

***Economic Issues in the
Construction Industry***

**An Annotated Bibliography
by
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ECONOMICS

1. Aniftos, Stylianos C. "International Standards: United States Construction Industry Competitiveness." Diss. Polytechnic University, 1996. DAI-B 56/09 (1996): 5032.

This dissertation addresses those issues related to the development and implementation of international standards that may impact the U.S. construction industry in the near future. Discussion of the catalysts for the development of international standards is provided.

02. Balgenorth, Robert L. "It isn't broken, so don't fix it." ENR 10 Mar. 1997: 61.

The author discusses that the prevailing wage is the best method of ensuring that public works construction projects are built to last and completed in a timely manner. Discussion of the consequences if the prevailing wage is repealed.

3. Bodipo-Memba, Alejandro. "Manufacturing Bounced Back in February." Wall Street Journal 2 Mar. 1999, eastern ed.: A2.

Focuses on the increase of personal income and construction spending in the United States for February 1999. Discussion of the increase of the index of manufacturing activity according to the National Association of Purchasing Management is provided. Percentage increases on consumer spending and construction spending are also enumerated.

4. "Construction economics." ENR 29 June. 1998: 96.

This report examines the United States construction industry and the growth of its labor market. Wage rates for key construction trades provided.

05. "Construction economics." ENR 7 Sept. 1998: 75-77.

Presents charts and graphs regarding construction cost index and building cost index in the United States for September 1998. Prices for asphalt, cement, aggregate, concrete, brick and lime; Materials cost component and skilled wages are also provided.

06. "Construction economics." ENR 24 Feb. 1997: 17-18.

This is a presentation of charts and graphs relating to the construction industry in the U.S. as of February 24, 1997. Monthly inflation rates are provided along with prices of structural steel, rebar, building sheet and piling among selected states in the United States as of 1997.

7. "Court trashes job targeting." ENR 2 Jan. 1995: 20.

Note: *ENR abstract*. Reports on the ruling by the US Court of Appeals backing the view by the Department of Labor that union job targeting programs violate the Davis Bacon Act and department regulations on the subject. Appeal by the AFL-CIO's Building and Construction Trades Department and other groups. Issues of the case are discussed.

08. "End of puny wage hikes had better be here soon." ENR 29 Sept. 1997: 134.

This commentary addresses a decade of wage freezes, rollbacks and concessions to employers and project owners along with remarks about construction worker wages.

09. "ENR market trends." ENR 6 May 1996: 152.

Presentation of statistics for the construction economy in the United States. Wage rates and cost indexes for May 1996 are provided. In addition, value of construction contract awards from August 1995 to April 1996 are given. Contract awards for the week ending April 15, 1996 present.

10. "ENR wages." ENR 29 April 1996: 49.

Focuses on construction industry wages in the United States. Levels of construction employment from March 1994 to March 1996 and wage rates for various trades in various US cities are provided.

11. "ENR wages." ENR 30 May 1994: 37.

Reports on the U.S. construction industry's employment rate for May 1994. In addition, data on heavy construction and specialty trades employment is presented.

12. "ENR wages." ENR 31 October 1994: 49.

Presents statistics on construction employment in the United States for the week ending October 31, 1994. Wage rates for key construction trades such as general building employment; heavy construction employment and specialty trades employment.

13. “ENR wages.” ENR 29 November 1993: 57.

Report on 1993 construction employment. Comparative data with employment rate in 1992 is also presented. Data on heavy construction and specialty trades is also presented. In addition, wage rates for key construction trades in different cities is provided.

14. Finkel, Gerald. The Economics of the Construction Industry. Armonk, New York: M.E. Sharpe, Inc., 1997.

This book discusses the many issues that encompass the building industry. It begins with a historical development of construction markets leading into a discussion of the economic theory of the construction industry. Areas of discussion include: an industry overview; trends and directions; statistics and determinants of construction investment; competition and workplace control; determination of wages; productivity; and training and safety. Case studies and descriptive finds are also present in the book.

15. Gitter, Robert J. “Wage Subsidy Programs in Apprenticeship Training in the Construction Industry.” Journal of Vocational and Technical Education Fall 1985: 3-10.

This is a study of firms in ten construction occupations estimating a multiple regression model of the level of apprentice employment on their wage rate and other variables. Results show that there is a negative effect on apprentice wage rates and the number employed.

16. Gould, John P. and Bittlingmayer, George. The Economics of the Davis-Bacon Act: An Analysis of Prevailing-Wage Laws. Washington D.C.: American Enterprise Institute of Public Policy Research, 1980.

This study surveys the literature dealing with the economic and social consequences of the Davis-Bacon Act, paying particular attention to its influence on construction industry wages and on the cost of projects covered by it. Part of this study addresses the two economic factors that contribute to the high cost of construction: the open shop and the union shop wages; and the Department of Labor’s wage determinations which is mandated by the Davis-Bacon legislation. The book devotes chapters to the legislative framework, and the administration of the Davis-Bacon Act.

17. Grandy, Tom. "The Cost of Non Billable Time is Higher than you think" Reeves Journal: Plumbing, Heating, Cooling 79.3 (1999): 18-21.

This article examines the costs of non-billable time paid by a construction company to its workers. Definition of non-billable time is given along with realistic percentage for non-billable time. Computation for equipment replacement cost and of non-billable time in terms of dollars is provided.

18. Grogan, Tim. "Labor: Open-shop wages step up." ENR 30 June. 1997: 28.

This article discusses trends in wages of construction workers in the U.S. as of June 1997. Topics of discussion include: increase in high wage rates of nonunion contractors and benefit packages for structural ironworkers.

19. ---. "Summary: Costs resist demand push." ENR 29 Jne 1998: 32-34.

Focuses on the construction markets in the United States. Shipments of Portland cement and lumber, information on union wages and the biggest price cut for 1998.

20. ---. "Tough labor market dulls price spikes." ENR 26 Jne. 1995: 33-36.

Focuses on the effect of the labor market on the prices of construction materials and wages in the United States. Discussion on union and non-union wage increases and the effect of the weakening of the dollar on imports provided.

21. Grogan, Tim; Ichniowski, Tom. "Summary: Costs dip as recovery peaks." ENR 30 Sept. 1996: 29-32.

Reports on the effect of inflation on the performance of the construction industry in the United States. Discussion on the decline in construction volume in the month of August 1996 along with the increase in unemployment rate in the construction labor markets. Failure of labor shortage to knock wages off their moderate pace is addressed.

22. "Gross hours and earnings of construction workers, by type of contractor." Construction Review Summer 1995: 51-53.

Presents statistics on gross hours and earnings of construction workers in the United States from January 1994 to December 1995 by type of contractor: general building contractors; heavy construction contractors; and special trade contractors.

23. “Gross Hours and Earnings of Construction workers, by type of contractor.” Construction Review Spring/Summer 1996: 51.

This report presents data based on gross hours and earnings of construction workers, by type of contractor, in the United States.

24. “Gross hours and earnings of construction workers, by type of contractor.” Construction Review Spring 1997: 51-53.

Presents information on the gross hours and earnings of construction workers, by type of contractor from 1992 to 1996 in the United States.

25. “Gross hours and earnings of construction workers, by type of contractor.” Construction Review Fall 1997: 51.

This report presents statistical information as it relates to the gross hours and earnings of construction workers according to the type of contractor.

26. Hancher, Donn E., de la Garza, Jesus M., and Eckert, Gregory, K. “Improving workers’ compensation management in construction.” Journal of Construction Engineering and Management September 1997: 285-91.

The authors suggest ways for contractors to improve their workers’ compensation management based on a Construction Industry Institute research project. The goal of the study was to discover more effective methods of management by contractors for their in-house workers’ compensation insurance program.

27. Hardwick, Phil. “Home building industry faces labor shortage.” Mississippi Business Journal 18.50 (1996): 31.

This article examines the labor problems in the home building industry in the United States. The article discusses the loss of the work ethic among construction workers and poor workmanship. It also addresses the need to focus on factory-built units and components that reduce the need for skilled labor.

28. Hillebrandt, Patricia M. Economic Theory and the Construction Industry, 2 ed. Houndsmills, Basingstoke, New Hampshire: MacMillan, 1985.

This book addresses the economics of the construction industry. It begins with a discussion of the relationship of the construction industry to the economy. Basic economic concepts are provided. Certain chapters address the demand for housing, demands on the construction industry and the costs of construction firms.

29. “Index of aggregate weekly hours of construction workers.” Construction Review Spring/Summer 1996: 51.

Statistical information is presented on the aggregate number of weekly hours of construction workers, seasonally adjusted, in the United States, from 1987 through 1996.

30. “Index of aggregate weekly hours of construction workers, seasonally adjusted.” Construction Review Fall 1997: 51.

This report presents statistical information as it relates to the aggregate weekly hours of construction workers, which is seasonally adjusted.

31. “Index of aggregate weekly hours of construction workers, seasonally adjusted.” Construction Review Spring 1997: 51.

Presents statistical information on aggregate weekly hours of construction workers seasonally adjusted from 1987 to 1996 in the United States.

32. Keating, Michael. “Government Construction Budgets: A Brawny Outlook.” Government Product News January 1999: 17.

Presents information on the report ‘Construction Outlook ’99,’ from McGraw Hill’s Construction Information Group. Prediction on the total public works construction in the United States in 1999; Forecasts on spending on highway and bridge construction; Details on prison construction.

33. Korman, Richard and Kohn, David. “Paying bonuses to fill the lineup.” ENR 27 Oct. 1997: 12.

This article addresses how U.S. construction workers are being enticed with bonuses and mid-year pay raises by construction companies. The challenge to keep craft jobs filled in nonunion construction is addressed along with bonus referrals and overtime to craft workers.

34. Korman, Richard, Tulacz, Gary, and Krizan, William G. "Employers may see 1999 as the year of the worker." ENR 25 Jan. 1999: 85+.

This report provides 1999 forecasts for the construction industry. The article discusses that the current success of the industry will spill over into the next millennium. High turnover of craft workers will drain resources and cut into productivity. Projections of collective bargaining agreements worth 3.4% as a result of the strengthening of collective bargaining contracts are made.

35. Krizan, William G. "Industry takes new look at costs." ENR 27 Jne. 1994: 26.

This article discusses how construction industry employers are looking for ways to boost their compensation to attract and retain quality people. Amount of pay increases sought by companies and data on open-shop wage rates for journeyman is addressed.

36. ---. "No wobbling in wages this year." ENR 27 Sept. 1993: 25-29.

Reports on wage data from the construction industry indicating low rates of increase in union labor costs. Highest rate posted by elevator constructors. Collective bargaining settlements; Slight rise as a result of regional variations in bargaining; Efforts from unions and contractors to abide by prevailing wage laws; Moves to improve enforcement of wage laws by several state agencies.

37. ---. "Labor: Wage stability holds up still." ENR 29 Sept. 1997: 36-38.

1997 third quarterly cost report on wages of construction for craft workers in the United States. Information on continued stability of worker compensation in 1997 along with union wage settlements for craft workers is provided. In addition, compensation opportunities being taken advantage of by craft workers is addressed. Data on hourly union pay scales of September 1, 1997.

38. ---. "Labor: cost of shortages hard to nail." ENR 30 Mar. 1998: 32-3.

Note: *ENR's abstract*. Part of a special section on ENR's first quarterly cost report. The difficulties associated with costing craft labor shortages in the construction industry are discussed. Labor shortages are increasing project costs through lower productivity rates and

greater overtime costs, both of which are hard to measure. This has a ripple effect on costs and schedules. Experiments that may be carried out in Detroit, Michigan, to develop improved methods of labor shortage costing are described. Some possible solutions to the problems of labor shortages are outlined, including making the work more attractive by offering travel pay and subsistence, increasing wages, and increasing advertising.

39. ---. "Labor: Prevailing wages under scrutiny." ENR 31 Mar. 1997: 33-35.

This reports that the US Department of Labor is examining the accuracy of wage rates for construction crafts under the Davis-Bacon Act of 1931. Contractors ruled to pay at least such prevailing rates to preclude wage cuts designed to win contracts. In addition, the Office of the Inspector General's review of wage survey for errors, fraud, efficiency of procedures and then suggesting reforms is discussed.

40. Krizan, William G; Tulacz, Gary. "Labor: Stability survives hiring boom." ENR 30 Sept. 1996: 35-37.

This article focuses on the unemployment rate in the construction industry sector in the United States. A decrease in construction unemployment is discussed along with the impact of employment levels on wages. Increase in wages of union construction workers is also examined.

41. "Looking for Workers in Some Unlikely Places." Editorial. ENR 30 Sept. 1996: 114.

This editorial examines the demand for construction workers in the United States. The article addresses the rate of unemployment of construction workers based on figures from US Department of Labor's Bureau of Labor Statistics. A campaign to attract youth into the industry is also discussed.

42. Lyons, Max. "The estimated cost of project labor agreements on federal construction." Journal of Labor Research Winter 1998: 73-88.

This report estimates the cost of President Clinton's 1997 executive memorandum encouraging federal departments and agencies to use project labor agreements (PLAs) on significant construction projects. Costs of federal construction are addressed along with cost studies of PLAs. A comparison of Davis-Bacon wages to the PLA wages is presented. In addition, relative costs of union and nonunion construction workers are discussed.

43. Marby, Tristan. "Value of Contracts For Construction Eased in January." Wall Street Journal 24 Feb. 1999, eastern edition: B2.

Reports the decline of construction contract value in the United States in January 1999. Information on a research conducted by F.W. Dodge company; Market performance of non-residential construction.

44. McKee, Bradford. "1999 economic outlook." Architecture January 1999: 120-125.

Focuses on the economic outlook for architects and the construction industry in the United States for 1999. Signs of alarm for the construction market; condition of the economy; stabilization of vacancy rates in 1998; Economic conditions outside United States and their implications for architects.

45. Moavenzadeh, Fred. Global construction and the environment; strategies and opportunities. N.p.: John Wiley & Sons, 1994.

This book gives an overview of environmental issues in the construction industry, based in part on the 1991 Symposium on the Global Environment and the Construction Industry at MIT. Topics of discussion include: industrial perspectives and initiatives, environmental policy and regulations, waste technologies, and corporate strategies. Summaries of papers presented at the symposium are present along with survey questionnaires.

46. "Number of employees on contract construction payrolls, by type of contractor." Construction Review Fall 1994: 50-51.

This is a presentation of the number of employees on contract construction payrolls according to type of contractor in the United States from 1989 to September 1994. Contractors include building, heavy construction and trade.

47. "Paying for performance." Professional Builder, December 1998: 32.

This report discusses pay for performance in the building and construction trades in the United States. Topics include: incentives, profit sharing, and information on best practices.

48. Pollock, Jon. "Labor pool now a local matter." ENR 10 Feb. 1997: 69.

This is an opinion that focuses on the shortage of construction workers in the United States. Discussion of obstacles to the construction industry traced to labor shortage is discussed. Factors that have kept down wages and benefits of workers and recommendations to make wages commensurate with kind of work done are discussed.

49. Ghilarducci, Teresa, ed. Portable pension plans for casual labor markets; lessons from the Operating Engineers central pension fund. Quorum Books, 1995.

Note: *Although this abstract does not directly address the construction industry, I felt that it was applicable to the industry.*

Four labor historians use the example of the Operating Engineers union pension fund to discuss the theory, history, administration and regulation of retirement benefits for US workers. They describe the fund's origins and growth, collective bargaining for contributions to it, what benefits it delivers and how, its investment policy and administration, and what of the experience can be generalized to other areas of the new US labor market in which workers increasingly move from company to company during their career.

50. Powers, Mary Buckner. "Insurance: Benefits are an issue as rates stabilize." ENR 09 Sept.1997: 32-34.

This is a presentation of ENR's 1997 third quarterly cost report on construction workers' compensation insurance in the United States. In addition, restoration of lost benefits and adoptions of reforms that favor union contractors is provided.

51. Rasch, Sara B. "An Examination of the Wage Contour Hypothesis: Wage Leadership in the United States Construction Industry (Key, Non-key)." Diss. University of Kansas, 1985. DAI-A 46/10 (1986): 3119.

Studied over the course of seven years, this paper examined wage leadership positions among several bargaining units to see if they stayed consistent over time. Discriminant analysis is used to determine the stability of wage leaders. Results indicate that the regional effect is more domineering in the formation of contour formation than the craft effect.

52. Robinson, J. and Shor, G. "Business-cycle influences on work-related disability in construction and manufacturing." Milbank Quarterly 1989; 67(Suppl. 2 Pt. 1): 92-113.

The authors report on when business is up, inexperienced workers are employed to meet demands. However, these upswings are also associated with increases in work-related injury rates. Discussion of the need for public policy to focus on macroeconomic determinants of employment and unemployment patterns when addressing work-related injuries. In addition, more attention should be given to safety training programs and worker participation in shop-floor decision making.

53. Roy, Jeffrey N. "Obtaining Just Compensation for Injured Workers." Trial December 1998: 38-44.

This article focuses on the need for trial lawyers to identify culpable third party liability to help injured construction workers to obtain just compensation benefits from their employers. Challenges faced by lawyers on a construction case are also discussed.

54. "Season for reason and restraint in wage hikes." Editorial. ENR 30 Jne. 1997: 98.

This editorial highlights the significance of practicing restraint in implementing wage hikes for construction workers. The article also discusses the responsibility of union contractors in local bargaining and the basis for industry agreements.

55. Sebastian, Pamela. Business Bulletin. (cover story) Wall Street Journal 25 Feb. 1999, eastern edition: A1.

Presents a background report on United States trends in industry and finance, as of February 25, 1999. Work loads and outlook for carpenters and contractors are given along with Internal Revenue System response to charities' concern about the effects of filing an optional lobbying form.

56. Smith, Jim. "Construction Industry Test Surveys." Compensation & Working Conditions Winter 1998: 2-6.

Report of the United States Bureau of Labor Statistics and Employment Standards Administration study of wages and benefits for construction workers. Discussion of the purpose of the study.

57. "Still Strong." Architectural Record January 1999: 54.

Reports that the global construction market remains solid despite economic turmoil, according to 'Engineering News-Record'. Construction spending in the United States in 1998 and bullish construction markets are discussed.

58. Thieblot, A.J. "Prevailing Wage Laws and Black Employment in the Construction Industry." Journal of Labor Research Winter 1999: 155-160.

The author discusses the inverse relationship found between the strengths of the state-level prevailing wage laws applying to federal construction contracts and black employment. Statistics are present.

59. Thieblot, A.J. "A new evaluation of impacts of prevailing wage law repeal." Journal of Labor Research Spring 1996: 297.

This report looks at the denial of an academic study claim that the repeal of the Davis-Bacon Act, the federal prevailing wage law covering construction of public works, would cost more in lost taxes. Frequency of construction injuries is reported along with ratio of construction worker earnings to all worker earnings between 1976 and 1993. Charts and graphs are present.

60. ---. "Prevailing Wage Laws and Market Recovery Strategies of Construction Unions." Journal of Labor Research Winter 1997: 31-47.

This article focuses on construction unions' ability to influence the administration of and set the agenda for prevailing wage laws in the United States. Rate setting process is reviewed along with an overview of state and federal prevailing wage laws.

61. "Trade and Wages." Economist 7 Dec.1996: 74.

This article considers the effect that freer trade has on the gap between pay of skilled and unskilled workers. Differences in 1995 gross annual income of construction workers and skilled industrial workers in various cities are examined. Graphs present.

62. Tulacz, Gary J. "Firms face new challenges as employees flex bargaining power." ENR 4 Aug. 1997: 70.

This article looks at the salaries of construction workers in the United States. Discussion of salary increases by contractors for staff-level positions plus increases in bonuses given to industry workers.

63. ---. "Firms under pressure to raise pay as employees enjoy sellers' market." ENR 5 Oct. 1998: 30-32.

This article discusses how the booming construction industry has created a demand for talented and experienced staff in the construction industry. Discussion of a survey conducted by PAS, Inc. has forecasted that contractors plan to give average raises of 4.02 percent in 1998.

64. United States. An Act to Provide for Appropriate Implementation of the Metric Conversion Act of 1975 in Federal Construction Projects, and for Other Purposes. Washington, D.C.: GPO, 1996.

Material not available at time of entry.

65. ---. International Trade Administration. Dept. of Commerce. Capital Goods and International Construction Sector Group. A Competitive Assessment of the U.S. Construction Machinery Industry. Washington, D.C.: 1985.

The focus of this report is to inform decision-makers in the Executive and Legislative Branches of the problems and prospects of the U.S. construction equipment industry. It begins with a definition of the industry leading into a discussion of industry performance and recent U.S. international competitiveness. The economics of the industry are also an area of discussion. Other topics addressed include: future demand and driving forces, projected U.S. international competitiveness, general economic issues affecting the industry, governmental policies (domestic and foreign) affecting the construction machinery industry. Provides numerous statistics.

66. ---. U.S. Dept. of Commerce. Economics and Statistics Administration. 1992 Census of Construction Industries. Geographic areas series. United States summary, establishments with and without payroll. Washington, D.C.: GPO, 1996.

Material not available.

67. ---. U.S. Dept. of Commerce, International Trade Administration. A Competitive Assessment of the U.S. International Construction Industry/ prepared by Capital Goods and International Construction Sector Group, 1989 ed. Washington, DC: GPO, 1989.

The purpose of this report is to analyze the international competitiveness of specific U.S. industries. The report identifies major economic and non-economic issues facing the U.S. international construction industry.

68. ---. U.S. Dept. of Labor, Employment Standards Administration, Wage and Hour Division. Conducting surveys for Davis-Bacon construction wage determinations resource book. Mar. 1989, rev., Washington, D.C.: GPO, 1989.

Material not available.

69. ---. Employment Standards Administration, Wage and Hour Division. The Construction Industry under the Fair Labor Standards Act(FLSA) ([computer file]). Washington, D.C.: GPO, 1997.

Material not available at time of entry.

70. ---. Dept. of Labor, Employment Standards Administration, Wage and Hour Division. Davis-Bacon and Related Act: prevailing wage resource book 1998. Washington, D.C.: GPO, 1998.

This publication provides information on how the prevailing wage is calculated in the construction industry.

71. ---. Congress. Congressional Budget Office. Modifying the Davis-Bacon Act: implications for the labor market and the federal budget. By Steven Sheingold. Washington, D.C.: GPO, 1983.

Material not available.

72. Untitled. ENR August 1993: 55.

Presents statistics on employment and wages in the construction industry for 1993. General building employment; Heavy construction employment; Specialty trades employment; Wage rates for key construction trades. Charts and graphs provided.

73. “Wages.” ENR 29 May 1995: 71.

Features information on wage rates for the United States construction industry as of May 29, 1995. Construction employment; Wage rates for key construction trades.

74. “Wages for operating engineers increases 2% to \$30.18 an hour.” ENR 20 Aug. 1998: 81.

Statistical data related to construction industry workers who operate equipment for July 1998. Average union wage rate for operating engineers given along with new construction equipment pricing.

75. “You get who you pay for.” ENR 4 Aug. 1997: 98.

This editorial discusses the improvement of construction workers’ salaries throughout the United States. It also addresses the attitudes of younger workers whose lack of interest in the construction trades is causing concern within the industry along with the loss of managers and other professions leaving the industry for other fields.

ORGANIZED LABOR/COLLECTIVE BARGAINING

76. "Address recruitment now." Editorial. ENR 17 Feb. 1997: 74.

This editorial suggests that the construction industry recruit and train construction workers in a uniformed matter. Discussion of poorly skilled laborers along with the profile of average construction worker is provided.

77. Allen, Steven G. Declining Unionization in Construction: the facts and the reasons. Cambridge, MA: National Bureau of Economic Research, [1987].

This paper examines the decline of unionization in the construction industry. Growth in the union-nonunion wage gap between 1967 and 1973 is discussed along with the erosion of the productivity advantage of union contractors. Descriptive statistics are present.

78. ---. Developments in Collective Bargaining in Construction in the 1980s and 1990s. Cambridge, MA: National Bureau of Economic Research, [1994].

This paper gives a summary of the developments in collective bargaining in the 1980's and 1990's. Topics addressed include high unemployment and a drop in real wages. Union density has decreased from 33% in 1981 to 22% in 1992. The author claims that decrease has occurred because of strategies adopted by contractors and owners to control labor costs. Changes in interpretations of labor laws that have given contractors more flexibility in their collective bargaining status have also led to the decline.

79. ---. Unions and Efficiency in Private Sector Construction: further evidence. Cambridge, MA: National Bureau of Economic Research, 1987.

This paper re-examines the productivity differences between union and non-union labor. The study is based on a sample of retail stores and shopping centers built in the late 1970's. Results indicate that square footage put in place per hour is 51% greater for union than non-union contractors. Numerous statistics are present.

80. "Amish, once almost all farmers, acquiring new job skills." New York Times 28 Nov. 1997: A27.

This article addresses the rising number of Amish people who are switching from the farming profession to the construction worker and craftsmen profession. Factors that precipitated this transition and details on Amish life are addressed.

81. Apprentice construction equipment operator (AFSC 55131)/[prepared by Department of Civil Engineering Training, 3750th Technical School (ATC)]. Gunter Air Force Station, Ala.: Extension Course Institute, Air University, 1984.

Material not available at time of entry.

82. Blanchard, Frederick L. "Construction Industry Organization, Labor Relations and Productivity." Diss. Massachusetts Institute of Technology, 1992. DAI-A 54/02 (1993): 586.

This paper addresses the two theories forged by authors Arthur L. Stinchcombe and Robert G. Eccles on construction organization. The two theories craft orientation and subcontracting, respectively are examined and the author provides statistical information that these two theories are not the premises for the organization of construction. The authors proffers an alternative theory substantiated by data.

83. Bourdon, Clinton C. and Levitt, Raymond E. Union and Open-Shop Construction. Lexington Books, Lexington, MA and Toronto, 1980.

This book attempts to compare and contrast current union and open-shop wages and work practices. The information comes from a sample data form both a wage questionnaire and from interviews with over two hundred construction firms in eight metropolitan areas. Non-union and union differences and similarities in compensation, work rules, hiring, training, technology are discussed. Total labor costs in relation to particular product markets in construction (residential, commercial-industrial, or heavy and highway) is also addressed. Figures and tables are present.

84. Bourdon, Clinton C. Union and open-shop construction: compensation, work practices, and labor markets. Geneva edition. Lexington, MA Lexington Books, 1980.

This book compares and contrasts union and open-shop construction firms. It begins with a broad overview of the industry. It then delves into a discussion of the organizations within the industry with attention on compensation, skills and occupational structure. Work structure and labor market institutions are also examined. Statistics and figures are present.

85. Burleson, Rebecca C. "An Analysis of Multi-skilled Labor Strategies in Construction (Single Skilled Workers)." Diss. The University of Texas at Austin, 1997. DAI-B 58/07 (1998): 3795.

This thesis discusses how technology has improved the accuracy, efficiency, and safety of many jobs in the construction field, but it has not contributed to overall productivity. It discusses the dilemma of the single skilled worker, which is prevalent throughout the workplace, and how it impedes the contractor to be cost effective on construction project. An extensive review of literature and anecdotes are discussed.

86. Characteristics of the construction craft work [i.e. force] by Gary B. Gehrig... [et al.]; a report to the Construction Industry Institute, the University of Texas at Austin, under the guidance of the Construction Work Task Force from Colorado State University, Fort Collins, Colorado. [Austin]: Bureau of Engineering Research, University of Texas at Austin, [1992].

Material not available.

87. Construction Labor Research Council. Data base development, labor supply information pilot study: a report to the Construction Industry Institute, the University of Texas at Austin, under the guidance of Task Force 83-4, Industry Data and Statistics/from Construction Labor Research Council. [Austin, TX]: The Institute, [1989]

Material not available.

88. Construction occupations. Washington, D.C.: U.S. Dept. of Labor, Bureau of Labor Statistics, 1984.

Material not available.

89. Construction occupations-finishing. U.S. Dept. of Labor, Bureau of Labor Statistics: For sale by the Supt. of Docs., U.S. GPO, 1982.

Material not available.

90. Construction occupations-structural. U.S. Dept. of Labor, Bureau of Labor Statistics: For sale by the Supt. of Doc., U.S. GPO, 1982.

Material not available.

91. Construction Work Force Recruitment Resources Guide. Prepared by the Education and Training Task Force, Construction Industry Institute, and the Construction Industry Workforce Foundation. Austin, TX: University of Texas at Austin, Bureau of Engineering Research, 1991.

The purpose of this publication is to guide Construction Industry Institute members and the Construction Industry Workforce Foundation in leading recruitment. The report discusses trends of the labor force, industry image and altering it. It also outlines getting prepared for recruitment.

92. Cullen, Donald and Feinberg, Louis. The Bargaining Structure in Construction: Problems and Prospects. U.S. Department of Labor Management Services Administration, 1980.

This report describes and appraises the several attempts made in recent years to improve the bargaining structure in the construction industry. It begins with a discussion on the fragmentation of the bargaining structure and the need and obstacles to change this decentralization within the construction industry. The report addresses the initiatives taken by employers at the national and local levels to reform the bargaining structure as well as initiatives by unions and the government. The report concludes with recommendations for reform such as voluntary reform, the need for intervention, and policy recommendations. Case studies and descriptive statistics are present.

93. Daniels, Stephen H. "Owners enforce 'no switch' rule." ENR 24 Nov. 1997:12.

This article discusses construction companies' efforts of banning craft workers from job-hopping from one contractor to another on the jobsite. Legality of the ban is discussed along with advantages of enforcing the policy.

94. Exploring careers: construction occupations. U.S. Dept. of Labor, Bureau of Labor Statistics: For sale by the Supt. of Docs., U.S. GPO, 1980.

Material not available.

95. Fahys-Smith, Virginia Ellen. The Migration of Boom Town Construction Workers: Wanderlust or Adaptation. University of Colorado at Boulder, 1982.

This study proposed that much decision for construction workers to migrate is explained by a calculation of costs and benefits to maintain an equitable exchange with the social environment. In addition, individual characteristics which have been found to influence migration in past studies are also examined. Results found that there is a correlation between construction worker wanderlust and employment security. The final chapter of this study proposed policy options to reduce the migration of this group.

96. Federle, Mark Osborn. Substitutes for Leadership in the Environment of Unionized Construction Carpenters (Leadership, Journeymen, Construction Carpenters). Ann Arbor, The University of Michigan, 1990.

This study recognized thirteen substitutes, with self-reported measures, for leadership in the construction work environment. Over 8,000 carpenters were the subject of the study. Factor, reliability, correlation, and variance analyses were used to identify relationships that were part of the stepwise multiple regressions procedure. Ability, Experience, Training, and Knowledge (AETK) and closely-knit Cohesive Work Crews (COHES) were found to be the two most effective.

97. “Finding skilled labor is top construction industry concern, says survey.” Aberdeen’s Concrete Construction. December 1998: 1110-11.

The findings of a 1997 construction industry training survey are presented. The survey highlights the lack of skilled people evident at all levels of employment, the dominant role of competition in the industry, the dependence on new tools for communication and training, and the negative impacts of poor communication on productivity.

98. Fine, Sidney. Without Blare of Trumpets: Walter Drew, the National Erectors’ Association, and the Open Shop Movement, 1903-57. Ann Arbor, The University of Michigan Press, 1995.

The author of this book embarks on a historical tour of the National Erectors’ Association (NEA) which has been described as the most class-conscious and belligerent national (employer) association” in the United States. A large defender of the open shop, the NEA attempted to spread this idea beyond structural steel erection to the building trades as a whole. The NEA continued to exist until 1957 as Walter Drew as its commissioner. Although the NEA was primarily associated with the structural steel industry, certain parts of the book discusses the construction industry as a whole.

99. "Good construction help getting harder to find." Civil Engineering, April 1997: 13.

Reports on the challenges faced by the construction industry in finding qualified workers in the United States. Current shortage of workers in the industry; Results of the survey conducted by the Construction Financial Management Association.

100. Grabelsky, Jeffrey. "Lighting the spark: COMET program mobilizes the ranks for construction organizing." Labor Studies Journal, Summer 1995: 4-22.

The article gives a description of the COMET program with an emphasis on organizing. Problems of the construction industry are discussed along with a reevaluation of policies and practices that seem to have contributed to the problem of a marked decrease in membership.

101. Grant, Peter. "Building union fight blocks cost cutting." Crain's New York Business 13 Dec. 1993: 3.

This article reports on the tension within ranks of construction union regarding cutting costs to boost the construction industry. It addresses the agreement to alter work-rules that would reduce construction costs.

102. Hess, Gary E. "Salting: An industry perspective." Journal of Labor Research, Winter 1997: 47-54.

Associated Builders and Contractors Inc. present their views on salting and other union tactics in the U.S. construction industry. Discussion of top down pressure on contractors to sign union agreements along and Construction Organizing Membership Education Training program. Further discussion of wearing down of nonunion contractors by filing unfair labor practice charges with the National Labor Relations Board.

103. Houston, Ben. "Don't exclude the merit shop." ENR 15 Jne. 1998: 107.

This author asserts that politicians should eliminate promoting policies that discriminate against construction workers. Topics of discussion include union-only project labor agreements on federal construction projects in the United States and the disadvantages of organized labor.

104. Isokait, William A. "Project labor agreements: An industry perspective." Journal of Labor Research, Winter 1998: 65-72.

This article discusses the impact of project labor agreements in public construction projects in the United States. How the Supreme Court decision affected the Building & Construction Trades is addressed along with policy and legal issues.

105. Korman, Richard. "General Contractors Enlist Unions Against Specialty Firms." ENR 7 July 1997: 9.

This is a report on general building contractors' enlistment of key works officials' hiring of specialty contractors as separate prime contractors. Rulings under multi-prime statutes and support by unions representing laborers, carpenters, bricklayers and

106. Krizan, William G. "Union and non-union hunt for market edge." ENR 2 May 1994: 6-8.

This article discusses the effect of the health care program on labor relations in the United States. Distortion of issues in Congress, concern over merit-shop construction and employment issues; dispute between AFL-CIO Building and Construction Trades Department and nonunion Associated Builders and Contractors.

107. Krizan, William G. "Labor: Open Shop Loosens purse strings." ENR 24 Jne.1996: 31.

This article reports on the hourly wage increases for nonunion construction workers in the U.S. Projected increases are given along with the status of construction activity and demand for workers by region.

108. Lucas, Michael D. "Salting and other union tactics: A unionist's perspective." Journal of Labor Research, Winter 1997: 55-65.

This article presents a unionist's view on salting and other union tactics in the construction industry of the United States. Practice of union members accepting nonunion jobs is discussed. Modern weapon for reorganization of building and construction trades union is also examined.

109. Lund, John. "Union owned or sponsored building trades cooperatives: a review of labor law issues." Labor Law Journal. October 1990: 685-93.

The author asserts that building trades union considering some form of involvement with a building and construction trades producer cooperative must consider the requirements of the Landrum-Griffin Act and the Labor Management Relations Act and the cases interpreting those acts.

110. Math on the job: construction laborer. Columbus, Ohio: National Center for Research in Vocational Education, 1985.

This publication is a guide for prospective and current construction workers in developing math skills for various occupations within the construction industry.

111. McDowell, Douglas S., Northrup, Herbert R. and Williams, Robert E. Doublebreasted Operations and Pre-hire Agreements in Construction: The Facts and the Law. Industrial Research Unit, Philadelphia, PA, University of Pennsylvania, 1987.

This report is a response to the 1986 legislation that was to prohibit nearly all double breasting by construction companies, and would have given pre-hire agreements the same effect as contract negotiated with a majority-supported union. This measure never reached a vote in the Senate because of a threatened filibuster and potential veto. The purpose of this report is to demonstrate that the current policies are working well to achieve the proper balance among the interests of employers, unions, and employees alike, so that there really is no need for change. There is discussion of the structure and causes of double breasting, special legal treatment of unions in the construction industry, an overview of the law of double breasting, and various aspects of pre-hire agreements.

112. Nielsen, Duke. Dump command-and-control. ENR 23 Mar. 1998: 123.

Note: *ENR abstract*. It is suggested that supportive-subordinate relationships are the key to attracting new craft workers to the construction industry. Such improved relationships enhance the public's image of the industry and entice people to work in the industry and also optimize training, customer satisfaction, company profitability, and employee job satisfaction. All supervisors and subordinates must partner with each other to develop supportive relationships.

113. Northrup, Herbert R. and White, Augustus T. "Construction Union Use of Environmental Regulation to Win Jobs: Cases, impact, and legal challenges." Harvard Journal of Law & Public Policy, Fall 1995: 55-119.

This report examines the construction union use of the permitting process required by environmental legislation as a pressure strategy to win jobs. Reason for the effectiveness of the strategy are discussed. In addition, cases of how the strategy works is provided.

114. Northrup, Herbert R. "Construction Union Programs to Regain Jobs: Background and overview." Journal of Labor Research, Winter 1997: 1-16.

This article focuses on construction union programs aimed at expanding the limited market share of unionized contractors in the United States. Decline in union membership since World War II is discussed and open-shop terms and conditions and wage advantages are discussed. Principal union tactics to regain market share are discussed.

115. Northrup, Herbert R. "The 'helper' controversy in the construction industry." Journal of Labor Research, Fall 1992: 421.

Helpers, whose role is to aid craftsmen, have been a point of controversy in the industry for over a century. The article discusses unions' attempts to control the employment of helpers. Effects of helpers in the construction industry and related training problems are discussed. The article also addresses the Davis-Bacon Act.

116. Pollock, Michael A.; Arnold, Bob; and Carson, Teresa. "Construction unions try to shore up a crumbling foundation." Business Week. 4 Feb. 1985: 52+.

This article discusses the concessions unions made in the mid-eighties as a result to the low demand in construction projects.

117. Remington, John and Londrigan, Bill. "Construction industry labor-management cooperation committees: defining essential elements." Labor Studies Journal Summer 1994: 67-80.

The author discusses the formation of construction labor-management cooperation committees (CLMCCs). These committees are based on the premise that in order for unions to be successful, union contractors must be successful. Three examples of CLMCCs are given.

118. Silver, Marc Lawrence. Craft Production: Work and Alienation in the Construction Industry. Diss. Columbia University, 1981.

The study focused on the nature of the labor process in the building and construction industry. Facets of the production process and labor relations were examined with respect to two major issues. The first addresses the organization of the labor process of a 'craft-dominated' industry. The second major issue addressed was the individual consequences of work and employment for construction craftspeople. Results found that employers have a considerable amount of control over the work organization and employment opportunities, while craft unions attempt to serve defensive functions for their members.

119. Stacey, Pam, Friedmann, John, and Ausburn, Lynna J. "Competency-based instruction for building trades." *Tech Directions*. August 1994: 27-8.

This article discusses a competency-based program that was devised to provide students with documentation of their knowledge and skills of the building and construction trades. It discusses the six standards that must be present in order for a building and trades program to be considered competency-based.

120. Starkey, Danielle. "Construction unions gain recession-eroded ground." *Business Journal Serving Greater Sacramento* 27 Feb. 1995: 18-20.

This article discusses the concerns of the labor unions in the construction industry. Decline in membership, effects of economic recession, trends in labor organizations, and attitudes and perceptions of workers on labor unions are all discussed.

121. "Taking Care of Careers." *ENR* 2 Oct. 1997: 78.

This is an editorial that comments on the labor shortage in the construction industry. Discusses how a recession impacts the industry and the lure of bonuses for retention purposes. The purpose of this publication is to guide Construction Industry Institute members and the Construction Industry Workforce Foundation in leading recruitment. The report discusses trends of the labor force, industry image and altering it. It also outlines getting prepared for recruitment.

122. "Trade takes to the road to train." *ENR* 9 Dec. 1996: 10.

This article describes how the International Masonry Institute is promoting union masonry work. Discussion of mobile training centers, construction site environment created by the institute, and description of the training center.

123. United States. Dept. of Labor, Labor Management Services Administration, Office of Construction Industry Services. *Handbook of wages and benefits for construction unions*. Washington, D.C.: GPO, 1980.

A summary of the wage and benefits that resulted from 5,000 collective bargaining agreements. Wage benefits, wage rates, pension, vacations and other benefits are provided 1980.

124. ---. ---. Handbook of Wages and Benefits For Construction Unions Washington, D.C.: GPO, 1981.

This is a summary of the wage and benefits that resulted from 5,000 collective bargaining agreements. Wage benefits, wage rates, pensions, vacations and other benefits are provided for 1981.

125. ---. Federal Highway Administration. General Law Division. Labor compliance manual, 4th ed., Washington: The Division: for sale by the Supt. of Docs., U.S. Govt. Print. Off., 1980.

Material not available.

126. White, Augustus T. "Litigation: Where has it been and where is it taking us?" Journal of Labor Research Winter 1997: 65-73.

This article looks at the litigation concerning salting and other union tactics in the construction industry of the United States.

127. Winston, Sherie. "Building Trades Want to Boost Membership with Amnesty Plan." ENR 27 April 1998: 12.

This article discusses efforts by the AFL-CIO's Building and Trades Department to increase membership through implementing an amnesty program for local unions. Factors leading to this action are discussed. Decline in membership is also addressed.

EMPLOYEE RELATIONS

128. Alternative Dispute Resolution in the Construction Industry Robert F. Cushman, G. Christian Hedemann, Avram S. Tucker, editors. New York: Wiley Law Publications, 1991.

This book discusses alternative dispute resolution within the construction industry. Chapters discuss selecting a third party neutral for a construction dispute. Strategies and presentation for ADR are addressed along with the increase growth of ADR within the construction industry. The book provides practical advice and techniques from a wide spectrum of skilled, seasoned practitioners in this area.

129. Americans with Disabilities Act: key issues for the design and construction industry. Prepared by the Construction Industry Institute, ADA Impacts Task Force; [Stuart D. Anderson, principal author; editor, Rusty Haggard]. Austin, TX: The Institute, University of Texas at Austin, [1993].

The purpose of this publication is to provide data regarding the ADA and the construction industry. The report begins with a discussion of the characteristics of the construction industry and the special concerns of the industry regarding ADA. The report aims to increase awareness about ADA and provides compliance flow charts for practical use.

130. Applebaum, Herbert A. Royal blue, the culture of construction workers. New York: Holt, Rinehart, and Winston, 1981.

This book is an ethnography of construction work and its workers. The primary emphasis on this book is how construction work is organized technologically and socially, which fosters a certain kind of belief of work. Chapters include: A Portrait of the Construction Worker, The Construction Worker on the Job Site, Independence and Autonomy, Accidents, Danger and Death. Photographs and charts are present.

131. Construction ADR developments. New York, N.Y.: American Arbitration Association, 1994.

This pamphlet provides a discussion on mediation in the construction industry along with the purpose of dispute review boards. It also provides information on partnering within the construction industry.

132. Construction arbitration: selected readings. Margaret Gibbons & Linda M. Miller, editors, New York, N.Y.: American Arbitration Association, 1980.

Various topics of construction arbitration are presented in narrative form. Readings include: Arbitration and Mediation: The Modern Approach to Resolving Construction Disputes; Recommended Procedures for Settlement of Underground Construction Disputes; Arbitration-The Pros and Cons; and Subcontractors and Arbitration. Construction industry arbitration and mediation rules are also mentioned.

133. Cox, Robert Francis. Case Studies of Employee Participation Programs in Construction and their Effects on Absenteeism. Virginia Polytechnic Institute and State University 1994.

This study looks at employee participation programs (EPP's) and their effect on absenteeism through regression analysis. Four construction firms were studied and their efforts to implement these programs. Results showed that the EPP's had a negative effect on absenteeism. The research utilized T-tests, F-tests, and factor analyses.

134. Crowley, Larry G., Lutz, James D. and Burleson, Rebecca C. "Functional illiteracy in the construction industry." Journal of Construction Engineering and Management. June, 1997: 162-70.

The authors discuss their administration of literacy tests to construction workers at various construction sites in Birmingham, Alabama. Results indicated that the construction workforce was not found to be significantly different from the national population with respect to literacy.

135. Ellis, Teri. "That first day." (cover story) Occupational Health & Safety, April 1998: 26-30.

The article focuses on how construction workers prepare for their first day on the job by safety managers. Introductions to the basics of construction work and interactive training are given.

136. “Even more communication is critically needed.” ENR. 10 Mar.1997: 61.Note: ENR abstract.

Following separate announcements by the National Center for Construction Education and Research and the building trades that they had both developed standardized safety training for construction workers, ENR proposed a safety summit to come up with a truly standardized program for everyone. Although the open-shop side responded positively within days, the union people did not. ENR, however, still contends that common ground may be reached on standardized safety training and the issue of employee responsibility for safety.

137. Human Factors/Ergonomics for Building and Construction. Edited by Martin Helander. New York: Wiley, c 1981.

This book examines the human factors that need to be considered when managing workers and workers’ activities in the construction industry. The book offers practical solutions to problems in the workplace. Chapters include: Safety in Construction, Physical Health Hazards in Construction, Chemical Health Hazards in Construction, Work Physiology, Human Factors Engineering in Construction Work, The Physiology of Job Satisfaction and Worker Productivity, Construction Productivity, and Women and Minorities in Construction. Graphs and descriptive statistics are present.

138. Ichinowski, Tom; Bradford, Hazel. ENR Washington observer. ENR 5 Sept. 1994: 7.

This is a report on the developments in legislation and government policies related to the engineering and construction industry.

139. Lee, Michael Edward. Alienation and Control Among ‘Semi-Autonomous Work Groups’ In the Non-Unionized Residential Sector of the Construction Industry (Industrial Democracy, Cooperation, Research Methodology). The American University, 1984.

This thesis examines semi-autonomous work groups in the open shop environment of the construction industry. Open shops are examined and contrasted with unionized sectors. Conflicts between owners and workers are also examined.

140. Maloney, William F. Employee Involvement in Construction. The University of Michigan, March 1961.

The objective of this study was to review literature pertaining to employee involvement, develop a continuum of employee involvement models, identify construction applications that apply to these models, and develop recommendations for further research into employee involvement.

141. Moccio, Francine Anne. Contradicting Male Power and Privilege: Class, Race and Gender Relations in the Building Trades. New School for Social Research, 1992.

Report on a historical case study of unionized electrician construction workers and others. This dissertation evaluates the quest to integrate women into a powerful male dominated union and workplace. The study is interdisciplinary, assessing socioeconomic, political and cultural factors to better understand the complex work dynamic. Also, this essay explores the male influence in shaping the current schema of the construction union.

142. "Paul T. Investigates." New Left Review, May/June 1996: 85.

A short story illustrating the attitudes of masculinity among construction workers and their treatment and illegal terms of employment.

143. Silver, Marc L. Under Construction: Work and Alienation in the Building Trades. State University of New York Press, Albany, New York, 1986.

This book gives a sociological perspective on work relations in the construction industry. The author examines the effects of local market conditions, employers' demands, and trade union activities on the daily lives of workers-skilled as well as unskilled. The book also challenges popular myths about construction work and the building trades with analyses of construction sites, hiring practices, and workers' reaction to the conditions of their work.

144. Ugwu, Maxwell Chimaeze. Absenteeism in the Construction Industry: A Diagnostic Study. University of Missouri Columbia, 1982.

This study identifies major factors affecting absenteeism in the construction industry. Careful review of literature on employee absenteeism is conducted first and the second part of the study involved 65 volunteers. Results found that pressured work climate, dissatisfaction with the job situation, poor interpersonal relationships with the crew and high competition between crew members were just some of the factors that led to absenteeism.

145. United States. Congress. Senate. Committee on Labor and Human Resources. Equal opportunity in federal construction: hearing of the Committee on Labor and Human Resources, United States Senate, One Hundred Fifth Congress, first session...April 30, 1997. U.S. G.P.O.: For sale by the U.S. G.P.O., Supt. of Docs., 1997.

Material not available.

MOTIVATION AND PRODUCTIVITY

146. Adrian, James J. Construction Productivity Improvement. New York: Elsevier, c1987.

This report provides a means toward improving construction productivity. It addresses improved project organization, project design, contractor management, labor attitudes and skills, and personal management. It attempts to integrate the practice and theory of construction productivity and its improvement.

147. Adrian, James J. "Six ways to increase construction equipment productivity." Aberdeen's Concrete Construction. November 1997: 891+.

Note: *Aberdeen abstract*. The writer outlines 6 techniques that can help increase the productivity of construction equipment. Low productivity, high costs, time delays, and more accidents can be attributed to using outdated, inappropriate, or ineffective equipment. The 6 techniques outlined are to compare labor and equipment productivity; keep track of productive, standby, and nonproductive time; consider the hourly cost of owning or renting equipment; monitor variable versus fixed costs; manage equipment maintenance and repair; schedule equipment efficiently; and select the right equipment for the job.

147. Alfeld, Louis Edward. Construction Productivity: on-site measurement and management. New York: McGraw-Hill, 1988.

This book offers guidance on how construction personnel at all levels can team up to measure on-site performance accurately and economically and how they can utilize these measurements to evaluate projects and to set priorities for improvement. The book is divided into nine chapters with the first three chapters devoted to laying out the principles and methods for measuring field performance and identifying and setting priorities for improvement. Descriptive statistics present.

148. Bilhaif, Abdullah. The Influence of High- Temperatures on the Productivity of Construction Workers. University of Reading (United Kingdom), 1991.

This is a direct observation study of workers in the United Arab Emirates and the effects of hot weather on productivity. Daily observations were collected and analyzed statistically in a regression analysis. Depending on the activity, construction workers were affected more or less. This study explains which activities have the greatest and least effects on the workers.

149. Bruggink, Matthew J. An investigation into the impacts of change order on labor efficiency in the electrical construction industry. 1997 (Masters Theses)

Note: Theses was not available.

150. Burlison, Rebecca C. and Haas, Carl T. "Multi-skilled Labor Utilization Strategies in Construction." Journal of Construction Engineering & Management November/December 1998: 480-489.

This article focuses on the skill groupings of employees in the construction industry craft divisions in the United States to ascertain their labor productivity. Discussion of failure of the labor market to respond to construction sequence for the optimal use of worker skills is provided. Model to measure the efficacy of alternative labor utilization strategies is recommended.

151. Delano, Daryl. "Construction equipment production steady in 1998." Industrial Distribution January 1999: 5.

Reports on an increase in construction equipment production in the United States during 1998. Expected growth rate in total heavy construction spending; Highway construction work; Annual output gains in the construction machinery industry.

152. Effects of Scheduled Overtime and Shift Schedule on Construction Craft Productivity: a report to the Construction Industry Institute, the University of Texas at Austin, under the guidance of Task Force 83-2, Productivity Measurements, and the Overtime and Shift Work Subcommittee. [Austin, TXJ: The Institute, [1988].

Material not available.

153. Garcia, Sandra A. "Planning and Communication In Construction: Impacts on Performance." Masters University of New Mexico, 1997. MAI 36/01 (1998): 224.

The purpose of this thesis will show how the organizational structure, computerization, design quality, and project budget influence communication and planning and how communication and planning impact performance.

154. Hadavi, Ahmad. "Improvement in Construction Productivity through Goal Setting in a Unionized Environment." Diss. Northwestern University, 1991.

This study discusses how effective goal setting is on masonry work and shows that it can be used in the construction industry to increase productivity if certain guidelines are followed.

155. Hanna, A. S. and Engelman, A.E. "Avoid interrupting crews during peak productivity times."

This article advises to avoid interrupting workers during periods of peak productivity. Discussion of the inverse relationship of reduced interruption and productivity. Ways to reduce interruption are discussed.

156. Hanna, Awad S. and Maples, Michael. "Place the crew on overtime." Concrete International September 1997 :71.

Note: *Concrete International abstract*. The writers discuss the payoff and cost implications of techniques commonly used to compress a project schedule. The 3 techniques discussed are scheduling overtime, adding additional workers, and negative effect of overtime, and additional costs, and it provides some examples of compressing a project schedule.

157. Heap, Alan. Improving Site Productivity in the Construction Industry/ compile by Alan Heap. Geneva: International Labour Office, 1987.

This report is an overall examination of improving productivity. It discusses motivation and incentives; human elements; work study, etc. Numerous techniques and examples are given. In depth look at how the construction industry contributes to the development and growth of virtually all other economic factors, thus the benefits that can be accrued from improving the effectiveness of construction operations can be very significant.

158. Jansma, Glen Lewis. A Methodology for Making Construction Productivity Comparisons. The University of Texas at Austin, 1987.

This study compares the productivity of different construction projects by providing a methodology for comparison. Principal concepts of productivity of measurement are applied at the firm level to a project environment. Two types of comparisons are discussed. The first

comparison utilizes the ‘best’ project performance and the second uses the actual project productivity versus the productivity predicted by the regression equations.

159. Khachaturian, Narbey and Gnadendinger, John P. “Guiding Principles for Improving the Construction Industry.” Journal of Management in Engineering November/December 1996: 30-33.

This article discusses principles for improving the construction industry. Concerns on the isolation of the academic environment from practice and the importance of communication and teamwork are discussed.

160. Khalaf, Ahmad Saleh. The Impact of Scheduled Overtime Operation on Workers in the Construction Field. The George Washington University, 1998. Dissertation.

The purpose of this research is to examine the attitudes and feedback of construction workers during scheduled overtime operations on construction projects. Results showed that most construction workers are interested in scheduled overtime. Factors that contribute to poor job performance during scheduled overtime are discussed.

161. Penteado Filho, Paulo De Arruda. Productivity Trends in the Construction Industry. Cornell University, 1984.

The purpose of this study is to analyze trends in productivity performance of the construction industry and the factors causing its changes over time. Current studies on the evolution of construction productivity are reviewed. Short and long series of construction productivity are estimated. Results indicate that demand factors contribute heavily to the decline in output along with other factors.

162. “Production and Business Activity.” Economic Indicators, January 1999: 17-22.

Presents charts and graphs depicting production and business production and capacity utilization; new construction; new private housing and vacancy rates; business sales and inventories.

163. “Researchers try to determine return on investment.” ENR 10 Nov. 1997: 13.

This article addresses the standard that is being developed to measure craft performance by construction workers in the United States. Problems in researching such an effort are addressed along with discussion of converting training dollars into hours of effort by craft labor.

164. Scott, Dale E. "Motivate construction crews." ENR 23 Mar. 1998: 123.

This article discusses that in order to prevent a decline in productivity, contractors should create a prideful work atmosphere that would inadvertently motivate workers. The author discusses the factors that lead to a decline in productivity.

165. Sonmez, Rifat and Rowings, James E. "Construction Labor Productivity Modeling Neural Networks." Journal of Construction Engineering & Management, November/December 1998: 498-504.

This report explains the model for assessing labor productivity of construction industry workers. Use of regression and neural network modeling techniques to determine the effect of influencing factors are discussed along with a comparison of predictive behaviors of the models.

166. Warren, Robert H. Motivation and Productivity in the Construction Industry. New York: Van Nostrand Reinhold, 1989.

The author of this book discusses the motivational forces that have the greatest effect on productivity in the construction industry. The book begins with a discussion on the concept of motivational forces in general and their effect on people. It then delves into the conditions that construction laborers work in and how these conditions have an impact on motivation and productivity. Chapters of this book are devoted to the character of the workforce, direct communication, sources of frustration, consistent management, safe working environment, and basic personal comforts. The last chapter of the book outlines a program to improve motivation and productivity.

TRAINING

167. Apprenticeship in the building and construction trades. U.S. Dept. of Labor, Employment and Training Administration, 1980.

Material not available.

168. An Assessment of Education and Training Needs Among Construction Personnel. Prepared by the Education and Training Task Force, Construction Industry Institute; (Robert W. Dorsey, principal author; editor, Rusty Haggard). [Austin, TX]: The Institute, [1992]

A National Survey was conducted to determine the broad perceptions of the current state of construction education and training; gain observations on how skills and traits should be acquired in order to perform well in the various positions in the construction industry. Results indicated that education and training are viewed as a continuum over a career; formal education provides approximately 30% of the preparation needed to perform in a career; and beyond formal education, special training and on the job experience should provide the other 70% of career preparation. Charts, graphs, and descriptive statistics are present.

169. Dorsey, Robert W. The Acquisition of Skills and Traits Among Construction Personnel a Report to the Construction Industry Institute, the University of Texas at Austin under the guidance of Task Force 25-13, Education and Training, with special assistance from the Construction Owners Association of the Tri-State, Inc. (COATS), from the University of Cincinnati/ by Robert W. Dorsey. [Austin, TX]: The Institute, [1990].

Material not available.

170. Frechette, Leon A. "Videos that tell a story." Tech Directions. October 1996: 33-34. This article discusses videos that provide a good perspective of the entire construction process. One of the videos discussed which is distributed by Meridian Education Corporation is Portable Power Woodworking Tools, a series that features the most popular and useful woodworking tools.

171. Gitter, Robert J. "Job training in Europe: lessons from abroad." Monthly Labor Review April 1992: 25-9.

172. Government Limitations on Training Innovations. A Construction Industry Cost Effectiveness Project Report. Business Roundtable, New York, NY March 1982.

This study examines how the US Department of Labor has impeded efforts to utilize skill training methods in the construction industry through regulations put forth by its Bureau of Apprenticeship and Training and its administration of the Davis-Bacon Act.

173. Hendrix, Mary W. Basic Skills Applications in Career investigation: Mathematics, Science, Social Studies, Communications, Productive Work Habits. Revised. East Texas State University, Commerce. Educational Development and Training Center 1991.

This is a presentation of instructional materials that allow instructors to provide learning experiences that stress the equal importance of academic and vocational education and the personal and social matters related to the work ethic. Instructional materials are provided for many industries including the construction industry. Each cluster contains several activities, which have the following sections: purpose of activity; basic skills applications; approximate time required; materials needed; step-by-step procedure; follow-up; and activities.

174. Hensley, Stephen Michael. "Labor-Management Training Programs Established and Funded through Collective Bargaining Agreements at Firms Employing 1000 or More Persons (Apprenticeship, Tuition Assistance)." Diss. Virginia Polytechnic Institute and State University, 1996. DAI-A (1996): 1219.

This study collected and analyzed information pertaining to over 700 existing joint training programs that were established and conducted through collective bargaining. Four types of programs were analyzed: skills training, apprenticeships, tuition assistance, and educational leave programs.

175. Korman, Richard. "Training goals divide industry." ENR 9 Jne. 1997: 8-9.

Note: ENR abstract. Training goals between nonunion work and union work are dividing the construction industry. According to union craft educators, nonunion training lacks depth and continuity partly because so many skilled workers are taught very little. On the other hand, union

apprentice training is a lot more expensive than nonunion training.

176. Krizan, William G. "Big Owners are about to ban contractors that don't train." ENR 6 Oct. 1997: 13.

This article reports the Business Roundtable's document persuading industrial company owners to make training of construction craft workers mandatory in order for contractors to be pre-qualified for the projects. Discussion of requirement for contractors to provide a description of their training programs and investment.

177. Krizan, William. "Training prequalification nears." ENR 25 November 1996: 8.

This article discusses the proposed training pre-qualification for union construction contractors and organizations. Union contractors' presence at the Business Roundtable's national construction conference. Discussion on contractors' use of program from the National Center for Construction Education and Research or union training programs.

178. Lorenzi, Neal. "OSHA may expand scope of industrial truck training." Professional Safety April 1996.

This article reports on the proposal by Occupational Safety and Health Administration for construction operators to comply with training standards. Proposal is presented in detail and contacts for further information are provided.

179. Markus, Ali Milud. A Research Discrepancy Model for Building Trades Training Programs. University of Florida, 1988.

This study examined the discrepancy between the low placement of post-secondary graduates from building trades training programs and the high demand for craftsmen. Four major construction groups that employ carpenters were surveyed. Results showed large discrepancies in the perceived skills that a skilled carpenter needs between the contractors and the post secondary graduates.

180. "Owners can lead the way to better training." ENR 2 Dec. 1996.

This editorial comments on how the Business Roundtable task force develops a standardized language to be used in requests for proposals, specifications and contracts that would allow contractors that train workers to a significant and effective degree. Launching of the project in support of the training curricula of the National Center for Construction Education and Research.

181. Saucerman, Steve. "To train or not to train." Aberdeen's Concrete Construction. November 1998: 963+.

The author discusses the advantages and disadvantages of sending employees on training courses. A review of many of the training opportunities that are available in the concrete industry is given. The choices discussed are apprenticeship programs, technology and vocational programs, and seminars and short courses.

182. "Training requirements can put public back into works." ENR 26 Jan. 1998: 148.

This author suggests that the government should only employ contractors who train a significant number of craft workers. The article also criticizes union-only and open shop project labor agreements.

183. United States. U.S. Dept. of Labor. Employment and Training Administration Apprenticeship in the building and construction trades. Washington, D.C., 1980.

Material not available.

SAFETY/HAZARDS

184. Adams, Kathleen and August, Melissa. "Risky Business." Time 27 May 1996: 16.

This chart illustrates the most dangerous jobs and the number of their job-related injuries recorded per 10,000 since 1994. Various occupations are mentioned including construction work.

185. Adequacy of federal OSHA tower crane regulations: hearing before the Employment and Housing Subcommittee of the Committee on Government Operations, House of Representatives, One Hundred First Congress, second session, February 15, 1990.

Material not available.

186. Asbestos Standard for Construction Industry. The United Department of Labor, OSHA 1989 (Revised) Note: 1995 revision

In 1988, OSHA issued a final asbestos standard for the Construction Industry. Discussion of exposure, monitoring, regulated areas, methods of compliance, respiratory protection, protective clothing, hygiene facilities and practices. Information on training also present.

187. Awadalla, Crystal A and Roughton, James E. "An overview of OSHA's scaffold standard for the construction industry." Professional Safety October 1997: 12+.

Note: Professional Safety abstract. The writers explore the reasons for the Occupational Safety and Health Administration's new scaffold standard for the construction industry and emphasize various requirements of the final rule. The objective of the standard is to give more flexibility in the use of fall protection systems and to improve protection for employees working on scaffolds. In addition, it aims to strengthen the training of employees. To attain these goals involves simplification of the standard's language, removal of duplicate and outdated provisions, consolidation of overlapping requirements, and making the standard more performance-oriented.

188. Bernold, Leonhard E. and Guler, Nil. "Analysis of back injuries in construction." Journal of Construction Engineering and Management September 1993: 607-621.

This article discusses the impact of back injuries not only on construction workers, but also on the industry itself. Discussion of medical costs, absenteeism, benefits, and lost productivity is presented.

189. "Body belt restrictions take effect." Industrial Distribution January 1998: 40.

Reports that body belts for construction workers, will no longer be acceptable as part of a personal fall arrest system effective from January 1, 1998, according to the Occupational Safety and Health Administration. Reasons for the delay of the restriction are given.

190. Bousfield, Greg. "Bricks and Back Aches." Safety & Health December 1998: 21-24.

This article discusses a study that has identified bricklaying as the construction job most likely to give workers chronic back pain. Discussion of work-related back injuries and task is provided. Methodology of the study is provided.

191. Brinderson, Gary L. "Don't punish safety violators." ENR 17 November 1997: 93.

The author believes that employees who violate safety regulations should not be reprimanded, except in cases where companies believe the employee should be dismissed for unsafe behavior.

192. Broughton, Anne Claire. "Demolition contractors discuss lead standard." Recycling Today (Cleveland, Ohio: 1992) May 1994: 38+.

The lead in construction standard introduced by the OSHA poses challenges to the construction and demolition industry. The article asserts that in order to minimize worker's exposure to lead, certain workplace practices need to be implemented which require the enforcement of compliance rules, enforcement procedures, and some mechanism to verify employee compliance.

193. Bye, A. Musculoskeletal disorders among employees in building and construction industry. [Norwegian]. Tidsskrift For Den Norske Laegeforening. 1991; 111(3): 337-40.

Over 2,500 construction workers were surveyed to determine where the majority of their musculoskeletal strain resided within the four regions of the body. Results indicated that there was a direct link between the number of complaints of pain and age. Carpenters between the ages of 30 and 40 were found to have a significant amount of musculoskeletal disorders in their arms and hands than office workers in the same age group. The author claims that 90% of these disorders can be attributed to working conditions.

194. Castelli, Jim. "A digest of developments in occupational safety and health." Safety & Health March 1994: 189.

Multiple reports on occupational safety and health developments. Study on workers' understanding of safety materials in the workplace. Examines leading causes of construction workers' deaths.

195. Concrete worker skill standards ([microform].) Laborers-AGC Education and Training Fund; U.S. Dept. of Education, Office of Educational Research and Improvement, Educational Resources Information Center, 1996.

This document provides information to prospective construction workers about the type of work they want to pursue in the industry. It discusses the skills and abilities needed for the various occupations in construction.

196. Construction Industry Digest. United States Department of Labor, OSHA 2202 1998(Revised). Washington, D.C.

This booklet is meant to assist employers, supervisors and safety and health personnel in their efforts toward achieving compliance with OSHA standards in the workplace. Discussion of the standards that are most frequently overlooked by the employer along with standards covering particularly hazardous situations such as abrasive grinding, aerial lifts, chains, cranes and derricks, lead, noise and scaffolds.

197. Construction industry: OSHA safety and health standards (29 CFR 1926/1910). Rev. 1987. Washington, D.C.: U.S. Dept. of Labor, Occupational Safety and Health Administration: For sale by the Supt. of Doc., U.S. G.P.O., 1987.

This is a compilation of the OSHA regulations applicable to construction in a single volume.

198. Construction Lost-time Injuries. The U.S. Bureau of Reclamation Database 1985-1989. United States Department of Labor OSHA 1993 Office of Construction and Engineering.

The Department of the Interior presents an analysis of data on accident investigation reports for 614 lost-time contractor construction injuries and fatalities from 1985 through 1989. Variables considered in the analysis were the type occupation in the construction industry and the worker's age. Charts and descriptive statistics are presented.

199. "Controlling Injury Hazards in Construction." Occupational Medicine: State of the Art Reviews 10(2): 1995: 395-405.

This article addresses measures of prevention for specific types of injuries in the construction industry and looks at the characteristics of employers and workers associated with injury rates. Management commitment, measurement of results, inclusion of safety issues in contracts, and cost effectiveness were stressed. The authors conclude that the features that result in lower injury rates are management commitment, employee involvement, work site analysis, hazard control, and safety and health training.

200. Cook, T.; Zimmerman, C. "A symptom and job factor survey of unionized construction workers." S. Kumar. Advances in Industrial Ergonomics and Safety IV. London: Taylor & Francis: 1992: 201-206.

Over 500 unionized construction workers participated in a two part survey. The survey was comprised of a job factor analysis and symptom survey. Prevailing areas of discomfort were found to be located in the lower back, neck, wrist/hand, knee and ankle/foot. Factors that contributed to these infirmities were prolonged positions, awkward positions, uncomfortable conditions, very hard work, and reaching overhead.

201. Crushed stone and sand and gravel in the Construction Industry. U.S. Dept. of the Interior, Bureau of Mines, 1989.

Material not available.

202. Cruickshank, J.S. "Construction industry safety: a bad rap and its consequences." Professional Safety March 1994: 33-34.

The writer cites statistics in defense of the safety practices of the construction industry. A 1991 Bureau of Labor Statistics survey revealed that the construction industry's 4.7 million employees had an OSHA incidence rate of 13.0. These statistics may help to dispel the myth surrounding the construction industry's alleged apathy toward safety issues.

203. de la Garza, Jesus M., Hancher, Donn E. and Decker, Lisa. "Analysis of safety indicators in construction." Journal of Construction Engineering and Management July/August 1998: 312-14.

A study sponsored by the Construction Industry Institute on workers' compensation practices is addressed. Participants in the survey were contractors, construction workers, owners, and insurance professionals. Four indicators of contractors' safety performance were analyzed: experience modification rate, recordable incident rate, lost time incident rate, and workers' compensation claims frequency indicator.

204. "Demolition workers and asbestos." Occupational Hazards March 1995: 25.

This report discusses that building trades workers involved in demolition work have been exposed to high levels of asbestos, according to the Building and Construction Trades Department of AFL-CIO. Allegations that some employers are violating federal standards and exposing workers to asbestos.

205. Dias, L.M. Alves and Coble, R.J. (Editors). Implementation of Safety and Health on Construction Sites. A.A. Balkema/Rotterdam/ Brookfield 1996.

Note: Although this publication is based out of Europe, it does have universal application and provide practical information. American perspectives are provided on certain topics.

Manual produced by the European Construction Institute entitled, 'Total Project Management of Construction Safety, Health and Environment (SHE). It provides a framework for the development of proactive management of SHE, and to describe a systematic approach to construction SHE management which promotes continuing improvement in SHE performance in all construction activities. Topics include: safety and health regulations and statistics; planning and controlling; social and human issues on construction safety; technological innovations in construction safety; and safety training and education. Charts and statistics present. Highly detailed and comprehensive.

206. "Differences in Occupational Mortality from Pleural Cancer, Peritoneal Cancer, and Asbestos." Occupational and Environmental Medicine, 52(11):775-777, 1995.

An evaluation of asbestos related diseases in occupations in the construction and engineering industries was conducted. The authors claim that the exposure response relations for diseases related to asbestos are not all linear, and that the risk of pleural mesothelioma may be underestimated by simple conclusions drawn from observations in groups with heavy exposure.

207. “Do construction workers fall through the cracks?” Safety & Health May 1997: 59-61.

Discussion of the lack of medical monitoring of construction workers because of their transient nature. Problems of the industry are discussed along with the need for a centralized database that track workers’ health and hazard exposure level longitudinally.

208. “Electrical safety.” Aberdeen’s Concrete Construction March 1995: 249.

This article provides advice on preventing accidents involving electricity on the jobsite. A list of 9 jobsite electrical tips, instructions on ground fault circuit interrupters, and guidelines for the prevention of electrocution are provided.

209. Electrical Standards for Construction. United States Department of Labor, OSHA 3097 1989 (Rev.)

OSHA’s standards for electrical construction. Covers examination, installation and use of equipment, guarding, overcurrent protection, and grounding of equipment.

210. Endres, G.W.R. Radiation does to construction workers at operating nuclear power plants. The Commission; Available from National Technical Information Service, 1978.

Material not available.

211. “Ergonomics: Applying What We Know.” Occupational Medicine: State of the Art Reviews, 10(2): 1995: 385-394.

Discussion of the application of ergonomics to the construction industry. Repetitive movements, abnormal postures, physical pressure, machinery vibrations, and the environmental factors of extreme temperatures were found to be risk factors for musculoskeletal disorders. Author concludes that the education of all parties, regulations and communication on safety applications can contribute to the control of work-related musculoskeletal disorders.

212. “Ergonomic hazards.” Modern Materials Handling, June 1996: 9.

The Department of Labor and Center for Substance Abuse Prevention cites a report on industry classifications that have the highest number of ergonomic hazards. Exposure of construction

workers to hazards is discussed. Implementation of variety of health and safety intervention programs

213. Everett, J. Ergonomic analysis of construction tasks for risk factors for overexertion injuries. NIOSH Symposium on Efforts to Prevent Injury and Disease Among Construction Workers. 1994 Jul 21;

The most prevalent injury known in the construction industry is due to overexertion which accounts for 24% of all injuries. NIOSH claims that these injuries are built into the tools and work methods given to the worker. NIOSH's objective of this project is to formulate a catalog of all construction tasks and examine the steps of the jobs that are planned for the construction worker. The intent is to be able to analyze and identify the certain construction tasks that subject workers to a high risk of injury.

214. "Fall protection." Occupational Hazards January 1998: 56-58.

This article discusses the standard OSHA set, which requires the use of full body harnesses as part of personal fall arrest systems for construction employees. Implementation of the standard is mentioned and what have fall protection efforts achieved.

215. Findley, Michael E. and Timmons, Timothy (Neal). "Team Safety in construction: tapping into underground knowledge." Professional Safety July 1995: 23-25.

This article discusses how construction employees were asked to design and implement a safety program for a construction firm.

216. Fisher, Timothy S. "Top OSHA violations... and how to avoid them." Aberdeen's Concrete Construction January 1995: 30-32.

The top 8 OSHA physical hazards in construction are listed along with advice on how to avoid them. Accidents can result in lost work time, lost revenue, and sometimes fatalities. The standard that requires the use of head protection was the most frequently cited.

217. Gambatese, John A. "Liability in designing for construction worker safety." Journal of Architectural Engineering: September 1998: 107-112.

This is a presentation on liability in designing for construction worker safety. Failure of designers to use new safety knowledge may increase their exposure to liability. Various court cases involving safety standards and design professionals are used as examples.

218. Gambatese, John Anthony. Addressing Construction Worker Safety in the Project Design. University of Washington, 1996.

The purpose of this paper examines the practices that can be utilized by the project designer in addressing safe work conditions for construction workers. A computer program entitled 'Design for Construction Safety Toolbox' was designed to aid project designers in recognizing safety hazards in the projects.

219. Gambatese, John A.; Hinze, Jimmie W.; Haas, Carl T. "Tool to design for construction worker safety." Journal of Architectural Engineering. March 1997: 32-41.

The Construction Industry Institute conducted a study to identify practices that can prevent construction site hazards. The purpose was to increase participation of project designers in the role of safety on the worksite. The study resulted in a computer program entitled, "Design for Construction Safety Toolbox" which aids designers in identifying potential hazards on a project design.

220. Ground-Fault Protection Construction Sites, U.S. Department of Labor, OSHA 1998 (Revised).

This booklet presents OSHA's electrical standard for construction, title 29 Code of Federal Regulations Part 1926, Subpart K, contains the requirements for ground fault circuit interrupters (GFCIs) and for assured equipment grounding conductor programs which are included in the Appendix of the booklet. The purpose of this publication is to assist employers and employees responsible for electrical equipment provide protection against 120-volt electrical hazards on the construction site. The most common hazard is ground fault electrical shock.

221. A guide to scaffold use in the construction industry. U.S. Dept. of Labor, Occupational Safety and Health Administration, 1998.

Material not available.

222. Gunn, Michael B. "Degrees of protection for asphalt workers on city road crews." Occupational Health & Safety May 1997: 57-59.

Safety regulation techniques are given to protect the health of asphalt workers. Information on OSHA and NIOSH provided.

223. Hazard Fact Sheet: Ergonomics in Construction, Washington, D.C.: Occupational Health Foundation; 1992.

A four page summary listing ergonomic hazards associated with different types of construction work was put out by the foundation. Discussion of ways of making work more palatable and that change needs to come from the worker and the contractor.

224. Hinze, Jimmie; Bren, Katherine. "Identifying OSHA paragraphs of particular interest." Journal of Construction Engineering and Management. March 1996: 98-100.

The authors identify paragraphs contained in the OSHA regulations that are of particular interest to employers of construction workers.

225. Hislop, Richard D. "Developing a safety incentive program." Professional Safety April 1993: 20-25.

The author asserts that safety incentive programs in construction should be aligned with the organization's business philosophy. He states that employees should take responsibility in the workplace.

226. Hislop, Richard D. "Who is responsible for construction site safety?" Professional Safety February 1998: 26-28.

Note: *Professional-Safety Abstract*. Responsibility for construction site safety can fall on many people, including the owner, construction manager, general contractor, or subcontractor. Construction site safety is a philosophy that identifies and eliminates unsafe work conditions and discourages work practices that place people at risk. The role of each person in the organization hierarchy of a safe construction environment, with emphasis on the responsibility for hazard identification and correction, is discussed.

227. Holmstrom, E. and Lindell, J.; Moritz, U. "Low back and neck/shoulder pain in construction workers: occupational workload and psychosocial risk factors. Part 2: Relationship to neck and shoulder pain." Spine 1992; 17(6): 672-677.

A sample of over 1700 construction workers were examined for rate of neck and shoulder pain. The study included looking at the pain's relationship to physical and psychosocial factors. Psychosocial factors include psychosomatic and psychic symptoms, stress and job satisfaction. After one year of observations, shoulder pain that was attributed by work that included lifting the hands above the head was found to be prevalent. The psychosocial factors were found to also contribute to neck and shoulder pain.

228. Huang, X. and Bernold, L.E. "CAD-integrated excavation and pipe laying." Journal of Construction Engineering & Management September 1997: 318-324.

Presents the development and testing of a computer-aided design (CAD) integrated trenching and pipe-laying system. Dangerous hazards that excavation represents to construction workers; Information on the design of new technologies; What the successful testing of the first prototype signifies; Summary of findings and concluding remarks.

229. Hunt, Bernard Joseph Patrick. Development of a Research Program for Scaffolding Standards. University of Kansas, 1908, DENGR

Since a major of construction worker casualties can be attributed to scaffolding, the need was to identify scaffolding improvement to reduce related injuries and losses. The purpose of this paper is to present a newly developed analytically based scaffolding research plan. Final conclusions and recommendations are then presented as to the direction of future scaffolding research.

230. "Industrial." Journal of Safety Research, Spring 1997: 65.

This article presents an abstract of 'Proportionate Mortality Among Construction Laborers,' by F. Stern, P. Schulte, M.H. Sweeney, M. Fingerhut, P. Vossen, G. Burkhardt and M. F. Kornak, which appeared in the 'American Journal of Industrial Medicine.' Use of proportionate mortality ratio (PMR) and proportionate cancer mortality ration (PCMR) in the study; Results of examination involving 20 mesothelioma deaths.

231. Injuries to Construction Laborers. United States Department of Labor, Bureau of Labor Statistics, March 1986 Bulletin 2252.

This is a survey on hazards of work. Construction workers were asked to describe their activity, tools or equipment used, and location at the time of the accident. Other factors studied were the number of days lost from work as a result of the injury, length of hospitalization required, nature of the injury and part of the body injured. Amount of training, worksite conditions, and other factors are looked at as catalysts for injuries. Graphs and descriptive statistics are present.

232. Kellher, Jim. "A builder's real-life first-aid kit." Fine Homebuilding August/September 1998: 108-111.

The author gives a personal account of injuries experienced as a carpenter and, based on this experience, lists essential supplies for a first-aid kit. A sidebar offers some further safety suggestions.

233. Koningsveld, Ernst A. and van der Molen, Henk F. "History and future of ergonomics in building and construction." Ergonomics October 1997: 1025-1034.

This article presents an overview of the progress in the field of ergonomics on behalf of the building and construction industry. Building and construction industry characteristics in relation to working conditions are given along with developments in the industry are described in view of perspectives for a better future.

234. Korman, Richard and Reinain, Peter. "Signs of change." ENR 23 June 1997: 28-30+.

The authors of this article address the efforts of construction contractors to save lives, injuries, and money by providing more attention to safety at worksites. Discussion of companies practicing zero tolerance regarding safety violations. Safety training is cited as being the principal factor in overall improvement.

235. Krizan, William G. and Winston, Sherie. "Craft Work is tough on bodies." ENR, 27 May 1996.

This article examines survey results stating that the majority of union construction workers surveyed suffered some form of occupational musculoskeletal aches and pains. Discussion of anatomic distribution of pain and percentage of cases with symptoms are addressed. Prevention strategies are also mentioned.

236. Kuhar, Mark S. "Help Needed for Hearing Protection?" Occupational Hazards, January 1996: 87-89.

This article focuses on OSHA's failure to set better standards on hearing protection in the workplace. Discussion on the concerns on the little protection given to construction workers. Factors that contribute to hearing loss are also addressed.

237. "Laborers' higher mortality." ENR 31 October 1994: 29.

Researchers at NIOSH in conjunction with the Laborers' Health and Safety Fund have compared death rates for laborers' union members to those for the general population from 1985 to 1988.

238. Lead abatement worker skill standards. Laborers-AGC Education and Training Fund; U.S. Dept. of Education, Office of Educational Research and Improvement, Educational Resources Information Center, 1997.

Material not available.

239. Legris, Michel and Poulin, Pierre. "Noise exposure profile among heavy equipment operators, associated laborers, and crane operators." American Industrial Hygiene Association Journal November 1998: 774-78.

This article discusses a study conducted in 1987 and 1988 quantifying exposure to noise among heavy equipment operators, associated laborers, and crane operators. Research found that main sources of noise to which heavy equipment operators are exposed are vehicle engines and the muffler exhaust system located near the operator. Crane operators' noise exposure is addressed along with types of tasks performed by laborers exposing them to noise hazards.

240. Lehman, B.J.; Gage, Howard. "How much is safety really worth? Countering a false hypothesis." Professional Safety May 1995: 37-40.

The theory that people compensate for increased safety by taking greater risks is demonstrated to have neither an experimental nor an analytical scientific basis. Manufacturers of construction cranes have used this perverse compensation theory as the principle reason why their machines do not include devices that reduce the occurrence of electrocutions. Better rules for setting up of the crane operator's workplace are required that would include better equipment design.

241. Ludewig, Paula Marie. Alterations in Shoulder Kinematics and Associated Muscle Activity in Persons with Shoulder Impingement Symptoms. The University of Iowa, 1998. Dissertation.

The purpose of this study was to develop an analysis of scapular and humeral kinematics and associated scapulothoracic muscle activity for construction workers who engage in overhead work. Variables included in the study were age, years in the trade, and exposure to overhead work. The author suggests that further investigation into this area is warranted.

242. Lusk, Sally L., Kerr, Madeleine J. and Kauffman, Sirkka A. "Use of hearing protection and perceptions of noise exposure and hearing loss among construction workers." American Industrial Hygiene Association Journal. July 1998: 466-470.

The purpose of this research was to examine construction workers' use of hearing protection devices and determine their perceptions of noise exposure and hearing loss. Occupations that were studied were carpenters, plumbers/pipe fitters and operating engineers. Conclusions of the study were that improvement is needed in hearing protection devices for all three groups.

243. Martens, Mary. "How to Reduce Vibration." Safety & Health May 1996: 54-56.

This article reports that workers in the United States in manufacturing construction and transportation industries, who use vibrating tools and vehicles may become weak, prone to be absent from work, or unable to continue in their field of work. Ways to protect workers from the effects of vibration are discussed.

244. Model Specifications for the Protection of Workers from Lead on Steel Structures. The Center to Protect Workers' Rights, Washington, DC, Report No. OSH-93, 18 pp., 1993.

Specifications were presented in this report to prevent construction workers who work on steel structures from being exposed to lead. Specific tasks of bridge repainting, rehabilitation and demolition projects were examined pertaining to lead exposure. Model specifications addressed the three phases of the prebid phase, the preconstruction phase, and the construction phase. Requirements pertaining to disclosure of possible lead exposure during the project were also a point of discussion.

245. Moir, Susan. "Dust can be deadly." ENR 17 Nov. 1997.

The author discusses the effects of crystalline silica dust on construction workers. Discussion of the International Agency for Research on Cancer reclassifying crystalline silica as a cause of cancer.

246. Nelson, Emmitt J. "Remarkable zero-injury safety performance." Professional Safety January 1996: 22-25.

Zero-injury goals are being achieved by many construction firms which is sending a message that injury on the job is unacceptable. The author asserts that such a philosophy can be felt through increased profits and, frequently, an improvement in employee performance. Accident statistics and data on projects studied by the construction industry's Zero Accidents Task Force are provided.

247. Nickolaus, J.R. Codes and standards and other guidance cited in regulatory documents ([microform]). Division of Inspection and Support Programs, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission: Supt. of Docs., U.S. G.P.O. [distributor].

Material not available.

248. NIOSH. Request for assistance in preventing electrocutions during work with scaffolds near overhead power lines. U.S. Dept. of Health and Human Services, Public Health Services, Centers for Disease Control, National Institute for Occupational Safety and Health; 1991.

Material not available.

249. Nwaelele, O. Dan. "Prudent owners take proactive approach." Professional Safety April 1996: 27.

The focus of this article is on the injury rate of employees in the construction industry and its corrupt safety practices in the United States. The article delves into the site's liability to injured employees and views from the book 'The Book of Beliefs and Opinions' on management responsibility are given. Other views on employees' safety are also discussed.

250. Occupational Exposure to Cadmium in the Construction Industry. United States Department of Labor. OSHA 1993.

OSHA estimates that approximately 70,000 employees in the Construction Industry are potentially exposed to cadmium. Separate standard for construction industry in which regulation applies to all occupations within the industry.

251. Ore, Timothy and Casini, Virgil. "Electrical Fatalities among U.S. construction workers." Journal of Occupational & Environmental Medicine June 1996: 587.

This report profiles the workers most at risk of electrical injury within the construction industry. Most likely time of injury is discussed. Electrical safety training for workers and supervisors is discussed.

252. "OSHA opens rulemaking on new fall protection." Professional Safety February 1996: 12.

This article reports on OSHA's plans to initiate rules on fall protection for residential construction workers. Interim compliance guidelines are discussed.

253. "Personal protective equipment." Aberdeen's Concrete Construction January 1995: 11.

A technical note on personal protective equipment is presented. The personal protective measures are listed under the categories of head protection, hand arm protection, cement burns, hearing protection, eye and face protection, and foot and leg protection.

254. Peyton, Robert X. and Rubio, Toni C. Construction Safety Practices and Principles. Van Nostrand Reinhold New York 1991.

This book is written from a management or employer's perspective, concentrating on what works on the job site, dealing with what is necessary and practical. Chapters are devoted to: The Need for a More Proactive Construction Industry; Safety and Health Management; The Worker

Component of Accident Causation; Dealing with OSHA; Selling Safety; The Hazard Communication Standard; and Drugs in the Workplace.

255. Piacitelli, Greg M., Whelan, Elizabeth A. and Sieber, W. Karl. "Elevated lead contamination in homes of construction workers." American Industrial Hygiene Association Journal. June 1997: 447-454.

NIOSH investigators studies lead exposures among construction worker families with no know lead exposures. This article discusses lead contamination levels on hands and interior surfaces of homes and automobiles driven by the lead-exposed workers. Results indicated that along with poor hygiene and construction workers' occupational exposures were the main agents of lead exposure in their homes.

256. Pollack, Earl S. and Franklin, Gary M.; et al. "Risk of job-related injury among construction laborers with a diagnosis of substance abuse." Journal of Occupational & Environmental Medicine June 1998: 573-577.

This article investigates the correlation between substance abuse among construction workers and the increased risk of work-related injuries. It discusses the risk factors that are attributable to work-related injuries. Statistical analysis on drug use among workers is given. Charts present.

257. "Preventing worker aches and pains." Aberdeen's Concrete Construction. June 1998: 507+.

Note: *Aberdeen's abstract*. The writer discusses work-related musculoskeletal disorders (WMSDs). According to the U.S. Labor Department's Bureau of Labor Statistics, WMSDs are the leading cause of lost time due to injuries and ill health in almost every industry in the U.S. A checklist is provided that gives guidelines on activities and habits that may lead to worker aches and pains.

258. Anonymous. "Protect your knees." Bygghalsans Broshcyr. 1983; 10(1): 9 pages.

Note: *NIOSH Abstract*. Knee pain and protection are reviewed. An unprotected knee resting against a hard surface is not capable of supporting the weight of the body for any extended period of time. The contact surface is very small and the force per unit surface area becomes very large resulting in injuries to the cartilage in the knee joint. The incidences of knee pain

among selected occupational groups are: floor layers, 26 percent; sheet metal workers, 17 percent; refrigeration installers, 16 percent; pipe fitters, 15 percent; electricians, 14 percent; roofers, masons, and carpenters, 13 percent; painters and concrete workers, 12.5 percent; crane operators, machine operators, stone workers, and scaffold builders, 12 percent; glass workers and insulation installers, 11 percent; foreman and drivers, 10 percent; and clerks, 5 percent. Other causes of knee pain include aging and injuries due to sports activities. Knee protection is summarized. Anyone who works in a kneeling position should use knee pads. The pads help distribute the body weight over a larger surface area, reducing the risk of knee pain.

259. Rautiala, Sirpa, Reponen, Tiina and Nevalainen, Aino. "Control of exposure to airborne viable microorganisms during remediation of moldy buildings; report of three case studies." American Industrial Hygiene Association Journal July 1998: 455-460.

This article discusses three different techniques for reducing exposure to microorganisms that were tested during remediation of moldy buildings. Construction zones during remediation are found to have a higher concentration of microorganisms than before it. The study showed that microorganisms can be reduced through dusting methods during demolition work. The authors conclude that construction workers need to be personally protected even with control techniques

260. "Reinforcing Safety." Aberdeen's Concrete Construction. July 1995: 589.

A technical note is presented addressing the issue of reinforcing safety. The topics of the note include: handling reinforcing steel and wire mesh, fall protection when placing steel reinforcement, and protecting workers from protruding reinforcing bars. The purpose of the note is to assist workers in on-the-job training.

261. "Respiratory Disease Risks in the Construction Industry." Occupational Medicine: State of the Art Reviews, 10(2):313-324, 1995.

This article reviews the risk of developing respiratory diseases due to the hazardous agents that construction workers expose themselves to on the jobsite. Specific diseases are enumerated in the article along with discussion of site specific exposures leading to the ailments.

262. Request for assistance in preventing lead poisoning in construction workers ([microform].) Rev. ed. Cincinnati, OH: U.S. Dept. of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, 1995.

Material not available.

263. Request for assistance in preventing silicosis and deaths in construction workers. Cincinnati, Ohio: U.S. Dept. of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, 1996.

Material not available.

264. Robbins, Lisa. "Build a safe work site for every size, shape and sex." Safety & Health April 1997: 52-56.

Calls for the implementation of a safe work site for U.S. construction workers. Issues addressed include: reversing the psychological implication of asking for assistance, complaints concerning the inadequacy of bathrooms in the worksite; implications of sexual harassment in the worksite; and the necessity of obtaining the management's commitment to ensure safety in the workplace. INSETS: Surveys say women workers want improvements.

265. Safer construction workplace evident during the early 1990s. U.S. Department of Labor, Bureau of Labor Statistics, 1995, Washington, D.C.

Report that shows that construction safety has improved in the early 1990s. Overexertion was found to be the prevailing factor for most injuries incurred on the job.

266. Safety and health standards for the construction industry ([microform].) U.S. Dept. of Labor, Occupational Safety and Health Administration, 1996.

Material not available.

267. Schneider, S. Ergonomic problems of construction workers and their solutions. NIOSH Symposium on Efforts to Prevent Injury and Disease Among Construction Workers. 1994 Jul 21:

The purpose of this study was to determine what ergonomic problems of construction workers reside in the industry and develop a system for quantifying ergonomic stresses in construction, and develop solutions to these problems through various intervention strategies.. The methodology used by the authors was observations and field work. The problem was defined through observation of work-related musculoskeletal disorders (WMD) through a literature review, hospital emergency room records, occupational health clinics and symptom surveys of workers.

268. Selected construction regulations for the home building industry. U.S. Dept. of Labor, Occupational Safety and Health Administration, 1997.

Material not available.

269. “A Shocking Construction Study.” Occupational Hazards August 1996: 19-21.

This report discusses the results of a study which examined construction workers’ risk of being electrocuted at work. Enumerates the number of workers electrocuted between 1980 and 1991.

270. Skill standards for open cut pipe laying. Laborers-AGC Education and Training Fund; U.S. Department of Education, Office of Educational Research and Improvement, Educational Resources Information Center, 1997.

This book identifies the skill standards for utility construction. It presents a general description of pipe laying and the utility construction process. The book begins with a look at the benefits of skill standards in the construction industry and then delves into the specifics of the skill standards for open cut pipe laying. Attention to workplace skills and standards is also given.

271. Smith, S.L. “Construction Laborers at Risk.” Occupational Hazards November 1997: 25.

This report notes that 26% of the construction fatalities in the U.S. are laborers. Female laborers and causes of deaths are addressed. Data from 1980-1992 is present.

272. Smith, S.L. “SOS for Silicosis.” Occupational Hazards October 1996: 67.

This report discusses the respirable silica exposure which has increase among workers and other workers’ risk of developing silicosis. Symptoms of silicosis are identified along with advice from the National Institute of Occupational Safety and Health (NIOSH) to workers.

273. Smith, S.L. “Health concern invades homes.” Occupational Hazards September 1997: 26.

Reports on the safety and health of occupational lead exposures on the homes and families of a group of construction workers. Information from the National Institute for Occupational Safety and Health on this issue; Claims made by workers.

274. Smith, S.L. "Tips to Reduce Construction Strains." Occupational Hazards July 1998: 36.

Information relating to musculoskeletal injuries in construction workers is presented. Annual cost of workers' compensation claims is given. Discussion of the book, 'Reducing Sprains and Strains in Construction Through Worker Participation,' by the Center to Protect Workers' Rights in Washington.

275. Smith, S.L. "Construction Workers' Children at Risk." Occupational Hazards October 1997: 65.

This article reports on a study which found children of lead exposed construction workers, are six times more likely to have blood lead levels over the recommended limit for children. Recommendations for the prevention of home contamination is provided.

276. Spielholz, Peregrin, Wiker, Steven F. and Silverstein, Barbara. "An ergonomic characterization of work in concrete form construction." American Industrial Hygiene Association Journal. September 1998: 629-635.

This article discusses the discovery of concrete formwork construction as the greatest ergonomic risk in unionized carpentry by both managers and unionized carpenters. Ergonomic risks were identified and characterized. Results show that carpenters spend 40% of the day in a forward posture and over one-third of the day working at or below knee level. Conclusions were that carpenters are prime targets for significant hazards in concrete form construction.

277. Stairways and ladders. U.S. Department of Labor, Occupational Safety and Health Administration, 1997.

Material not available.

278. Steinberg, Jacques. "Changes Made to Prevent Deaths at School Building Sites." New York Times, 2 June 1999: B3.

Discusses the steps taken by the leaders of the New York City School Construction Authority to prevent accidents at the construction sites. Details on the death of a 16-year-old girl struck on the case; Person responsible for the girl's death.

279. "Tread carefully." Aberdeen's Concrete Construction July 1998: 581.

This article discusses safeguarding against toe and foot injuries. Discussion of donning protective footwear which should be in compliance with ANSI Z41-1991. Listing of types of hazards for toes and feet is discussed accompanied by recommended footwear for protection.

280. Underwood, J. Kent and Langton, David G. "Signs of safety changes." ENR 21 July 1997: 3.

Safety performance improvements in the construction industry presented by Korman and Reinain are discussed. The author addresses the work performed by the Construction Industry Institute and the Construction Industry Safety Excellence Awards program. Langton discusses the philosophy of zero accident shared by many construction firms.

281. Underground Construction (Tunneling). United States Department of Labor, OSHA 3115 1996 (Revised).

This standard applies to the construction of underground tunnels, shafts, chambers, and passageways. The standard gives employers flexibility to select from a variety of methods of controlling workplace hazards in underground construction. Listing of states with approved plans pertaining to underground construction.

282. "Unguarded regulators pose fire risk." Safety & Health March 1997: 14.

This a report put out by OSHA claiming that propane cylinders with unguarded regulators may pose a hazard to construction workers. The article goes into detail of a worker being killed by a broken propane cylinder. In addition, features of the regulations set by OSHA on the use of liquefied petroleum gas containers and equipment for construction sites is addressed.

283. Vernon, L. Skip. "OSHA lead in construction compliance directive: respiratory protection." Materials Performance August 1994: 43-44.

A discussion on the OSHA regulation 29 CFR 1926.62 concerning respiratory protection from lead exposure is presented.

284. Whelan, Elizabeth A. and Piacitelli, Greg M. "Elevated blood lead levels in children of construction workers." American Journal of Public Health, August 199~: 1352-1356.

This study presents an examination of whether children of lead exposed construction workers had higher blood levels than neighborhood control children. The article looks at the study methodology and the percent of workers' children with blood lead levels at or over the Centers for Disease Control and Prevention action level of .48 umo/L(10ug/dL).

285. Work zone safety. [Washington, D.C.]: U.S. Dept. of Transportation, Federal Highway Administration: SHRP, 1997.

Material not available.

WORKSITE ACCIDENTS

286. Benti, Kweku Kwesah. A Model Approach for Predicting Commercial Construction Site Accidents (Accident Prediction, Occupational Safety). University of Florida, 1990.

The purpose of this study was to predict construction site accidents through a model approach. Factor identification is examined and data collection is developed.

287. Construction accidents: the workers' compensation data base 1985-1988. [Washington, D.C.?] :U.S. Dept. of Labor, Occupational Safety and Health Administration, Office of Construction and Engineering, [1992].

This report presents the analysis of worker compensation claims data for over 350,000 construction accidents occurring in 10 states for the period 1985 to 1988. The data was obtained from the Supplementary Data System established by the Bureau of Labor Statistics. The analysis considers the variation of the number of accidents and accident rate over the 4 year period and the influence of factors such as geography, individual groups, construction trade, worker age, etc. on the accident statistics. Charts and graphs are present.

288. Doyle, Bill. "25 stories high, all senses on alert." New York Times(Late New York Edition). 25 July 1998: A13.

The article addresses the hidden causes of disastrous construction accidents. Issues of unsafe acts or unsafe practices. The article discusses the prevention of these unsafe practices since they tend to be systemic.

289. "Fatalities in the Construction Industry in the United States, 1992 and 1993." American Journal of Industrial Medicine, 30(3):325-330, 1996.

Examination of construction industry fatalities in the United States for 1992 and 1993. Fatality rates were computed at 14.2 and 13.3 per 100,000 person years, respectively, for 1992 and 1993. Different trades throughout the industry were examined for fatality rates.

290. Gillen, Marion E. Nonfatal Falls in Construction Workers: Predictors of Injury Severity (Hazard Identification, Safety Climate), University of California, San Francisco, 1996.

The purpose of this study was to evaluate injury severity of construction workers who sustained nonfatal falls at work. A full range of trades were represented in the study with no significant differences in means among them. The author asserts that nonfatal falls among construction workers are far too common and there is a dire need for prevention in this area.

291. Hinze, Jimmie. Indirect Costs of Construction Accidents: a report to the CII, the University of Washington, Seattle 1991, Seattle Washington.

Through the participation of 185 projects under construction by more than 100 firms, a study was conducted to determine the indirect costs of accidents on the construction site. Participants were asked to document all known costs associated with each worker injury that occurred during a certain period of time. Results indicated that indirect costs are significant enough to compel construction managers to reduce the rate of worker injuries. Charts, graphs, and descriptive statistics are present.

292. "Homicides surprise industry." ENR 14 Oct. 1996: 12.

NIOSH study indicates that 305 construction workers were murdered between 1980 and 1992. Figures show that, on average, there is a construction homicide every two weeks. Personal confrontation has found to be the cause of on-the-job violence with union workers to be more likely involved.

293. Personick, Martin E. "New Data Highlight Severity of Construction Falls." Compensation & Working Conditions, September 1996: 54-57.

This article focuses on construction falls and its resulting deaths or disability to workers in the United States. Enumeration of the data of the different fatal falls; Variations in the risk for construction workers depending upon occupations.

294. Powers, Mary Buckner. "Insurance: Costs slip as worker comp plans grip." ENR 30 Sept. 1996: 78-80.

This article reports on the insurance costs for construction workers in the United States. Insurance companies' willingness to take risks even in unprofitable states; Suppression of workers' compensation for political reasons.

295. Schmidt, John R. Quantifying the Impact of Construction Accidents Using Predictive Models (Safety, Worker Compensation, Insurance). State University of New York at Buffalo, 1997.

This paper looks at the effectiveness of statistical modeling in predicting the impact of construction accidents. Linear regression modeling is examined and the introduction of classification and regression trees are presented. Paper may be useful to insurance providers, contractors, safety professionals, construction engineers and managers, and design engineers.

296. "Those who die on the job are not just statistics." ENR 15 Sept. 1997: 118.

This article focuses on the injury and illness rate for construction workers in the U.S. from 1990 to 1995. Topics addressed are crane accidents and the significance of safety programs.

297. "U.S. crane accidents claim 502 lives." Aberdeen's Concrete Construction February 1998: 243.

Between 1984 and 1994, 502 construction workers' lives were claimed in crane accidents. The main cause of death was electrocution when the cranes came in contact with power lines. Other causes are also discussed. The author makes recommendations to reduce crane-related deaths and injuries.

298. "Work Accidents Rise." Migration World Magazine, 1997, Vol.25 Issue 4, p.12.

This article presents statistics on the number of work-related deaths in 1996. Discussion of the increase among construction industry deaths.

299. Work zone accident data process: training guide. [Washington, D.C.]: Springfield, VA.: U.S. Dept. of Transportation, Federal Highway Administration; National Technical Information Service, 1985.

Material not available.

DRUG TESTING

300. Altayeb, Saleh Almubarak. Drug Testing and its Impact on the Incident Rate in the Construction Industry. Clemson University, 1990.

The purpose of this dissertation was to examine whether there is a decrease in incident rates after a drug testing policy is implemented, and if so, by how much. Numerous construction companies were surveyed and results showed that incident rates before and after a drug testing policy was implemented varied among the companies surveyed.

301. Coble, Richard Jon. An Empirical Investigation of Factors Related to the Construction Industry Drug-Free Workplace for General Contractors. University of Florida 1992.

This thesis examines the effective of communication in developing drug free workplace programs. The study interviewed over 200 ABC organizations. Research shows that the size of the construction firm plays a large role in its communication and awareness.

302. Korman, Richard. "Drug problems persist." ENR 13 May 1996: 10.

Results of survey indicates that construction supervisors, laborers, plumbers, and painters were ranked the highest for illicit drug and alcohol use.

303. Popp, Sharon Marie. Alcohol Use and Occupational Culture in the Skilled Building Trades: An Ethnographic Study (Substance Abuse). Wayne State University, 1996.

Utilizing an anthropological perspective, this study investigated the influence of occupational culture on drinking behavior in the skilled building trades. Longitudinal data was used and based on ethnographic models including direct observation and viewing. Results found that conforming to occupational drinking represented an attempt to increase job stability.

304. Smith, S.L. "Alcohol Abuse Doubles Injury Risk." Occupational Hazards August 1998:21.

This article addresses the rate of substance abuse among young construction workers subjecting them to higher risks of workplace injuries than non-abusers. Percentage of substance abuse relating to alcohol is discussed along with time-loss injury rate of the workers per full-time workers.

305. Smith, S.L. "The real deal: Drugs in the workplace." Occupational Hazards September 1998: 23.

General report published by the Department of Labor of workplace drug abuse citing the construction industry as being one of the highest rates of substance abuse in the United States among full-time employees.

TECHNOLOGY

306. Adrian, James J. Microcomputers in the Construction Industry. Prentice-Hall, Reston, VA 1985.

The purpose of this book is to provide people in the construction industry basic instruction on microcomputers. The book is written on the assumption that the reader has no prior computer experience. Chapters cover: computers and the construction industry, understanding computer hardware and software and writing application programs. Applies to all workers in the industry.

307. Everett, John G. Construction Automation: Basic Task Selection and Development of the Cranium. Massachusetts Institute of Technology 1991.

This dissertation reviews issues facing the construction industry and some of the strategies for addressing such issues. The primary focus is on the development of automation technology and its use for solving problems pertaining to productivity, safety, quality, and skilled labor shortages.

308. Steiger, Thomas Lock. Working Construction: Organization and Control of the Labor Process. University of Illinois Urbana-Champaign 1988.

This thesis asserts that the construction industry offers a case where technology does not differ greatly by organizational setting thereby permitting an examination of the effect of organizational structure somewhat independent of technological change on worker's control.

309. Tam, CM. "Use of the Internet to enhance construction communication: Total Information Transfer System." International Journal of Project Management April 1998: 107-109.

This article studies the potentials of information technology in improving coordination between construction project participants or facilitating information transfer in construction projects. A historical perspective of the Internet is given along with a cost and time effective analysis.

310. Technological Change and Its Labor Impact in Four Industries. U.S. Department of Labor. Bureau of Labor Statistics, Bulletin 2316, December 1988.

This bulletin appraises some of the major technological changes emerging among selected American industries and discusses the impact of these changes on productivity and labor over the next 5 to 10 years. Of these four topics, the first section is devoted to the construction industry. Areas of discussion include major technology changes in contract construction; employment trends in contract construction (1967-1986); and percent employment by occupation, total construction, 1986 and 2000.

311. Technology, Trade, and the U.S. Residential Construction Industry. Special Report. Washington D.C., Congress of the United States Office of Technology Assessment, 1986.

This report explores questions of whether the U.S. housing industry has taken adequate advantage of technologies that have improved quality and reduced costs in other industries or how will the domestic industry fare against competition from sophisticated foreign producers of housing components and production equipment. The report begins with the development of the U.S. housing construction industry leading into a discussion of the consequences of the shift to industrialized housing. The balance of the report addresses international housing and the government's role in facilitating new technology. Tables and statistics are present.

CONSTRUCTION WEBSITES

312. http://www.osha-slc.gov/Reg_Agenda_data/2226.html
OSHA Unified Agenda: 2226. Confined Spaces in Construction (Part 1926):
Preventing Suffocation/Explosions in Confined Spaces

Because the majority of construction workers are exposed to confined spaces on the worksite, OSHA has agreed to extend a standard industry to provide protection to the workers appropriate to their work environment.

313. <http://www.camerongrafx.com/ohs/articles/problem-solver/lymedis.html>
Protecting Workers from Lyme Disease

Information provided by the Center to Protect Workers' Rights (CPWR) pertaining to Lyme Disease. Discussion of construction workers being tested for it regularly since the nature of their work is outdoors. Information on where to obtain a the study of construction workers' risk for Lyme disease is provided.

314. <http://dothr.dot.gov/careers/construc.htm>
U.S. Department of Transportation
Departmental Office of Human Resource Management

This website provides information on the construction industry for anyone who is interested in entering the profession. It provides a description of the type of jobs within the industry, median income, necessary training and more.

315. <http://www.gwumc.edu/sphhs/occenv/construc.htm>
Research on Injuries in the Construction Industry

This website is devoted to learning more about the causes of nonfatal construction accidents. Since November 1990, medical records of over 3,400 construction workers who have been treated for work-related injuries have been reviewed. Summary tables are available characterizing the injuries along with numerous reports.

316. <http://www.uml.edu/Dept/WE/COHP/index.shtml>
Construction Occupational Health Project (COHP)

This purpose of this website is to educate viewers in obtaining a better understanding of occupational risks for construction workers and to develop strategies to alleviate these risks. Topics stressed in the COHP are ergonomics, industrial hygiene, epidemiology, and policy. Articles, reports, conference papers, etc. provided on the site.

317. <http://www.constructionguy.com/training.htm>
Construction Experts, Inc.

This website provides consulting services to construction contractors who are interested in providing in-house training programs to craft and supervisory workers. Topics include: craft training programs, comprehensive in-house training programs and various seminars.

318. http://www.emi.org/public_policy/clean_air_epa_ozone.htm
Public Policy: Clean Air—Economic...ed U.S. EPA Ozone and PM Standards

This article discussed the U.S. Environmental Protection Agency's efforts to tighten the reins on air quality standards and the restriction of federal highway funding if states are found to be non-compliant with these stringent standards. The author suggests that the implications of such action could be detrimental for the U.S. highway construction industry. The article is 13 pages in length and provides state by state statistics.

319. <http://www.educationindex.com/construct/>
Construction Trade Resources

This website serves as an information resource for the construction trades by providing a variety of other links pertaining to the construction industry. These links include: AEC Info, Building Industry Exchange, Building Online, Construction Monthly Online, and more.

320. <http://www.state.sd.us/dol/sdooh/costequipop.htm>
Construction Equipment Operators

This website provides information on construction equipment operators, their working conditions, and the training and qualifications required for the occupation. Career planning program links included.

321. <http://www.osha-slc.gov/SLTC/constructionconcrete/index.html>
Construction, Concrete & Masonry

This website provided by OSHA addresses construction, concrete and masonry, specifically. OSHA standards are listed in these fields.

322. <http://infoventures.com/osh/abs/cons0007.html>
Controlling Injury Hazards in Construction

Preventive strategies for specific types of injuries in construction and features of employers and workers associated with injury rates were reviewed.

323. <http://www.cmarket.net/edcharts/employ.htm>
Construction Employment

This website provides data from the monthly Current Employment Statistics (CES) survey. Categories of charts include: general economics, measures, housing, value of new construction put in place, construction employment, materials and equipment, and retail sales.

324. <http://www.thriveonline.com/health/Library/CAD/abstract4145.html>
Journal of Occupational Medicine 1990 Nov; 32(11):1099-103

Safety performance among union and nonunion workers in the construction industry. This website provides the study conducted by Dedobbeleer, N.; Champagne, F.; and German, P. regarding the differences of safety performance between union and non-union construction workers.

325. <http://www.ce.utexas.edu/prof/haas/onepagere/needsaccess.html>
Needs Assessment For Construction Automation

Investigators Richard Tucker and Carl Haas discuss the issue of construction automation and the necessary research and development for it.

326. <http://www.samhsa.gov/oas/wkplace/workpl30.htm>
An analysis of Worker Drug Use and Workplace Policies and Programs

This website provides information on illicit drug and alcohol abuse in the workplace by occupation. Table indicating the percentage of full-time workers reporting current drug and alcohol abuse by occupation is provided.

327. <http://www.cpwr.com/hazheat.html>
Hazard Alert: Heat Stress in Construction

This website provides information on the risks of heat stress during construction. Symptoms of heat stress are provided along with measures of prevention.

328. <http://purl.access.gpo.gov/GPO/LPS1496>
U.S. Census Bureau: Current Construction Reports

This website provides statistical information on the current housing industry along with other links to construction industry data such as the Census of the Construction Industry.

329. <http://www.cpwr.com/hazasbes.html>
Hazard Alert-Asbestos in Construction.

This website provides information on the hazards of asbestos in the construction industry. It addresses in which workers can protect themselves from asbestos contamination.

330. <http://www.osha-slc.gov/Silica/it69a.html>
Silicosis Fact Sheet for Construction Workers presented by OSHA.

This website is to be used as an informational guide regarding the problem of silicosis. Definition of silicosis is given along with ways to prevent the infirmity.

331. <http://www.cpwr.com/infocpwr.html>
Center to Protect Workers' Rights website.

This nonprofit organization is part of the Building and Construction Trades Department, AFL-CIO. Its main purpose is to concentrate on workers' safety and health as a means to better working conditions throughout the industry. Activities include labor-management cooperation, mainly in safety planning and training; medical surveillance of occupational disease, lost-time injuries, deaths, etc. The organization works in conjunction with NIOSH.

332. <http://www.lni.wa.gov/prevalingwage/scopes.htm>

Department of Labor and Industries – Prevailing Wage – Scopes of Work

This website provides a listing of construction worker occupations within the construction industry. The scope of each occupation is given along with a description of that occupation's job duties. Prevailing wage rates are also given for each occupation by region.

333. <http://www.abc.org>

ABC-Associated Builders and Contractors National Trade Association 1997.

This website acts as a reference guide to many aspects of the construction industry. Categories include: Protecting Members' Businesses, Finding Quality Contractors, Defending Members' Rights, Building a Safer Workplace, News Releases, Providing World Class Benefits, The Best Construction Projects of 1997 and more.

334. <http://www.cacontractorreferral.com/text/glossary.html>
Glossary of Construction Terms

Distributed by the National/California Contractor Referral and License Bureau, the glossary of construction terms offers brief, concise definitions on the basics of construction including tools, materials, etc. Topics include Carpentry, Concrete, Electrical, Heating and Air Conditioning, Painting, Plumbing, and Roofing, among others.

335. <http://www.cae.wisc.edu/~tonulun/saftrend.html> Coble, Richard Dr., Hanna, Awad Dr., Jaselskis, Edward J., Dr. Future Safety Trends in the U.S. Construction Industry.

This paper gives an overview of significant safety trends throughout the United States construction industry. Accident statistics are present along with an overview of OSHA. Topics include: Rights and Responsibilities and Current Safety Legislative Initiatives.

336. <http://www.oshasic.gov/FedReq> OSHA data/FED19790209.html
OSHA Federal Register: General Industry Construction 44:8S77-858.

This register provides identification of General Industry safety and health standards that apply to construction work. The register dates from February 1979 to present.

337. <http://www.dol.gov/dol/esa/public/regs/compliance/whd/whdfs1>

The Construction Industry under the Fair Labor Standards Act: Employment Standards Administration, Wage and Hour Division, 1997.

338. <http://www.thebluebook.com>
The Electronic Blue Book of Building and Construction

This website is a source for construction information by region. Topics include: General Contractors; Subcontractors; Architects; Engineers; Manufacturers; Equipment, Material and Product Suppliers; and Services.

339. <http://www.cpwr.com/hwelding.html>
Hazard Alert-Lead in Construction

This website provides information on the hazards of welding in confine spaces. The site also lists ways of preventing lead exposure as a result of welding.

340. <http://www.cpwr.com/hazback.html>
Hazard Alert-Back Injuries

Since the construction industry is notorious for back injuries among its workers, CPWR has provided a website that discusses ways of preventing from such injuries occurring. Warming up prior to work and back belts are mentioned as a few measures.

341. <http://www.cpwr.com/hazasbes.html>
Hazard Alert-Disease in Construction

342. <http://www.cpwr.com/haznoise.html>
Hazard Alert-Construction Noise

The website discusses exposure levels of hearing and being able to detect if hearing is diminishing. Measures of protection are provided.

343. <http://www.cpwr.com/kflead.html>
Hazard Alert-Lead in Construction

344. <http://www.cpwr.com/kftrench.html>

Hazard Alert-Trench Safety

This website discusses the hazards of working in trenches. It provides a list of things a construction worker should do prior to working in the trench.

345. <http://www.cpwr.com/kfsolven.html>
Hazard Alert-Solvents in Construction

This website discusses ways to prevent exposure to solvents and ways to be protected.

346. <http://www.cpwr.com/kfdustsi.html>
Hazard Alert-Silica in Sandblasting and Rock Drilling.

347. <http://gws.epnet.com>
Push Is On For Safety In Construction. RSI: Roofing, Siding, Insulation, August 1997, Vol. 74 Issue 8, p.27.

This website provides a summary of the data provided in the periodical addressing the need to improve safety in the construction industry. Statistics are provided regarding unsafe behavior on jobsites, work-related injuries and more.

348. <http://www.thriveonline.com/health/Library/CAD/abstract9480.html>
Journal of Occupational Medicine 1994 Nov: Mortality patterns of US female construction workers by race,...

This website provides mortality patterns of female construction workers in the United States by race dating from 1979 to 1990.

349. <http://www.citation.com/hpages/oshadc2.html>
OSHA Scaffold Use Course Now Available

This website describes the course provided by the OSHA Training Institute Education Centers and various United Brotherhood of Carpenters (UBC) training sites in the United States.

350. <http://www.legalpad.com/files/peoples/injury/c.htm>
Legal Pad: Construction

This site provides construction workers with information about collecting damages, in addition to worker's compensation, if injured on the job. Site provides a channel guide of attorneys.

351. <http://www.census.gov/const/www/cci/f6text.html>
Census of Construction Industries: 6 Digit SIC Data

Six digit SIC data is provided for construction industry 'subgroups' such as plumbing, roofing and fencing contractors. Number of establishments, employees, construction workers, payroll, value of construction work done, cost of work subcontracted, etc. This site was revised in February 1999.

352. <http://www.opsafesite.com/oshasa~1/noise.html>
Operation Safe Site: Noise/Hearing Conservation

This site provides information on noise/hearing conservation which is prevalent in many occupations, including construction workers who are not covered by OSHA standards. Discussion of OSHA regulating this hazard as a top priority.

353. <http://www.opsafesite.com/oshasa~1/powerd~1.htm> Operation Safe Site: Power Transmission & Distribution in Construction

This site provides information on the hazards that concern employees who work around power transmission and distribution systems. Faced with the threat of electrocution, falls, and other serious hazards, the construction industry standard is outdated making it OSHA's goal to revise the standard.

354. <http://www.open.gov.uk/hse/pubns/indg127.htm>

Noise in Construction: Further guidance on the Noise at Work Regulations 1989

This booklet is aimed at construction workers although it may serve as a guide to other industries. It guides employers and employees as to what precautions to take and whether noise assessments should be conducted. Chart of likely noise exposure within certain construction occupations.

WOMEN IN CONSTRUCTION

355. Arvidson, Jeanne Louise. The Trades Mentor Network: Mentoring as a Retention Intervention for Women Apprentices in the Building Trades (Women Students). Oregon State University, 1997.

The purpose of this paper was to describe the Trades Mentor Network which grew out of a need to address the issue of barriers placed before women and minorities to successfully complete the building trades apprenticeships. The paper investigates the apprentice mentor relationship to see if, in the perception of the apprentices, it was a useful retention strategy. Literature surveys, participant observations, focus groups and interviews were used. Results showed that the TMN had a positive effect on the building trades culture.

356. Dorsey, Robert W. and Minkarah, Eleanor. Women in Construction. [Austin, TX]: Bureau of Engineering Research, University of Texas at Austin, [1992].

This thesis examines the results of 250 women who had completed the Century Freeway Pre-Apprenticeship Training Program. Success factors of the women in the construction industry were identified. The study also shows the relationship between job satisfaction and completing, placement, and longevity in a chosen trade.

357. Eisenberg, Susan. We'll Call You If We Need You. Experiences of Women Working Construction. 1998.

This book is a compilation of personal narratives of women who discuss their construction experiences as construction workers. Detailed discussion of why the women chose the construction industry as a career, experiences of being apprentices, male counterpart attitudes toward female construction workers, career ceilings, economics, etc.

358. Florman, Samuel C. Hard-hatted women. New York Times Book Review, 04/26/98, Vol. 147 Issue 51139, p.37.

The author reviews two books about women employed in the construction industry. The books reviewed are, 'We'll Call You If We Need You: Experiences of Women Working Construction,' by Susan Eisenberg and 'Pioneering: Poems From the Construction Site,' by Susan Eisenberg.

359. Fruehling, Douglas. "Women at Work." Washington Business Journal, 08/23/96, Vol. 15 Issue 15, p 15, 2p, 1 chart, 1c, 1 bw.

The author of this article focuses on the number of women entering into the construction industry in as field engineers, project managers and inspectors in the United States. Discussion of the increasing rate of women into the industry.

360. Green, Kathleen. "Should you build a future as a construction tradeswoman?" Occupational Outlook Quarterly Spring 1993: 2-12.

This article reports on opportunities for women in the highway or building construction trades. Reasons why women enter construction and other skilled trades; Median weekly earnings in construction occupations compared with those occupations traditionally held by women; benefits; skills needed; hazard and harassment and more.

361. Korman, Richard, Kohn, David and et. al. "The jokes are very funny anymore." ENR 7 Sept. 1998: 26.

This report examines the growth of sexual harassment as more women enter the construction industry causing a greater liability for employers. Specifics on sexual harassment cases, average cost of a trial, forms of sexual harassment and preventive measures for employers to protect themselves legally are discussed.

362. Monahan, Genevieve Louise. Cultural Knowledge of Women in the Construction Industry Related to Occupational Health and Safety. The University of Arizona 1988.

The following study identifies and describes the cultural knowledge of women working in the construction industry regarding occupational health and safety. Results showed that women had

a high level of knowledge of many work place hazards and were aware of ways of cutting down on these hazards.

363. Rabalais, Francois Xavier. Women, Hard Hats, and the Building Trades. California State University, Long Beach 1991.

364. On the road to equality: women in highway construction. [Washington, D.C.: U.S. Dept. of Transportation, Federal Highway Administration: U.S. Dept. of Labor, Women's Bureau, 1992?].

365. Women in construction [videorecording/producer, Jocelyn Riley. Madison, WI: 1993.

This video is an account of women who work in the capacities of carpenters, electrical apprentices, apprentice plumbers, sheet-metal workers, and architects. Discussion of their work and experiences in the construction industry. Still photographs accompany the narration.

366. "Women build future in new trades." News for You, 10/03/90, Vol. 38 Issue 39, p.3.

This article comments on the growing number of women in the construction industry and male responses to this growth. Sample wages earned are present.

CONSTRUCTION MANAGEMENT

367. Bentil, Kweku K. Fundamentals of the construction process. R.S. Means Publishers, 1989.

This is a guide to the basics of building construction. It addresses the main players, critical business concepts, specifics of paperwork, and construction approaches. The majority of the book is devoted to describing and illustrating the components of actual construction-materials, building methods, installation techniques and the differences between various systems.

368. Civitello, Andrew M. Construction operations manual of policies and procedures, 2d. ed. McGraw-Hill Book Co., 1994.

This manual covers all phases of construction and operations management, including company organization and quality assurance, contracts, safety and loss control, planning, scheduling, and fund analysis.

369. Construction and building: federal research and development in support of the U.S. Construction Industry. National Institute of Standards and Technology, 1995, Gaithersburg, MD. (Book) 32 pages and illustrations

370. “Environmental Update.” Building Design & Construction, December 1995: 10.

This article reports on environmental developments related to the construction industry in the United States as of December 1995.

371. Coulter III, Carleton and Coulter, Jill Justice. The Complete Standard Handbook of

Construction Personnel Management. Prentice-Hall Englewood Cliffs, NJ 1989.

This book is designed to help all contractors manage personnel. Provides information on staffing, directing personnel and controlling personnel on a daily basis. Insight on how management perceives personnel.

372. Gehrig, Gary Berger. Organizational Practices and Theories: Alignment of Construction Executive's Beliefs with Company Policies. Colorado State University, 1985.

The purposes of this study were to: (1) determine the beliefs of construction company chief executive officers relating to the likelihood that influence specified organizational practices and human resource development theories will influence worker productivity, (2) determine the degree of implementation of these practices, and (3) determine the degree of alignment between those practices and theories the executives believed improve productivity and the application of the practice or theory in company policies. Results suggest that construction worker productivity would be improved if organizational practices were actually implemented in the company's management philosophy.

373. Halpin, Daniel W. and Woodhead, Ronald W. Construction Management. New York, John Wiley & Sons, 1980.

The purpose of this book is to give readers a perspective regarding the industry and some cross sectional understanding of what needs to be known in order to be a successful construction manager. Chapter thirteen of the book is devoted to labor relations in the construction industry. Areas of discussion in the chapter includes: the labor resource, short history of labor organizations, early labor legislation, union growth, Labor Management Relations Act (unfair labor practices), vertical versus horizontal labor organization structure, jurisdictional disputes, union structure, hiring halls, boycotts, and open shops and double breasted operations.

374. Newman, Morton. Standard handbook of structural details for building construction, 2d. ed. McGraw-Hill Book Co., 1993.

This handbook provides information on structural details that are commonly used throughout the construction industry. It has over 1,900 well-drawn structural details, with updated codes. Chapters are devoted to wood, masonry, concrete, and steel.

375. Stein, J. Stewart. Construction glossary; an encyclopedia reference and manual, 2nd ed., John Wiley & Sons, 1993.

This edition defines over 30,000 words and terms including both current and accepted usage that are critical for construction professionals to understand historical references, specific language, codes for building and zoning interpretations, reference standards, manufacturers' descriptions, and scientific and engineering analyses. Includes a new, detailed alphabetical index.

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376. Andreassen, Arthur and Berman, Jay M. "Infrastructure alternatives for 2005: employment and occupations." Monthly Labor Review. April 1994: 22-28.

This article addresses the issue of infrastructure spending in the areas of highway construction, water and sewer construction, and operation of existing water and sanitation facilities. The author claims that increased investment in US infrastructure would result in new jobs in construction and related industries.

377. Construction Industry Research Prospectuses for the 21st Century: Engineering and Construction for Sustainable Development: technical report/Civil Engineering Research Foundation, Washington D.C.: Civil Engineering Research Foundation, 1996.

This report includes 38 prospectuses by industry experts at an international research symposium hosted by the Civil Research Foundation in D.C. The symposium identified challenges facing the engineering and construction industry and problems applying innovative technologies. The report recommends solutions to these challenges and details the benefits of these solutions. Topics include: Management and Business Practices, Design Technology and Practices, Construction and Equipment, Materials and Systems; and Public Government Policy.

378. The Future Needs of the Construction Industry's Worldwide Customer/ by Daniel W. Halpin... [et al.]. [Austin, TX]: Construction Industry Institute, [1993].

This report describes the work performed under the supervision of the International Construction Task Force of the Construction Industry Institute relating to the needs of international clients for the year 2000 and beyond. The report identifies significant trends that related to the future needs

of international client firms; evaluate trends; draw conclusions; and make recommendations. Graphs are present.

379. “Supply challenge is looming.” ENR 16 Oct. 1998: 23.

The Construction Labor Research Council has analyzed demographic work force information from the Labor Department’s Bureau of Labor Statistics. The analysis shows that the construction industry needs to attract at least 100,000 construction craft workers each year from 2000 to 2010. Approximately 75,000 of those workers will be required simply to replace workers retiring. The industry’s problems are an aging work force, workers who tend to leave at an earlier age than other industries, and a diminishing pool of people entering the national work force.

APPENDIX

380. Rekus, John F. "Understanding OSHA's fall protection standard." Occupational Hazards April 1999: 57-61.

This article discusses construction falls as being the primary cause of death among workers and the cause of over 60,000 injuries every year. Fall-protection options such as guardrails, safety nets, or hole covers are discussed.

381. Gregerson, Kevin S. "Workers' compensation programs" Employee Benefits Journal March 1999: 33-35.

This article examines the advent of alternative workers' compensation program designed to pay benefits to injured union workers while keeping costs at a minimum for contractors. Description of one such program in Minnesota is given.

382. Power, Matthew. "Hazardous duty: the roots of regulation." Builder (National Association of Home Builders) February 1999: 154-158.

Data presented by the Department of Labor indicates that outside of manufacturing, the construction industry has the worst safety record. New initiatives in safety and discussion of a program called "HomeSafe" that is aimed at residential contractors are presented.

383. Sedam, Scott. "Rebuilding the trade base." Builder(National Association of Home Builders) December 1998: 106.

This article discusses the skilled labor problems in the building industry and the strategy that is being devised to encourage younger people to pursue careers in the trades. Discussion of the indifference among builders and the initiative that is needed to recruit more people into the industry.

384. Smith, S.L. "Under construction: safety at multi-employer sites." Occupational Hazards May 1998: 56-58.

This article discusses who is primarily responsible for safety at a multi-employer worksite. Issues include: interpretation of OSHA regulations as they relate to multi-employer sites, current case law, familiarity of OSHA officers about safety management and more.

385. Sharoff, Robert. "Augmented title: job site alcohol and drug abuse." Builder(National Association of Home Builders March 1997: 154-157.

This article discusses the tough stance against drug abuse throughout the construction industry. Discussion of the construction industry as having the highest abuse rate of any vocation. Theories as to why drug abuse is so prevalent in the construction industry are given.

386. McNicholas, Thomas Martin. "Potential Barriers to the Adoption of New Technology in the United States Construction Industry (Technology Lag)." DBA Golden Gate University, 1994. DAI-A 55/06 (1994): 1625.

This essay examines the lag of technology used in the construction industry. This identifies factors that inhibit the use of new technology as perceived by managers of companies, government officials and academicians associated with United States construction.

387. Grob, Heather L. "Self-Regulation and Safety Programs in Construction (Occupational Health, OSHA Enforcement, Unions, Workers)." Diss. University of Notre Dame, 1998. DAI-A 59/06 (1998): 2131.

This thesis introduces self-regulation theory to the economics of safety and health and provides a detailed investigation of the relationships between safety programs, unions, size of establishment, and government enforcement in the construction industry.

388. Miscimarra, Philip A. and Altschul, Andrew M. "The Town and Country case: legal issues and implications." Journal of Labor Research Winter 1997: 73-90.

The authors discuss the legal issues and implications of the Supreme Court ruling in the case of NLRB versus Town and Country Electric, Inc. to approve of the practice of salting. They examine the issues and initiatives that can be lawfully taken by organizing construction industry employees.

389. LaBar, Gregg. "Harnessing the full power of fall protection." Occupational Hazards February 1998: 29-30.

This article discusses OSHA's 1994 revision of Subpart M standards that requires full-body harnesses for construction workers working at heights of six feet or more.

390. Baskin, Maurice. "The case against union-only project labor agreements on government construction projects." Journal of Labor Research Winter 1998: 115-24.

The case against union-only project labor agreements in the public sector is presented. The author asserts that project labor agreements discriminate against 80 percent of the construction industry's employees who do not belong to any labor union and who do not want union representation.

391. Coupe, Bradford W. "Legal considerations affecting the use of public sector project labor agreements: a proponent's view." Journal of Labor Research Winter 1998: 99-113.

The author asserts that PLAs are an important tool for effective labor relations management on construction projects, but it should be noted that there are also caveats to these agreements. The debate and legal adjudication should be conducted with an emphasis on the public interest rather than on the interests of the bidders, the unions, or the employees.