



LCLS Room Data Sheet #	1.9-1044	Central Lab Office Complex - Laser Lab	Revision 2
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Signature

8/12/05

Date

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8/15/05

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REVISION INFORMATION

Rev 2, Changed temperature tolerance to +/- 2F, changed heat dissipation load. Clarifications to water cooling specifications

Updated Standards and Codes- Added diversity factor for power panels. Clarified lighting requirements

ROOM DATA SHEETS

FACILITY COMPONENT	LASER LAB (CLOC) - ROOM DATA SHEET										
	Name of Building	Laser Lab (CLOC)									
	Organization or Department	SLAC, Stanford University									
	Net area	139.4 sq. meters 1500 SF									
	Critical dimensions	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">H:</td> <td style="width: 33%;"></td> <td style="width: 33%;">9'-0" min.</td> </tr> <tr> <td>W:</td> <td></td> <td>25'-0"</td> </tr> <tr> <td>L:</td> <td></td> <td>59'-0"</td> </tr> </table>	H:		9'-0" min.	W:		25'-0"	L:		59'-0"
H:		9'-0" min.									
W:		25'-0"									
L:		59'-0"									
	Hours of operation	Facility is locked with controlled access									
	Users/Occupancy	Laboratory reseachers prepare and run experiments. Maximum occupancy: 15									
	Building orientation	Five Laser labs are distributed within the 3 floors of the CLOC building -									
FUNCTIONAL OBJECTIVE	1- Must be able to use each laser lab for at least two separate experimental groups with the possibility of a central shared area. The implication of this is that lighting, mechanical, electrical and all utilities are to stress flexibility as the layouts of the laser tables and enclosures will always change and adapt to requirements of new experiments.										
PLANNING CONSIDERATIONS & CRITICAL FACTORS	1- Each Laser Lab requires two access. One access shall be near the elevator for equipment using one pair of 3'x7' doors with key lock. 2.-Another access for personnel. Personnel access shall be by means of a labyrinth, or by a double doors system with vestibule. Provide controlled access (card reader) into the Laser Bay. This vestibule should be sized to accommodate as minimum: a bench which a small group of lab personnel can use to don booties safely, a rack or cabinet to place bootie dispensing and bootie disposal recepticles, smock dispensing / storage / disposal, protective eyewear dispensing / storage, a few personal lockers and the clear space between the inner and outer pair of 3'-0" wide access doors.										
FINISHES	Wall	Painted gypsum wall board. No glossy finishes.									
	Ceiling	Mylar wrapped acoustic tile panels within suspended Unistrut framing grid capable of supporting experiment specific diagnostic equipment on suspended shelf below the ceiling above each laser table. Each shelf shall be able to carry a weight of 500 lbs each.									
	Floor	Epoxy coated concrete floor									
	Base	Rubber base									
	Doors	Flush hollow metal inner vestibule doors. Doors shall have automatic door bottoms preventing light leak.									
	Fenestrations	None allowed.									
	Acoustical	Typical laboratory decibel level required. NC: 35									
BUILT-IN CABINETS	Upper and Lower cabinets	Furnished by SLAC									

<p>APPLICABLE STANDARDS</p>	<p>29 CFR Part 1910 Occupational Safety and Health Standards Dept of Labor, 29 CFR Part 1926 Safety and Health Regulations for Construction Dept of Labor, Uniform Building Code (UBC) 1997 including appendixes, National Electric Code (NEC) 2002, Uniform Mechanical Code (UMC) 2003 including appendixes, Uniform Plumbing Code (UPC) 2003 including appendixes, Uniform Fire Code (UFC) 1997 including appendixes, California Code of Regulations Title 8 Industrial Safety, Title 19 Public Safety, NFPA 70 National Fire Codes, National electrical Safety Code ANSI C2, Occupational Safety and Health Act (OSHA), General Services Administration 41 CFR part 101-19, Environmental Protection Agency 40 CFR Parts 264 and 265, SLAC Environmental Safety & Health Manual, General Industrial Activities Storm Water Permit (SLAC Permit), NFPA 101 life Safety Code, Title 24-Energy Code, DOE standard 10 CFR Part 435, ASHRAE/IES Standards 90.1, NFPA Standard 13 and SLAC Fire Marshal requirements, LCLS Cabling Standard, SLAC LOTO</p>
<p>VIEWS & SCHEMATICS (N. T. S.)</p>	<p>Refer to figures in RDS CLOC overall</p>

MECHANICAL REQUIREMENTS	HVAC	<input checked="" type="checkbox"/> Heating system	Temp: 72 degrees F +/- 2 degree F	<input checked="" type="checkbox"/> Mechanical humidification
<p>Provide filtered clean air using Pre-filters, high efficiency filters and HEPA filters in the air handling unit. Use floor and ceiling material that does not produce dust. 6 FPM average room velocity or less.</p>		<input checked="" type="checkbox"/> Air conditioning		<input type="checkbox"/> Direct exhaust system - for laser table experiment enclosures only.
		<input type="checkbox"/> Direct supply		<input type="checkbox"/> Positive pressure system
		<input type="checkbox"/> Indirect supply		<input type="checkbox"/> Negative pressure system
		<input checked="" type="checkbox"/> Smoke control system		<input type="checkbox"/> Standard registers
		<input checked="" type="checkbox"/> Temperature sensors connected to SLAC's DDC system		<input type="checkbox"/> Requirement for gases
		<p>Centralized Mechanical Utilities: Clean dry oil-free compressed air 20 SCFM, 100 psig. Provide three (3) locations (along large wall) with shut off valve and pressure gauge</p>		<p>1- Low velocity less than 6 FPM. 2- Relative Humidity shall be 45% +/- 10% 3. 200 CFM exhaust duct (6") for process exhaust at 1.5"W.C. static pressure for Laser Lab, header located along wall. 4.- Direct Digital Control for operations and interface w/ SLAC Energy Management System (EMS).</p>
	Communications	<input checked="" type="checkbox"/> Telephone- 2 phone lines/location-		<input type="checkbox"/> PA speakers
		<input checked="" type="checkbox"/> Dataport- 2 jacks/location-		<input type="checkbox"/> PA station
		<input type="checkbox"/> Payphone		<input type="checkbox"/> CCTV camera
		<input checked="" type="checkbox"/> Fire alarm station		<input type="checkbox"/> CCTV monitor
		<input type="checkbox"/> Intercom		
		<p>Comments: 1) Provide three locations along each long wall and two locations along each short wall 2) Provide cable tray 12" wide, 6" height below the ceiling level at approximately 7 ft AFF. 3) Cable trays shall be made of galvanized steel, provide with 1# 4/0 bare copper wire as grounding for each cable tray.</p>		
	Plumbing/Fire Protection	<input type="checkbox"/> Hot water system		<input type="checkbox"/> Electric watercooler
		<input type="checkbox"/> Cold water system		<input type="checkbox"/> Drinking fountain
		<input type="checkbox"/> Tempered water		<input checked="" type="checkbox"/> Smoke detection system
		<input checked="" type="checkbox"/> Process Cooling Water- see comments		
		<input type="checkbox"/> Waste drain		<input checked="" type="checkbox"/> Wet Sprinkler System
		<input checked="" type="checkbox"/> Floor drain		<input type="checkbox"/> Eye wash
		<input type="checkbox"/> Trench drain		
		<p>Comments: 1- Process Cooling water: 15 GPM, 25 PSi at 68 F supply water. Refer to LCLS ESD Water Cooling for Specifications. Terminate piping 12" above ceiling level. Provide shut off valve and pressure gauge. 2- NO LCW water is needed.</p>		

ELECTRICAL REQUIREMENTS	Power supply	<input type="checkbox"/> 208 V 1ph and 208 volts, 3 phase outlets	<input type="checkbox"/> Uninterrupted power supply
		<input checked="" type="checkbox"/> 110V, 1ph Double duplex outlets, 30 amps locate at 10ft apart on walls	<input checked="" type="checkbox"/> Special electric Type:
		<input type="checkbox"/> Emergency power	a) Provide three panels, 208-120 volts, 3 ph- (two "clean" and one "dirty" power). Each panel shall have a main breaker. All panels should have 42 circuits. Capacity of each panel: 125 amps minimum. Diversity factor: 70%
		Comments: 1- Number of circuits: 42 per panel 2- Heat dissipation from equipment expected for entire room: 15kW	
	Lighting	<input checked="" type="checkbox"/> Light fixtures - 2 x 4 recessed flourescent	<input type="checkbox"/> Remote lighting control
		<input type="checkbox"/> Fixture type I: Downlight	<input checked="" type="checkbox"/> Light switches
		<input type="checkbox"/> Fixture type II: Bollard (exterior)	<input checked="" type="checkbox"/> Lighting level FC: see note #3
		<input checked="" type="checkbox"/> Emergency lighting	
		Comments: 1- No night lighting desired. 2- Must have the ability to completely darken the room when required by the particular experiment. 3- Lighting level should be higher than normal standard office environment due to the dark laser protective goggles worn by the lab personnel. FC= 100	
RADIATION/SEISMIC/VIBRATIONS ISSUES	Comments: 1- All equipment (HVAC, cable trays, panels, etc) and systems are to be seismically braced and restrained per SLAC's Seismic Standards and Code. 2- Vibration criteria: 500 - 1000 micro inch/sec 3- Vibration generating HVAC equipment, pumps, and any other equipment located adjacent to the Laser Labs are to be mounted on vibration isolating assemblies to mitigate the transmission of vibration into the building structure and affect the experiments.		
SPECIAL REQUIREMENTS FOR EQUIPMENT	Comments:		
CHEMICALS / GASES	CHEMICALS		SPECIALTY GASES
	#	Chemical Type	Quantity
	#	Gas Type	Quantity
ENVIRONMENTAL NEEDS			