

Plumbing, Heating, and Air-Conditioning Contractors: 2002

Issued December 2004

EC02-231-238220

2002 Economic Census

Construction

Industry Series



U S C E N S U S B U R E A U

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-- Not applicable for this report.

Introduction to the Economic Census

PURPOSES AND USES OF THE ECONOMIC CENSUS

The economic census is the major source of facts about the structure and functioning of the nation's economy. It provides essential information for government, business, industry, and the general public. Title 13 of the United States Code (Sections 131, 191, and 224) directs the Census Bureau to take the economic census every 5 years, covering years ending in "2" and "7."

The economic census furnishes an important part of the framework for such composite measures as the gross domestic product estimates, input/output measures, production and price indexes, and other statistical series that measure short-term changes in economic conditions. Specific uses of economic census data include the following:

- Policymaking agencies of the federal government use the data to monitor economic activity and to assess the effectiveness of policies.
- State and local governments use the data to assess business activities and tax bases within their jurisdictions and to develop programs to attract business.
- Trade associations study trends in their own and competing industries, which allows them to keep their members informed of market changes.
- Individual businesses use the data to locate potential markets and to analyze their own production and sales performance relative to industry or area averages.

INDUSTRY CLASSIFICATIONS

Data from the 2002 Economic Census are published primarily according to the 2002 North American Industry Classification System (NAICS). NAICS was first adopted in the United States, Canada, and Mexico in 1997. The 2002 Economic Census covers the following NAICS sectors:

21	Mining
22	Utilities
23	Construction
31-33	Manufacturing
42	Wholesale Trade
44-45	Retail Trade
48-49	Transportation and Warehousing
51	Information
52	Finance and Insurance
53	Real Estate and Rental and Leasing
54	Professional, Scientific, and Technical Services
55	Management of Companies and Enterprises
56	Administrative and Support and Waste Management and Remediation Services
61	Educational Services
62	Health Care and Social Assistance
71	Arts, Entertainment, and Recreation
72	Accommodation and Food Services
81	Other Services (except Public Administration)

(Not listed above are the Agriculture, Forestry, Fishing, and Hunting sector (NAICS 11), partially covered by the census of agriculture conducted by the U.S. Department of Agriculture, and the Public Administration sector (NAICS 92), largely covered by the census of governments conducted by the Census Bureau.)

The 20 NAICS sectors are subdivided into 100 subsectors (three-digit codes), 317 industry groups (four-digit codes), and, as implemented in the United States, 1,179 industries (six-digit codes).

RELATIONSHIP TO HISTORICAL INDUSTRY CLASSIFICATIONS

Prior to the 1997 Economic Census, data were published according to the Standard Industrial Classification (SIC) system. While many of the individual NAICS industries correspond directly to industries as defined under the SIC system, most of the higher level groupings do not. Particular care should be taken in comparing data for retail trade, wholesale trade, and manufacturing, which are sector titles used in both NAICS and SIC, but cover somewhat different groups of industries. The 1997 Economic Census *Bridge Between NAICS and SIC* demonstrates the relationships between NAICS and SIC industries. Where changes are significant, it may not be possible to construct time series that include data for points both before and after 1997.

Most industry classifications remained unchanged between 1997 and 2002, but NAICS 2002 includes substantial revisions within the construction and wholesale trade sectors, and a number of revisions for the retail trade and information sectors. These changes are noted in industry definitions and will be demonstrated in the *Bridge Between NAICS 2002 and NAICS 1997*.

For 2002, data for enterprise support establishments (those functioning primarily to support the activities of their company's operating establishments, such as a warehouse or a research and development laboratory) are included in the industry that reflects their activities (such as warehousing). For 1997, such establishments were termed auxiliaries and were excluded from industry totals.

BASIS OF REPORTING

The economic census is conducted on an establishment basis. A company operating at more than one location is required to file a separate report for each store, factory, shop, or other location. Each establishment is assigned a separate industry classification based on its primary activity and not that of its parent company. (For selected industries, only payroll, employment, and classification are collected for individual establishments, while other data are collected on a consolidated basis.)

GEOGRAPHIC AREA CODING

Accurate and complete information on the physical location of each establishment is required to tabulate the census data for states, metropolitan and micropolitan statistical areas, counties, and corporate municipalities (places) including cities, towns, townships, villages, and boroughs. Respondents were required to report their physical location (street address, municipality, county, and state) if it differed from their mailing address. For establishments not surveyed by mail (and those single-establishment companies that did not provide acceptable information on physical location), location information from administrative sources is used as a basis for coding.

AVAILABILITY OF ADDITIONAL DATA

All results of the 2002 Economic Census are available on the Census Bureau Internet site (www.census.gov) and on digital versatile discs (DVD-ROMs) for sale by the Census Bureau. The American FactFinder system at the Internet site allows selective retrieval and downloading of the data. For more information, including a description of reports being issued, see the Internet site, write to the U.S. Census Bureau, Washington, DC 20233-6100, or call Customer Services at 301-763-4100.

HISTORICAL INFORMATION

The economic census has been taken as an integrated program at 5-year intervals since 1967 and before that for 1954, 1958, and 1963. Prior to that time, individual components of the economic census were taken separately at varying intervals.

The economic census traces its beginnings to the 1810 Decennial Census, when questions on manufacturing were included with those for population. Coverage of economic activities was expanded for the 1840 Decennial Census and subsequent censuses to include mining and some commercial activities. The 1905 Manufactures Census was the first time a census was taken apart

from the regular decennial population census. Censuses covering retail and wholesale trade and construction industries were added in 1930, as were some service trades in 1933. Censuses of construction, manufacturing, and the other business censuses were suspended during World War II.

The 1954 Economic Census was the first census to be fully integrated, providing comparable census data across economic sectors and using consistent time periods, concepts, definitions, classifications, and reporting units. It was the first census to be taken by mail, using lists of firms provided by the administrative records of other federal agencies. Since 1963, administrative records also have been used to provide basic statistics for very small firms, reducing or eliminating the need to send them census report forms.

The range of industries covered in the economic census expanded between 1967 and 2002. The census of construction industries began on a regular basis in 1967, and the scope of service industries, introduced in 1933, was broadened in 1967, 1977, and 1987. While a few transportation industries were covered as early as 1963, it was not until 1992 that the census broadened to include all of transportation, communications, and utilities. Also new for 1992 was coverage of financial, insurance, and real estate industries. With these additions, the economic census and the separate census of governments and census of agriculture collectively covered roughly 98 percent of all economic activity. New for 2002 is coverage of four industries classified in the agriculture, forestry, and fishing sector under the SIC system: landscape architectural services, landscaping services, veterinary services, and pet care services.

Printed statistical reports from the 1992 and earlier censuses provide historical figures for the study of long-term time series and are available in some large libraries. Reports for 1997 were published primarily on the Internet and copies of 1992 reports are also available there. CD-ROMs issued from the 1987, 1992, and 1997 Economic Censuses contain databases that include all or nearly all data published in print, plus additional statistics, such as ZIP Code statistics, published only on CD-ROM.

SOURCES FOR MORE INFORMATION

More information about the scope, coverage, classification system, data items, and publications for the 2002 Economic Census and related surveys is published in the *Guide to the 2002 Economic Census* at www.census.gov/econ/census02/guide. More information on the methodology, procedures, and history of the census will be published in the *History of the 2002 Economic Census* at www.census.gov/econ/www/history.html.

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Construction

SCOPE

The Construction sector (sector 23) comprises establishments primarily engaged in the construction of buildings or engineering projects (e.g., highways and utility systems). Establishments primarily engaged in the preparation of sites for new construction and establishments primarily engaged in subdividing land for sale, as building sites also are included in this sector.

Construction work done may include new work, additions, alterations, or maintenance and repairs. Activities of these establishments generally are managed at a fixed place of business, but they usually perform construction activities at multiple project sites. Production responsibilities for establishments in this sector are usually specified in (1) contracts with the owners of construction projects (prime contracts) or (2) contracts with other construction establishments (subcontracts).

Establishments primarily engaged in contracts that include responsibility for all aspects of individual construction projects are commonly known as general contractors, but also may be known as design-builders, construction managers, turnkey contractors, or (in cases where two or more establishments jointly secure a general contract) joint-venture contractors. Construction managers that provide oversight and scheduling only (i.e., agency) as well as construction managers that are responsible for the entire project (i.e., at risk) are included as general contractor type establishments. Establishments of the "general contractor type" frequently arrange construction of separate parts of their projects through subcontracts with other construction establishments.

Establishments primarily engaged in activities to produce a specific component (e.g., masonry, painting, and electrical work) of a construction project are commonly known as specialty trade contractors. Activities of specialty trade contractors are usually subcontracted from other construction establishments but, especially in remodeling and repair construction, the work may be done directly for the owner of the property.

Establishments primarily engaged in activities to construct buildings to be sold on sites that they own are known as operative builders, but also may be known as speculative builders or merchant builders. Operative builders produce buildings in a manner similar to general contractors, but their production processes also include site acquisition and securing of financial backing. Operative builders are most often associated with the construction of residential buildings. Like general contractors, they may subcontract all or part of the actual construction work on their buildings.

There are substantial differences in the types of equipment, work force skills, and other inputs required by establishments in this sector. To highlight these differences and variations in the underlying production functions, this sector is divided into three subsectors.

Subsector 236, Construction of Buildings, comprises establishments of the general contractor type and operative builders involved in the construction of buildings. Subsector 237, Heavy and Civil Engineering Construction, comprises establishments involved in the construction of engineering projects. Subsector 238, Specialty Trade Contractors, comprises establishments engaged in specialty trade activities generally needed in the construction of all types of buildings.

Exclusions. Force account construction is construction work performed by an enterprise primarily engaged in some business other than construction for its own account and use, using employees of the enterprise. This activity is not included in the construction sector unless the construction work performed is the primary activity of a separate establishment of the enterprise.

The installation and the ongoing repair and maintenance of telecommunications and utility networks is excluded from construction when the establishments performing the work are not independent contractors. Although a growing proportion of this work is subcontracted to independent contractors in the Construction Sector, the operating units of telecommunications and utility companies performing this work are included with the telecommunications or utility activities.

The tabulations for this sector do not include central administrative offices, warehouses, or other establishments that serve construction establishments within the same organization. Data for such establishments are classified according to the nature of the service they provide. For example, separate headquarters establishments are reported in NAICS Sector 55, Management of Companies and Enterprises.

The reports described below exclude establishments of firms with no paid employees. These “nonemployers,” typically self-employed individuals or partnerships operating businesses that they have not chosen to incorporate, are reported separately in *Nonemployer Statistics*. The contribution of nonemployers, relatively large for this sector, may be examined at www.census.gov/nonemployerimpact.

Definitions. Industry categories are defined in Appendix B, NAICS Codes, Titles, and Descriptions. Other terms are defined in Appendix A, Explanation of Terms.

REPORTS

The following reports provide statistics on this sector.

Industry Series. There are 31 reports, each covering a single NAICS industry (six-digit code). These reports include such statistics as number of establishments, employment, payroll, value added by construction, cost of materials, value of construction work, value of business done, capital expenditures, etc. The industry reports also include selected statistics for states. While most of the state data in the industry series reports are by physical location of the establishment, some data are available by reported location of the construction work. The data in industry reports are preliminary and subject to change in the following reports.

Geographic Area Series. There are 51 separate reports, one for each state and the District of Columbia. Each state report present similar statistics at the “all construction” level for each state.

Subject Series:

- **Industry General Summary.** This report contains industry statistics summarized in one report. It includes higher levels of aggregation than the industry reports, as well as revisions to the data made after the release of the industry reports.
- **Industry Kind Of Business and Type of Construction Summary.** This report contains industry kind of business and types of construction statistics summarized in one report. It includes higher levels of aggregation than the industry reports, as well as revisions to the data made after the release of the industry reports.
- **Geographic Area Summary.** This report contains industry and geographic area statistics summarized in one report. It includes higher levels of aggregation than the industry and state reports, as well as revisions to the data made after the release of the industry and state reports.

Other reports. Data for this sector are also included in reports with multisector coverage, including *Nonemployer Statistics*, *Comparative Statistics*, *Bridge Between 2002 NAICS and 1997 NAICS*, *Business Expenses*, and the Survey of Business Owners reports.

GEOGRAPHIC AREAS COVERED

1. The United States as a whole.
2. States and the District of Columbia.

3. Census regions. The regions are made up of groups of states as follows:

- a. Northeast region: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont
- b. Midwest region: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin
- c. South region: Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia
- d. West region: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming

DOLLAR VALUES

All dollar values presented are expressed in current dollars; i.e., 2002 data are expressed in 2002 dollars, and 1997 data, in 1997 dollars. Consequently, when making comparisons with prior years, users of the data should consider the changes in prices that have occurred.

All dollar values are shown in thousands of dollars.

COMPARABILITY OF THE 1997 AND 2002 ECONOMIC CENSUSES

Both the 2002 Economic Census and the 1997 Economic Census present data based on the North American Industry Classification System (NAICS). There were substantial revisions made to the entire construction sector, for 2002. These changes are:

1. Each subsector has been reclassified in 2002 to:
 - 236—Construction of Buildings
 - 237—Heavy and Civil Engineering Construction
 - 238—Specialty Trade Contractors
2. Adopted several mining industries:
 - oil and gas pipeline and related structures construction, now in Industry 237120
 - site preparation and related construction activities on a contract or fee basis, now in Industry 238910.

More detailed information of NAICS changes from 1997 to 2002, may be examined at <http://www.census.gov/epcd/naics02/n02ton97.htm>.

In addition, there have been several additional data tables added, which did not exist in 1997. These tables for 2002 include e-commerce value of business done and leased and nonleased detail employment statistics by subsectors. Also included is housing starts by single NAICS industry (six-digit code).

RELIABILITY OF DATA

All data compiled for this sector are subject to nonsampling errors. Nonsampling errors can be attributed to many sources: inability to identify all cases in the actual universe; definition and classification difficulties; differences in the interpretation of questions; errors in recording or coding the data obtained; and other errors of collection, response, coverage, processing, and estimation for missing or misreported data.

No direct measurement of these effects has been obtained except for estimation for missing or misreported data, as by the percentages shown in the tables. Precautionary steps were taken in all phases of the collection, processing, and tabulation of the data in an effort to minimize the effects of nonsampling errors. More information on the reliability of the data is included in Appendix C, Methodology.

DISCLOSURE

In accordance with federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments in a specific industry or geographic area is not considered a disclosure; therefore, this information may be released even though other information is withheld. Techniques employed to limit disclosure are discussed at www.census.gov/epcd/ec02/disclosure.htm.

AVAILABILITY OF MORE FREQUENT ECONOMIC DATA

The U.S. Census Bureau's monthly Construction Reports, Series C30, Value of New Construction Put in Place contain data related to construction sector census data. The main difference is that the C30 series covers all new construction put in place without regard to who is performing the construction activity. The construction sector census data covers both new construction and maintenance and repair work done by establishments classified in the construction industries. Significant amounts of construction are done by establishments classified outside of construction (real estate, manufacturing, utilities, and communications, for example), as both "force account" construction and construction done for others. In addition, the C30 series includes construction-related expenses such as architectural and engineering costs and the costs of materials supplied by owners that are normally not reflected in construction sector census data.

Data contained in the 2002 construction sector may also differ from industry data in Employment and Earnings Statistics, published by the Bureau of Labor Statistics and Statistics of Income, published by the Internal Revenue Service. These differences arise from varying definitions of scope, coverage, timing, classification, and methodology.

In addition, the County Business Patterns program offers annual statistics on the number of establishments, employment, and payroll classified by industry within each county, and Statistics of U.S. Businesses provides annual statistics classified by the employment size of the enterprise, further classified by industry for the United States, and by broader categories for states and metropolitan areas.

CONTACTS FOR DATA USERS

Questions about these data may be directed to the U.S. Census Bureau, Manufacturing & Construction Division, Information Services Center, 301-763-4673 or ask.census.gov.

ABBREVIATIONS AND SYMBOLS

The following abbreviations and symbols are used with these data:

A	Standard error of 100 percent or more
D	Withheld to avoid disclosing data of individual companies; data are included in higher level totals
F	Exceeds 100 percent because data include establishments with payroll exceeding revenue
N	Not available or not comparable
S	Withheld because estimates did not meet publication standards
X	Not applicable
Z	Less than half the unit shown
a	0 to 19 employees
b	20 to 99 employees
c	100 to 249 employees
e	250 to 499 employees
f	500 to 999 employees
g	1,000 to 2,499 employees
h	2,500 to 4,999 employees
i	5,000 to 9,999 employees
j	10,000 to 24,999 employees
k	25,000 to 49,999 employees
l	50,000 to 99,999 employees
m	100,000 employees or more

p 10 to 19 percent estimated
q 20 to 29 percent estimated
r Revised
s Sampling error exceeds 40 percent
nsk Not specified by kind
– Represents zero (page image/print only)
(CC) Consolidated city
(IC) Independent city

Table 1. Industry Statistics on 2002 NAICS Basis Distributed Among 1997 NAICS-Based Industries for the United States: 2002

[Thousand dollars unless otherwise noted. Detail may not add to total because of rounding. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, and nonsampling error, see note at end of table. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A. For detailed title descriptions, see Appendix F]

2002 NAICS code	1997 bridge code	Industry or bridge	Number of establishments	Total number of employees	Total payroll	Value of construction work ¹	Net value of construction work	Value added	Cost of materials, components, supplies, and fuels	Capital expenditures, other than land
			A	B	C	D	E	F	G	H
238220		Plumbing, heating, and air-conditioning contractors.....	87 501	974 368	35 942 262	117 785 785	105 323 163	66 878 082	39 400 181	1 837 897
	23511000	Plumbing, heating, and air-conditioning contractors (pt)	87 443	973 364	35 906 778	117 682 869	105 236 865	66 803 636	39 382 240	1 834 497
	23595000	Building equipment and other machinery installation contractors (pt)	58	1 005	35 484	102 916	86 297	74 446	17 941	3 400

¹For the 2002 Economic Census, the definition of value of construction work has been modified from the 1997 Economic Census definition. See Appendix A for the modified definition.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 2. Employment Statistics for Establishments by State: 2002

[Detail may not add to total because of rounding. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, nonsampling error, and geographical definitions, see note at end of table. For information on geographic areas followed by *, see Appendix D. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Location of establishment	Number of establishments	Number of employees		Number of construction workers				Payroll (thousand dollars)		Relative standard error of estimate (percent) for column—
		Total	Construction workers	January to March	April to June	July to September	October to December	Total	Construction workers	
238220, Plumbing, heating, and air-conditioning contractors										
United States.....	87 501	974 368	712 452	S	726 131	735 393	711 835	35 942 262	25 619 932	1
Alabama.....	1 425	16 279	12 433	10 625	13 047	13 105	12 956	430 252	308 967	2
Alaska.....	209	2 228	1 653	1 474	1 544	1 883	1 709	97 193	72 876	7
Arizona.....	1 508	18 586	14 019	13 026	14 178	14 589	14 284	584 041	420 668	4
Arkansas.....	1 045	8 066	5 939	5 204	6 281	6 336	5 936	209 991	154 099	3
California.....	7 251	95 674	69 918	64 923	71 866	72 794	70 086	3 846 448	2 701 946	3
Colorado.....	2 015	20 715	15 714	14 616	16 520	16 406	15 314	753 883	547 419	3
Connecticut.....	1 299	11 426	8 220	7 312	8 471	8 643	8 456	465 055	322 154	3
Delaware.....	307	4 112	3 187	3 099	3 198	3 339	3 111	157 576	D	5
District of Columbia.....	22	786	516	511	506	524	523	40 085	21 379	-
Florida.....	5 019	57 881	41 564	40 065	42 243	42 171	41 777	1 823 204	1 258 964	2
Georgia.....	2 534	28 419	20 760	19 826	21 253	21 418	20 542	944 212	653 972	4
Hawaii.....	280	2 320	1 653	1 582	1 651	1 680	1 699	96 844	65 305	9
Idaho.....	581	5 318	4 037	3 765	4 126	4 202	4 055	170 647	133 184	3
Illinois.....	3 807	44 713	32 589	33 253	32 822	32 101	32 179	2 052 539	1 503 988	3
Indiana.....	1 843	23 719	17 304	16 657	17 376	17 713	17 472	991 141	753 297	3
Iowa.....	1 068	10 399	7 697	6 987	8 190	7 980	7 633	372 291	266 275	3
Kansas.....	946	10 046	7 323	6 908	7 316	7 647	7 419	367 219	264 596	3
Kentucky.....	1 219	12 827	9 638	9 237	9 677	10 022	9 614	408 927	307 205	3
Louisiana.....	1 469	13 850	10 118	9 262	10 383	10 915	9 913	419 948	291 819	5
Maine.....	458	3 946	2 633	2 404	2 698	2 684	2 745	114 586	76 227	7
Maryland.....	2 043	29 222	21 964	21 164	22 239	22 759	21 695	1 131 064	797 680	2
Massachusetts.....	2 519	24 002	17 295	16 782	17 471	17 616	17 311	1 007 904	715 867	3
Michigan.....	3 047	33 162	24 354	23 051	25 216	25 153	23 996	1 319 789	957 926	3
Minnesota.....	1 616	20 131	14 800	14 095	14 833	15 586	14 687	842 593	601 832	3
Mississippi.....	654	6 482	4 963	4 974	5 060	5 093	4 725	184 147	132 811	5
Missouri.....	1 813	19 878	14 460	14 142	14 561	14 835	14 301	801 854	580 960	3
Montana.....	432	3 096	2 282	1 876	2 351	2 462	2 438	92 499	68 335	7
Nebraska.....	683	6 859	5 053	4 703	5 141	5 262	5 106	236 196	177 052	3
Nevada.....	497	8 727	6 311	6 311	6 619	6 717	7 277	325 159	236 085	7
New Hampshire.....	531	4 365	3 178	3 076	3 164	3 179	3 293	179 570	123 215	5
New Jersey.....	3 527	31 012	22 118	21 592	22 534	22 466	21 883	1 319 889	949 574	3
New Mexico.....	579	4 934	3 714	3 453	3 746	3 836	3 820	147 852	104 343	7
New York.....	5 746	55 878	40 229	38 135	40 362	41 484	40 934	2 304 763	1 594 555	3
North Carolina.....	2 951	31 716	22 993	22 236	23 514	23 484	22 737	992 231	684 213	2
North Dakota.....	272	2 470	1 916	1 759	2 099	1 960	1 846	87 633	D	4
Ohio.....	3 494	38 761	27 813	26 231	28 040	29 147	27 835	1 440 407	1 035 653	2
Oklahoma.....	1 158	8 413	6 262	6 082	6 478	6 423	6 063	256 922	185 111	3
Oregon.....	1 031	11 979	8 589	8 254	8 776	8 871	8 456	475 266	332 135	3
Pennsylvania.....	3 651	41 647	30 163	28 610	30 587	31 406	30 048	1 600 874	1 156 067	3
Rhode Island.....	397	3 675	2 816	2 502	2 902	2 995	2 866	136 580	99 426	6
South Carolina.....	1 471	15 075	10 643	10 152	10 869	11 048	10 504	461 390	327 225	3
South Dakota.....	337	2 841	2 087	1 801	2 157	2 219	2 171	83 704	58 708	3
Tennessee.....	1 329	19 555	14 302	13 951	14 321	14 545	14 391	640 808	459 267	2
Texas.....	5 628	74 047	54 643	52 113	56 307	56 545	53 606	2 427 844	1 729 375	3
Utah.....	891	8 599	6 478	6 398	6 536	6 620	6 359	270 881	202 660	4
Vermont.....	281	1 776	1 307	1 437	1 394	1 231	1 166	62 004	43 093	8
Virginia.....	2 525	30 691	22 982	21 139	23 773	24 077	22 941	999 269	699 847	3
Washington.....	1 601	18 929	13 374	12 224	13 483	14 029	13 762	771 215	539 445	4
West Virginia.....	411	3 090	2 315	2 175	2 376	2 388	2 320	92 540	70 544	7
Wisconsin.....	1 818	20 454	14 584	14 225	14 714	14 656	14 743	855 264	617 952	3
Wyoming.....	262	1 591	1 130	1 074	1 164	1 149	1 132	48 071	D	8

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C. For geographical definitions, see Appendix D.

Table 3. General Statistics for Establishments by State: 2002

[Thousand dollars unless otherwise noted. Detail may not add to total because of rounding. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, nonsampling error, and geographical definitions, see note at end of table. For information on geographic areas followed by *, see Appendix D. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Location of establishment	E ¹	Value of construction work ²	Net value of construction work	Value added	Cost of materials, components, supplies, and fuels	Cost of construction work subcontracted out to others	Total rental costs	Capital expenditures, other than land	End-of-year gross book value of depreciable assets	Relative standard error of estimate (percent) for column—		
		A	B	C	D	E	F	G	H	I	C	H
238220, Plumbing, heating, and air-conditioning contractors												
United States	1	117 785 785	105 323 163	66 878 082	39 400 181	12 462 622	1 913 836	1 837 897	S	—	1	
Alabama	2	1 486 266	1 335 026	818 944	547 075	151 240	27 315	23 509	290 264	3	6	
Alaska	—	384 009	315 779	209 645	110 136	68 230	5 227	5 679	38 067	5	7	
Arizona	1	1 957 356	1 815 586	1 048 567	776 410	141 770	34 897	31 360	264 734	3	8	
Arkansas	1	799 157	733 666	438 746	305 198	65 491	14 066	18 636	143 602	5	11	
California	1	12 348 324	11 176 186	7 219 967	4 018 868	1 172 138	220 791	159 086	1 379 541	2	6	
Colorado	1	2 354 130	2 119 118	1 325 667	821 432	235 012	39 970	32 069	277 315	2	6	
Connecticut	2	1 576 996	1 420 933	929 762	504 432	156 063	25 349	33 415	204 471	3	12	
Delaware	1	466 051	423 604	275 565	152 589	42 447	8 583	8 141	61 135	4	4	
District of Columbia	1	117 971	D	71 124	29 263	D	2 139	1 503	13 194	S	—	
Florida	1	6 238 129	5 623 316	3 414 651	2 266 488	614 813	95 941	121 985	797 735	2	3	
Georgia	1	3 436 673	3 055 853	1 851 844	1 226 368	380 819	58 283	69 373	455 712	4	4	
Hawaii	1	358 921	322 867	197 562	129 870	36 053	6 875	3 383	35 667	8	13	
Idaho	1	546 120	498 667	299 925	211 224	47 453	8 781	9 633	68 704	3	4	
Illinois	1	6 103 440	5 497 917	3 756 225	1 769 005	605 523	100 596	85 480	678 503	2	6	
Indiana	1	2 962 739	2 544 565	1 704 087	869 252	418 174	53 614	44 331	383 437	2	14	
Iowa	—	1 191 466	1 057 441	655 448	429 826	134 024	19 693	21 441	195 012	2	6	
Kansas	1	1 225 206	1 070 515	649 710	431 111	154 691	17 039	16 461	157 091	2	6	
Kentucky	1	1 357 063	1 235 103	771 886	469 639	121 960	23 385	23 261	213 805	2	5	
Louisiana	1	1 439 726	1 265 444	777 030	497 169	174 283	23 841	29 949	206 571	5	14	
Maine	1	393 322	356 787	221 625	141 012	36 535	5 976	7 991	63 075	5	17	
Maryland	1	3 903 426	3 320 118	2 090 301	1 252 186	583 308	60 994	46 674	412 934	2	6	
Massachusetts	2	3 531 603	3 028 454	2 004 051	1 038 135	503 149	48 898	53 725	374 145	2	13	
Michigan	1	4 333 866	3 840 947	2 537 704	1 338 122	492 919	72 144	61 291	517 389	3	6	
Minnesota	—	2 869 964	2 588 826	1 662 334	961 326	281 138	50 240	50 953	371 596	2	7	
Mississippi	2	754 581	683 606	402 127	283 974	70 975	10 805	19 315	133 694	5	19	
Missouri	1	2 538 164	2 261 591	1 432 464	849 634	276 573	33 258	39 012	316 221	2	6	
Montana	2	356 269	311 282	182 602	135 009	44 987	6 009	7 917	60 228	7	13	
Nebraska	—	819 918	729 336	413 453	321 124	90 582	11 161	13 247	136 486	2	11	
Nevada	2	1 093 301	1 015 045	669 019	350 843	78 256	16 811	13 038	89 094	6	10	
New Hampshire	2	535 046	482 837	308 537	179 259	52 209	8 642	9 060	65 819	4	8	
New Jersey	2	4 192 136	3 725 573	2 519 115	1 225 623	466 562	63 778	59 631	438 476	2	6	
New Mexico	1	541 393	491 217	302 576	191 137	50 176	8 476	11 156	81 059	6	16	
New York	2	7 554 021	6 612 164	4 316 369	2 333 826	941 858	112 826	102 407	785 784	2	4	
North Carolina	1	3 225 498	2 888 425	1 789 608	1 125 922	337 072	57 384	53 437	492 974	2	7	
North Dakota	—	292 117	257 146	153 815	105 405	34 971	4 386	4 246	48 732	3	9	
Ohio	1	4 603 389	4 102 841	2 670 123	1 468 365	500 549	79 918	66 850	591 855	2	5	
Oklahoma	1	906 621	829 415	494 542	341 921	77 207	14 125	15 434	136 060	3	6	
Oregon	1	1 440 390	1 307 867	820 169	506 559	132 523	22 697	17 683	156 741	3	5	
Pennsylvania	1	5 284 960	4 683 368	3 045 892	1 677 707	601 592	80 222	83 627	680 491	2	5	
Rhode Island	3	490 872	430 654	259 703	171 994	60 217	6 453	6 508	46 030	4	7	
South Carolina	2	1 395 221	1 283 841	771 453	518 348	111 381	23 803	19 856	203 862	3	6	
South Dakota	1	333 758	311 005	173 539	141 297	22 754	3 739	18 812	65 198	2	3	
Tennessee	1	2 291 636	2 090 568	1 252 575	845 946	201 068	36 992	52 247	316 106	2	4	
Texas	1	7 995 926	7 195 231	4 394 161	2 871 664	800 694	121 622	117 242	1 021 758	3	5	
Utah	1	1 010 226	896 459	546 742	353 933	113 766	16 539	12 732	127 915	3	6	
Vermont	2	207 788	187 828	113 013	77 190	19 961	3 350	2 827	30 717	9	15	
Virginia	1	3 032 746	2 779 629	1 738 782	1 073 626	253 117	47 652	49 327	400 329	2	7	
Washington	1	2 469 407	2 207 511	1 393 599	853 946	261 896	44 707	32 908	370 312	3	7	
West Virginia	1	296 407	277 298	180 188	99 089	19 109	4 113	4 589	35 685	6	15	
Wisconsin	—	2 575 754	2 382 971	1 507 365	941 196	192 783	45 933	41 098	405 451	2	5	
Wyoming	1	166 318	D	94 180	59 507	D	3 797	4 361	27 087	S	16	

¹Construction receipts were obtained from census respondent forms. For establishments whose respondent forms were not received at the time data were tabulated, these data were calculated using industry averages and imputation for nonresponse. The following symbols are shown where estimated imputation-based data on construction receipts account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

²For the 2002 Economic Census, the definition of value of construction work has been modified from the 1997 Economic Census definition. See Appendix A for the modified definition.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C. For geographical definitions, see Appendix D.

Table 4. Detailed Statistics for Establishments: 2002

[Detail may not add to total because of rounding. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, and nonsampling error, see note at end of table. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Item	Value	Relative standard error of estimate (percent)
238220, Plumbing, heating, and air-conditioning contractors		
All establishments number	87 501	1
All employees number	974 368	1
Construction workers in March number	S	S
Construction workers in May number	726 131	1
Construction workers in August number	735 393	1
Construction workers in November number	711 835	1
Average number of construction workers number	712 452	1
Other employees in March number	S	S
Other employees in May number	257 811	1
Other employees in August number	261 941	1
Other employees in November number	261 405	1
Average number of other employees number	261 916	1
Total payroll \$1,000	35 942 262	-
Construction workers \$1,000	25 619 932	1
Other employees \$1,000	10 322 330	1
First-quarter payroll, all employees \$1,000	8 733 693	-
Fringe benefits, all employees \$1,000	9 326 660	-
Legally required expenditures \$1,000	4 861 969	1
Voluntary expenditures \$1,000	4 464 691	-
Value of business done ¹ \$1,000	118 740 885	-
Value of construction work ¹ \$1,000	117 785 785	-
Value of construction work on government owned projects \$1,000	25 407 206	1
Value of construction work on federally owned projects \$1,000	6 836 230	1
Value of construction work on state and locally owned projects \$1,000	18 570 976	1
Value of construction work on privately owned projects \$1,000	92 378 579	1
Other business receipts \$1,000	955 100	3
Value of construction work subcontracted in from others \$1,000	62 989 676	1
Net value of construction work \$1,000	105 323 163	-
Value added \$1,000	66 878 082	1
Selected costs \$1,000	51 862 803	1
Materials, parts, and supplies \$1,000	37 813 136	1
Construction work subcontracted out to others \$1,000	12 462 622	1
Selected power, fuels, and lubricants \$1,000	1 587 045	1
Purchased electricity \$1,000	263 532	1
Natural gas and manufactured gas \$1,000	106 837	4
Gasoline and diesel fuel \$1,000	1 167 983	1
On-highway use of gasoline and diesel fuel \$1,000	1 086 953	1
Off-highway use of gasoline and diesel fuel \$1,000	81 030	2
All other fuels and lubricants \$1,000	48 694	4
Total rental costs \$1,000	1 913 836	1
Machinery and equipment \$1,000	889 133	1
Buildings \$1,000	1 024 703	1
Selected purchased services \$1,000	3 675 805	1
Communication services \$1,000	1 012 703	1
Repairs to buildings and other structures \$1,000	518 107	1
Repairs to machinery and equipment \$1,000	785 457	1
Legal services \$1,000	229 859	3
Accounting, auditing, and bookkeeping services \$1,000	416 471	4
Advertising and promotional services \$1,000	S	S
Beginning-of-year gross book value of depreciable assets \$1,000	13 662 064	1
Capital expenditures, other than land \$1,000	1 837 897	1
Retirements and disposition of depreciable assets \$1,000	S	S
End-of-year gross book value of depreciable assets \$1,000	S	S
Depreciation charges during year \$1,000	1 666 352	1
Establishments with inventories number	28 570	-
Value of construction work for establishments with inventories \$1,000	57 629 835	-
End-of-2002, inventories of materials and supplies \$1,000	1 845 675	2
End-of-2001, inventories of materials and supplies \$1,000	1 724 821	2
Establishments with no inventories number	44 669	-
Value of construction work for establishments with no inventories \$1,000	48 392 125	-
Establishments not reporting inventories number	14 263	-
Value of construction work for establishment not reporting inventores \$1,000	11 763 826	-

¹For the 2002 Economic Census, the definitions of value of business done and value of construction work has been modified from the 1997 Economic Census definition. See Appendix A for the modified definitions.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 5. Selected Statistics for Establishments by Employment Size Class: 2002

[Detail may not add to total because of rounding. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, and nonsampling error, see note at end of table. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Employment size class	E ¹	Number of establishments	Total number of employees	Total payroll	Value of business done ²	Value of construction work ²	Net value of construction work	Value added	Cost of materials, components, supplies, and fuels	Cost of construction work subcontracted out to others	Relative standard error of estimate (percent) for column—
	A	B	C	D	E	F	G	H	I	J	C
238220, Plumbing, heating, and air-conditioning contractors											
All establishments	1	87 501	974 368	35 942 262	118 740 885	117 785 785	105 323 163	66 878 082	39 400 181	12 462 622	1
Establishments with—											
1 to 4 employees	—	46 507	98 197	2 396 404	10 394 201	10 330 012	9 687 847	5 852 775	3 899 261	642 165	2
5 to 9 employees	—	19 233	124 682	3 635 485	12 180 461	12 072 884	11 295 276	7 057 692	4 345 161	777 608	2
10 to 19 employees	—	11 620	155 274	5 471 724	16 774 782	16 616 667	15 378 251	9 885 762	5 650 605	1 238 415	2
20 to 49 employees	—	6 979	206 624	8 193 334	25 279 522	25 036 095	22 723 509	14 582 615	8 384 320	2 312 587	1
50 to 99 employees	—	2 007	136 816	5 789 358	18 741 145	18 573 512	16 246 893	10 258 016	6 156 509	2 326 619	1
100 to 249 employees	—	892	131 304	5 604 200	19 151 617	19 050 229	16 372 133	10 288 381	6 185 141	2 678 096	1
250 to 499 employees	—	185	61 287	2 544 919	8 569 134	8 498 738	7 181 883	4 618 031	2 634 248	1 316 855	1
500 to 999 employees	—	67	42 967	1 616 252	5 924 201	5 884 825	4 893 206	3 200 448	1 732 134	991 619	—
1,000 employees or more	—	11	17 218	690 587	1 725 823	1 722 823	1 544 164	1 134 361	412 803	178 659	—

¹Construction receipts were obtained from census respondent forms. For establishments whose respondent forms were not received at the time data were tabulated, these data were calculated using industry averages and imputation for nonresponse. The following symbols are shown where estimated imputation-based data on construction receipts account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

²For the 2002 Economic Census, the definitions of value of business done and value of construction work has been modified from the 1997 Economic Census definition. See Appendix A for the modified definitions.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 6. Selected Statistics for Establishments by Value of Business Done Size Class: 2002

[Detail may not add to total because of rounding. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, and nonsampling error, see note at end of table. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Dollar value size class	E ¹	Number of establishments	Total number of employees	Total payroll	Value of business done ²	Value of construction work ²	Net value of construction work	Value added	Cost of materials, components, supplies, and fuels	Cost of construction work subcontracted out to others	Relative standard error of estimate (percent) for column—
	A	B	C	D	E	F	G	H	I	J	G
238220, Plumbing, heating, and air-conditioning contractors											
All establishments	1	87 501	974 368	35 942 262	118 740 885	117 785 785	105 323 163	66 878 082	39 400 181	12 462 622	—
Establishments with value of business done—											
Less than \$25,000	3	63	S	S	S	S	S	S	S	S	S
\$25,000 to \$49,999	—	2 366	S	S	S	S	S	S	S	S	S
\$50,000 to \$99,999	—	6 831	9 329	141 768	516 401	513 302	482 275	305 577	179 798	31 027	5
\$100,000 to \$249,999	—	22 881	47 362	949 116	3 889 777	3 871 021	3 643 167	2 265 956	1 395 968	227 853	3
\$250,000 to \$499,999	—	20 143	81 082	2 025 720	7 183 622	7 121 673	6 747 470	4 162 696	2 646 723	374 203	3
\$500,000 to \$999,999	—	14 548	108 662	3 150 775	10 167 418	10 080 791	9 525 147	5 907 289	3 704 485	555 644	2
\$1,000,000 to \$2,499,999	—	11 773	171 905	6 010 717	18 133 132	17 943 160	16 832 796	10 741 967	6 280 801	1 110 364	2
\$2,500,000 to \$4,999,999	—	4 578	130 916	5 250 555	15 869 298	15 719 596	14 380 600	9 219 224	5 311 078	1 338 996	1
\$5,000,000 to \$9,999,999	—	2 486	132 114	5 505 044	17 134 516	16 990 560	15 155 146	9 558 079	5 741 023	1 835 414	1
\$10,000,000 or more	—	1 832	290 441	12 878 579	45 757 538	45 456 950	38 473 979	24 663 302	14 111 265	6 982 971	—

¹Construction receipts were obtained from census respondent forms. For establishments whose respondent forms were not received at the time data were tabulated, these data were calculated using industry averages and imputation for nonresponse. The following symbols are shown where estimated imputation-based data on construction receipts account for 10 percent or more of the figures shown: 1—10 to 19 percent; 2—20 to 29 percent; 3—30 to 39 percent; 4—40 to 49 percent; 5—50 to 59 percent; 6—60 to 69 percent; 7—70 to 79 percent; 8—80 to 89 percent; 9—90 percent or more.

²For the 2002 Economic Census, the definitions of value of business done and value of construction work has been modified from the 1997 Economic Census definition. See Appendix A for the modified definitions.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 7. Value of Construction Work for Establishments by Type of Construction: 2002

[Detail may not add to total because of rounding. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, and nonsampling error, see note at end of table. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Type of construction	Value of construction work ¹				Relative standard error of estimate (percent) for column—			
	Total	New construction	Additions, alterations, or reconstruction	Maintenance and repair	A	B	C	D
	A	B	C	D	A	B	C	D
238220, Plumbing, heating, and air-conditioning contractors								
Total	117 785 785	59 127 042	28 884 167	29 774 577	—	—	1	1
Building construction, total	111 566 876	56 350 917	27 373 503	27 842 456	—	1	1	1
Single-family houses, detached and attached	37 458 666	19 000 254	6 577 374	11 881 038	1	1	2	1
Single-family houses, detached	32 803 653	16 690 587	5 871 314	10 241 752	1	1	2	2
Single-family houses, attached	4 655 013	2 309 666	706 060	1 639 286	3	5	4	4
Other manufacturing and light industrial buildings, such as factories, assembly plants, and industrial research laboratories	10 201 433	4 545 170	3 245 439	2 410 823	1	1	1	1
Office buildings	13 623 274	6 329 965	3 965 740	3 327 569	1	1	1	2
Stores, restaurants, and automobile service stations, and other commercial buildings	11 147 972	5 269 020	2 522 825	3 356 127	1	1	2	2
Educational buildings	11 146 272	6 175 769	3 857 691	1 112 812	1	1	1	3
Other building construction	27 989 259	15 030 739	7 204 433	5 754 086	1	1	1	1
Nonbuilding construction, total	6 106 637	2 663 852	1 510 664	1 932 121	1	1	2	3
Other nonbuilding construction	6 106 637	2 663 852	1 510 664	1 932 121	1	1	2	3
Construction work, nsk	112 273	112 273	—	—	—	—	—	—

¹For the 2002 Economic Census, the definition of value of construction work has been modified from the 1997 Economic Census definition. See Appendix A for the modified definition.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 8. Selected Statistics for Establishments by Specialization in Types of Construction: 2002

[Thousand dollars unless otherwise noted. Detail may not add to total because of rounding. This table presents selected statistics for establishments according to degree of specialization in major types of construction work. If number of establishments or value of construction work for a given type of specialization are relatively insignificant, data may not be shown. In addition, data are not shown in this table where distribution of the value of construction work by type of construction was not provided in Table 7. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, and nonsampling error, see note at the end of table. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A.]

Item	Number of establishments	Total number of employees	Total payroll	Value of construction work for specialized type	Net value of construction work	Value added	Cost of construction work subcontracted out to others	Relative standard error of estimate (percent) for column—
	A	B	C	D	E	F	G	G
238220, Plumbing, heating, and air-conditioning contractors								
Total	87 501	974 368	35 942 262	X	105 323 163	66 878 082	12 462 622	1
Establishments specializing 51 percent or more...	64 190	593 303	20 534 537	56 198 029	62 123 326	38 866 662	6 534 836	1
Building construction, total								
Establishments specializing 51 percent or more...	62 489	566 457	19 454 426	53 780 243	59 616 993	37 089 678	6 082 273	2
Specialization 100 percent	22 333	170 274	5 703 238	19 836 348	18 099 551	11 278 289	1 736 797	4
Specialization 90 to 99 percent	10 820	88 828	2 819 575	8 953 551	8 964 416	5 368 288	640 252	3
Specialization 80 to 89 percent	9 983	81 888	2 737 912	7 774 661	8 645 013	5 345 536	822 886	2
Specialization 70 to 79 percent	8 399	86 507	3 028 440	7 481 893	9 147 647	5 681 757	1 098 083	4
Specialization 60 to 69 percent	7 274	85 926	3 127 713	6 218 888	8 958 662	5 623 159	1 039 123	1
Specialization 51 to 59 percent	3 679	53 035	2 037 548	3 514 902	5 801 704	3 792 649	745 132	2
Single-family houses, detached and attached								
Establishments specializing 51 percent or more...	48 433	334 000	9 745 039	29 296 619	32 401 426	19 658 067	1 838 966	4
Specialization 100 percent	18 043	110 969	3 201 683	12 046 514	11 245 920	6 870 227	800 593	9
Specialization 90 to 99 percent	9 250	65 388	1 848 915	6 098 484	6 254 033	3 659 939	287 273	5
Specialization 80 to 89 percent	8 180	53 912	1 554 645	4 534 030	5 245 261	3 142 438	264 623	5
Specialization 70 to 79 percent	6 123	43 834	1 318 850	3 209 882	4 181 533	2 539 465	188 249	5
Specialization 60 to 69 percent	4 331	38 624	1 150 193	2 291 485	3 528 227	2 196 008	160 567	4
Specialization 51 to 59 percent	2 506	21 273	670 753	1 116 224	1 946 452	1 249 991	137 661	5
Single-family houses, detached								
Establishments specializing 51 percent or more...	44 727	310 893	9 068 897	27 264 935	30 030 582	18 156 894	1 713 001	4
Specialization 100 percent	16 868	105 240	3 063 554	11 419 609	10 652 608	6 457 138	767 001	9
Specialization 90 to 99 percent	8 652	62 016	1 755 426	5 756 665	5 906 023	3 434 448	265 530	3
Specialization 80 to 89 percent	7 444	49 632	1 413 787	4 159 961	4 817 020	2 887 301	238 705	5
Specialization 70 to 79 percent	5 509	39 260	1 186 041	2 856 758	3 722 676	2 259 913	166 319	5
Specialization 60 to 69 percent	3 966	35 080	1 031 831	2 054 933	3 159 529	1 975 111	146 763	4
Specialization 51 to 59 percent	2 288	19 664	618 258	1 017 010	1 772 727	1 142 983	128 683	5
Single-family houses, attached								
Establishments specializing 51 percent or more...	3 706	23 108	676 141	2 031 684	2 370 844	1 501 173	125 965	13
Specialization 100 percent	1 175	5 729	138 129	626 905	593 312	413 088	33 593	35
Specialization 90 to 99 percent	597	3 372	93 489	341 819	348 010	225 491	21 742	49
Specialization 80 to 89 percent	736	4 280	140 858	374 069	428 241	255 137	25 918	13
Specialization 70 to 79 percent	613	4 574	132 809	353 124	458 857	279 552	21 930	12
Specialization 60 to 69 percent	365	3 544	118 362	236 552	368 698	220 897	13 804	14
Specialization 51 to 59 percent	218	1 609	52 495	99 215	173 725	107 009	8 978	16
Other manufacturing and light industrial buildings, such as factories, assembly plants, and industrial research laboratories								
Establishments specializing 51 percent or more...	1 860	44 406	2 128 504	5 018 824	5 352 744	3 590 700	760 630	1
Specialization 100 percent	922	19 168	909 551	2 532 766	2 262 484	1 565 685	270 282	1
Specialization 90 to 99 percent	121	3 410	165 414	418 752	394 593	263 080	54 450	4
Specialization 80 to 89 percent	119	3 996	184 991	465 875	500 657	377 767	68 791	1
Specialization 70 to 79 percent	250	5 617	260 655	533 398	639 900	396 305	97 047	2
Specialization 60 to 69 percent	319	6 389	312 178	590 631	818 405	500 944	133 093	1
Specialization 51 to 59 percent	129	5 826	295 716	477 402	736 705	486 920	136 968	2
Office buildings								
Establishments specializing 51 percent or more...	2 426	42 884	1 874 214	4 881 368	5 485 409	3 499 021	853 201	1
Specialization 100 percent	822	9 780	396 780	1 354 115	1 175 497	703 442	178 618	4
Specialization 90 to 99 percent	267	4 114	182 589	567 251	549 705	360 096	67 776	7
Specialization 80 to 89 percent	300	5 617	266 962	743 169	774 144	537 385	133 501	3
Specialization 70 to 79 percent	398	8 376	346 404	908 314	1 094 288	680 321	156 305	2
Specialization 60 to 69 percent	472	8 612	406 536	873 275	1 161 424	717 256	227 803	2
Specialization 51 to 59 percent	164	6 385	274 943	435 243	730 351	500 521	89 198	2
Stores, restaurants, and automobile service stations, and other commercial buildings								
Establishments specializing 51 percent or more...	3 965	49 730	1 855 663	4 495 704	5 223 451	3 455 160	520 980	2
Specialization 100 percent	1 265	13 565	531 906	1 636 597	1 498 795	997 510	137 802	4
Specialization 90 to 99 percent	371	4 134	160 968	469 648	459 563	302 706	41 940	5
Specialization 80 to 89 percent	688	5 953	233 525	534 673	610 521	393 651	44 873	5
Specialization 70 to 79 percent	619	8 996	318 920	787 140	928 354	603 244	149 778	3
Specialization 60 to 69 percent	635	8 802	320 223	566 956	850 503	561 174	68 973	5
Specialization 51 to 59 percent	387	8 279	290 121	500 690	875 714	596 876	77 615	4
Educational buildings								
Establishments specializing 51 percent or more...	1 795	35 838	1 473 193	4 061 338	4 440 289	2 795 337	1 074 360	2
Specialization 100 percent	213	2 568	111 917	431 852	338 533	210 966	93 319	17
Specialization 90 to 99 percent	343	5 016	180 803	622 312	544 609	313 980	120 757	6
Specialization 80 to 89 percent	232	5 251	216 583	707 510	664 481	410 553	195 676	3
Specialization 70 to 79 percent	418	9 560	364 663	1 025 266	1 136 853	728 087	276 415	3
Specialization 60 to 69 percent	445	9 312	400 046	874 057	1 161 109	742 033	239 431	4
Specialization 51 to 59 percent	145	4 131	199 179	400 342	594 702	389 718	148 762	4

See footnotes at end of table

Table 8. Selected Statistics for Establishments by Specialization in Types of Construction: 2002—Con.

[Thousand dollars unless otherwise noted. Detail may not add to total because of rounding. This table presents selected statistics for establishments according to degree of specialization in major types of construction work. If number of establishments or value of construction work for a given type of specialization are relatively insignificant, data may not be shown. In addition, data are not shown in this table where distribution of the value of construction work by type of construction was not provided in Table 7. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, and nonsampling error, see note at the end of table. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A.]

Item	Number of establishments	Total number of employees	Total payroll	Value of construction work for specialized type	Net value of construction work	Value added	Cost of construction work subcontracted out to others	Relative standard error of estimate (percent) for column—
	A	B	C	D	E	F	G	G
Other building construction								
Establishments specializing 51 percent or more...	4 010	59 599	2 377 813	6 026 390	6 713 674	4 091 392	1 034 136	5
Specialization 100 percent	1 068	14 223	551 401	1 834 504	1 578 322	930 460	256 183	8
Specialization 90 to 99 percent	468	6 766	280 886	777 103	761 912	468 486	68 058	9
Specialization 80 to 89 percent	464	7 158	281 205	789 405	849 948	483 742	115 423	5
Specialization 70 to 79 percent	590	10 124	418 948	1 017 892	1 166 719	734 336	230 290	20
Specialization 60 to 69 percent	1 072	14 188	538 537	1 022 485	1 438 994	905 746	209 255	3
Specialization 51 to 59 percent	348	7 141	306 837	585 000	917 780	568 622	154 928	6
Nonbuilding construction, total								
Establishments specializing 51 percent or more...	1 525	25 796	1 040 957	2 305 514	2 404 578	1 702 193	442 045	5
Specialization 100 percent	1 022	14 874	458 386	1 187 970	1 078 285	755 815	109 684	10
Specialization 90 to 99 percent	107	1 713	93 945	233 199	202 658	173 655	48 972	35
Specialization 80 to 89 percent	24	1 179	60 624	114 926	117 884	96 747	25 091	2
Specialization 70 to 79 percent	112	2 596	120 531	226 918	268 091	163 081	42 321	4
Specialization 60 to 69 percent	229	3 061	161 517	288 127	386 839	257 401	78 580	1
Specialization 51 to 59 percent	32	2 372	145 954	254 374	350 821	255 493	137 397	2
Other nonbuilding construction								
Establishments specializing 51 percent or more...	1 525	25 796	1 040 957	2 305 514	2 404 578	1 702 193	442 045	5
Specialization 100 percent	1 022	14 874	458 386	1 187 970	1 078 285	755 815	109 684	10
Specialization 90 to 99 percent	107	1 713	93 945	233 199	202 658	173 655	48 972	35
Specialization 80 to 89 percent	24	1 179	60 624	114 926	117 884	96 747	25 091	2
Specialization 70 to 79 percent	112	2 596	120 531	226 918	268 091	163 081	42 321	4
Specialization 60 to 69 percent	229	3 061	161 517	288 127	386 839	257 401	78 580	1
Specialization 51 to 59 percent	32	2 372	145 954	254 374	350 821	255 493	137 397	2
Construction work, nsk								
Establishments specializing 51 percent or more...	176	1 050	39 155	112 273	101 755	74 791	10 518	—
Specialization 100 percent	176	1 050	39 155	112 273	101 755	74 791	10 518	—

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 9. Value of Business Done for Establishments by Kind-of-Business Activity: 2002

[Thousand dollars unless otherwise noted. Detail may not add to total because of rounding. Based on their primary business activity or combination of activities, establishments were classified into this specific industry. These establishments, however, may also be engaged in other kinds of business activities. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, and nonsampling error, see note at end of table. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Primary and other kind of business activities	Value of business done ¹	Relative standard error of estimate (percent)
238220, Plumbing, heating, and air-conditioning contractors		
Total	118 740 885	—
Special trade contractors, total	100 297 766	1
Heating, ventilation and air-conditioning contractor (HVAC)	49 425 445	1
Mechanical contractor	17 811 996	1
Plumbing contractor	33 060 325	1
All other construction activities	17 425 375	1
Other business activities secondary to construction activities, total	943 763	3
All other business activities secondary to construction activities	943 763	3
Kind of business activity, nsk	73 981	9

¹For the 2002 Economic Census, the definition of value of business done has been modified from the 1997 Economic Census definition. See Appendix A for the modified definition.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 10. Selected Statistics for Establishments by Specialization in Kind-of-Business Activity: 2002

[Thousand dollars unless otherwise noted. Detail may not add to total because of rounding. This table presents selected statistics for establishments according to degree of specialization by major activity of construction work. If number of establishments or value of construction work for a given type of specialization are relatively insignificant, data may not be shown. In addition, data are not shown in this table where distribution of the value of business done by kind of business activity was not provided in Table 9. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, and nonsampling error, see note at end of table. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A.]

Item	Number of establishments	Total number of employees	Total payroll	Value of construction work for specialized kind of business	Net value of construction work	Value added	Cost of construction work subcontracted out to others	Relative standard error of estimate (percent) for column—
	A	B	C	D	E	F	G	G
238220, Plumbing, heating, and air-conditioning contractors								
Total	87 501	974 368	35 942 262	X	105 323 163	66 878 082	12 462 622	1
Establishments specializing 51 percent or more...	85 190	943 531	34 749 621	101 423 440	102 200 432	64 897 846	12 063 345	1
Special trade contractors, total								
Establishments specializing 51 percent or more...	77 180	828 799	30 150 597	89 543 425	90 072 752	56 678 284	10 774 610	1
Specialization 100 percent	53 572	514 992	18 129 954	62 329 785	56 253 469	35 271 628	6 076 316	2
Specialization 90 to 99 percent	6 435	68 677	2 440 744	7 280 784	7 036 948	4 425 103	689 474	4
Specialization 80 to 89 percent	4 262	49 437	1 808 199	4 989 920	5 367 207	3 307 979	651 106	1
Specialization 70 to 79 percent	4 463	50 184	1 920 587	4 472 491	5 427 304	3 332 311	688 443	2
Specialization 60 to 69 percent	4 301	60 072	2 196 073	4 354 139	6 131 230	3 955 026	838 966	2
Specialization 51 to 59 percent	4 145	85 437	3 655 039	6 116 307	9 856 595	6 386 237	1 830 305	1
Heating, ventilation and air-conditioning contractor (HVAC)								
Establishments specializing 51 percent or more...	36 345	413 392	15 077 645	44 843 001	45 736 143	28 424 482	4 769 818	1
Specialization 100 percent	25 496	252 584	8 914 130	30 930 024	28 344 874	17 493 061	2 585 150	2
Specialization 90 to 99 percent	3 161	37 165	1 301 880	3 900 613	3 824 341	2 323 710	310 781	3
Specialization 80 to 89 percent	1 974	26 733	951 427	2 602 040	2 841 413	1 724 810	294 504	2
Specialization 70 to 79 percent	1 959	24 300	932 775	2 166 425	2 624 029	1 602 555	325 365	3
Specialization 60 to 69 percent	1 801	27 940	1 076 601	2 123 625	3 013 655	1 980 851	369 871	1
Specialization 51 to 59 percent	1 954	44 669	1 900 833	3 120 274	5 087 830	3 299 494	884 146	2
Mechanical contractor								
Establishments specializing 51 percent or more...	3 219	119 411	5 330 712	16 069 385	14 744 179	9 470 815	3 499 949	1
Specialization 100 percent	2 121	75 136	3 254 930	11 422 606	9 305 993	5 930 246	2 116 613	1
Specialization 90 to 99 percent	138	5 954	272 553	879 863	738 543	485 070	195 462	8
Specialization 80 to 89 percent	148	6 680	318 916	891 465	864 039	546 247	205 970	2
Specialization 70 to 79 percent	169	6 868	340 696	825 041	921 182	584 213	203 097	2
Specialization 60 to 69 percent	287	8 121	323 386	682 999	880 591	598 068	212 947	2
Specialization 51 to 59 percent	357	16 652	820 232	1 367 411	2 033 831	1 326 971	565 860	1
Plumbing contractor								
Establishments specializing 51 percent or more...	37 615	295 997	9 742 240	28 631 039	29 592 430	18 782 987	2 504 844	3
Specialization 100 percent	25 955	187 272	5 960 895	19 977 155	18 602 603	11 848 320	1 374 552	5
Specialization 90 to 99 percent	3 136	25 557	866 312	2 500 308	2 474 064	1 616 324	183 231	10
Specialization 80 to 89 percent	2 141	16 024	537 855	1 496 414	1 661 755	1 036 922	150 632	4
Specialization 70 to 79 percent	2 335	19 016	647 116	1 481 025	1 882 092	1 145 542	159 980	4
Specialization 60 to 69 percent	2 213	24 011	796 087	1 547 515	2 236 983	1 376 107	256 149	5
Specialization 51 to 59 percent	1 834	24 116	933 975	1 628 623	2 734 933	1 759 772	380 299	3
All other construction activities								
Establishments specializing 51 percent or more...	7 993	114 308	4 575 212	11 812 424	12 066 441	8 170 805	1 282 383	3
Specialization 100 percent	5 527	75 705	2 830 103	8 107 601	7 531 197	5 151 769	576 404	5
Specialization 90 to 99 percent	752	10 341	483 568	1 225 335	1 179 806	800 023	147 979	2
Specialization 80 to 89 percent	362	5 162	225 490	582 000	580 559	415 691	130 891	2
Specialization 70 to 79 percent	525	7 169	276 704	570 929	670 917	488 540	105 822	4
Specialization 60 to 69 percent	304	4 939	229 314	436 976	627 153	394 665	75 157	6
Specialization 51 to 59 percent	522	10 992	530 032	889 583	1 476 810	920 118	246 129	8
Kind of business activity, nsk								
Establishments specializing 51 percent or more...	17	423	23 812	67 591	61 239	48 757	6 352	7
Specialization 100 percent	17	423	23 812	67 591	61 239	48 757	6 352	7

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C.

Table 11. Value of Construction Work for Establishments by Location of Construction Work: 2002

[Thousand dollars unless otherwise noted. Detail may not add to total because of rounding. Data based on the 2002 Economic Census. For information on confidentiality protection, sampling error, nonsampling error, and geographical definitions, see note at end of table. For information on geographic areas followed by *, see Appendix D. For meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Location of construction work	Value of construction work ¹	Relative standard error of estimate (percent) for column—
238220, Plumbing, heating, and air-conditioning contractors		
United States	117 785 785	—
Construction work done in—		
Alabama	1 473 664	2
Alaska	388 165	4
Arizona	2 030 119	3
Arkansas	755 617	5
California	12 051 737	2
Colorado	2 405 746	2
Connecticut	1 703 431	3
Delaware	430 658	3
District of Columbia	593 638	2
Florida	6 301 205	2
Georgia	3 409 940	5
Hawaii	380 827	7
Idaho	537 545	3
Illinois	6 255 128	2
Indiana	2 757 032	2
Iowa	1 183 950	2
Kansas	1 149 451	2
Kentucky	1 450 695	2
Louisiana	1 372 204	5
Maine	390 967	5
Maryland	3 017 159	2
Massachusetts	3 511 514	2
Michigan	4 478 262	2
Minnesota	2 861 940	2
Mississippi	869 053	5
Missouri	2 477 098	2
Montana	358 513	7
Nebraska	786 712	2
Nevada	1 206 834	5
New Hampshire	509 771	4
New Jersey	4 065 988	2
New Mexico	567 642	5
New York	7 732 702	2
North Carolina	3 219 548	2
North Dakota	260 236	4
Ohio	4 462 779	2
Oklahoma	941 971	3
Oregon	1 610 962	4
Pennsylvania	5 283 062	2
Rhode Island	492 480	4
South Carolina	1 483 792	3
South Dakota	319 353	3
Tennessee	2 098 289	2
Texas	8 146 269	3
Utah	926 063	3
Vermont	207 427	9
Virginia	3 417 506	2
Washington	2 433 761	3
West Virginia	373 032	4
Wisconsin	2 455 033	2
Wyoming	189 314	7

¹For the 2002 Economic Census, the definition of value of construction work has been modified from the 1997 Economic Census definition. See Appendix A for the modified definition.

Note: The data in this table are based on the 2002 Economic Census. To maintain confidentiality, the Census Bureau suppresses data to protect the identity of any business or individual. The census results in this table contain sampling errors and nonsampling errors. Data users who create their own estimates using data from American FactFinder tables should cite the Census Bureau as the source of the original data only. For explanation of terms, see Appendix A. For full technical documentation, see Appendix C. For geographical definitions, see Appendix D.

Appendix A.

Explanation of Terms

ESTABLISHMENT

A relatively permanent office, or other place of business, where the usual business activities related to construction are conducted. Generally, a relatively permanent office is one which has been established for the management of more than one project or job and which is expected to be maintained on a continuing basis.

Number of establishments includes all establishments that were in business at any time during the year. It covers all full-year and part-year operations. Construction establishments which were inactive or idle for the entire year were not included.

NUMBER OF EMPLOYEES

Includes all full-time and part-time individuals on the payrolls of construction establishments during any part of the pay period which included the 12th of March, May, August, and November. Included are individuals on paid sick leave, paid holidays, paid vacations, and salaried officers and executives of a corporation. Excluded are subcontractors and their employees; full- or part-time leased employees whose payroll was filed under an employee leasing company's Employer Identification Number; temporary staffing obtained from a staffing service; and proprietors and partners of unincorporated businesses.

Includes all permanent full-time and part-time employees who are on the payrolls of establishments who worked or received pay for any part of the pay period including the 12th of March, May, August, and November.

The all employees or total number of employees number is the sum of construction workers plus other employees who were on the payroll during the pay periods including the 12th of March, May, August, and November, divided by four.

Construction workers

Includes all payroll workers (up through the working supervisory level) directly engaged in construction operations, such as painters, carpenters, plumbers, and electricians. Included are journeymen, mechanics, apprentices, laborers, truck drivers and helpers, equipment operators, on-site record keepers, and security guards. Supervisory employees above the working foreman level are excluded from this category and are included in the other employees category.

The average number of construction workers is the sum of construction workers who were on the payroll during the pay periods including the 12th of March, May, August, and November, divided by four.

Other employees

Includes payroll employees in executive, purchasing, accounting, personnel, professional, technical activities, and routine office functions. Also included are supervisory employees above the working foreman level.

The average number of other employees is the sum of other employees who were on the payroll during the pay periods including the 12th of March, May, August, and November, divided by four.

PAYROLL

Includes the gross earnings paid in the reporting year to all employees on the payroll of construction establishments. It includes all forms of compensation such as salaries, wages, commissions, dismissal pay, bonuses, and vacation and sick leave pay, prior to deductions such as employees'

Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. The total includes salaries of officers of these establishments, if a corporation, but excludes payments to the proprietor or partners, if unincorporated.

Payroll for Construction Workers

Includes the gross earnings paid in the reporting year to all construction workers on the payroll of construction establishments. It includes all forms of compensation such as salaries, wages, commissions, dismissal pay, bonuses, and vacation and sick leave pay, prior to deductions such as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds.

Payroll for Other Employees

Includes the gross earnings paid in the reporting year to all other employees on the payroll of construction establishments. It includes all forms of compensation such as salaries, wages, commissions, dismissal pay, bonuses, and vacations and sick leave pay, prior to deductions such as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. Payroll of other employees excludes salaries of the proprietor or partners, if unincorporated.

FIRST-QUARTER PAYROLL FOR ALL EMPLOYEES

Includes the gross earnings paid in the first quarter of the reporting year to all employees on the payroll of construction establishments. The first-quarter payroll period is the first quarterly pay period which includes March 12. Included are all forms of compensation such as salaries, wages, commissions, dismissal pay, bonuses, and vacation and sick leave pay, prior to such deductions as employees' Social Security contributions, withholding taxes, group insurance, union dues, and savings bonds. It also includes salaries of officers of these establishments, if a corporation, but excludes payments to the proprietor or partners, if unincorporated.

FRINGE BENEFITS FOR ALL EMPLOYEES

Includes the total sum of fringe benefits of all full-time and part-time employees on the payrolls of construction establishments during any part of the pay period which included the 12th of the months specified on the report form. Includes expenditures made by the employer for legally required and voluntary fringe benefit programs for employees.

Legally Required Expenditures

Includes expenditures made by the employer for Social Security and Medicare contributions, unemployment compensation, worker's compensation, and state temporary disability payments.

Voluntary Expenditures

Includes expenditures made by the employer for life insurance premiums, pension plans, insurance premiums on hospital and medical plans, welfare plans, and union negotiated benefits.

VALUE OF BUSINESS DONE

Includes the sum of value of construction work and other business receipts. Value of business done is the sum of receipts, billings, or sales from establishments of construction business activities plus receipts from other business activities.

Value of Construction Work

In the 1987-1997 censuses, the value of construction work was collected to measure actual construction activity done during the year. Studies have shown that respondents were not able to accurately report these data. In 2002, receipts, billings, or sales for construction work was collected.

This item includes the receipts, billings, or sales for construction work done by building contractors, heavy and civil engineering construction contractors, and specialty trade contractors. Included are new construction, additions, alterations or reconstruction, and maintenance and repair construction work. Establishments engaged in the sale and installation of construction components such as plumbing, heating, and central air-conditioning supplies and equipment; lumber and building materials; paint, glass, and wallpaper; and electrical and wiring supplies, elevators, or escalators were instructed to include both the value for the installation and receipts covering the price of the items installed. Excluded are the cost of industrial and other special machinery and equipment that are not an integral part of a structure and receipts from business operations in foreign countries.

The value of construction work consists of several components that are summed up individually to get the total value of construction work. These components are:

1. Value of construction work on government owned projects. This is the total of all projects owned by federal, state, and local governments:
 - a. Value of construction work on federally owned projects. This is the value of construction work for projects owned by the federal government.
 - b. Value of construction work on state and locally owned projects. This is the summed total value of construction work for all projects owned by state and local governments.
2. Value of construction work on privately owned projects. This is the value of construction work for projects owned privately (excluding government owned projects).

Other Business Receipts

Includes the receipts for all other business activities done by an establishment in the current year. Includes business receipts not reported as value of construction work. This includes business receipts from retail and wholesale trade, rental of equipment without operator, manufacturing, transportation, legal services, insurance, finance, rental of property and other real estate operations, and other nonconstruction activities. Receipts for separately definable architectural and engineering work for others are also included here. Excluded are nonoperating income such as interest, dividends, the sale of fixed assets, or receipts from other business operations in foreign countries.

NET VALUE OF CONSTRUCTION WORK

Includes the value of construction work less the cost of construction work subcontracted out to others.

VALUE ADDED

This measure of construction activity is equal to value of business done, less costs for construction work subcontracted out to others and costs for materials, components, supplies, and fuels.

VALUE OF CONSTRUCTION WORK SUBCONTRACTED IN FROM OTHERS

Includes the value of construction work done by reporting establishments as subcontractors to other contractors or builders. Establishments were asked to report the approximate percent of total value of construction work accounted for by such work, and the percentages reported were applied to the reported value of construction work to develop a dollar value.

CONSTRUCTION RECEIPTS PERCENT ESTIMATED

Construction receipts were obtained from census respondent forms. For establishments whose respondent forms were not received at the time data were tabulated, the data were calculated using industry averages and imputation for nonresponse.

SELECTED COSTS

Includes the direct charges actually paid or payable for costs incurred for purchases of materials, components, and supplies; costs of construction work subcontracted out to others; and costs for selected power, fuels, and lubricants. Capital expenditures and rental costs for machinery, equipment, and structures are not included.

Cost of Materials, Components, and Supplies

Includes the costs for materials, components, and supplies used by establishments in the construction or reconstruction of buildings, structures, or other facilities plus costs for materials bought and resold to others. Also included are costs made for direct purchases of materials, components, and supplies although the purchases were subsequently provided to subcontractors for their use. Supplies include expendable tools which are charged to current accounts. Freight and other direct charges representing only that amount paid after discounts and the value of materials, components, and supplies obtained from other establishments of the respondent's company are also included. Excluded from this item are the cost of fuels, lubricants, electric energy, and industrial and other specialized machinery and equipment such as printing presses; computer systems that are not an integral part of a structure; and materials furnished to contractors by the owners of projects.

Cost of Construction Work Subcontracted Out to Others

Includes all costs for construction work subcontracted out to other construction contractors during the reporting year. Excluded from this item are costs to the reporting establishment for its purchases of materials, components, and supplies provided to a subcontractor for use. These costs are reported under costs for materials, components, and supplies. Also excluded are costs for the rental of machinery or equipment.

Cost of Selected Power, Fuels, and Lubricants

Includes costs for fuels including gasoline, diesel fuel and lubricants, and electric energy purchased during the year from other companies or received from other establishments of the company. Also included are costs for natural gas, manufactured gas, fuel oil, and coal and coke products.

The components of selected power, fuels, and lubricants are:

1. Purchased electricity. This is the cost of electric energy purchased during the year from other companies or received from other establishments of the company.
2. Natural gas and manufactured gas. This is the cost of natural gas and manufactured gas purchased during the year from other companies or received from other establishments of the company.
3. Gasoline and diesel fuel. This is the cost of gasoline and diesel fuel purchased during the year from other companies or received from other establishments of the company. This cost is broken down into two different uses of gasoline and diesel fuel. They are:
 - a. On-highway use of gasoline and diesel fuel. This is the cost of gasoline and diesel fuel purchased during the year to fuel highway vehicles. A highway vehicle is any self-propelled vehicle designed to carry a load over public highways, whether or not the vehicle was also designed to perform other functions. Examples of vehicles designed to carry a load over public highways are passenger automobiles, trucks, and truck tractors. If a vehicle can be used for a combination of on-highway and off-highway uses and has one fuel tank, the fuel use is not considered off-highway. An example of this is a concrete-mixer truck where the truck engine operates both the engine and the mixing unit by a power take-off and is fueled by a single tank. None of the fuel used in this vehicle is off-highway because of the on-highway use. If the vehicle has separate fuel tanks and engines, the fuel in a tank used for non-highway use may be considered off-highway use.

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- b. Off-highway use of gasoline and diesel fuel. This is the cost of gasoline and diesel fuel purchased during the reporting year for off-highway use. Off-highway fuel use is the use of fuel for trade, business, or income producing activity. In most cases, off-highway fuel use does not include use in a highway vehicle registered or required to be registered for use on public highways.
 4. All other fuels and lubricants. This is the cost of fuels and lubricants purchased during the year from other companies or received from other establishments of the company that are not included as costs in any of these categories: natural gas; manufactured gas; gasoline; and diesel fuel.

COSTS OF MATERIALS, COMPONENTS, SUPPLIES, AND FUELS

Includes the costs for materials, components, and supplies used by establishments in the construction or reconstruction of buildings, structures, or other facilities plus costs for materials bought and resold to others. Also included is the costs for fuels. These include gasoline, diesel fuel, lubricants, electric energy purchased during the year from other companies or received from other establishments of the company, and costs for natural and manufactured gas, fuel oil, and coal and coke products. Excluded from this item are industrial and other specialized machinery and equipment, such as printing presses; computer systems that are not an integral part of a structure; and materials furnished to contractors by the owners of projects.

RENTAL PAYMENTS

Includes the total rental costs for renting and/or leasing construction machinery and equipment, transportation equipment, production equipment, office equipment, furniture and fixtures, scaffolding, office space, and buildings. It excludes costs for the rental of land. It also excludes costs under agreements that in effect are conditional sales contracts such as capital leases. Such costs are included in capital expenditures.

SELECTED PURCHASED SERVICES

Includes the costs for services purchased from other companies that are paid directly by an establishment that are normally considered as overhead or non-job-related costs. Included are only the cost of repairs necessary to maintain property and equipment. Excluded are the cost of improvements that increase the value of property or the cost of adapting the property for another use. Such costs are included in capital expenditures. Also excluded are the salaries paid to employees and cost of construction activities subcontracted to others already reported within the selected costs of an establishment.

Included in the cost of selected purchased services for communication services is the actual expense incurred or payable during the year for any type of communication. Such types of communication include telephone, data transmission, telegraph, Internet, connectivity, FAX, telex, photo transmission, paging, cellular telephone, on-line access and related services, etc.

Included in the cost of selected purchased services for repairs to buildings and other structures is the actual expense incurred or payable during the year for any type of repair to buildings and other structures. Such types of repair include maintenance and repair of buildings, job-site trailers, and other structures. Excluded are janitorial services.

The cost of selected purchased services for repairs to machinery and equipment is the actual expense incurred or payable during the year for any type of repairs made to structures and equipment by outside companies or from other establishments of the same company. Such types of repairs to machinery and equipment include maintenance and repair of construction equipment and tools; machinery; and office equipment, furniture, and vehicles, including related service contracts.

Included in the cost of selected purchased services for legal services is the actual expense incurred or payable during the year for any type of legal services. Excluded are the salaries paid to employees of the establishment for these services.

Included in the cost of selected purchased services for accounting, auditing, and bookkeeping services is the actual expense incurred or payable during the year for these services. Excluded are the salaries paid to employees of the establishment for these services.

Included in the cost of selected purchased services for advertising and promotional services is the actual expense incurred or payable during the year for these services. Such types of advertising and promotional services include advertising, marketing, promotional, or public relations services.

GROSS BOOK VALUE OF DEPRECIABLE ASSETS AT BEGINNING OF YEAR (BOY) AND END OF YEAR (EOY)

Includes the value of depreciable assets for the beginning of year (BOY) and end of year (EOY). Gross value of depreciable assets are usually the original costs of the assets at the beginning of the year. The gross value of depreciable assets (BOY), plus any capital expenditures for new and used depreciable assets in the reporting year, minus the gross value of depreciable assets sold, retired, scrapped, destroyed, etc. in the reporting year, comprise gross book value of depreciable assets (EOY). Depreciable assets are the fixed tangible property of the establishment for which depreciation accounts are ordinarily maintained.

CAPITAL EXPENDITURES, OTHER THAN LAND

Includes capital expenditures that will be charged to the fixed assets accounts and for which depreciation accounts are ordinarily maintained. Includes the cost of capital improvements that were made during the year that increased the value of property or adapted the property for another use. Capital expenditures for leasehold improvements made to property leased from others are also included. Land expenditures are not included as capital expenditures. If any building or equipment had been acquired under a capital leasing arrangement that meet the criteria set down by the Financial Accounting Standards Board (FASB), respondents were instructed to report the original cost or market value as a fixed asset and as a capital expenditure, if acquired in the reporting year. If the lease qualified as an operating lease, respondents were instructed not to include the value of the building and equipment as a fixed asset or capital expenditure. If capital expenditures were not recorded directly at the establishment level but handled centrally at a company or division level, respondents were requested to report appropriate estimates for the individual establishments.

RETIREMENTS AND DISPOSITION OF DEPRECIABLE ASSETS

Includes the gross value of depreciable assets sold, retired, scrapped, destroyed, abandoned, etc., during the year. The values shown are the acquisition costs of the retired assets. This item also includes the value of assets (at acquisition cost rather than current market value) transferred to other establishments of the same company.

DEPRECIATION CHARGES DURING YEAR

Includes the depreciation expenses of the establishment during the reporting year. These expenses are charged against depreciable assets which are the fixed tangible property of the establishment for which depreciation accounts are ordinarily maintained.

NUMBER OF ESTABLISHMENTS WITH INVENTORIES

Includes all establishments with payroll that reported a dollar amount of inventory. Includes the number of establishments that were in business at any time during the reporting year. It covers all full-year and part-year operations. Construction establishments that were inactive or idle for the entire year were not included.

Value of Construction Work for Establishments With Inventories

Includes the value of construction work for establishments with payroll that reported a dollar amount of inventory in the reporting year.

BEGINNING- AND END-OF-YEAR INVENTORIES OF MATERIALS AND SUPPLIES

Includes the inventories of materials and supplies owned at the beginning and end of the reporting year by establishments with payroll. Includes all of the materials and supplies that are owned regardless of where they are held. Excludes materials that are owned by others but held by the reporting establishment. Builders who built on their own account for sale were requested to exclude work in progress and finished units not sold from inventories. Inventories of multiestablishment companies were instructed to be reported by the establishment that is responsible for the inventories, even if these inventories were held at a separate location.

NUMBER OF ESTABLISHMENTS WITH NO INVENTORIES

Includes all establishments with payroll that reported having no inventories of materials and supplies during the reporting year. Includes the number of establishments that were in business at any time during the reporting year. It covers all full-year and part-year operations. Construction establishments that were inactive or idle for the entire reporting year were not included.

Value of Construction Work for Establishments With No Inventories

Includes the value of construction work for establishments with payroll that reported having no dollar amount of inventory in the reporting year.

NUMBER OF ESTABLISHMENTS NOT REPORTING INVENTORIES

Includes all establishments with payroll that did not report a dollar amount for inventories of materials and supplies during the reporting year. It covers all full-year and part-year operations. Construction establishments that were inactive or idle for the entire reporting year were not included.

Value of Construction Work for Establishments Not Reporting Inventories

Includes the value of construction work for establishments that did not report a dollar amount for inventories of materials and supplies, and the value of construction work for establishments that did not complete a census form.

VALUE OF CONSTRUCTION WORK BY TYPE OF CONSTRUCTION

Includes the dollar value of construction work according to the specified types of construction. There are three categories of construction. They are:

1. New construction. The original construction work done on a project including all finishing work on the original building or structure. Land development work on the site and demolition of existing structures are also included.
2. Additions, alterations, or reconstruction. The construction work which adds to the value or useful life of an existing building or structure or which adapts a building or structure to a new or different use. Included are "major replacements" of building systems such as the installation of a new roof or heating system and the resurfacing of streets or highways. This contrasts to the repair of a hole in a roof or the routine patching of highways and streets, which would be classified as maintenance and repair.
3. Maintenance and repair. The incidental construction work which keeps a property in ordinary working condition. Excluded are trash and snow removal, lawn maintenance and landscaping, cleaning, and janitorial services.

Types of Construction

Provides data by the types of buildings, structures, or other facilities being constructed or worked on by construction establishments in the reporting year. Respondents were instructed that each building, structure, or other facility should be classified in terms of its function. For example, a restaurant building was to be classified in the restaurant category whether it was designed as a commercial restaurant building or an auxiliary unit of an educational institution. If respondents

worked on more than one type of building or structure in a multibuilding complex, they were instructed to report separately for each building or type of structure. If they worked on a building that had more than one purpose; i.e., office and residential, or commercial, they were to classify the building by its major purpose. In addition, all respondents were requested to report the percentage of the value of construction work done for new construction, additions, alterations, or reconstruction, and maintenance and repair work for each of these types. There are two types of construction:

1. Building Construction. The details for this type of construction are defined as:

- Single-family houses, detached. Includes all fully detached residential buildings constructed for one family use.
- Single-family houses, attached, including townhouses and townhouse-type condominiums. Includes all residential buildings with two or more living quarters side by side, completely independent of one another, and separated by an unbroken party or lot line wall from ground to roof.
- Apartment buildings, apartment-type condominiums, and cooperatives. Includes apartment rentals, high-rise, low-rise, or any structures containing two or more housing units, excluding attached single-family houses.
- Dormitories and barracks. Includes school dormitories and military or nonmilitary barracks that are nonhousekeeping structures.
- Other manufacturing and industrial buildings. Includes all manufacturing and industrial buildings and plants that are used to house production and assembly activities. Note that industrial parks should be classified under its primary usage such as warehouses, office space, commercial, or industrial type buildings. Heavy industrial facilities such as blast furnaces, petroleum refineries, and chemical complexes are not included in this category but are reported under nonbuilding construction.
- Manufacturing and industrial warehouses. Includes all warehouses which are intended for industrial activities.
- Hotels and motels. Includes hotels, motels, bed-and-breakfast inns, and tourist cabins intended for transient accommodations. Also included are hotel and motel conference centers.
- Office buildings. Includes all buildings that are used primarily for office space or for government administrative offices. Also included are banks or financial buildings that are three stories or more. Medical office buildings are reported under hospitals and institutional buildings.
- All other miscellaneous commercial buildings. Includes all buildings that are intended for use primarily in the retail and service trades, i.e., shopping centers, department stores, drug stores, restaurants, public garages, auto service stations, and one or two story bank or financial institutions.
- Commercial warehouses. Includes distribution buildings and mini-storage units intended for commercial use. Also included are storage warehouses.
- Religious buildings. Includes all buildings that are intended for religious services or functions such as churches, synagogues, convents, monasteries, and seminaries.
- Educational buildings. Includes all buildings that are used directly in administrative and instructional activities such as colleges, universities, elementary and secondary schools, correspondence, commercial, and trade schools. Libraries, museums, and art galleries, as well as laboratories that are not a part of a manufacturing or commercial establishment, are also included.

- Health care and institutional buildings. Includes hospitals, medical office buildings, and all other buildings that are intended to provide health and institutional care such as clinics, infirmaries, sanitariums, nursing homes, homes for the aged, and orphanages.
- Public safety buildings. Includes detention centers, prisons, fire stations, and rescue squad buildings.
- Farm buildings, nonresidential. Includes nonresidential farm buildings such as barns, poultry houses, implement sheds, and farm silos.
- Amusement, social, and recreational buildings. Includes buildings that are used primarily for entertainment, social, and recreational activities such as sports arenas, convention centers, theaters, music halls, golf and country club buildings, fitness centers, and bowling alleys.
- Indoor swimming pools. Includes pools that are inside a building.
- Indoor ice rinks. Includes ice rinks that are inside a building.
- Grain elevators and dry cleaning plants. Includes grain and storage elevators and dry cleaning plants.
- Waste disposal plants. Includes recycling centers, garbage disposal plants, incinerator disposed facilities, and material recovery facilities.
- Miscellaneous building construction. Includes all other nonresidential buildings such as fire stations, post offices, and bus and air passenger terminals and hangars.

2. Nonbuilding Construction. The details for this type of construction are defined as:

- Highways, streets, and related work. Includes streets, roads, alleys, sidewalks, curbs and gutters, culverts, erosion control, installation of guard rails, highway signs, and lighting. Also includes earthwork protective structures when used in connection with road improvements.
- Airport runways and related work. Includes airport runways, taxiways, aprons, and related work.
- Private driveways and parking areas. Includes all nonstructural parking areas and private driveways of all surface types.
- Bridges and elevated highways. Includes viaducts and overpasses, roads, highways, railroads, and causeways built on structural supports.
- Tunnels. Includes highway, pedestrian, railroad, and water distribution tunnels.
- Sewers, sewer lines, septic tanks, and related facilities. Includes sanitary and storm sewers, pumping stations, septic systems, and related facilities.
- Water mains and related facilities. Includes water supply systems, pumping stations, and related facilities.
- Oil and gas pipeline construction. Includes pipelines for the transmission of gas, petroleum products, and liquefied gases.
- Power and communication transmission lines, towers, and related facilities. Includes electric power lines, telephone and telegraph lines, fiber optic cables, cable television lines, television and radio towers, and electric light and power facilities.
- Power plants and cogeneration plants, except hydroelectric. Includes electric and steam generating plants, cogenerating plants, and nuclear plants.
- Power plant, hydroelectric. Includes all types of hydroelectric power generating plants.
- Blast furnaces, chemical complexes, etc. Includes coke ovens and mining appurtenances such as tipples and washeries.

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- Sewage treatment plants. Includes sewage treatment and waste disposal plants.
 - Water treatment plants. Includes water filtration and water softening plants.
 - Urban mass transit. Includes subways, street cars, and light rail systems.
 - Railroad construction. Includes the construction of railroad beds, tracks, freight yards, and signal towers for railroad systems, excluding urban mass transit.
 - Conservation and development construction. Includes land reclamation, irrigation projects, drainage canals, levees, jetties, breakwaters, and flood control projects.
 - Dam and reservoir construction. Includes hydroelectric, water supply, and flood control dams and reservoirs.
 - Dry and Solid waste disposal. Includes all dry and solid waste disposal sites where non-hazardous waste is buried.
 - Harbor and port facilities. Includes docks, piers, and wharves.
 - Marine construction. Includes dredging, underwater rock removal, breakwaters, navigational channels, and locks.
 - Petrochemical plants and petroleum refineries. Includes petroleum related facilities.
 - Outdoor swimming pools. Includes wading pools and reflecting pools.
 - Fencing. Includes all types of fencing, except electronic containment fencing for pets.
 - Electronic containment fencing. Includes all types of electronic containment fencing for pets.
 - Recreational facilities. Includes athletic fields, golf courses, outdoor tennis courts, trails, and camps.
 - Ships. Includes special trade contractors working on ships and boats such as painters, carpenters, joiners, electricians, etc.
 - Oil and gas fields. Includes road construction, land clearing contracting, land moving contracting, and land leveling contracting in oil and gas fields.
 - Oil and gas field gathering lines. Includes land clearing contracting, land moving contracting, and land leveling contracting.
 - Coal mines. Includes land clearing contracting, land moving contracting, and land leveling contracting.
 - Metal mines. Includes land clearing contracting, land moving contracting, and land leveling contracting.
 - Nonmetallic mines. Includes land clearing contracting, land moving contracting, and land leveling contracting.
 - All other miscellaneous nonbuilding construction. Includes all other types of nonbuilding construction.

KINDS OF BUSINESS ACTIVITIES

Includes dollar value of business done by business activity. Primary activities are construction activities that generate fifty-one percent or more of an establishment's dollar value of business done. Also included are other kinds of business activities. Other kinds of business activities include business receipts not reported as value of construction work. This item includes business receipts from retail and wholesale trade, rental of equipment without an operator, manufacturing, transportation, legal services, insurance, finance, rental of property and other real estate operations, and other nonconstruction activities. Receipts for separately definable architectural and engineering work for others are also included in other kinds of business activities.

VALUE OF CONSTRUCTION WORK FOR SPECIALIZED TYPE AND KIND OF BUSINESS

Includes value of construction work for one of two specialized categories. These categories include types of construction and kind-of-business activity. A construction establishment specializes in a type of construction when fifty-one percent or more of the construction work done is in one construction industry. The construction establishment reports each type of construction it performs as a percent of value of construction work. Types of construction refers to the types of buildings, structures, or facilities constructed or worked on by construction establishments in the reporting year. Specialization in types of construction displays data for establishments with payroll that falls within each percent range of specialization. A construction establishment specializes in a kind-of-business activity when fifty-one percent or more of the construction work done by the establishment is performed in one type of business activity. The construction establishment reports each kind-of-business activity engaged in as a percent of value of construction work. Kind-of-business activity refers to the kinds of business activities construction establishments perform throughout the reporting year. Examples of kind-of-business activity include highway and street construction, electrical contracting, carpentry contracting, and concrete contracting. Specialization in kind-of-business activity displays data for establishments with payroll that fall within each percent range of specialization.

SPECIALIZATION PERCENT

Includes data for establishments with payroll that fall within each percent range of specialization.

VALUE OF CONSTRUCTION WORK FOR ESTABLISHMENTS BY LOCATION OF WORK

This is the value of construction done in particular states by establishment. An establishment can do construction in one or more states.

Appendix B.

NAICS Codes, Titles, and Descriptions

238220 PLUMBING, HEATING, AND AIR-CONDITIONING CONTRACTORS

This U.S. industry comprises establishments primarily engaged in installing and servicing plumbing, heating, and air-conditioning equipment. Contractors in this industry may provide both parts and labor when performing work. The work performed may include new work, additions, alterations, maintenance, and repairs.

Appendix C.

Methodology

SOURCES OF THE DATA

The construction sector includes approximately 650,000 establishments that were determined to be in-scope of the 2002 Economic Census — Construction. This number includes those industries in the North American Industry Classification System (NAICS) definition of construction with at least one paid employee in 2002.

Establishments in the 2002 Economic Census are divided into those sent report forms and those not sent report forms. The coverage of and the method of obtaining census information from each are described below:

1. Establishments sent a report form:

Sample frame establishments. The sample frame consisted of the entire construction universe; there were no subpopulations that were explicitly removed from the sample frame. The sample frame was compiled from a list of all construction companies in the active records of the Internal Revenue Service (IRS) and the Social Security Administration (SSA) that are subject to the payment of Federal Insurance Contributions Act taxes. Under special arrangements, to safeguard their confidentiality, the U.S. Census Bureau obtains information on the location and classification of the companies, as well as their payroll and receipts data from these sources. Unfortunately, these sources do not provide establishment level information for companies with multiple locations. For multilocation companies, the establishment level information is directly obtained from the U.S. Census Bureau's Company Organization Survey. For single-location companies, the IRS-SSA information is generally sufficient for assigning the company to a specific six-digit NAICS industry code.

The 2002 NAICS structure for the construction sector was significantly revised from the 1997 NAICS structure. Initially, only a small proportion of the establishments in the sample frame could be directly assigned a 2002 NAICS industry code with a high degree of confidence. Therefore, a special classification card was mailed to 150,000 construction establishments in early 2002. The goal of this classification card was to obtain the current NAICS industry code prior to assembly of the sample frame for the economic census — construction sample.

2. Establishments not sent a report form:

a. Nonsample frame establishments. There were a limited number of establishments included in the business register who were completely unclassified at the time of the economic census — construction sampling operation. These establishments were mailed a general classification card in early 2003. A portion of these were ultimately determined to be in-scope of the economic census — construction. Since this determination was not made until after the sample selection operation had been completed; these establishments were treated as a supplement to the original universe and were sampled independently for inclusion in the derived estimates.

b. All nonemployers, i.e., all firms subject to federal income tax, with no paid employees, were also excluded from the 2002 sample frame, as in previous censuses. Nonemployers with significant levels of receipts data were identified and included in the census mailout under the presumption that the nonemployer status may have been incorrect. Those determined to have employees are included in this report. Data for nonemployers are not included in this report, but are released in the annual *Nonemployer Statistics* series.

The report forms used to collect information for establishments in this sector are available at help.econ.census.gov/econhelp/resources/.

A more detailed examination of census methodology is presented in the *History of the Economic Census* at www.census.gov/econ/www/history.html.

INDUSTRY CLASSIFICATION OF ESTABLISHMENTS

The classifications for all establishments covered in the 2002 Economic Census — Construction are classified in 1 of 31 industries in accordance with the industry definitions in the *North American Industry Classification System (NAICS), United States, 2002* manual. Changes between 1997 and 2002 affecting this sector are discussed in the text at the beginning of this report. Tables at www.census.gov/epcd/naics02/n02ton97.htm identify those industries that changed between the 1997 North American Industry Classification System (NAICS) and 2002 NAICS.

In the NAICS system, an industry is generally defined as a group of establishments that use similar processes or have similar business activities. To the extent practical, the system uses supply-based or production-oriented concepts in defining industries. The resulting group of establishments must be significant in terms of number, value added by construction, value of business done, and number of employees.

The coding system works in such a way that the definitions progressively become narrower with successive additions of numerical digits. In the construction sector for 2002, there are 3 subsectors (three-digit NAICS), 10 industry groups (four-digit NAICS), 28 NAICS industries (five-digit NAICS) that are comparable with Canadian and Mexican classification, and 31 U.S. industries (six-digit NAICS).

ESTABLISHMENT BASIS OF REPORTING

The 2002 Economic Census — Construction is conducted on an establishment basis. A construction establishment is defined as a relatively permanent office or other place of business where the usual business activities related to construction are conducted. With some exceptions, a relatively permanent office is one that has been established for the management of more than one project or job and that is expected to be maintained on a continuing basis. Such establishment activities include, but are not limited to, estimating, bidding, purchasing, supervising, and operation of the actual construction work being conducted at one or more construction sites. Separate construction reports were not required for each project or construction site.

Companies with more than one construction establishment were required to submit a separate report for each establishment operated during any part of the census year. The construction sector figures represent a tabulation of records for individual establishments, rather than for companies.

If an establishment was engaged in construction and one or more distinctly different lines of economic activity at the same place of business, it was requested to file a separate report for each activity, provided that the activity was of substantial size and separate records were maintained. If a separate establishment report could not be prepared for each activity, then a construction report was requested covering all activities of that establishment providing that the value of construction work exceeded the gross receipts from each of its other activities.

The 2002 Economic Census — Construction excludes data for central administrative offices (CAOs). These would include separately operated administrative offices, warehouses, garages, and other auxiliary units that service construction establishments of the same company. These data are published in a separate report series.

DESCRIPTION OF THE SAMPLE FRAME

The major objective of the sample design was to provide a sample that would provide reliable estimates at the state by industry level. For sample efficiency considerations, the establishments in the initial 2002 construction frame were partitioned into two components for developing estimates within the sample frame. The details of each are described below:

1. Probability-proportionate-to-size (pps) sample. There were three non-overlapping strata for sample selection. An independent sample was selected within each state by industry cell. The details of each stratum were defined as:

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- Stratum 1. This stratum was comprised of approximately 12,000 establishments associated with multilocation companies. The establishments of these multiunit companies were included in the construction sample with certainty.
 - Stratum 2. This stratum was comprised of approximately 145,000 single-location companies that could be classified into a valid 2002 NAICS industry. These cases accounted for approximately 75 percent of the payroll associated with single-location companies in construction. The industry code for most of these establishments was determined from the special classification card that was mailed in early 2002. This group was partitioned into state by NAICS (six-digit) cells and an independent sample selected from each cell. Within each cell, a probability-proportionate-to-size (pps) sampling strategy was used. Under this approach, the probability of selection for the sample for larger establishments is higher than for smaller establishments. There were approximately 80,000 establishments selected from this group.
 - Stratum 3. This stratum was comprised of the remaining single-location companies. For these companies, we did not have an updated 2002 NAICS industry code. The most recent classification information available for these companies was their 1997 NAICS. Using this 1997 NAICS industry code, this stratum was partitioned into state by NAICS (four-digit) cells; and an independent sample selected from each cell. Again, probability-proportionate-to-size sampling methodology was utilized. There were approximately 30,000 establishments selected from this group.

Subsequent to the initial census mail-out, companies that initiated operations in 2002 were identified via administrative sources. To assure proper representation of the entire in-scope population, simple random samples of these new operations were selected and mailed separately.

2. Estimation and variances. Based on the response data, establishments were assigned to the appropriate NAICS (six-digit) industry. At each level of tabulation, unbiased estimates were derived by summing the weighted establishment data where the establishment sample weight was equal to the inverse of its probability of selection for the construction sample.

The resulting estimates were generated from one of many possible samples and are subject to sampling variability. Estimates of this sample variability were independently derived at all levels of aggregation. These sampling variances were then aggregated to the publication levels for the computation of the relative standard errors.

RELIABILITY OF DATA

The estimates developed from the sample can differ somewhat from the results of a survey covering all companies in the sample lists, but are otherwise conducted under essentially the same conditions as the actual sample survey. The estimates of the magnitude of the sampling errors (the difference between the estimates obtained and the results theoretically obtained from a comparable, complete-coverage survey) are provided by the standard errors of estimates.

The particular sample selected for the construction sector is one of many similar probability samples that, by chance, might have been selected under the same specifications. Each of the possible samples would yield somewhat different sets of results, and the standard errors are measures of the variation of all the possible sample estimates around the theoretically, comparable, complete-coverage values.

Estimates of the standard errors have been computed from the sample data. They are presented in the form of relative standard errors that are the standard errors divided by the estimated values to which they refer.

In conjunction with its associated estimate, the relative standard error may be used to define confidence intervals, or ranges that would include the comparable, complete-coverage value for specified percentages of all the possible samples.

The complete-coverage value would be included in the range:

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- From one standard error below to one standard error above the derived estimate for about two-thirds of all possible samples.
 - From two standard errors below to two standard errors above the derived estimate for about 19 out of 20 of all possible samples.
 - From three standard errors below to three standard errors above the derived estimate for nearly all samples.

An inference is that the comparable complete-survey result would fall within the indicated ranges and the relative frequencies shown. Those proportions, therefore, may be interpreted as defining the confidence that the estimates from a particular sample would differ from complete-coverage results by as much as one, two, or three standard errors, respectively.

For example, suppose an estimated total is shown at 50,000 with an associated relative standard error of 2 percent, that is, a standard error of 1,000 (2 percent of 50,000). There is approximately 67 percent confidence that the interval 49,000 to 51,000 includes the complete-coverage total, about 95 percent confidence that the interval 48,000 to 52,000 includes the complete-coverage total, and almost certain confidence that the interval 47,000 to 53,000 includes the complete-coverage total.

In addition to the sample errors, the estimates are subject to various response and operational errors: errors of collection; reporting; coding; transcription; imputation for nonresponse, etc. These operational errors also would occur if a complete canvass were to be conducted under the same conditions as the survey. Explicit measures of their effects generally are not available. However, it is believed that most of the important operational errors were detected and corrected during the U.S. Census Bureau's review of the data for reasonableness and consistency. The small operational errors usually remain. To some extent, they are compensating in the aggregated totals shown. When important operational errors were detected too late to correct the estimates, the data were suppressed or were specifically qualified in the tables.

As derived, the estimated standard errors included part of the effect of the operational errors. The total errors, which depend upon the joint effect of the sampling and operational errors, are usually of the order of size indicated by the standard error, or moderately higher. However, for particular estimates, the total error may considerably exceed the standard errors shown. Any figures shown in the tables of this publication having an associated standard error exceeding 75 percent may be combined with higher level totals, creating a broader aggregate, which then may be of acceptable reliability.

DUPLICATION IN VALUE OF CONSTRUCTION WORK

The aggregate of value of construction work reported by all construction establishments in each of the industry, geographic area, or other groupings contains varying amounts of duplication. This is because the construction work of one firm may be subcontracted to other construction firms and may also be included in the subcontractors' value of construction work. Also, part of the value of construction results from the use of products of nonconstruction industries as input materials. These products are counted in the nonconstruction industry, as well as part of the value of construction. Value added avoids this duplication and is, for most purposes, the best measure for comparing the relative economic importance of industries or geographic areas. Value added for construction industries is defined as the dollar value of business done less costs for construction work subcontracted to others and payments for materials, components, supplies, and fuels.

DISCLOSURE

In accordance with federal law governing census reports (Title 13 of the United States Code), no data are published that would disclose the operations of an individual establishment or company. However, the number of establishments in a specific industry or geographic area is not considered a disclosure; therefore, this information may be released even though other information is withheld. Techniques employed to limit disclosure are discussed at www.census.gov/epcd/ec02/disclosure.htm.

Appendix D. Geographic Notes

Not applicable for this report.

Appendix E. Metropolitan and Micropolitan Statistical Areas

Not applicable for this report.

Appendix F.

Detailed NAICS and Bridge Code Titles: 2002

[The NAICS code title shown in Table 1 is a standard NAICS title from the North American Industry Classification System Manual. A more detailed title description for the NAICS code shown in Table 1 is included in this appendix]

2002 NAICS code	1997 bridge code	Detailed 2002 NAICS and 1997 bridge code title description
236115	23321000	New single family housing construction (except operative builders) Single family housing construction, general contractors
236116	23322000	New multifamily housing construction (except operative builders) Multifamily housing construction, general contractors
236117	23321000 23322000	New housing operative builders Single family housing construction, operative builders Multifamily housing construction, operative builders
236118	23321000 23322000	Residential remodelers Remodeling contractors, single family housing Remodeling contractors, multifamily housing
236210	23331000 23493000 23499000	Industrial building construction Other manufacturing and industrial building construction Other industrial nonbuilding construction Waste disposal plant construction
236220	23322000 23331000 23332000 23599000	Commercial and institutional building construction Barrack and dormitory construction Grain elevators, dry cleaning plants, and manufacturing and industrial warehouses construction Commercial and institutional building construction Indoor swimming pool contractors
237110	23491000 23499000 23581000	Water and sewer line and related structures construction Water and sewer line, mains, and related structures (including pumping stations, etc.) construction Sewage and water treatment plants and irrigation systems construction Water well drilling contractors
237120	21311200 23491000 23493000	Oil and gas pipeline and related structures construction Construction of oil and gas field gathering lines Oil and gas pipelines, mains, and related and related structures (including oil storage tanks, etc) construction Petrochemical plants and refineries construction
237130	23492000 23493000	Power and communication line and related structures construction Power and communication transmission line construction Power generation plants and transformer stations construction, except hydroelectric
237210	23311000	Land subdivision Land subdivision and land development
237310	23411000 23412000 23521000	Highway, street, and bridge construction Highway and street construction Bridge construction Highway and traffic line painting contractors
237990	22412000 23499000 23599000	Other heavy and civil engineering construction Tunnel construction All other heavy and civil engineering construction Anchored earth retention contractors
238110	23571000	Poured concrete foundation and structure contractors Concrete (except paving) contractors
238120	23591000	Structural steel and precast concrete contractors Other structural steel erection contractors
238130	23551000	Framing contractors Framing carpentry contractors
238140	23541000 23542000	Masonry contractors Masonry and stone contractors Stucco contractors
238150	23592000	Glass and glazing contractors Glass and glazing contractors
238160	23561000	Roofing contractors Roofing contractors
238170	23561000	Siding contractors Siding (including gutters and downspouts) contractors
238190	23591000 23599000	Other foundation, structure, and building exterior contractors Metal curtain walls and metal furring installation contractors Forming, ornamental metal work installation, and foundation, structure, and building exterior contractors
238210	23511000 23531000	Electrical contractors Environmental controls installation contractors Electrical contractors
238220	23511000 23595000	Plumbing, heating, and air-conditioning contractors Other plumbing, heating, and air-conditioning contractors Scrubber, dust collection, and other industrial ventilation installation contractors
238290	23595000 23599000	Other building equipment contractors Other building equipment and machinery installation contractors Boiler, duct, and pipe insulation and service station equipment, lightning rod, bowling alley, church bell, and tower clock installation contractors
238310	23542000	Drywall and insulation contractors Other drywall, plastering, acoustical, and insulation contractors
238320	23521000	Painting and wall covering contractors Other painting and wall covering contractors

[The NAICS code title shown in Table 1 is a standard NAICS title from the North American Industry Classification System Manual. A more detailed title description for the NAICS code shown in Table 1 is included in this appendix]

2002 NAICS code	1997 bridge code	Detailed 2002 NAICS and 1997 bridge code title description
238330	23552000	Flooring contractors Floor laying and other floor contractors
238340	23543000	Tile and terrazzo contractors Tile, marble, terrazzo, and mosaic contractors
238350	23551000	Finish carpentry contractors Finish carpentry contractors
238390	23561000 23599000	Other building finishing contractors Sheet metal, except roofing and siding contractors Trade show exhibits installation and dismantling, spectator seating, modular furniture, window covering fixture installation, and other building finishing contractors
238910	21311200 21311300 21311400 21311500 23499000 23593000 23594000 23599000	Site preparation contractors Site preparation and related construction activities for oil and gas operations Site preparation and related construction activities for coal mining Site preparation and related construction activities for metal mining Site preparation and related construction activities for nonmetallic mining, except fuels Construction equipment (except cranes) rental with operator and right-of-way clearing and line slashing, blasting, and trenching contractors Excavation contractors Wrecking and demolition contractors Dewatering and core drilling and test boring for construction contractors
238990	23499000 23571000 23599000 56172000	All other specialty trade contractors Crane rental with operator Residential and commercial asphalt, brick, and concrete paving contractors All other special trade contractors Cleaning building exteriors, except sand blasting

