

Facilities Quarterly

ERNEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY ♦ FACILITIES DEPARTMENT NEWSLETTER

JANUARY
2002

THE DAVIS-BACON BITE: HOW MUCH DOES IT COST?

Whenever Berkeley Lab sends a construction contract to bid, one telling feature identifies it as a federally funded project: In Article 34 of the contract, the labor rate and fringe benefits for every construction worker to be employed on the job are already specified in complete detail. During construction, Berkeley Lab must keep a daily record of the numbers of each craft on the job, and the subcontractor must submit a weekly report of each worker's time.

It's all part of complying with the Davis-Bacon Act, and none of this would happen in the private sector. As Projects Group Leader Charlie Allen explains, "If we didn't have to comply, our contracts wouldn't specify a minimum hourly rate—we'd just say, 'Give us a price.'"

The Davis-Bacon Act affects virtually every construction and repair subcontract that Berkeley Lab awards. Originally passed by Congress in

1931, Davis-Bacon was intended to protect regional construction markets from low-balling itinerant contractors employing low-cost labor. For federally-funded construction projects valued at more than \$2000—a figure which hasn't changed since 1933—Davis-Bacon requires that workers be paid no less than the locally prevailing wages and benefits. The idea was to prevent contractors from using labor cost as a bidding tool, and to prevent the Depression's great public works projects from simply enriching contractors while undercutting workers' wages. Whether this objective is relevant in today's economy is the subject of ongoing debate.

For the purposes of Davis-Bacon, regional offices of the US Department of Labor (DOL) set local prevailing wages and benefits in a lengthy document called a "wage determination." The data that goes into a wage determination covers

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GRIZZLY SUBSTATION UPGRADE NEARS COMPLETION

After approximately two years of construction, the Grizzly Substation's \$4 million upgrade is nearly complete, further enhancing the Lab's 12-kV electrical supply system.

Substation upgrades were set in motion in 1993, when the University of California decided to purchase Grizzly Substation from PG&E. As

owner of the substation, the University can purchase power from PG&E at 115-kV transmission-line rates rather than at the much-higher "secondary side" rates charged on the 12-kV side of the transformers.

With the upgrade nearly complete, Grizzly Substation is still owned by UC, but it will be transferred to the Lab's ownership after "...we accept and pay for about 75 percent of the improvements," explains Project Manager Chuck Taberski. "For about \$3 million and the land for the new UC-Hill Area Substation, the Lab in effect gets the substation for the cost of improvements."

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Grizzly Substation (Photo by Robert Couto)

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<http://www.lbl.gov/Workplace/Facilities>.

CONSTRUCTION COSTS *continued from page 1*

16 basic construction crafts and is updated constantly, based on voluntary input from local contractors, labor unions, local government, and other sources. The data is further categorized to reflect differences in pay from county to county. The northern California wage determination is appended to virtually every construction subcontract at the Lab.

A recurring question in the debate over Davis-Bacon is whether the wage determination accurately reflects "local prevailing wages." An objective appraisal of Berkeley Lab's local wage determination reveals that it consistently reflects union wages,

which are relatively high but account for only about a quarter of nonfederal construction. This statistical bias turns out to be a systemic problem. Unions and union contractors have every reason to report their wage scales to DOL, since they want the prevailing wages to be set high. Those open-shop contractors who are interested in federal work are also content to work for union wages, and so don't bother to report theirs.

Another subject of debate is the magnitude of the effect that Davis-Bacon has on federal construction. Detractors place it as high as a 35% increase in total project cost, and

point out several other ill effects. Among these are the exclusion of small—especially minority—contractors who can't afford the cost of meeting federal reporting requirements, denying jobs and training to minority workers, and artificially inflating local nonfederal construction costs. Davis-Bacon defenders generally admit to nominal increases in construction cost, but claim these are offset by the efficiencies and superior workmanship provided by a highly qualified workforce. They sometimes also point to side-benefits, such as increased opportunities for small and minority contractors, provision of jobs and training for minority workers, and reducing local

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FROM THE FACILITIES MANAGER...

Another year has passed. The highlight was the extraordinary success you made in reducing accidents. The effort each of you made in working safely made a difference, not only in the numbers, but also in the health of your fellow workers. We must not rest here. Our goal must always be zero accidents—zero injuries. I know that working together we can do it.

For this next year I am asking everyone in Facilities to concentrate on communication. We must learn to tell our customers what we are going to do, when we plan to do it, and what assistance is needed, for example, shutting down fume hoods. We also must tell the customer when the work has been completed. Within the department I think we all recognize the improvements we have made in quality and productivity. Our customers, however, remember when our product was lacking. Now is the time to blow our own horn and show that we truly are the best Facilities Department in DOE.

I am also asking our customers to let us know when we can do a better job of communicating. If you think you have not been properly and completely informed, let us know by calling the Work Request Center, a Facilities Department manager, and/or me.

We have three big projects going; the Molecular Foundry, the EEERL, and 50X, which is a third-party office building. This is a large load for our staff; but I have no doubt it will be done professionally.

I wish each of you the happiest (and safest) of New Years.

Bob Camper

Work **SMART**

Work **SAFELY**

If it is not safe, **STOP** the work.

GRIZZLY SUBSTATION

continued from page 1

Upgrades include a new 30 MVA transformer bank, which replaces Transformer Bank 1 and matches the power characteristics of the Lab's second bank. Two environmentally friendly sulfur hexafluoride (SF₆) circuit breakers replace six oil-filled circuit breakers. The new Grizzly Substation is also "doubly redundant," meaning that the Lab is interconnected with UC's electrical system, so that "...if we lose one of our [four] transformers, it could feed off of UC, and vice versa," explains Taberski. Work is expected to conclude in early 2002.

Taberski says that Berkeley Lab owes its bargain acquisition to the "firm, insistent, and pressing" negotiation skills of Bert Schliefer, recently retired from his position as Facilities Department Deputy Head, and Mahesh Gupta, the Electrical Engineering Section Head. Schliefer and Gupta, continues Taberski, have provided the Lab with "...an efficient and robust electrical distribution system that will supply safe, reliable power well into the twenty-first century."

FACILITIES DEPARTMENT

Facilities provides Berkeley Lab with a full range of architectural and engineering, construction, and maintenance services for new facilities and for modification and support of existing facilities.

Architectural and engineering services include facility planning, programming, design, engineering, project management, and construction management. Maintenance and construction functions include custodial, gardening, and lighting services; operation, service, and repair or replacement of equipment and utility systems; and construction of modifications, alterations, and additions to buildings, equipment, facilities, and utilities. Additional

services include bus and fleet management, mail distribution, stores distribution, property management, property disposal, cafeteria operations, and electronics repair.

Ongoing Facilities activities include renewal and upgrade of site utility systems and building equipment; preparation of environmental planning studies; in-house energy management; space planning; and assurance of Laboratory compliance with appropriate facilities-related regulations and with University and DOE policies and procedures.

The Work Request Center expedites facility-related work requests, answers questions, and provides support for facility-related needs.

FOCUS ON SERVICE: BUILDING 77 REHAB COMPLETED

For much of 2001, Building 77—always a hub of activity—was even busier, as rehabilitation work on the 40-year-old structure swung into high gear.

One of the largest buildings on the Hill, Building 77 is home of the Engineering Division's mechanical shops, which have for decades provided precision engineering services to the DOE research community. Built in the early 1960s, the warehouse-like structure totals 69,000 sq ft. Its eastern half consists of two stories, while its western half is a high-bay with plenty of vertical clearance for its massive bridge cranes, which move the heavy workpieces that will become beamlines, detectors, and other large scientific instruments.

By the early 1990s, it had become apparent the building had experienced significant settlement. "We found that the settlement over the years had

affected the crane runways by throwing them out of alignment, overstressed the girders, and stretched the vertical cross-bracings beyond their capacity," explains Facilities Chief Structural Engineer Fred Angliss.

According to Angliss, "We [initially] tried pressure grout to push [the crane runways] back up." But it was soon clear that the building required a complete structural rehabilitation. In 1999, Congress provided \$8 million to do the work.

The rod cross-bracings that once lined the interior walls were replaced with stronger, 8-inch tubular steel bracings. To underpin the building itself, three types of reinforcements were used: helical anchors, drilled piers, and H-piles. Over a mile's worth of helical anchors—basically steel

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COMPLIMENTS

Plant maintenance technician Tom Hill came to the assistance of Anne Skirry, of Life Sciences, when her car's temperature gauge suddenly hit "H" as she left the Lab. "Tom...saved me a possibly burned up engine, money, and most of all he brought my stress level down."

Tom Caronna of EH&S notes the "outstanding safety" practiced by BBAP and other Facilities workers during the end-of-year rush.

Engineering's Deb Hopkins commends the work of Custodial Services' Vivian Owens in Building 46: "All of us have seen Vivian on her hands and knees cleaning floors and baseboards. She works very hard and is cleaning areas that I don't think have ever been touched before."

Allan Chen of the Berkeley Energy Technical Advisory Group thanks Toni Reaves for providing data which will help the City of Berkeley explore energy alternatives.

Steven Rossi of the DOE Office of Science Infrastructure Management Division praises the "spectacular work" of Planning Group Leader Laura Chen and Kathy Johnsecu of DOE/BSO in producing the Facilities Information Management System (FIMS) Final Status Report.

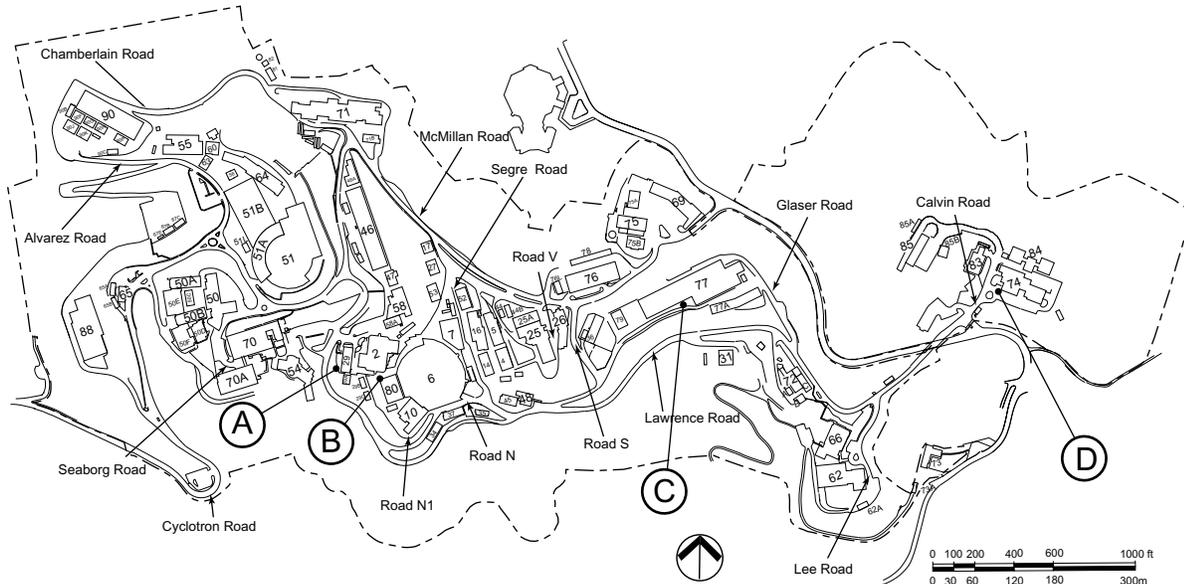
WORK REQUEST CENTER

Telephone	6274
Fax	7805
E-Mail	WRC@lbl.gov
Mailstop	76-222
Web	web3.lbl.gov/wrc

WRC welcomes questions or comments about Facilities Quarterly.

CONSTRUCTION AND YOU

Current construction projects affecting parking, or vehicular or pedestrian circulation



Project Contacts. The name in parentheses after each project is the Project Manager (PM) or other person who is responsible for project oversight: coordinating all phases from design through construction; controlling cost, scope and schedule; and ensuring client satisfaction. This person will be happy to answer any questions about the project.

(A) Building 29 Disassembly

JAN	FEB	MAR
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Parking between Building 29 and Building 2 will be used for construction activities. Pedestrian traffic will be rerouted in the area around Building 29. (Bill Wu, x5216)

(B) Bldg 2: Ventilation Upgrade Project, Phase 2

JAN	FEB	MAR
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Parking spaces along the south side of Bldg 2 will be reserved for contractor use. (Richard Stanton, x6221)

Bldg 77: Rehabilitation of Building Structure and Systems

JAN	FEB	MAR
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(C)

Construction is in progress around the building perimeter and in selected areas within the building. Laydown areas will be located adjacent to Building 77 and Glaser Road. Project completion is scheduled for January. (Bill Wu, x5216)

Bldg 74: Expansion of Annual Holding Facility

JAN	FEB	MAR
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(D)

Parking spaces near the southwest corner of Building 74 will be reserved for contractor parking and laydown areas. (Bill Wu, x5216)

“CAUTION—CONSTRUCTION AREA”

Construction barricades and warnings are there for your protection. Under no circumstances should you cross a construction barricade, or disobey posted warnings or directions. Contact the Project Manager for escorted access to construction areas.

ON THE DRAWING BOARD

projects in study or conceptual design

Building 77, Rehabilitation of Building Structure and Systems, Phase 2

This project will correct mechanical, electrical and architectural deficiencies in Buildings 77 and 77A. The conceptual design phase is in progress. Funding will be requested for FY 2003. (Bill Wu, x5216)

Energy Efficiency and Electricity Reliability Laboratory

Conceptual planning is under way for a new 2,000 sq meter (29,000 sq ft) building to be located in front of Building 90. The new building will incorporate sustainable design and leading-edge energy-efficiency technologies. (Richard Stanton, x6221)

Research Support Building

Planning is going forward on a new 2,900 sq m (26,000-sq ft) building that will house key Berkeley Lab administrative functions now scattered across the site. This "Town Center" will be located on the site of Building 29, which will be demolished. Its central location will allow efficient administration and easy access for all staff and guest researchers. (Richard Stanton, x6221)

IN PROGRESS

funded projects

2-MW Diesel-Engine Driven Generator

Installation of a new 12-kV auxiliary power generator is in progress. Located behind Bldg 64, the generator is designed to absorb 15% of Berkeley Lab's electrical demand in the event of a rolling blackout (see FQ 7/01). (Chuck Taberski, x6076)

Bldg 2: Ventilation Upgrade Project, Phase 2

This project will upgrade the heating, ventilation and air conditioning system in Building 2 to provide improved temperature control, improved pressure control and increased exhaust air capacity. (Bill Wu, x5216)

Bldg 6: Sector 4 Support Building

Project design is in progress for an equipment staging area for Beamline 4. This 100 sq m (1,100 sq ft) single-story addition will be located between buildings 10 and 80, on the west side of Building 6. (Dan Galvez, x6213)

Bldg 29: Disassembly of Building 29

This project will disassemble Building 29, which has been condemned and vacated. The project will include retrieval of building elements that can be reused by LBNL organizations or offsite ventors. (Bill Wu, x5216)

Bldg 74: Animal Holding Facility Expansion

This project will convert Building 74 rooms 223, 227, and 231 from wet lab use to animal holding rooms. Room 235 will be modified for use as a procedure room. The

work includes demolition, HVAC, electrical, plumbing, painting, doors, and hardware. (Bill Wu, x5216)

Bldg 77: Rehabilitation of Building Structure and Systems

Construction will be completed in January 2002. This project will arrest differential settlement of Building 77, replace building cross bracing, and realign bridge crane runways. (Bill Wu, x5216)

Grizzly Substation Improvement

Amelco Electric, under contract to the University of California, has completed all improvements to the Grizzly Substation except replacement of the two main 115-kV circuit breakers. These are expected to be delivered in November 2001. The substation is de-energized, and all LBNL electrical power is being supplied by the University's new Hill Area Substation, located at the corner of Road S and Glaser. (Chuck Taberski, x6076)

Sitewide Water Distribution Upgrade, Phase 1

Much of Berkeley Lab's fresh-water supply system has been in place for over 30 years. This project will replace about 0.9 mile (1.5 km) of cast iron pipe and upgrade the remaining 5 miles (8 km) of pipe with corrosion protection, new valves, pressure reducing stations, improvements to existing water storage tanks, and a new water storage tank in the East Canyon area. Project design is in progress. (Dan Galvez, x6213)

CONSTRUCTION COSTS *continued from page 2*

nonfederal construction costs.

Such conflicting claims reflect differing political agendas, but it's also true that comparisons between the public and private sectors are hard to make. We'll never know how much a Berkeley Lab project would have cost if it had been done in the private sector. Besides that, conditions at Berkeley Lab are unique, due both to site conditions and the nature of our scientific facilities. Asked to comment on the bottom-line effects of Davis-Bacon, Facilities Estimator John Eastman, while not claiming to have any hard evidence one way or the other, produced a few suggestive numbers. First, labor costs run in the neighborhood of 50 percent of total project cost, depending on the technical complexity of the work. Second, the differential between union and nonunion hourly wages is about 30 percent. These numbers are borne out by industry-standard estimating tables, which contain separate columns for union and open-shop construction costs. For example, union sheetrock costs \$1.41 per square foot

versus \$1.14 for open shop. Union painting is \$.58 per square foot; open shop is \$.49. In terms of project cost, not considering variables such as the quality of work and timely completion, this suggests roughly a 15-percent differential between union and nonunion contractors.

Another less obvious but perhaps more serious effect is a chronic shortage of bidders for Berkeley Lab subcontracts. Because their wage structures match DOL's prevailing wages exactly, union contractors have an edge over open shops when bidding Davis-Bacon jobs, since the open shop's advantage in terms of labor cost is neutralized. This pay-scale compatibility also helps with the union shop's administrative costs: While the union shop doesn't have to change its way of doing business to work on a federal project, the nonunion contractor is obliged to adjust its wage scales and job classifications to match those in the wage determination. The upshot according to John Eastman is that, "Some small and even large nonunion contractors

don't want to bother. This is a problem for us, and often results in our getting only one or two bidders on projects." According to Saylor Publications, a leading supplier of cost data to the construction industry, having only one or two bidders can boost project cost by 15 to 40 percent.

Unlike in the Thirties, today the federal government is a relatively small player in the construction industry, and many contractors are unwilling to play the federal game. Still, Charlie Allen notes that although the Lab's major construction projects have always gone to union contractors, many smaller jobs are nonunion. "I think that some contractors find the Lab to be a good business environment compared to the private sector," says Allen. "It's a rough world out there. Here, they know they're going to get paid. They've made a business decision to go after federal work and handle the paperwork and weekly reports—the 'administrivia'—that come along with it." And, of course, they're working for Davis-Bacon wages.

BUILDING 77 REHAB *continued from page 3*

shafts with helical blades welded at the ends—were drilled into the earth under the building's interior columns. Forty-five-foot-long H-piles underpin the building's exterior columns, while four drilled piers were installed to support three interior columns where helical anchors could not be used because of underground utility obstructions.

During the rehabilitation, Wu and Angliss sought to preserve the tools

and services of Building 77 in a cost-effective yet safe manner.

Outsourcing was considered, but finding a location of sufficient size proved difficult. "Outsourcing would've been costly," explains Angliss. "And, adds Wu, "Building 77 has a unique capability and accessibility that would have been lost if relocated offsite."

Wu and Angliss attribute much of the project's success to the mechani-

cal-shop employees, who scheduled their work around the construction schedule, working second or third shifts. Wu praises the "tremendous cooperation" between Facilities and the mechanical shops, and particularly the leadership of Design and Fabrication Department Head Lowell Koht, for helping him and Angliss complete the rehab "on time and under budget."

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This work was supported by the U.S. Department of Energy under Contract No. DE-AC03-76SF00098
Ernest Orlando Lawrence Berkeley National Laboratory, University of California
LBNL/PUB-678 1/2002-4200

Printed on  recycled paper.