

LCLS Room Data Sheet #	1.9-1018	Near Experimental Hall (NEH) - Hutch 1	Revision 2
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Owner / Editor

 8/15/05
Signature Date

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System Physicist

 8/16/05
Signature Date

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Conventional Facilities System Manager

 8/15/05
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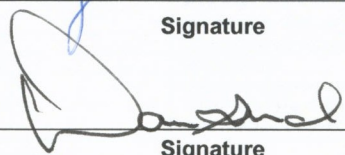
Stefan Moeller
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 8-15-05
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REVISION INFORMATION

Rev 2. changed 110 v, 20 A, deleted floor drain, added wall penetration figure, added nitrogen boil off station, added variable speed control to fans, updated fig 1, deleted list of equipment that was given as an example only

ROOM DATA SHEETS

System Manager: Stefan Moeller/John Arthur

Rev 2

FACILITY COMPONENT	HUTCH 1 - ROOM DATA SHEET																										
	<table border="1"> <tr> <td>Name of Building</td> <td colspan="2">LCLS Experimental Facility</td> </tr> <tr> <td>Organization or Department</td> <td colspan="2">SLAC, Stanford University</td> </tr> <tr> <td>Net area</td> <td>95.0</td> <td>sq. meters 1023sf</td> </tr> <tr> <td rowspan="3">Critical dimensions</td> <td>H:</td> <td>4.5 m 15'-0"</td> </tr> <tr> <td>W:</td> <td>9.5 m 31'-2"</td> </tr> <tr> <td>L:</td> <td>10.0 m 32'-9"</td> </tr> <tr> <td>Hours of operation</td> <td colspan="2">24/7/365</td> </tr> <tr> <td>Users/Occupancy</td> <td colspan="2">5</td> </tr> <tr> <td>Building orientation</td> <td colspan="2">Located along the beam line on the Sub-basement level.</td> </tr> </table>		Name of Building	LCLS Experimental Facility		Organization or Department	SLAC, Stanford University		Net area	95.0	sq. meters 1023sf	Critical dimensions	H:	4.5 m 15'-0"	W:	9.5 m 31'-2"	L:	10.0 m 32'-9"	Hours of operation	24/7/365		Users/Occupancy	5		Building orientation	Located along the beam line on the Sub-basement level.	
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FUNCTIONAL OBJECTIVE	To conduct a variety of experiments with the the high energy X-ray beam.																										
PLANNING CONSIDERATIONS & CRITICAL FACTORS	Floor level is to remain constant throughout the entire length of the hutches at 1.4m below the beam axis. Y = - 0.895305m in LCLS coordinate system (Refer to LCLS-TN-03-8). The hutch should have it's longer side parallel to the direction of beam travel.																										
FINISHES	<table border="1"> <tr> <td>Wall</td> <td>Reinforced concrete, painted surface. For other hutch walls gypsum board with 1/8in. lead (see figure 1 for wall thicknesses required for radiation safety requirements). Penetrations can not allow line of sight to beamlines. (See figure 2 below)</td> </tr> <tr> <td>Ceiling</td> <td>Reinforced concrete, painted surface. 15'-0"high. Remains 3 ft thick (see Title I). Exposed concrete structure with suspended Unistrut framing grid capable of supporting experiment specific diagnostic equipment on suspended shelving below the ceiling above each laser table. Each shelf estimated weight is 500 lbs each. Bottom of unistrut framing grid: 12'-0" AFF</td> </tr> <tr> <td>Floor</td> <td>sealed concrete with epoxy coating. Refer to LCLS General Concrete Specification Document.</td> </tr> <tr> <td>Base</td> <td>None allowed.</td> </tr> <tr> <td>Doors</td> <td>Sliding Hutch doors should contain 1/8" lead. Door runs in groove. No cracks. Door height 8'-0". Width to allowed 5 ft entry space. Door must interface with special Personal Protection System(PPS). PPS provided by SLAC. Example of doors are similar to SSRL X-Ray hutch doors.</td> </tr> <tr> <td>Fenestrations</td> <td>None</td> </tr> <tr> <td>Acoustical</td> <td>None</td> </tr> </table>	Wall	Reinforced concrete, painted surface. For other hutch walls gypsum board with 1/8in. lead (see figure 1 for wall thicknesses required for radiation safety requirements). Penetrations can not allow line of sight to beamlines. (See figure 2 below)	Ceiling	Reinforced concrete, painted surface. 15'-0"high. Remains 3 ft thick (see Title I). Exposed concrete structure with suspended Unistrut framing grid capable of supporting experiment specific diagnostic equipment on suspended shelving below the ceiling above each laser table. Each shelf estimated weight is 500 lbs each. Bottom of unistrut framing grid: 12'-0" AFF	Floor	sealed concrete with epoxy coating. Refer to LCLS General Concrete Specification Document.	Base	None allowed.	Doors	Sliding Hutch doors should contain 1/8" lead. Door runs in groove. No cracks. Door height 8'-0". Width to allowed 5 ft entry space. Door must interface with special Personal Protection System(PPS). PPS provided by SLAC. Example of doors are similar to SSRL X-Ray hutch doors.	Fenestrations	None	Acoustical	None												
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APPLICABLE STANDARDS	29 CFR Part 1910 Occupational Safety and Health Standards Dept of Labor, 29 CFR Part 1926 Safety and Health Regulations for Constructions Dept of Labor, Uniform Building Code (UBC) 1997 including appendixes, National Electric Code (NEC) 2002, 2003 Uniform Mechanical Code (UMC) including appendixes, 2003 Uniform Plumbing Code (UPC) 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 and SLAC LOTO																										

Figure 1: NEH Sub basement: Hutch Wall Thicknesses

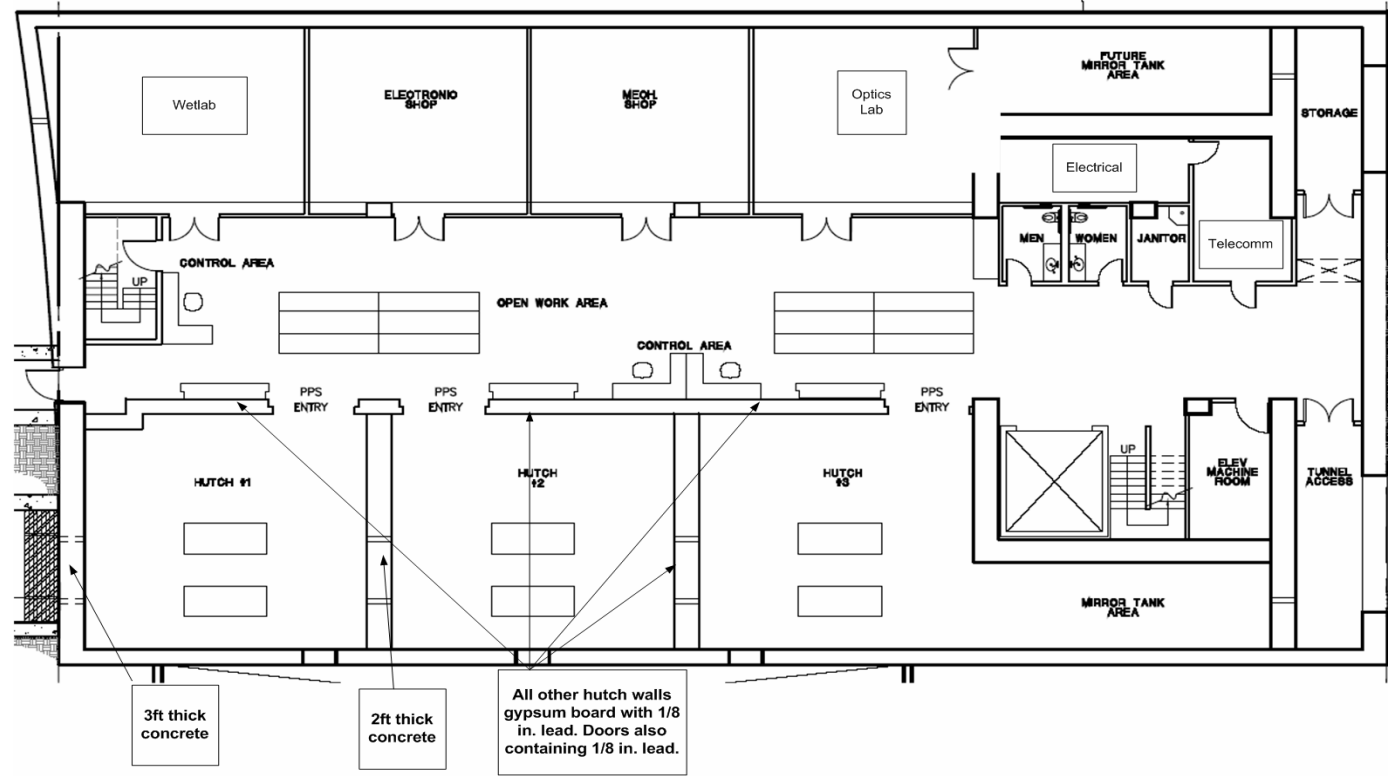


Figure 3: Radiation Physics Wall Penetrations for cables

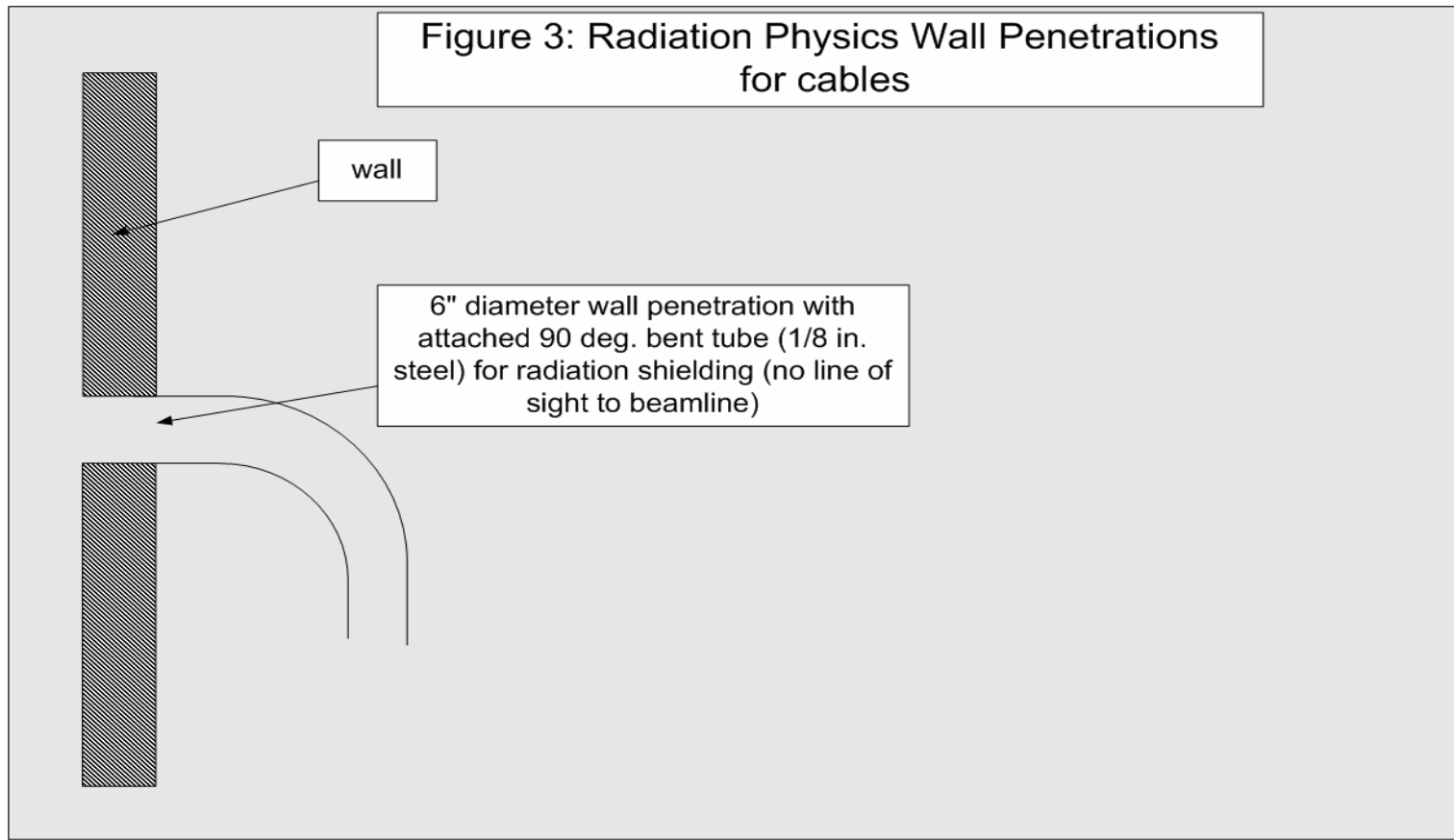
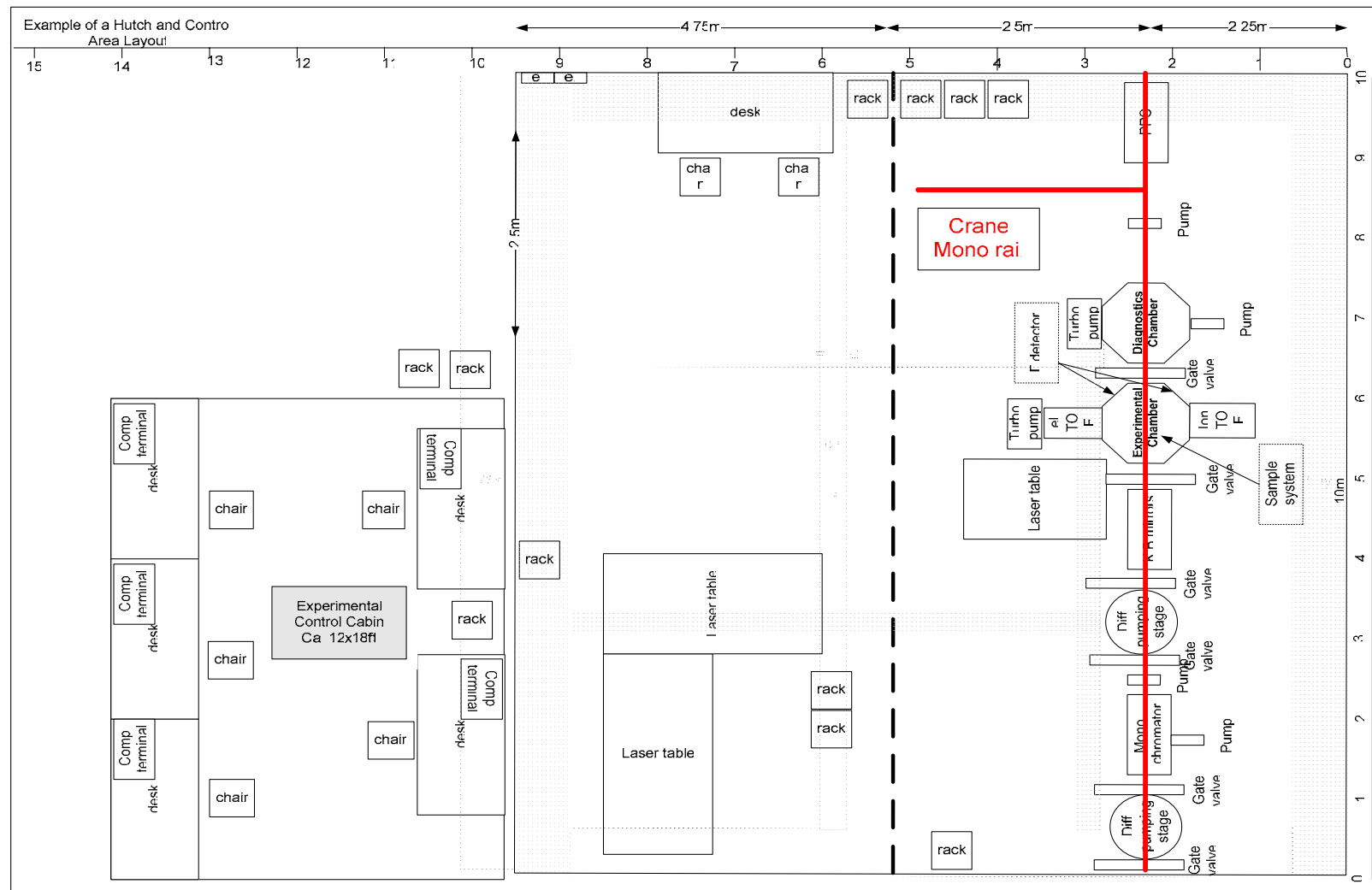


Figure 3



MECHANICAL REQUIREMENTS		HVAC		
Provide filtered clean air using pre filters, high efficiency filters and HEPA filters in the air handling unit. 6 FPM average room velocity or less.	<input checked="" type="checkbox"/>	Heating system	Temp: 72 degrees F ± 1 degree F	
	<input checked="" type="checkbox"/>	Air conditioning		
	<input type="checkbox"/>	Direct supply		
	<input type="checkbox"/>	Indirect supply		
	<input type="checkbox"/>	Smoke control system		
	<input checked="" type="checkbox"/>	Temperature sensors for DDC system-SLAC		
	List of Gases - Provide piping to 3 hutches and laser room for N2 gas from Nitrogen boil off station to be located outside near service dock, right outside staircase on first parking lot. Centralized Mechanical Utilities: Clean dry oil-free compressed air 20 SCFM, 100 psig. Provide one location (side of concrete wall) with shut off valve and pressure gauge per hutch.		<input type="checkbox"/> Mechanical humidification <input checked="" type="checkbox"/> Direct exhaust system <input type="checkbox"/> Positive pressure system <input type="checkbox"/> Negative pressure system <input type="checkbox"/> Standard registers <input checked="" type="checkbox"/> Requirement for gases 1. Noise criteria: 35 NC. 2. Temperature fluctuation to be maximum of +/- 1 deg F for stability. Relative Humidity (RH)- shall be controlled to 45% +/- 10%. 3. At least 200 CFM exhaust duct (6") for process exhaust at 1.5"W.C. static pressure for each hutch on separate fan for each hutch (with variable speed control).	
	Communications		<input checked="" type="checkbox"/>	Telephone- 2 phone lines/location
			<input checked="" type="checkbox"/>	Dataport- 2 jacks/location
			<input type="checkbox"/>	Payphone
		<input checked="" type="checkbox"/>	Fire alarm station	
		<input type="checkbox"/>	Intercom	
		Comments: Provide two locations (data and voice) per wall (see figures in worksheet "NEH Overall").		
Plumbing/Fire Protection	<input type="checkbox"/>	Hot water system		
	<input checked="" type="checkbox"/>	Process cooling water		
	<input type="checkbox"/>	Tempered water		
	<input type="checkbox"/>	Waste drain		
	<input type="checkbox"/>	Floor drain		
	<input type="checkbox"/>	Trench drain		
	Comments: Process Cooling water: 10GPM, 25 PSI pressure drop at 68 F in each hutch. Terminate with shut off valve and pressure gauge. Locate piping on concrete wall. Refer to LCLS Water Cooling Specification		<input type="checkbox"/>	Electric watercooler
		<input type="checkbox"/>	Drinking fountain	
		<input checked="" type="checkbox"/>	Smoke detection systems with devices suitable for radiation environment	
		<input checked="" type="checkbox"/>	Wet sprinkler System	
		<input type="checkbox"/>	Eye wash	

ELECTRICAL REQUIREMENTS	Power supply	<input type="checkbox"/>	208V outlets-1 phase- 30 amps	<input type="checkbox"/>	Uninterrupted power supply
		<input checked="" type="checkbox"/>	110V, 1ph Double duplex outlets, 20 amps locate at 10ft apart on all walls.	<input checked="" type="checkbox"/>	Special electric Type:
		<input type="checkbox"/>	Emergency power		Provide two panels, 120-208 volts, 3 ph, (one "clean" and one "dirty" power) in each hutch. Each panel shall have a main breaker. Capacity of each panel: 100 amps, Diversity=60%. Panel location: On walls between hutches next to door. (see figure in "NEH overall"). Power diversity 60%.
		Comments: 1 - Each panel shall have a main 100 amp, 120-208volts, 3 ph, breaker. Electrical distribution system in ceiling with vertical drops. 2 - The two panels will provide power to future experimental equipment.			
	Lighting	<input checked="" type="checkbox"/>	Light fixtures	<input type="checkbox"/>	Remote lighting control
		<input checked="" type="checkbox"/>	Fixture type I: Downlight	<input checked="" type="checkbox"/>	Light switches
		<input type="checkbox"/>	Fixture type II: Bollard (exterior)	Lighting level	FC: 75
		<input checked="" type="checkbox"/>	Emergency lighting		
		Comments: 1- All conduits are surface mounted. Low profile fixtures preferred. 2- No night lighting desired. 3- Must have the ability to completely darken the room when required by the particular experiment. 4- Lighting level should be higher than normal standard office environment due to the dark laser protective goggles worn by the lab personnel. (75 FC). 5- Light fixtures could be located at the lower unistrut level, placing the fixtures as close to the worksurface as possible.			
RADIATION/SEISMIC/VIBRATIONS ISSUES	Comments: 1- All equipment (HVAC, cable trays, panels, etc) and systems are to be seismically braced and restrained per Code. 2- Vibration criteria in the hutches: Refer to document: LCLS Vibration Specification B. (100 micro inch/sec.) 3- Vibration criteria for Mirror Tank Area (applicable to Hutch #3 only): Refer to document: LCLS Vibration Specification A. (30 micro-inch/sec) 4 - For cable penetration details, refer to figure 2. Allow for two 6 inch penetrations between hutches (one on each end)				
SPECIAL REQUIREMENTS FOR EQUIPMENT	Comments: 1- Each hutch is equipped with a "L" shaped mono rail electric crane (capacity 1 ton, hook height 12ft) which runs above the beam line and has a loading area adjacent to it (see figure 7 in "NEH Overall"). 2- Cabletrays: Double 12 inch to be installed along the inside walls of each hutch and along side hutch wall in control area and single 12in grid in each hutch. Provide cable trays at 8'-6" ft AFF (see figure 3 and figure in "NEH overall" for layout). Cable trays should be made from galvanized steel. Provide each cable tray with 1-4#0 bare copper wire for grounding. Provide 6" deep cable tray for I&C cables and control cables for DC racks, and 4" deep for cables for DC racks.				
CHEMICALS / GASES	CHEMICALS			SPECIALTY GASES	
	#	Chemical Type	Quantity	#	Gas Type
ENVIRONMENTAL NEEDS					