00	$5,936
Panel "L6A,B,C" 200 amp 120/208v 3ph 4w	3	EA	$2,385.00	$7,155
Panel "LRQ" 200 amp 120/208v 3ph 4w	1	EA	$2,385.00	$2,385
Panel "H1,2,3,4,5,6" 100 amp 277/480 volt 3ph 4w	6	EA	$2,173.00	$13,038

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
Distribution panel "DHB" 800 amp 277/480v 3ph 4w	1	EA	$12,720.00	$12,720
ATS 225 amp 4 pole 480 volt 3R	1	EA	$5,830.00	$5,830
Distribution panel "EHD" 225 amp 277/480 volt 3ph	1	EA	$2,597.00	$2,597
Panel "EH1" 100 amp 277/480 volt 3ph 4w	1	EA	$2,173.00	$2,173
Transformer 30kva	1	EA	$1,690.70	$1,691
Panel "ELB,EL4" 100 amp 120/208v 3ph 4w	2	EA	$2,173.00	$4,346
Lighting control panel	1	EA	$7,950.00	$7,950
Grounding	1	LS	$1,590.00	$1,590
Feeder conduit, 1", emt	400	LF	$6.14	$2,455
Feeder conduit, 1-1/2", emt	700	LF	$8.29	$5,802
Feeder conduit, 2", emt	2,000	LF	$11.55	$23,108
Feeder conduit, 2.5", emt	700	LF	$15.37	$10,759
Feeder conduit, 3", emt	700	LF	$21.74	$15,218
Feeder conduit, 4", emt	300	LF	$31.28	$9,384
Copper wire, #8 thhn	13	CLF	$79.50	$1,034
Copper wire, #6 thhn	13	CLF	$100.70	$1,309
Copper wire, #2 thhn	12	CLF	$190.80	$2,290
Copper wire, #1 thhn	12	CLF	$203.52	$2,442
Copper wire, #1/0 thhn	14	CLF	$323.30	$4,526
Copper wire, #3/0 thhn	32	CLF	$323.30	$10,346
Copper wire, #4/0 thhn	97	CLF	$365.70	$35,473
Copper wire, #500 mcm	28	CLF	$694.30	$19,440
Emergency Service and Distribution	91,525	SF	$2.12	$194,033
HVAC and Equipment Connection	91,525	SF	$1.33	$121,271
Convenience Power				
Duplex 20 amp 120 volt outlet	245	EA	$63.60	$15,582
Duplex GFI 20 120 volt amp outlet	109	EA	$68.90	$7,510
Double duplex 20 amp 120 volt outlet	61	EA	$71.02	$4,332
Duplex 20 amp 120 volt outlet GFI weatherproof	10	EA	$79.50	$795
Duplex 20 amp 120 volt separate circuit outlet	50	EA	$95.40	$4,770
Duplex IG 20 amp 120 volt outlet	89	EA	$116.60	$10,377
Double duplex IG 20 amp 120 volt outlet	90	EA	$132.50	$11,925
Floor outlet power 20 amp 120 volt	10	EA	$418.70	$4,187
Duplex ceiling power 20 amp 120 volt	16	EA	$132.50	$2,120
Duplex wall IG power 20 amp 120 volt	12	EA	$159.00	$1,908
VAV connection with switch	180	EA	$169.60	$30,528

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
Wiremold surface raceway	765	LF	$18.02	$13,785
Wiremold duplex 20 amp 120 volt	210	EA	$63.60	$13,356
Wiremold duplex IG 20 amp 120 volt	210	EA	$79.50	$16,695
Nema rated 30 amp 208 volt outlet	36	EA	$291.50	$10,494
Allowance for connections	1	LS	$74,200.00	$74,200
Electric microscope	4	EA	$265.00	$1,060
Branch conduit, emt, 3/4"	16,120	LF	$4.74	$76,380
Branch conduit, emt, 1"	12,000	LF	$6.14	$73,649
Branch conduit, emt, 1-1/4"	2,000	LF	$8.29	$16,578
Copper wire, #12 thhn	345	CLF	$61.48	$21,211
Copper wire, #10 thhn	660	CLF	$68.90	$45,474
Copper wire, #8 thhn	200	CLF	$96.13	$19,226
Lighting Systems, fixtures, controls, conduit and wire	91,525	SF	$11.66	$1,067,182
Telephone / Data Systems				
Cable tray in corridors	1,100	LF	$26.50	$29,150
Cable tray 90's, T's, 45's ect	36	EA	$212.00	$7,632
Wireless ceiling data outlet	40	EA	$954.00	$38,160
Wireless data outlet	20	EA	$1,590.00	$31,800
Telephone, cvr, jack RJ-45	105	EA	$58.30	$6,122
Telephone/data outlet, cvr, jack RJ-45	290	EA	$68.90	$19,981
Floor telephone data	20	EA	$418.70	$8,374
Wiremold surface raceway	765	LF	$16.96	$12,974
Wiremold tel\data outlet	210	EA	$159.00	$33,390
Telephone terminal box	6	EA	$609.50	$3,657
Telephone backboard	6	EA	$265.00	$1,590
Tel/data room power and grounding	6	LS	$795.00	$4,770
Conduit, emt, 1"	12,500	LF	$6.14	$76,718
Conduit, emt, 1-1/4"	2,000	LF	$8.29	$16,578
Riser conduit, 4", emt	400	LF	$27.48	$10,990
Cat 6 rated cable	175,000	LF	$1.33	$231,875
Fire Alarm System	91,525	SF	$5.30	$485,083
Security Systems perimeter	91,525	SF	$1.06	$97,017

Detailed Project Program Cost Plan **April 20, 2006**

MAIN BUILDING COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
AV Systems				
Rough conduit only to seminar and conference rooms only	91,525	SF	$0.32	$29,105
				$3,451,606
13 Fire Protection Systems				
Fire pump and accessories	1	EA	$68,370.00	$68,370
Fire department connection	1	EA	$3,816.00	$3,816
Backflow preventer	1	EA	$10,176.00	$10,176
Combined wet-pipe sprinkler system	91,525	SF	$3.71	$339,558
				$421,920

Detailed Project Program Cost Plan **April 20, 2006**

SITEWORK

UC COMPONENT COST SUMMARY WORKSHEET

Element			Construction Cost with markups broken out $/OGSF	Construction Cost with markups broken out Cost ($x1,000)	Construction Cost with markups rolled up $/OGSF	Construction Cost with markups rolled up Cost ($x1,000)
1. Foundations						
2. Vertical Structure						
3. Floor & Roof Structures						
4. Exterior Cladding						
5. Roofing, Waterproofing & Skylights						
A) Shell (1-5)						
6. Interior Partitions, Doors & Glazing						
7. Floor, Wall & Ceiling Finishes						
B) Interiors (6-7)						
8. Function Equipment & Specialties						
9. Stairs & Vertical Transportation						
C) Equipment and Vertical Transportation (8-9)						
10. Plumbing Systems						
11. Heating, Ventilating & Air Conditioning						
12. Electric Lighting, Power & Communications						
13. Fire Protection Systems						
D) Mechanical and Electrical (10-13)						
Total Building Construction (1-13)		(Sub 1)				
14. Site Preparation & Demolition		(Sub 0)	5.89	$436	9.18	$680
15. Site Paving, Structures & Landscaping		(Sub 4)	14.99	$1,110	23.39	$1,731
16. Utilities on Site		(Sub 2)	9.49	$702	14.81	$1,096
Total Site Construction (14-16)			**30.37**	**$2,247**	**47.38**	**$3,506**
TOTAL BUILDING & SITE (1-16)			**30.37**	**$2,247**	**47.38**	**$3,506**
General Conditions		8.00%	2.43	**$180**		
Contractor's Fee		6.00%	1.97	**$146**		
Design Contingency		10.00%	3.48	**$257**		
Base budget as of date of estimate			**38.24**	**$2,830**		
Escalation from Date of Estimate to Start Date of Construction	Jul-09	23.89%	**9.14**	**$676**		
ESTIMATED CONSTRUCTION BUDGET			**47.38**	**$3,506**		

Detailed Project Program Cost Plan **April 20, 2006**

SITEWORK COMPONENT SUMMARY

Element		Subtotal	Total	Cost / SF	Cost / SF
E) Site Construction (14-16)			**$2,247,327**		**$30.37**
14 Site Preparation & Demolition		$435,565		$5.89	
15 Site Paving, Structures & Landscaping		$1,109,513		$14.99	
16 Utilities on Site		$702,250		$9.49	
Subtotal			**$2,247,327**		$30.37
Gen'l Cond, Bonds and Insurance	8.00%		**$179,786**		$2.43
Subtotal			**$2,427,113**		$32.80
General Contractor's Fee	6.00%		**$145,627**		$1.97
Subtotal			**$2,572,740**		$34.77
Design Contingency	10.00%		**$257,274**		$3.48
Subtotal			**$2,830,014**		$38.24
Escalation to Start Date (July 2009)	23.89%		**$676,090**		$9.14
TOTAL ESTIMATED CONSTRUCTION COST			**$3,506,105**		**$47.38**

Total Area: **74,000 SF**

Detailed Project Program Cost Plan **April 20, 2006**

SITEWORK COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
14 Site Preparation & Building Demolition				
Site protective construction				
Allowance for erosion control	74,000	SF	$0.32	$23,532
Site clearing and grading				
Clear and grub site	74,000	SF	$0.42	$31,376
Field stacking and layout	74,000	SF	$0.16	$11,766
Imported fill, compacted	2,966	CY	$37.10	$110,039
Rough grading	74,000	SF	$3.18	$235,320
Fine grading	74,000	SF	$0.32	$23,532
				$435,565
15 Site Paving, Structures & Landscaping				
Vehicular paving and curbs				
Asphalt paving forming service road	14,000	SF	$6.36	$89,040
Concrete curb and gutter - allowance	960	LF	$19.08	$18,317
Concrete paving to loading dock	4,400	SF	$12.72	$55,968
Pedestrian paving				
Allowance for pedestrian paving	10,000	SF	$10.60	$106,000
Allowance for site steps	1	EA	$26,500.00	$26,500
Curb cut concrete ramps	3	EA	$2,650.00	$7,950
Structural Retaining walls				
Allowance for site retaining walls	1	LS	$265,000.00	$265,000
Drainage				
Allowance for perforated drain and waterproofing to retaining walls	1	LS	$53,000.00	$53,000
Allowance for site drainage	1	LS	$84,800.00	$84,800
Landscape, planting and maintenance				
Lawn, ground preparation and seeding	21,100	SF	$0.74	$15,656
Premium for shrubs and ground covers	21,100	SF	$10.60	$223,660
Allowance for trees	1	LS	$47,700.00	$47,700
Allowance for maintenance	1	LS	$7,420.00	$7,420

Detailed Project Program Cost Plan **April 20, 2006**

SITEWORK COMPONENT DETAIL

Element	Quantity	Unit	Unit Cost	Total
Irrigation	21,100	SF	$2.12	$44,732
Fencing and miscellaneous accessories				
Chainlink fence, 8' high	560	LF	$38.16	$21,370
Allowance for site furnishings, etc.	1	LS	$42,400.00	$42,400
				$1,109,513

16 Utilities on Site

Electrical				
Site Service and Distribution	1	LS	$111,300.00	$111,300
Site Emergency Service and Distribution	1	LS	$156,350.00	$156,350
Site Lighting	1	LS	$53,000.00	$53,000
Site Telephone / Data Systems	1	LS	$42,400.00	$42,400
Site MATV Systems	1	LS	$21,200.00	$21,200
Mechanical				
Allowance for sanitary sewer, storm drainage, domestic fire, etc.	1	LS	$318,000.00	$318,000
				$702,250

UNIVERSITY of CALIFORNIA Riverside

APPENDIX A4.0
PRESENTATION MATERIALS

ENGINEERING BUILDING UNIT 3
DETAILED PROJECT PROGRAM

DPP

CO ARCHITECTS

University of California, Riverside
Bourns College of Engineering
Engineering Building Unit 3

DESIGN REVIEW BOARD PRESENTATION

CO ARCHITECTS

01

CO Architects
EBU3 Programming Team

DPP Planning Consultants

CO Architects – Architecture
RFD – Lab Planning
BR+A – MEP Engineering
KPFF – Civil & Structural
Cumming LLC – Cost Estimating

CO Architects

02

University of California, Riverside
EBU3 Programming Team

Project Management Team

Ted Chiu
Dan Rockholt

CPP

Tim Ralston
Luis Carrazana
Nita Bullock

DPP Committee

Reza Abbaschian, Dean
Dennis Rice, Assistant Dean
Jerome Schultz, Bioengineer
Mark Matsumoto, Chemical Engineer

Building Committee

03

EBU3 – Goals

- Support BCOE Future Growth
- Accommodate Faculty & Student Projections
- Provide Needed Space for :
  - Chemical Engineering Research
  - Material Sciences Research
  - New Department of Bioengineering
- Provide Wet Labs for Teaching and Research
- Provide Research Offices and Meeting Space

Project Statement

04

- Vision Development
- BCOE Space Inventory
- Building Tours
- 5 Programming Workshops
  - Meetings with Dean
  - Meetings with Faculty
  - Meetings with Campus Planner
  - Meetings with Campus Engineer
  - Meetings with UCOP
- Space Program
- Program Organization
- Building Concepts / Cost Model

DPP Process

05

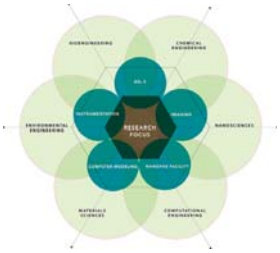
Master Plan

06

BCOE Space Inventory

07

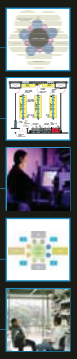
- Highly Interdisciplinary Approach
- Development of New Processes and Products
- Reliant Upon New and Emerging Technologies
- Capitalization on Synergy of New Discoveries in Biology and Engineering
- Dependent on New Fields of Discovery
  - Microfabrication
  - Advanced Computer Systems
  - Sophisticated Imaging Methods
  - Automated Manufacturing Techniques
  - New and Innovative Use of Materials



Bioengineering / Interdisciplinary Research

08

- Diversity of Disciplines and Users
- Balancing Lab Versatility with Cost
- Strategic Planning of Core Facilities
- Key Functional Adjacencies
- Collaborative Teaching and Research Environment



EBU3 Critical Planning Goals

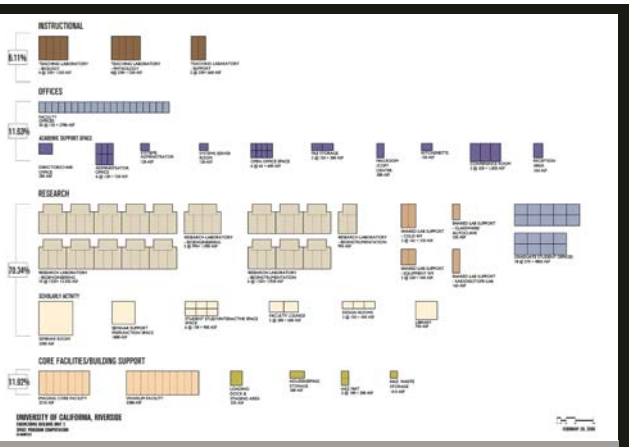
09

- Total GSF : 91,000 S.F.
- Total ASF : 54,000 S.F.
- Efficiency : 59%

Scholarly Space Activity	5,900 SF	11 %
Offices	11,140 SF	21 %
Instructional Labs	3,300 SF	6 %
Research Labs	27,225 SF	50 %
Core Facilities	6,435 SF	12 %
		100 %

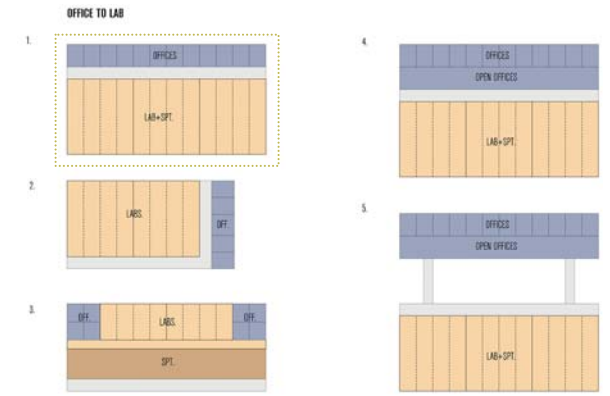
EBU3 : Program Synopsis

10



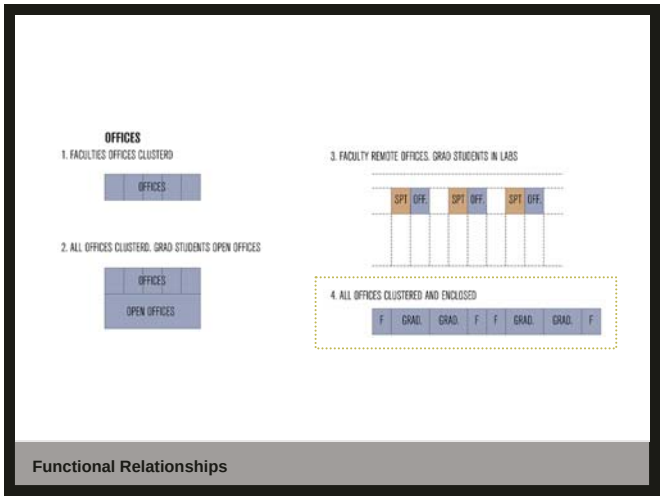
Space Program

11



Functional Relationships

12



Functional Relationships

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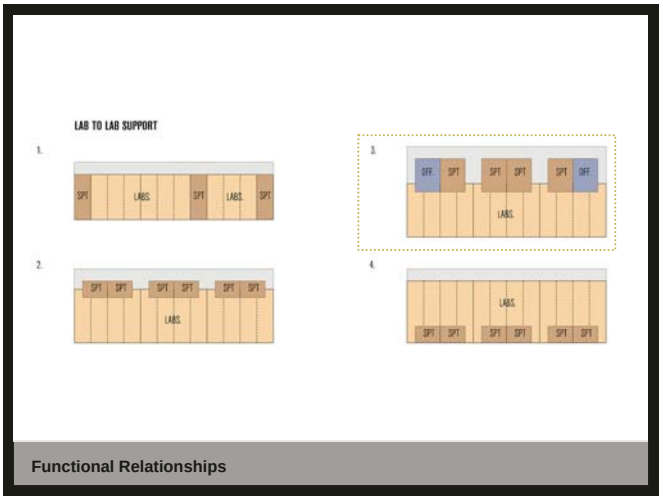

Functional Relationships

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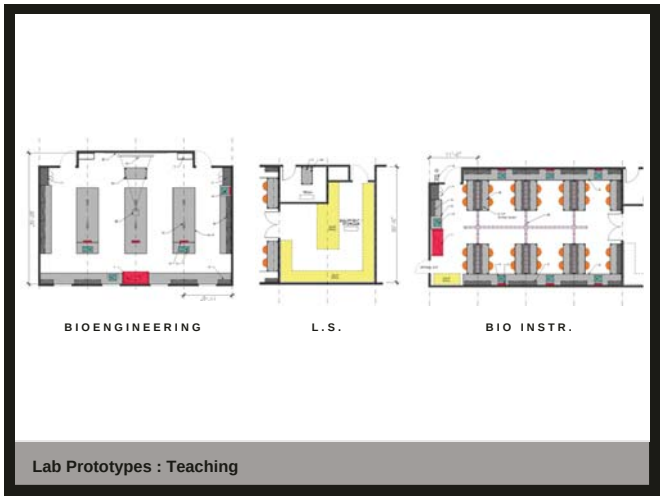
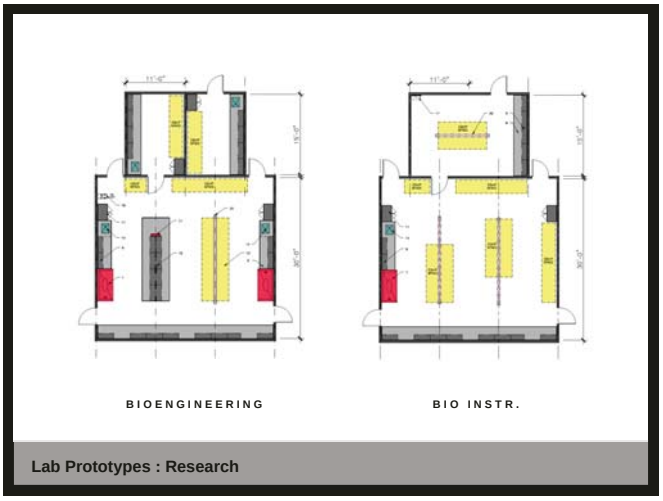


Lab Prototypes : Teaching

15



Lab Prototypes : Research

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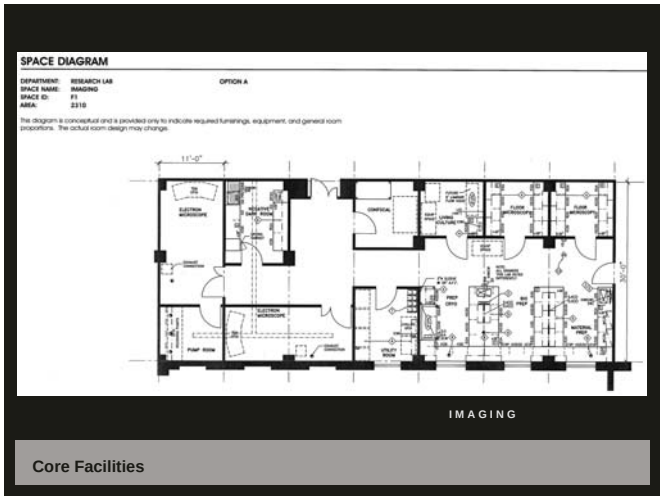
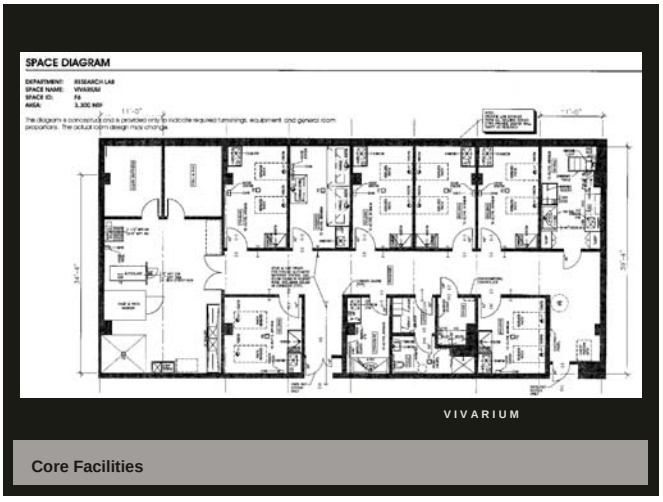


Core Facilities

17

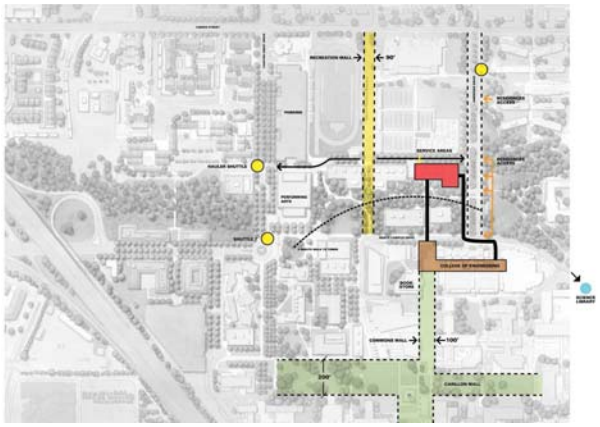


Core Facilities

18

Master Plan

19



Campus Plan

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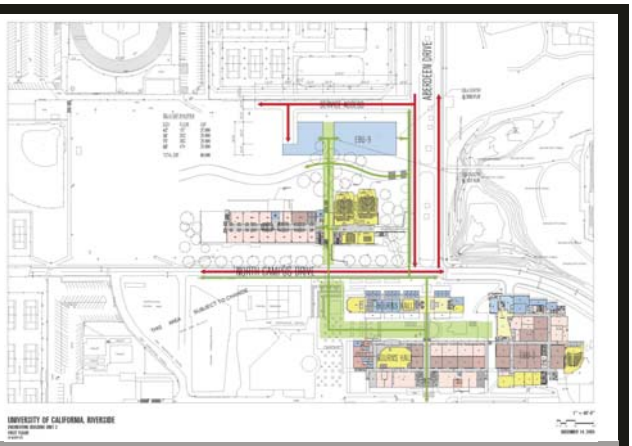
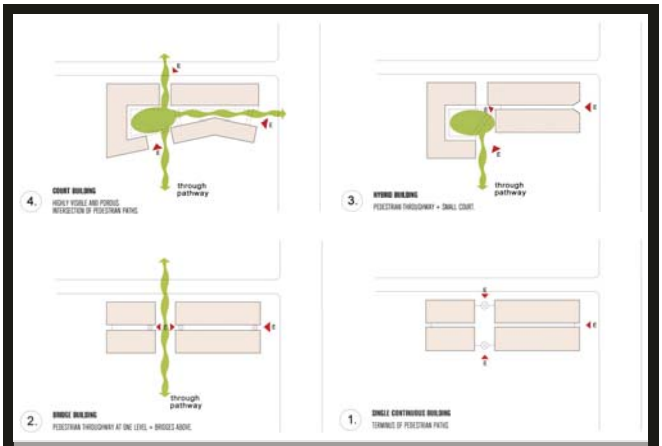


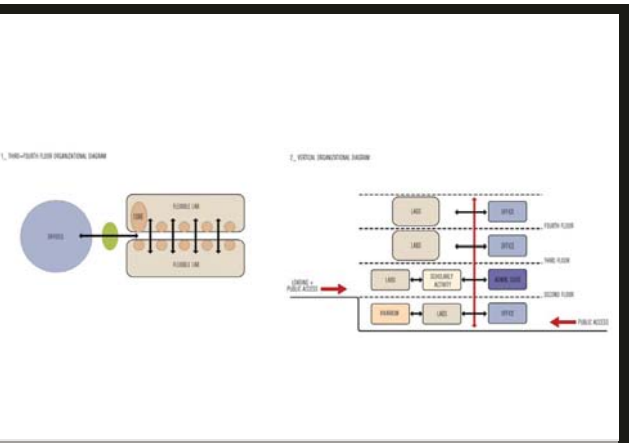
Site Sketch

21



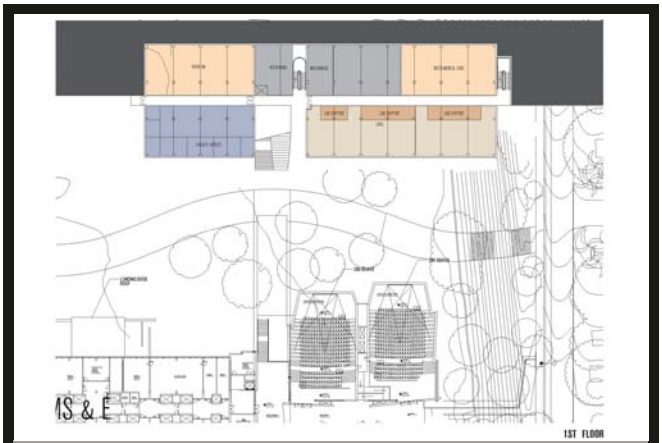
Levels of Porosity and Entry Studies

22



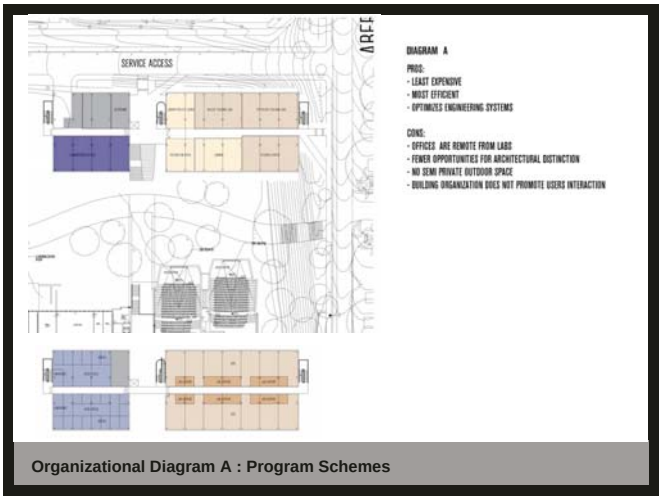
Organizational Diagram A : Program Concepts

23



Organizational Diagram A : Program Schemes

24



Organizational Diagram A : Program Schemes

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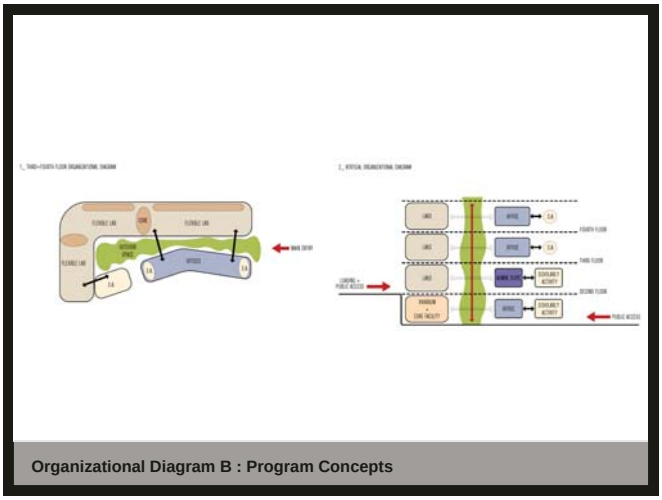
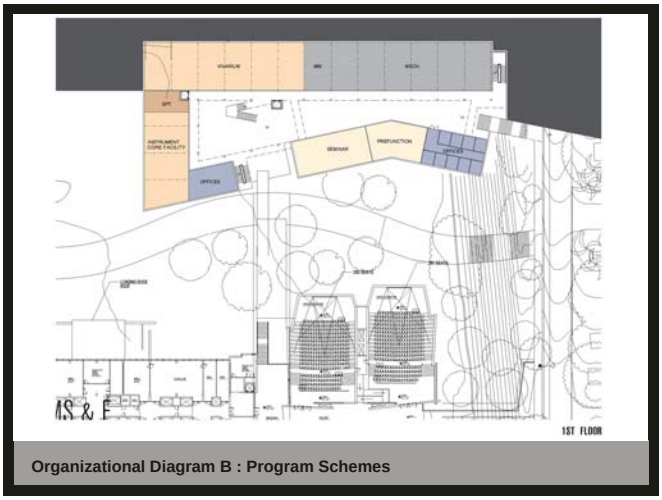


Organizational Diagram B : Program Concepts

26



Organizational Diagram B : Program Schemes

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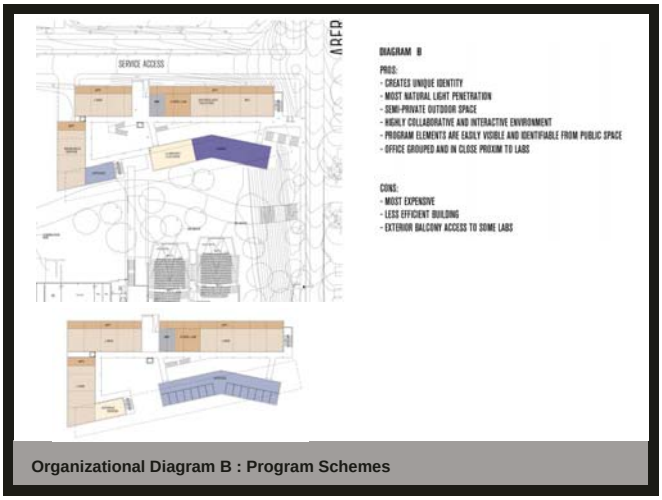
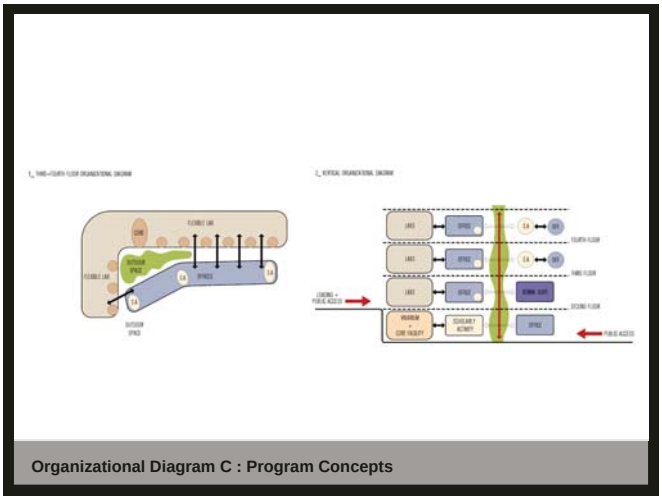


Organizational Diagram B : Program Schemes

28



Organizational Diagram C : Program Concepts

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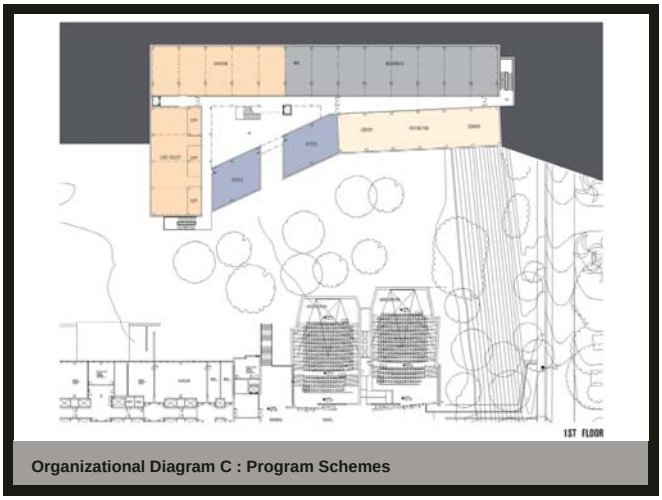

Organizational Diagram C : Program Schemes

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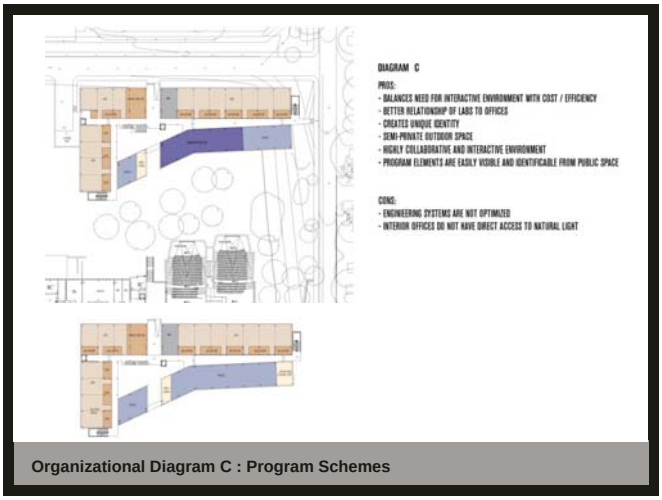

Organizational Diagram C : Program Schemes

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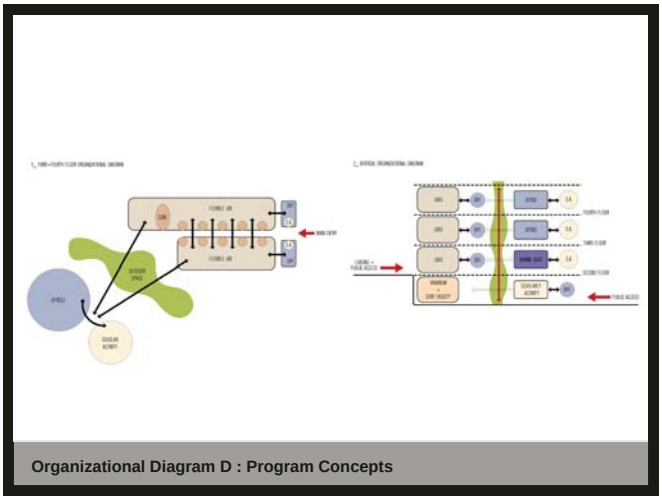
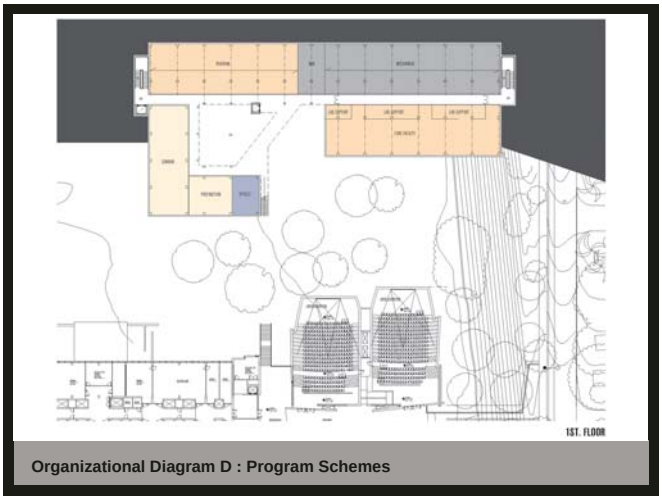


Organizational Diagram D : Program Concepts

32



Organizational Diagram D : Program Schemes

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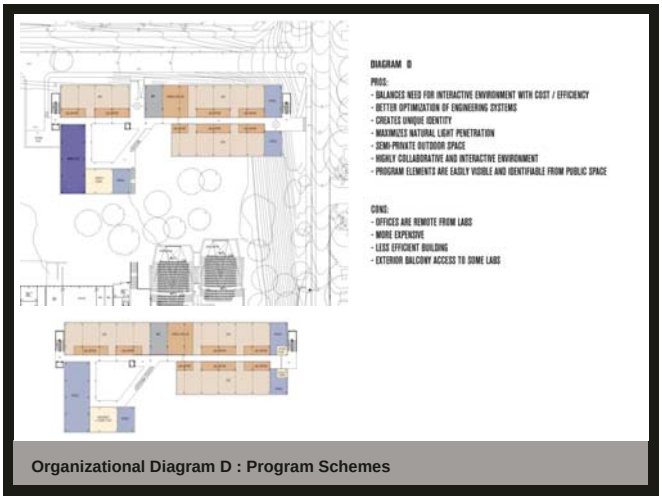

Organizational Diagram D : Program Schemes

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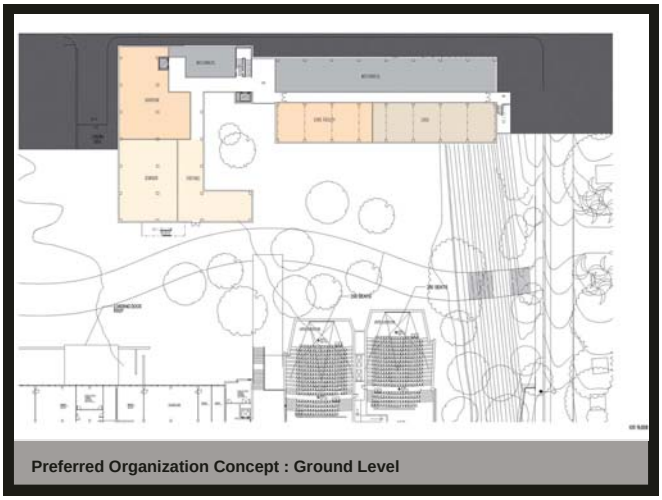
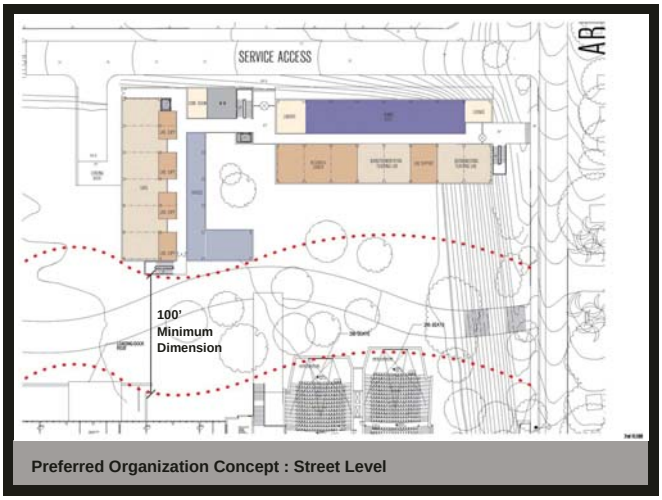


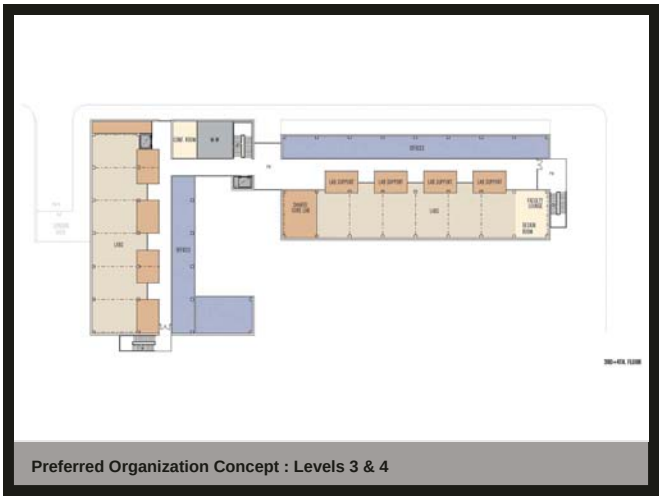
Preferred Organization Concept : Ground Level

35



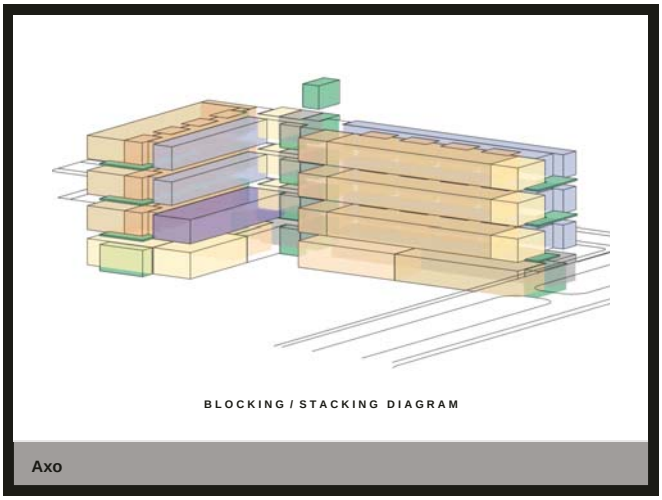
Preferred Organization Concept : Street Level

36



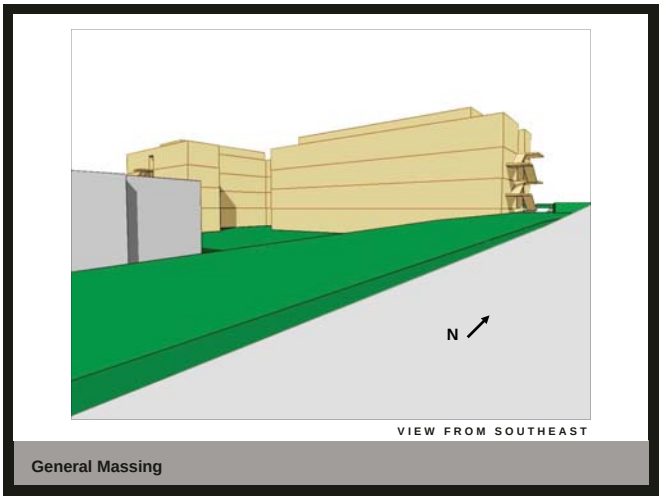
Preferred Organization Concept : Levels 3 & 4

37



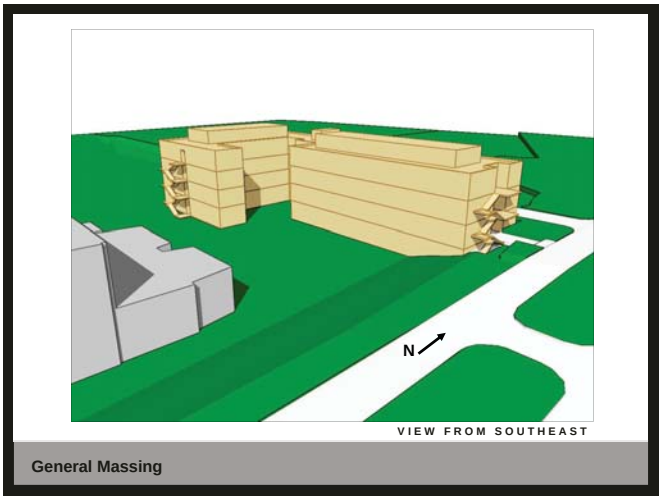
Axo

38



General Massing

39



General Massing

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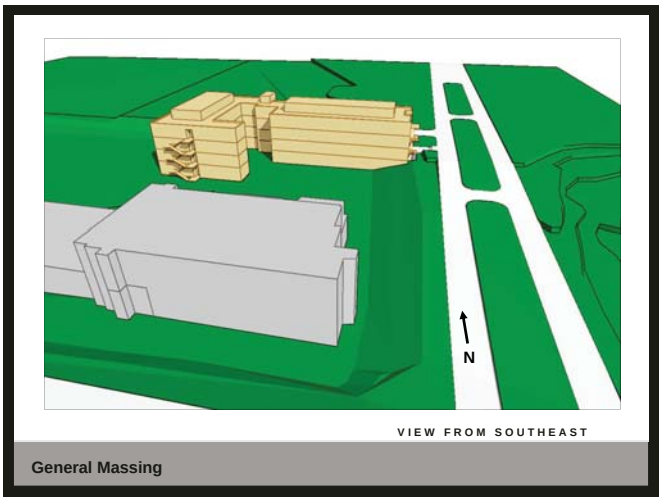

General Massing

41