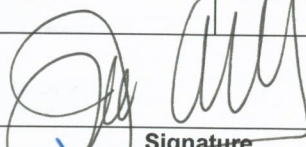
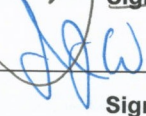

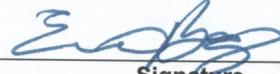




LCLS Room Data Sheet #	1.9-1006	Beam Transport Hall (BTH) - Overall	Revision 2
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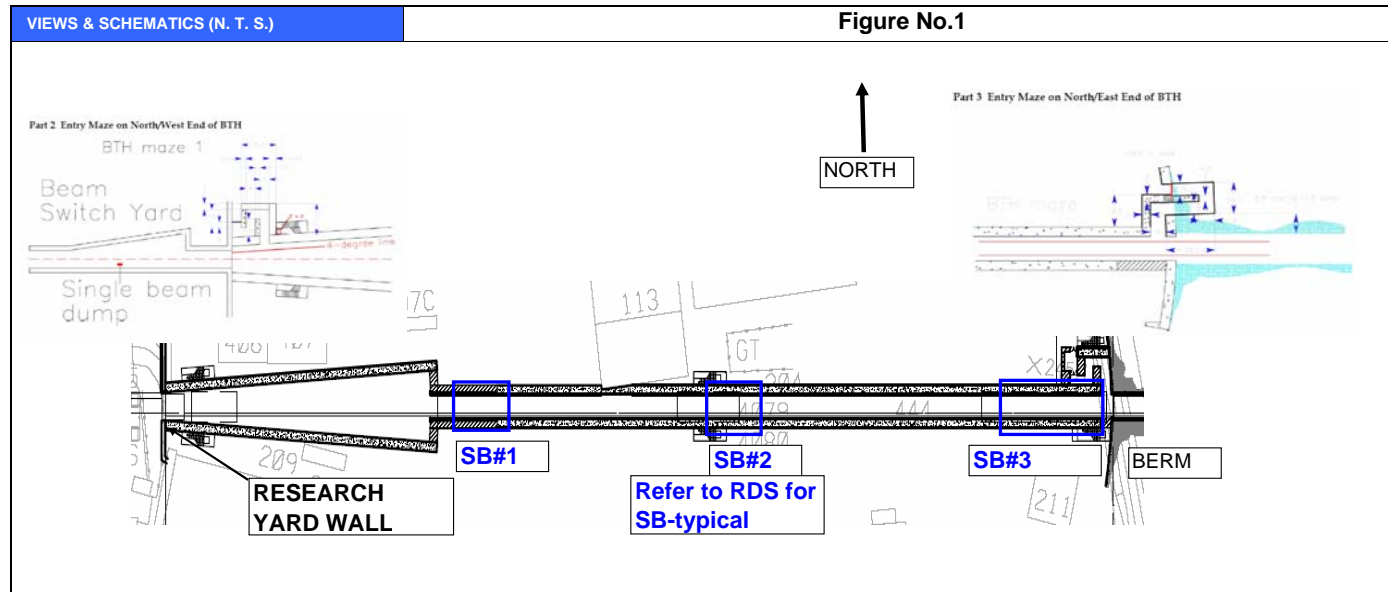
Javier A. Sevilla Owner / Editor		8/15/05
	Signature	Date
Jim Welch Conventional Facilities System Physicist		8/16/05
	Signature	Date
David Saenz Conventional Facilities System Manager		8/15/05
	Signature	Date
Eric Bong Injector-Linac WBS Manager		8/15/05
	Signature	Date
David Schultz E-Beams System Manager		8/10/05
	Signature	Date
Darren Marsh Quality Assurance Manager		8/15/05
	Signature	Date

Rev 2. Updated graphics, Changes to floor specs, general deletions, added electrical requirements, deleted graphics and electrical table that were not applicable for the BTH
Added references to LCLS ESD 1.9-102, 1.9-103 and 1.9-104

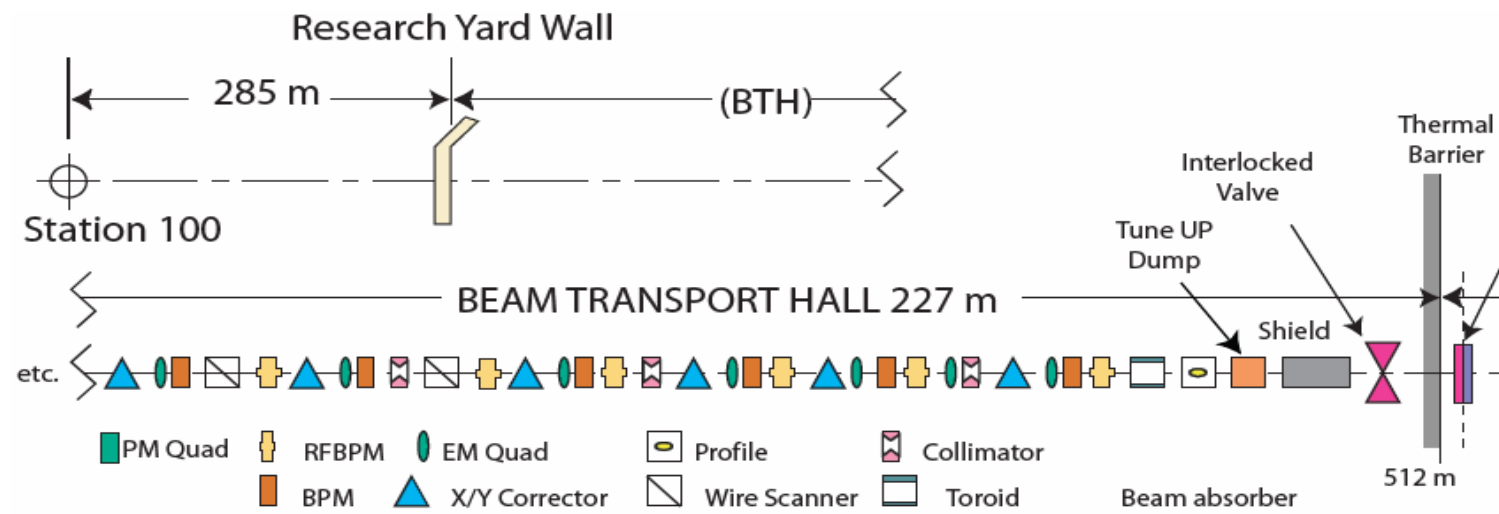
ROOM DATA SHEETS

System & WBS Manager: Dave Schultz/Eric Bong

FACILITY COMPONENT	BEAM TRANSPORT HALL (BTH) - ROOM DATA SHEET																										
	<table border="1"> <tr> <td>Name of Building</td> <td colspan="2">LCLS Beam Transport Hall</td> </tr> <tr> <td>Organization or Department</td> <td colspan="2">SLAC, Stanford University</td> </tr> <tr> <td>Net area</td> <td>1021.5 sq. meters</td> <td>11000 SF</td> </tr> <tr> <td rowspan="3">Critical dimensions</td> <td>H:</td> <td>3.05m (finish floor to ceiling) 10'-0"</td> </tr> <tr> <td>W:</td> <td>4.5m (interior wall to interior wall) 14'-9"</td> </tr> <tr> <td>L:</td> <td>227m 745'-9"</td> </tr> <tr> <td>Hours of operation</td> <td colspan="2">Facility is locked 24/7/365 (periodic maintenance only)</td> </tr> <tr> <td>Users/Occupancy</td> <td colspan="2">No occupancy during normal operation of the facility. During access: 30 persons</td> </tr> <tr> <td></td> <td colspan="2">To be located in the existing Research Yard. This is the first building in the upstream end of the LCLS facility running West to East. This facility bisects the existing Research Yard.</td> </tr> </table>		Name of Building	LCLS Beam Transport Hall		Organization or Department	SLAC, Stanford University		Net area	1021.5 sq. meters	11000 SF	Critical dimensions	H:	3.05m (finish floor to ceiling) 10'-0"	W:	4.5m (interior wall to interior wall) 14'-9"	L:	227m 745'-9"	Hours of operation	Facility is locked 24/7/365 (periodic maintenance only)		Users/Occupancy	No occupancy during normal operation of the facility. During access: 30 persons			To be located in the existing Research Yard. This is the first building in the upstream end of the LCLS facility running West to East. This facility bisects the existing Research Yard.	
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FUNCTIONAL OBJECTIVE	The BTH extends from the Beam Switch Yard wall, to the beginning of the Undulator Hall. Its purpose is to carry the high-energy electron beam into the Undulator Hall. Walls, ceiling and floor act as barrier for radiation entering into the RSY.																										
PLANNING CONSIDERATIONS & CRITICAL FACTORS	Floor level is to remain constant throughout the entire length of the BTH at 1.4m below the beam axis. Y = - 0.895305m in LCLS coordinate system (Refer to LCLS-TN-03-8). This facility commences at the existing Reseach Yard vertical concrete wall. From the RSY wall, the BTH shape will accomodate anticipated future beam lines (± 2 and ± 4 degree). This accomodation will provide a wedge shape facility (headhouse) for the intial 61 meters (in the direction of the beam) only. The BTH will continue in a linear shape from the end of the wedge to the existing berm. The thickness of walls shall be minimum 70", using normal weight concrete. The thickness of the ceiling shall be 48" at locations where no occupancy is designated above. In areas where occupancy is allowed, the depth of the ceiling shall be increased to minimum of 70". Since the BTH is a high-radiation zone, all walls and ceiling shall comply with the SLAC Radiation Physics Criteria.																										
FINISHES	<table border="1"> <tr> <td>Wall</td> <td>Reinforced concrete, white</td> </tr> <tr> <td>Ceiling</td> <td>Reinforced concrete, white</td> </tr> <tr> <td>Floor</td> <td>Refer to LCLS General Concrete Guideline- ESD 1.9-103.</td> </tr> <tr> <td>Base</td> <td>None</td> </tr> <tr> <td>Doors</td> <td>Egress shall include a steel pair of 3' wide doors. Thermal barrier wall shall have a pair of 3' wide doors. 7' height.</td> </tr> <tr> <td>Fenestrations</td> <td>None</td> </tr> <tr> <td>Acoustical/Thermal</td> <td>Thermal barrier at downstream end of BTH - 4" metal stud wall-insulated</td> </tr> </table>	Wall	Reinforced concrete, white	Ceiling	Reinforced concrete, white	Floor	Refer to LCLS General Concrete Guideline- ESD 1.9-103.	Base	None	Doors	Egress shall include a steel pair of 3' wide doors. Thermal barrier wall shall have a pair of 3' wide doors. 7' height.	Fenestrations	None	Acoustical/Thermal	Thermal barrier at downstream end of BTH - 4" metal stud wall-insulated												
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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, Uniform Mechanical Code (UMC) 1997 including appendixes, Uniform Plumbing Code (UPC) 1997 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), 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 Standards-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																										



SCHMATIC PLAN VIEW OF BTH-NOT TO SCALE



BTH SCHEMATIC LAYOUT- NTS

Continued

MECHANICAL REQUIREMENTS	HVAC				
		<input type="checkbox"/>	Heating system	Temp:	<input type="checkbox"/> Mechanical humidification
		<input type="checkbox"/>	Air conditioning	Temp:	<input checked="" type="checkbox"/> Direct exhaust system
		<input checked="" type="checkbox"/>	Direct supply		<input type="checkbox"/> Positive pressure system
		<input type="checkbox"/>	Indirect supply		<input type="checkbox"/> Negative pressure system
		<input type="checkbox"/>	Smoke control system		<input type="checkbox"/> Standard registers
		<input type="checkbox"/>	Thermostat		<input type="checkbox"/> Requirement for gases
		List of Gases - a) Compressed air- See requirements below in Plumbing section. Clean dry oil-free compressed air 20 CFM, 100 psig. b) Provide locations with shut off valve and pressure gauge.		Comments: a) Ventilation shall be required in hall while occupied.	
	Communications	<input checked="" type="checkbox"/>	Telephone		<input type="checkbox"/> PA speakers
		<input checked="" type="checkbox"/>	Dataport		<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		
		Comments: Telephone are for maintenance & emergency use only. Spacing of phones shall be located every 100' intervals. Provide connections for dataports (2 min) at every 100 feet intervals.			
	Plumbing/Fire Protection	<input type="checkbox"/>	Hot water system		<input type="checkbox"/> Electric water cooler
		<input type="checkbox"/>	Cold water system		<input type="checkbox"/> Drinking fountain
		<input type="checkbox"/>	Tempered water		<input type="checkbox"/> Smoke detection system
		<input type="checkbox"/>	Waste drain		<input checked="" type="checkbox"/> Wet Sprinkler System
		<input type="checkbox"/>	Floor drain		<input type="checkbox"/> Eye wash
		<input checked="" type="checkbox"/>	Trench drain		<input checked="" type="checkbox"/> Low Conductivity Water (LCW)-Refer to Utility Table
		Comments: 1) BTH requires roof drainage. Tunnel interior trench drainage system shall flow toward the Undulator Hall for further routing to a holding tank located in RSY. 2) Compressed air piping system (85 psi min, 100 psi) Refer to LCLS Compressed Air technical specifications. Provide 1/2" outlets with shut-off valve and gauge every 50' on center. Locate each outlet on the wall at 4 ft AFF.			

ELECTRICAL REQUIREMENTS	Power supply	<input type="checkbox"/>	208 V 3 phase	<input type="checkbox"/>	Uninterrupted power supply	
		<input checked="" type="checkbox"/>	120V outlets - 20 amp	<input checked="" type="checkbox"/>	Special electric <small>Type: 480v</small>	
		Comments: a) Requirements are limited to convenience receptacles. b) Provide four (4) 100 amps, 480V, 3 phase welding receptacles equally spaced along the length of the BTH. c) Provide double duplex convenience outlets (120 volts, 1 phase, 20 amps) at every 50 feet/ alternate side of the BTH (north and south walls)				
	Lighting	<input checked="" type="checkbox"/>	Light fixtures	<input type="checkbox"/>	Remote lighting control	
		<input type="checkbox"/>	Fixture type I: Downright	<input checked="" type="checkbox"/>	Light switches	
		<input type="checkbox"/>	Fixture type II: Bollard (exterior)	<input checked="" type="checkbox"/>	Lighting level	FC: 30
		<input checked="" type="checkbox"/>	Emergency lighting			
		Comments: a) Lighting: Fixtures are surface mounted fluorescent, low profile. b) No electronic ballasts are allowed inside radiation areas. c) Refer to LCLS Emergency Lighting Specifications, ESD- 1.9-105.				
RADIATION/SEISMIC/VIBRATION ISSUES	Comments: Refer to AE Design Guidelines for Radiation and Seismic requirements. a) If necessary, provide mitigation of sources of vibration due to large reciprocating equipment or ordinary vehicular traffic, such that vibration levels at the floor should not exceed 200 nm average RMS, integrated over all frequencies above 1 Hz. Refer to LCLS Vibration Specification B b) A thermal barrier is required to isolate the interior of BTH from the adjacent Undulator Hall downstream. c) Service buildings shall be attached to the roof of the BTH for rack equipment. Refer to RDS for service buildings. d) Access shall be provided at each end of the facility through chicanes to meet Rad physics requirements. East chicane shall be designed to accommodate a 4'(w) x 13.25'(l) object. West access shall provide a 6' wide aisle way. e) For Floor tolerance, Refer to LCLS General Concrete Guideline, ESD-1.9-103. f) For wall and ceiling tolerances, refer to LCLS Generic Accelerator Tunnel Construction Tolerance Specification, ESD-1.9-102. The last 8 meters of of BTH to match UH profile. g) Decouple BTH footing from parking lot slab expansion and contaction.					
SPECIAL REQUIREMENTS FOR EQUIPMENT	Comments: a) Requirements for low-conductivity cooling water (LCW) for the electromagnets, refer to BTH Utility spreadsheet. b) Assumption for cable trays: Provide (2) two 2' wide cable trays stacked vertically on south wall near ceiling, to run full-length of BTH. Cable trays shall be made of galvanized steel. Provide 1# 4/0 bare copper cable for grounding for each cable tray. c) For Maximum anticipated floor load, refer to LCLS ESD specification 1.9-103. d) Cable penetrations must be cast into the wall/ceiling to route cables from service bldgs to beam line equipment. Penetrations shall comply with radiation requirements per LCLS Radiation Physics Requirements.					
ENVIRONMENTAL NEEDS	1.0					
	2.0					
	3.0					