Construction Lab

Summary

Example of Construction Lab at Louisiana Tech

(preferred by users)

The lab will be the Center for Underground Infrastructure Research and Education (CUIRE). It will be used for research and teaching activities in this discipline. The lab should consist of two primary areas: the physical testing lab and office/computer lab area. The physical testing lab should be a 30-foot high-bay with partially open ground with select fill. The open ground will be used for vertical and horizontal drilling. The lab should accommodate a 10-ton bridge crane. The drilling area will be 10 feet deep and 10 feet long. The office/computer lab area should have a computer lab, two offices, a conference room, a graduate student office, a reception/waiting area, and a workroom/storage. The computer lab should accommodate 20 chairs and tables in addition to 20 computer stations. Chairs and tables should be placed in the middle of the lab and computers should be placed along the perimeter walls. The conference room should accommodate 10 seats around a large conference table. The graduate student office should accommodate 10 modular workstations and a small meeting area. The small meeting area should accommodate three to four people and have a whiteboard. The reception/waiting area should accommodate a workstation for a receptionist and a waiting area with lounge chairs or sofa for two to three people. The workroom/storage should accommodate a space for a copier and fax and a counter with cabinet for a coffee maker and a microwave.

Space Requirements

Name of Space	Proposed Area (ASF)	
	No. and Size of Space	Total Area
Lab Space		
Construction Lab		
Physical Testing Lab	1 @ 1,400sf	1,400
Computer Lab (20 stations)	1 @ 700sf	700
Offices	2 @ 140sf	280
Conference Room (10± seats)	1 @ 250sf	250
Graduate Student Office (10 people)	1 @ 570sf	570
Reception/Waiting Area	1 @ 200sf	200
Workroom/Storage	1 @ 100sf	100
Subtotal		*3,500*

Physical Testing Lab

- The lab should be a long rectangular shape: 50' long x 28' wide desirable

Example of Construction Lab at Louisiana Tech
(preferred by users)

Adjacencies

Physical Testing Lab

- The lab should have direct access from exterior
- An open ground with select fill should be located near the garage door
- Workbenches and cabinets should be located along longer sides of both walls

Computer Lab

- The lab should be accessed from a hallway
- Tables and chairs should be located in the middle of the room
- Computer stations should be located along perimeter walls

Other Spaces

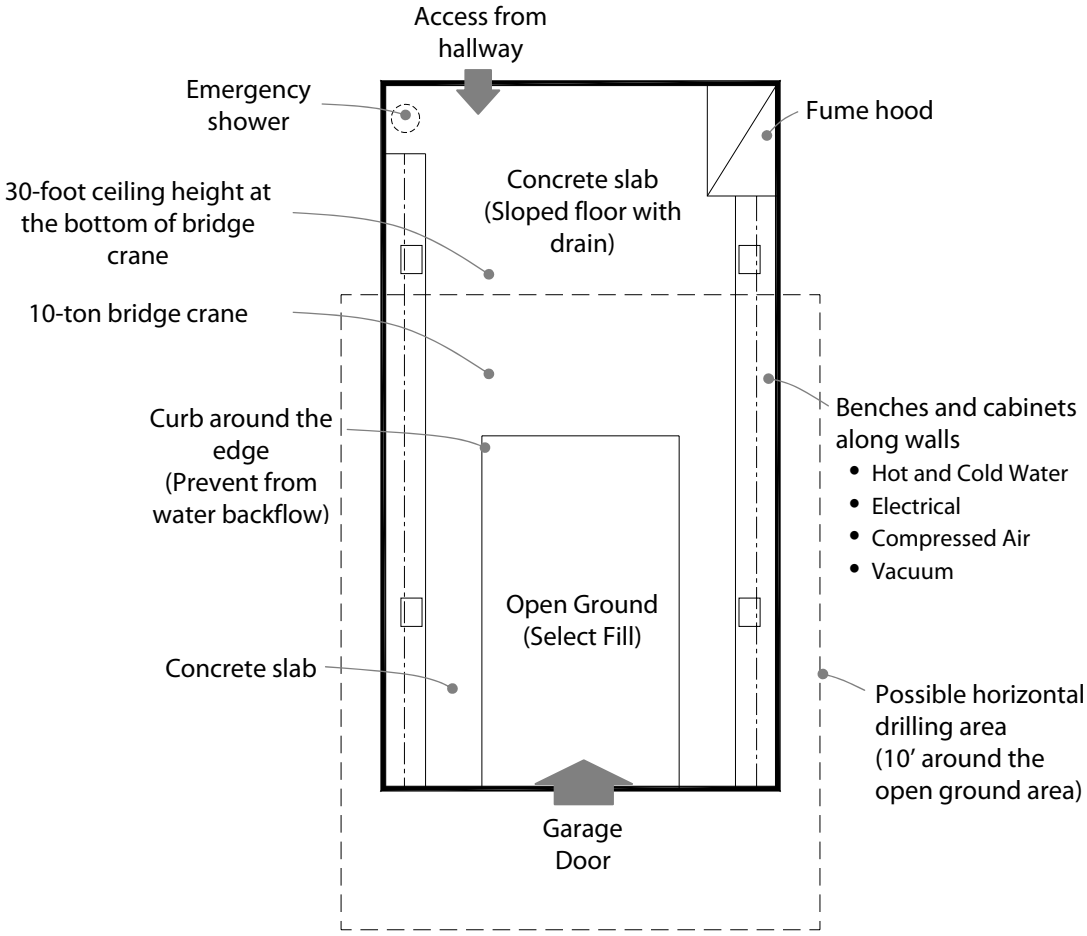
- All other spaces, offices, conference room, graduate student office, reception/waiting area, and workroom/storage should be located in a suite; a suite entrance and internal circulation leads into each rooms within the suite
- The reception/waiting area should be located near the suite entrance
- Offices should have access to natural light

Example of Construction Lab at Louisiana Tech
(preferred by users)

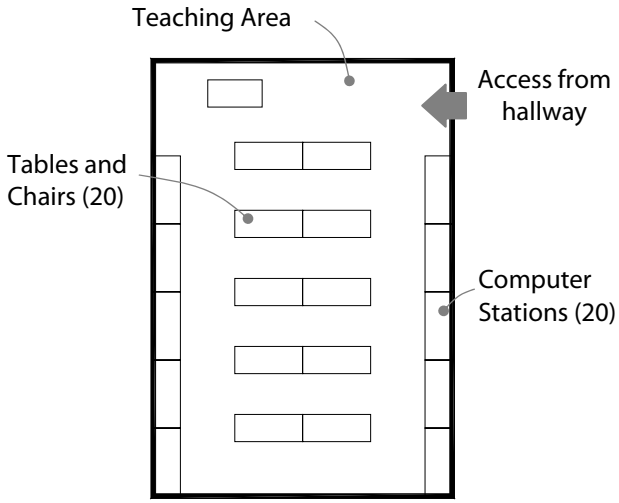
Adjacency Diagrams

Physical Testing Lab

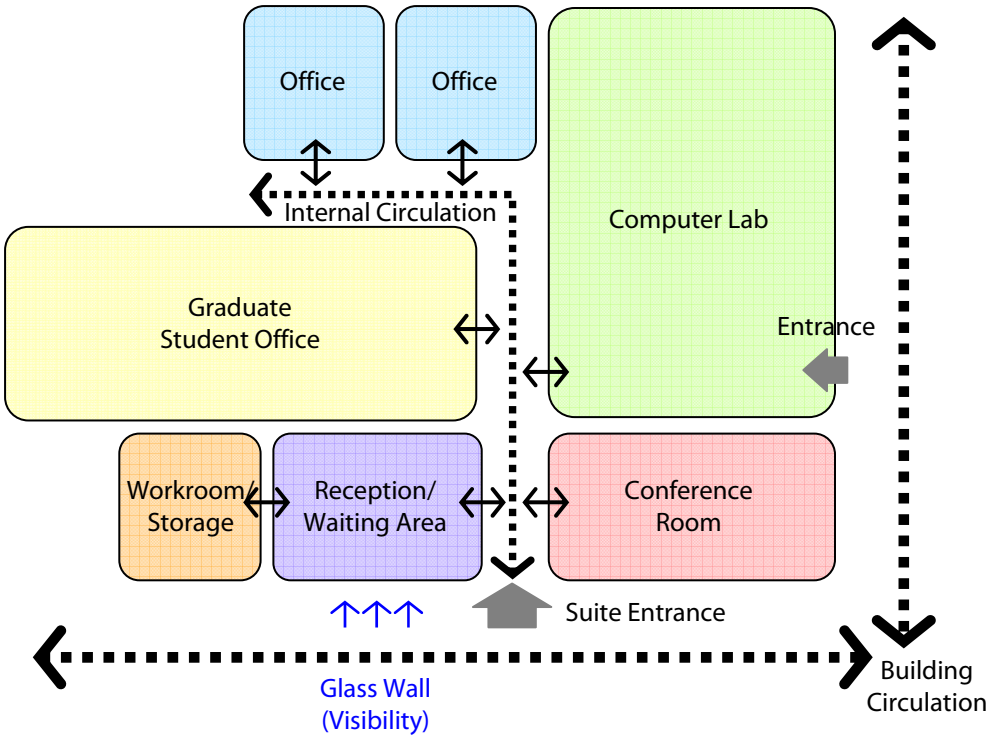
Note: The following diagrams are intended to show adjacencies and functions of the space. Specific details should be determined during design.



Computer Lab



Other Spaces



Use of Space

Physical Testing Lab and Computer Lab

Item	Description				Description			
User Type (No. of People)	Physical Testing Lab				Computer Lab			
Students (for class)	20				20			
Students (for research)	10				as needed			
Technical Staff	2				0			
Faculty	1				1			
Type of Use	Physical Testing Lab				Computer Lab			
Hours of Operation								
Primary Use	Teaching 2/day Research 10/day Mixed 12/day				Teaching			
Safety concern	No				No			
Security concern	Yes - Lab needs to be secured from office				Yes - Computers			
Type of Activities	Physical Testing Lab				Computer Lab			
Vibration Sensitive	Minimal				Minimal			
Vibration Producing	Minimal				Minimal			
Noise Producing	Minimal				Minimal			
Heat Producing	Minimal				Computers (20)			
Light Sensitive	Minimal				Minimal			
Visibility/Access	Physical Testing Lab				Computer Lab			
	Required	Desirable	Not Desirable	N/A	Required	Desirable	Not Desirable	N/A
Visibility from interior	●							●
Visibility from exterior	●							●
Access from exterior		●						●

Other Spaces

- Typical use

Technical Requirements

Physical Testing Lab and Computer Lab

Item	Description	Description
Architectural	Physical Testing Lab	Computer Lab
Floor Load	2 ton/sf	Typical
Ceiling Height	30' (bottom of bridge crane - not include host length)	Typical (10')
Pit	Open ground with select fill (12' W x 25' L)	No
Sloped Floor with Drain	For cleaning purpose in the concrete slab area. Drain with cleanout.	No
Bridge Crane	10 ton	No
Wide Access	No	No
Vehicle Access	Garage door (12' wide x 12' high)	No
Built-In Attributes	Physical Testing Lab	Computer Lab
Cabinet	Size [50' L x 3' W x 3' H (standing height)] x Quantity [2]	No
Workbench	Size [50' L x 3' W x 3' H (standing height)] x Quantity [2]	No
HVAC	Physical Testing Lab	Computer Lab
A/C Requirement	Physical Testing Lab - Tempered Air, Other Areas - A/C	Typical
Temperature	Typical	Typical
Relative Humidity	Typical	Typical
Air Exchange Rate	Required by code	Required by code
Relative Pressurization		
Special Exhaust		
Chemical Use	Physical Testing Lab	Computer Lab
Use of Chemicals	Resins	No
Chemical Storage	Yes	
Fume Hoods	Size [8' L x 5' W x 36" H] x Quantity [1]	
Safety Equipment	Shower [1] Eyewash [1] First Aid Kit [1]	

Pit

- Space below the open ground area should be clear of any utilities or structures for drilling: the drilling area should be 10 feet deep and 10 feet around the open ground area

Built-In Attributes

- Provide small counter with cabinets above and below in the workroom/storage

HVAC

- The physical testing lab should have tempered air around the workbench area along both longer sides of walls

Chemical Use

- First aid kit in each teaching and research lab

Other Spaces

- Typical office space

Utility Services

Physical Testing Lab

Item	Quantity	Item	Quantity	Item	Quantity	Item	Quantity
Water Systems							
Hot Water	4	Cold Water	4	Purified Water	4	Deionized Water	
Gas							
Natural Gas		Compressed Air	4	Vacuum	4		
Electrical							
110v, 20A, 1ø	10	208v, 20A, 1ø		208v, 30A, 1ø	5	208v, 30A, 3ø	3
480v, 40A, 3ø	2	Dedicated circuit		Isolated Ground		Emergency Power	
Communications							
Telephone	1	Data	10				

Water Systems and Gas

- Plumbing should be provided at four sinks on the workbenches in the physical testing lab

Electrical

- Convenience outlets along the workbenches (i.e., 8-foot interval)

Communications

- Several data along workbenches and one telephone

Other

- Deionized water, compressed air, and vacuum should be supplied from a building central system
- Each teaching lab and research lab should be equipped with a fire alarm pull box

Computer Lab

Item	Quantity	Item	Quantity	Item	Quantity	Item	Quantity
Water Systems							
Hot Water		Cold Water		Purified Water		Deionized Water	
Gas							
Natural Gas		Compressed Air		Vacuum			
Electrical							
110v, 20A, 1ø	22	208v, 20A, 1ø		208v, 30A, 1ø		208v, 30A, 3ø	3
480v, 40A, 3ø		Dedicated circuit		Isolated Ground		Emergency Power	
Communications							
Telephone		Data	22				

Offices

- Provide a vision lite or glass lite on the door
- Extend perimeter walls through any suspended ceiling to minimize transfer of sound
- Provide convenience electrical outlets

Graduate Student Office

- Provide a vision lite or glass lite on the door
- Extend perimeter walls through any suspended ceiling to minimize transfer of sound
- Provide minimum of 10 electrical and data outlets where desks are located
- Provide a telephone connection
- Provide a small meeting area
- Provide convenience electrical outlets

Reception/Waiting Area

- Provide a vision lite or glass lite on the door
- Consider glass wall along the hallway
- Extend perimeter walls through any suspended ceiling to minimize transfer of sound
- Provide minimum of one electrical and data outlet at the receptionist's desk
- Provide a telephone connection
- Provide convenience electrical outlets

Conference Room

- Provide a vision lite or glass lite on the door
- Extend perimeter walls through any suspended ceiling to minimize transfer of sound
- Provide minimum of two electrical and data outlets
- Provide a telephone connection
- Provide a motorized projection screen and a ceiling-mount LCD projector
- Provide convenience electrical outlets

Workroom/Storage

- Provide data for a network printer, a telephone for a fax, and a dedicated circuit for a copier
- Provide a counter with cabinets above and below

- Provide electrical outlets on the counter for a coffee maker and a microwave
- Provide convenience electrical outlets

Finishes and Illumination

	Floor					Base			Walls			Ceiling				Lighting				
Name of Space	Carpet	Resilient Floor	Sealed Concrete	Epoxy Paint	Other	Rubber	Other	None	Painted Gypsum Board	Painted Structure	Other	Acoustical Tile	Gypsum Board	Exposed Structure	Other	Fluorescent	High-Intensity Discharge	Task Light	Natural Light	Other
Physical Testing Lab			●	●	●			●		●				●			●			
Computer Lab		●				●			●			●				●				
Offices	●					●			●			●				●			●	
Conference Room	●					●			●			●				●				
Graduate Student Office	●					●			●			●				●		●		
Reception/Waiting Area	●					●			●			●				●				
Workroom/Storage		●				●			●			●				●				

Furnishings, Fixtures, and Equipment

Name of Space	Item	Quantity	Size			Mount				Utilities			Existing/ New		Furnished By		Installed By		Remarks
			L	W	H	Floor	Ceiling	Wall	Counter	Gas	Electricity	Data	Existing	New	Contractor	Owner	Contractor	Owner	
Physical Testing Lab	Long-term testing of pipe materials	1	10'	5'	5'	●			●			●		●		●		●	240V, 3ø
	10-ton bridge crane	1					●				●			●		●	●		
Computer Lab	Tables	20				●								●		●		●	
	Chairs	40				●								●		●		●	
	Computers	20							●		●	●		●		●		●	
	Motorized Projection Screen	1					●				●			●		●	●		
	Ceiling-mounted Projector	1					●				●	●		●		●	●		
	Whiteboard	1						●						●		●	●		
Offices	Desk	1 ea.				●								●		●		●	
	Desk Chair	1 ea.				●								●		●		●	
	Computer Desk	1 ea.				●								●		●		●	
	Guest Chairs	2 ea.				●								●		●		●	
	File Cabinet	1 ea.				●								●		●		●	
	Book Shelve	1 ea.				●								●		●		●	
Conference Room	Conference Table	1				●								●		●		●	
	Chairs	10				●								●		●		●	
	Motorized Projection Screen	1					●				●			●		●	●		
	Ceiling-mounted Projector	1					●				●	●		●		●	●		
	Whiteboard	1						●						●		●	●		
Graduate Student Office	Modular Workstations	10				●								●		●		●	
	Chairs	10				●								●		●		●	
	Small Conference Table	1				●								●		●		●	
	Conference Table Chairs	4				●								●		●		●	
	Whiteboard	1				●								●		●	●		
Reception/ Waiting Area	Modular Workstation with counter	1				●								●		●		●	
	Chair	1				●								●		●		●	
	File Cabinet	1				●								●		●		●	
	Sofa	1				●								●		●		●	
	Coffee Table	1				●								●		●		●	
Workroom/ Storage	Copier	1				●					●	●		●		●		●	
	Fax	1							●		●	●		●		●		●	
	Coffee Maker	1							●		●			●		●		●	
	Microwave	1							●		●			●		●		●	