

# Michigan: 2002

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## 2002 Economic Census

*Construction*

Geographic Area Series



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

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U.S. Department of Commerce  
Economics and Statistics Administration  
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## 2002 Economic Census

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#### Geographic Area Series



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-- Not applicable for this report.

# Introduction to the Economic Census

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## **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).

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## **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](http://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

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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](http://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](http://www.census.gov/econ/www/history.html).



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# Construction

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## 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.

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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](http://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.

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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.

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## 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](http://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](http://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

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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. 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 meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

NAICS code	Industry	Number of establishments	Number of employees		Number of construction workers in				Payroll (thousand dollars)		Relative standard error of estimate (percent) for column—
			Total	Construction workers	March	May	August	November	Total	Construction workers	
			A	B	C	D	E	F	G	H	
<b>MICHIGAN</b>											
<b>23</b>	<b>Construction .....</b>	<b>26 014</b>	<b>219 032</b>	<b>161 667</b>	<b>151 529</b>	<b>165 263</b>	<b>171 042</b>	<b>158 834</b>	<b>8 108 488</b>	<b>5 677 748</b>	<b>1</b>
236	Construction of buildings .....	8 512	54 259	36 080	34 296	37 177	37 468	35 379	1 880 613	1 078 570	3
2361	Residential building construction ..	7 134	30 819	19 962	19 104	20 838	20 512	19 394	948 527	501 934	4
23611	Residential building construction ..	7 134	30 819	19 962	19 104	20 838	20 512	19 394	948 527	501 934	4
236115	New single-family housing construction (except operative builders) .....	2 580	11 165	7 868	7 204	8 165	8 258	7 847	320 792	184 591	7
236116	New multifamily housing construction (except operative builders) .....	195	1 061	664	727	667	654	606	33 724	19 873	17
236117	New housing operative builders .....	1 096	5 756	3 072	3 072	3 232	3 065	2 917	214 579	92 590	8
236118	Residential remodelers .....	3 264	12 837	8 359	8 101	8 774	8 535	8 024	379 433	204 880	6
2362	Nonresidential building construction .....	1 378	23 440	16 118	15 192	16 339	16 956	15 985	932 086	576 636	3
23621	Industrial building construction ..	141	4 705	3 796	3 682	3 938	3 939	3 624	206 911	140 437	4
236210	Industrial building construction .....	141	4 705	3 796	3 682	3 938	3 939	3 624	206 911	140 437	4
23622	Commercial and institutional building construction .....	1 237	18 735	12 322	11 510	12 401	13 017	12 361	725 175	436 199	3
236220	Commercial and institutional building construction .....	1 237	18 735	12 322	11 510	12 401	13 017	12 361	725 175	436 199	3
237	Heavy and civil engineering construction .....	1 472	28 074	20 642	18 383	21 546	22 360	20 281	1 197 547	861 466	4
2371	Utility system construction .....	720	13 876	10 203	9 566	10 618	10 660	9 968	602 264	438 347	6
23711	Water and sewer line and related structures construction .....	487	5 704	4 159	3 769	4 308	4 429	4 133	239 753	171 144	7
237110	Water and sewer line and related structures construction .....	487	5 704	4 159	3 769	4 308	4 429	4 133	239 753	171 144	7
23712	Oil and gas pipeline and related structures construction .....	<sup>s</sup> 47	1 959	1 743	<sup>s</sup> 1 474	1 764	1 857	1 877	86 540	71 698	36
237120	Oil and gas pipeline and related structures construction .....	<sup>s</sup> 47	1 959	1 743	<sup>s</sup> 1 474	1 764	1 857	1 877	86 540	71 698	36
23713	Power and communication line and related structures construction .....	186	6 213	4 301	4 323	4 546	4 374	3 959	275 972	195 505	6
237130	Power and communication line and related structures construction .....	186	6 213	4 301	4 323	4 546	4 374	3 959	275 972	195 505	6
2372	Land subdivision .....	185	854	333	362	356	322	295	39 956	13 605	12
23721	Land subdivision .....	185	854	333	362	356	322	295	39 956	13 605	12
237210	Land subdivision .....	185	854	333	362	356	322	295	39 956	13 605	12
2373	Highway, street, and bridge construction .....	373	10 459	8 038	6 650	8 418	9 168	7 915	428 905	323 460	4
23731	Highway, street, and bridge construction .....	373	10 459	8 038	6 650	8 418	9 168	7 915	428 905	323 460	4
237310	Highway, street, and bridge construction .....	373	10 459	8 038	6 650	8 418	9 168	7 915	428 905	323 460	4
2379	Other heavy and civil engineering construction .....	194	2 885	2 068	1 805	2 154	2 209	2 103	126 421	86 055	11
23799	Other heavy and civil engineering construction .....	194	2 885	2 068	1 805	2 154	2 209	2 103	126 421	86 055	11
237990	Other heavy and civil engineering construction .....	194	2 885	2 068	1 805	2 154	2 209	2 103	126 421	86 055	11
238	Specialty trade contractors .....	16 030	136 700	104 945	98 851	106 540	111 214	103 173	5 030 329	3 737 712	2
2381	Foundation, structure, and building exterior contractors .....	4 487	38 469	31 255	28 402	32 203	33 899	30 518	1 216 426	924 618	4
23811	Poured concrete foundation and structure contractors .....	1 318	10 761	8 940	7 524	9 365	10 032	8 839	361 241	273 708	7
238110	Poured concrete foundation and structure contractors ..	1 318	10 761	8 940	7 524	9 365	10 032	8 839	361 241	273 708	7
23812	Structural steel and precast concrete contractors .....	95	2 004	1 700	1 791	1 811	1 771	1 425	80 073	64 033	15
238120	Structural steel and precast concrete contractors .....	95	2 004	1 700	1 791	1 811	1 771	1 425	80 073	64 033	15
23813	Framing contractors .....	710	5 862	4 933	5 121	5 057	4 970	4 586	168 119	132 344	9
238130	Framing contractors .....	710	5 862	4 933	5 121	5 057	4 970	4 586	168 119	132 344	9
23814	Masonry contractors .....	1 048	8 283	6 859	5 903	6 896	7 624	7 011	273 195	223 298	9
238140	Masonry contractors .....	1 048	8 283	6 859	5 903	6 896	7 624	7 011	273 195	223 298	9
23815	Glass and glazing contractors ..	174	1 632	1 104	1 102	1 063	1 116	1 135	60 431	38 528	16
238150	Glass and glazing contractors .....	174	1 632	1 104	1 102	1 063	1 116	1 135	60 431	38 528	16
23816	Roofing contractors .....	820	7 624	5 997	5 351	6 176	6 511	5 951	203 387	144 652	11
238160	Roofing contractors .....	820	7 624	5 997	5 351	6 176	6 511	5 951	203 387	144 652	11
23817	Siding contractors .....	242	1 861	1 385	1 324	1 437	1 520	1 258	55 417	37 651	21
238170	Siding contractors .....	242	1 861	1 385	1 324	1 437	1 520	1 258	55 417	37 651	21

See footnotes at end of table.

**Table 1. Employment Statistics for Establishments by State: 2002—Con.**

[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 meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

NAICS code	Industry	Number of establishments	Number of employees		Number of construction workers in				Payroll (thousand dollars)		Relative standard error of estimate (percent) for column—
			Total	Construction workers	March	May	August	November	Total	Construction workers	
			A	B	C	D	E	F	G	H	
<b>MICHIGAN—Con.</b>											
<b>23</b>	<b>Construction—Con.</b>										
238	Specialty trade contractors—Con.										
2381	Foundation, structure, and building exterior contractors—Con.										
23819	Other foundation, structure, and building exterior contractors...	79	441	338	286	397	356	314	14 563	10 405	22
238190	Other foundation, structure, and building exterior contractors .....	79	441	338	286	397	356	314	14 563	10 405	22
2382	Building equipment contractors ...	5 234	58 488	43 569	42 694	43 296	45 364	42 923	2 498 613	1 848 774	2
23821	Electrical Contractors .....	1 987	22 113	16 727	16 094	16 356	17 944	16 514	961 854	728 662	4
238210	Electrical Contractors .....	1 987	22 113	16 727	16 094	16 356	17 944	16 514	961 854	728 662	4
23822	Plumbing, heating, and air-conditioning contractors .....	3 051	31 884	23 472	23 328	23 508	24 008	23 044	1 319 863	957 980	3
238220	Plumbing, heating, and air-conditioning contractors .....	3 051	31 884	23 472	23 328	23 508	24 008	23 044	1 319 863	957 980	3
23829	Other building equipment contractors .....	197	4 491	3 370	3 272	3 432	3 412	3 366	216 896	162 133	4
238290	Other building equipment contractors .....	197	4 491	3 370	3 272	3 432	3 412	3 366	216 896	162 133	4
2383	Building finishing contractors .....	3 859	23 567	17 853	17 091	18 161	18 801	17 359	756 776	557 640	5
23831	Drywall and insulation contractors .....	601	7 407	6 062	6 016	6 202	6 200	5 832	257 982	205 092	8
238310	Drywall and insulation contractors .....	601	7 407	6 062	6 016	6 202	6 200	5 832	257 982	205 092	8
23832	Painting and wall covering contractors .....	1 247	6 302	4 709	4 096	4 829	5 358	4 552	181 888	129 793	10
238320	Painting and wall covering contractors .....	1 247	6 302	4 709	4 096	4 829	5 358	4 552	181 888	129 793	10
23833	Flooring contractors .....	366	2 031	1 317	1 241	1 373	1 358	1 296	68 016	43 129	15
238330	Flooring contractors .....	366	2 031	1 317	1 241	1 373	1 358	1 296	68 016	43 129	15
23834	Tile and terrazzo contractors .....	217	1 091	808	819	760	857	796	40 887	27 361	10
238340	Tile and terrazzo contractors .....	217	1 091	808	819	760	857	796	40 887	27 361	10
23835	Finish carpentry contractors ...	1 319	5 629	4 225	4 089	4 344	4 319	4 147	168 349	124 817	9
238350	Finish carpentry contractors ..	1 319	5 629	4 225	4 089	4 344	4 319	4 147	168 349	124 817	9
23839	Other building finishing contractors .....	108	1 107	732	830	653	709	735	39 656	27 447	18
238390	Other building finishing contractors .....	108	1 107	732	830	653	709	735	39 656	27 447	18
2389	Other specialty trade contractors ..	2 450	16 175	12 267	10 664	12 881	13 151	12 373	558 513	406 679	5
23891	Site preparation contractors .....	1 328	9 040	6 963	5 943	7 383	7 538	6 990	325 127	247 101	6
238910	Site preparation contractors ..	1 328	9 040	6 963	5 943	7 383	7 538	6 990	325 127	247 101	6
23899	All other specialty trade contractors .....	1 122	7 135	5 304	4 721	5 498	5 612	5 383	233 386	159 578	10
238990	All other specialty trade contractors .....	1 122	7 135	5 304	4 721	5 498	5 612	5 383	233 386	159 578	10

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 2. 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 meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

NAICS code	Industry	E <sup>1</sup>	Value of business done <sup>2</sup>	Value of construction work <sup>2</sup>	Net value of construction work	Value added	Cost of materials, components, supplies, and fuels	Cost of construction work sub-contracted out to others	Total rental costs	Capital expenditures, except land	Gross book value of depreciable assets, end-of-year
<b>MICHIGAN</b>											
<b>23</b>	<b>Construction .....</b>	<b>1</b>	<b>36 536 275</b>	<b>36 094 747</b>	<b>26 800 774</b>	<b>17 388 942</b>	<b>9 853 360</b>	<b>9 293 972</b>	<b>585 816</b>	<b>694 276</b>	<b>5 681 477</b>
236	Construction of buildings .....	1	15 075 447	14 947 116	8 426 898	4 919 388	3 635 841	6 520 218	92 491	122 020	858 231
2361	Residential building construction ..	2	7 255 819	7 210 856	4 721 893	2 434 499	2 332 357	2 488 963	39 673	70 309	447 947
23611	Residential building construction .....	2	7 255 819	7 210 856	4 721 893	2 434 499	2 332 357	2 488 963	39 673	70 309	447 947
236115	New single-family housing construction (except operative builders) .....	2	2 018 698	2 008 409	1 336 295	608 636	737 948	672 114	12 007	25 389	149 541
236116	New multifamily housing construction (except operative builders) .....	2	277 332	275 150	135 809	78 291	59 701	139 341	\$2 376	2 241	18 157
236117	New housing operative builders .....	1	3 150 439	3 125 634	1 999 914	981 874	1 042 845	1 125 720	9 276	16 013	115 518
236118	Residential remodelers .....	3	1 809 350	1 801 663	1 249 876	765 699	491 863	551 788	16 015	26 666	164 732
2362	Nonresidential building construction .....	1	7 819 629	7 736 261	3 705 006	2 484 889	1 303 485	4 031 255	52 818	51 711	410 284
23621	Industrial building construction ..	2	1 248 725	1 234 823	575 787	295 396	294 293	659 036	12 252	10 574	86 708
236210	Industrial building construction .....	2	1 248 725	1 234 823	575 787	295 396	294 293	659 036	12 252	10 574	86 708
23622	Commercial and institutional building construction .....	-	6 570 904	6 501 437	3 129 218	2 189 493	1 009 192	3 372 219	40 566	41 137	323 575
236220	Commercial and institutional building construction .....	-	6 570 904	6 501 437	3 129 218	2 189 493	1 009 192	3 372 219	40 566	41 137	323 575
237	Heavy and civil engineering construction .....	1	5 216 069	5 093 008	4 004 812	2 732 739	1 395 134	1 088 196	160 392	234 648	1 838 525
2371	Utility system construction .....	-	2 048 821	1 990 306	1 667 139	1 275 453	450 201	323 167	72 271	74 473	716 146
23711	Water and sewer line and related structures construction .....	1	1 060 391	1 056 834	841 788	528 765	316 580	215 046	37 175	35 816	428 723
237110	Water and sewer line and related structures construction .....	1	1 060 391	1 056 834	841 788	528 765	316 580	215 046	37 175	35 816	428 723
23712	Oil and gas pipeline and related structures construction .....	-	218 523	D	200 355	170 437	D	D	8 691	7 267	86 578
237120	Oil and gas pipeline and related structures construction .....	-	218 523	D	200 355	170 437	D	D	8 691	7 267	86 578
23713	Power and communication line and related structures construction .....	-	769 908	D	624 996	576 252	D	D	26 405	31 391	200 845
237130	Power and communication line and related structures construction .....	-	769 908	D	624 996	576 252	D	D	26 405	31 391	200 845
2372	Land subdivision .....	4	302 427	285 077	210 394	170 649	57 094	74 684	1 992	6 737	123 470
23721	Land subdivision .....	4	302 427	285 077	210 394	170 649	57 094	74 684	1 992	6 737	123 470
237210	Land subdivision .....	4	302 427	285 077	210 394	170 649	57 094	74 684	1 992	6 737	123 470
2373	Highway, street, and bridge construction .....	1	2 291 342	2 248 390	1 660 038	944 464	758 526	588 351	72 204	68 350	706 434
23731	Highway, street, and bridge construction .....	1	2 291 342	2 248 390	1 660 038	944 464	758 526	588 351	72 204	68 350	706 434
237310	Highway, street, and bridge construction .....	1	2 291 342	2 248 390	1 660 038	944 464	758 526	588 351	72 204	68 350	706 434
2379	Other heavy and civil engineering construction .....	4	573 479	569 235	467 241	342 172	129 313	101 994	13 925	85 087	292 476
23799	Other heavy and civil engineering construction .....	4	573 479	569 235	467 241	342 172	129 313	101 994	13 925	85 087	292 476
237990	Other heavy and civil engineering construction .....	4	573 479	569 235	467 241	342 172	129 313	101 994	13 925	85 087	292 476
238	Specialty trade contractors .....	1	16 244 758	16 054 622	14 369 064	9 736 816	4 822 385	1 685 558	332 934	337 608	2 984 722
2381	Foundation, structure, and building exterior contractors .....	1	4 026 000	3 996 138	3 621 252	2 372 915	1 278 199	374 886	77 867	83 089	723 232
23811	Poured concrete foundation and structure contractors .....	1	1 372 837	1 354 062	1 169 752	708 952	479 574	184 310	27 318	34 504	312 870
238110	Poured concrete foundation and structure contractors .....	1	1 372 837	1 354 062	1 169 752	708 952	479 574	184 310	27 318	34 504	312 870
23812	Structural steel and precast concrete contractors .....	1	204 683	D	190 938	140 964	D	D	6 154	4 847	45 699
238120	Structural steel and precast concrete contractors .....	1	204 683	D	190 938	140 964	D	D	6 154	4 847	45 699
23813	Framing contractors .....	-	503 817	502 916	442 889	339 093	104 697	60 026	6 391	8 988	49 243
238130	Framing contractors .....	-	503 817	502 916	442 889	339 093	104 697	60 026	6 391	8 988	49 243
23814	Masonry contractors .....	1	734 187	731 885	699 739	497 712	204 329	32 146	14 113	16 703	145 645
238140	Masonry contractors .....	1	734 187	731 885	699 739	497 712	204 329	32 146	14 113	16 703	145 645
23815	Glass and glazing contractors ..	1	218 977	214 482	203 469	117 197	90 767	11 013	4 916	1 773	19 041
238150	Glass and glazing contractors .....	1	218 977	214 482	203 469	117 197	90 767	11 013	4 916	1 773	19 041
23816	Roofing contractors .....	1	778 257	775 148	718 776	445 992	275 892	56 372	14 399	11 700	120 045
238160	Roofing contractors .....	1	778 257	775 148	718 776	445 992	275 892	56 372	14 399	11 700	120 045
23817	Siding contractors .....	-	160 119	D	147 651	93 653	D	D	3 006	\$3 523	19 789
238170	Siding contractors .....	-	160 119	D	147 651	93 653	D	D	3 006	\$3 523	19 789
23819	Other foundation, structure, and building exterior contractors .....	-	53 125	52 875	48 039	29 351	18 938	4 836	1 572	1 050	\$10 900
238190	Other foundation, structure, and building exterior contractors .....	-	53 125	52 875	48 039	29 351	18 938	4 836	1 572	1 050	\$10 900

See footnotes at end of table.

**Table 2. General Statistics for Establishments by State: 2002—Con.**

[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 meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

NAICS code	Industry	E <sup>1</sup>	Value of business done <sup>2</sup>	Value of construction work <sup>2</sup>	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, except land	Gross book value of depreciable assets, end-of-year
<b>MICHIGAN—Con.</b>											
<b>23</b>	<b>Construction—Con.</b>										
238	Specialty trade contractors—Con.										
2382	Building equipment contractors . . .	1	7 774 148	7 697 528	6 942 747	4 740 388	2 278 979	754 781	138 746	121 801	951 703
23821	Electrical Contractors . . . . .	1	2 716 698	2 690 248	2 526 699	1 755 477	797 671	163 549	49 190	50 116	349 953
238210	Electrical Contractors . . . . .	1	2 716 698	2 690 248	2 526 699	1 755 477	797 671	163 549	49 190	50 116	349 953
23822	Plumbing, heating, and air-conditioning contractors . . . . .	1	4 369 139	4 334 221	3 841 264	2 537 953	1 338 229	492 957	72 150	61 295	517 421
238220	Plumbing, heating, and air-conditioning contractors . . . . .	1	4 369 139	4 334 221	3 841 264	2 537 953	1 338 229	492 957	72 150	61 295	517 421
23829	Other building equipment contractors . . . . .	1	688 311	673 059	574 784	446 957	143 079	98 275	17 406	10 390	84 329
238290	Other building equipment contractors . . . . .	1	688 311	673 059	574 784	446 957	143 079	98 275	17 406	10 390	84 329
2383	Building finishing contractors . . . . .	1	2 336 299	2 309 119	1 975 798	1 353 400	649 579	333 321	38 828	32 005	262 997
23831	Drywall and insulation contractors . . . . .	—	849 422	846 474	661 427	449 375	215 000	185 047	11 650	6 758	65 794
238310	Drywall and insulation contractors . . . . .	—	849 422	846 474	661 427	449 375	215 000	185 047	11 650	6 758	65 794
23832	Painting and wall covering contractors . . . . .	2	496 576	486 504	454 303	343 152	121 223	32 201	10 815	11 194	89 748
238320	Painting and wall covering contractors . . . . .	2	496 576	486 504	454 303	343 152	121 223	32 201	10 815	11 194	89 748
23833	Flooring contractors . . . . .	3	240 764	238 718	210 161	126 825	85 381	28 558	3 644	2 421	19 078
238330	Flooring contractors . . . . .	3	240 764	238 718	210 161	126 825	85 381	28 558	3 644	2 421	19 078
23834	Tile and terrazzo contractors . . .	1	120 492	D	113 948	75 900	D	D	1 808	942	13 745
238340	Tile and terrazzo contractors . . .	1	120 492	D	113 948	75 900	D	D	1 808	942	13 745
23835	Finish carpentry contractors . . .	2	535 223	524 483	447 615	292 981	165 373	76 868	9 013	8 774	63 852
238350	Finish carpentry contractors . . .	2	535 223	524 483	447 615	292 981	165 373	76 868	9 013	8 774	63 852
23839	Other building finishing contractors . . . . .	—	93 823	D	88 345	65 166	D	D	1 899	1 916	10 780
238390	Other building finishing contractors . . . . .	—	93 823	D	88 345	65 166	D	D	1 899	1 916	10 780
2389	Other specialty trade contractors . .	1	2 108 311	2 051 837	1 829 267	1 270 113	615 628	222 570	77 493	100 714	1 046 790
23891	Site preparation contractors . . . .	1	1 200 895	1 171 530	1 055 805	784 710	300 460	115 725	48 182	66 281	744 857
238910	Site preparation contractors . . . .	1	1 200 895	1 171 530	1 055 805	784 710	300 460	115 725	48 182	66 281	744 857
23899	All other specialty trade contractors . . . . .	1	907 416	880 307	773 462	485 403	315 167	106 846	29 310	34 433	301 932
238990	All other specialty trade contractors . . . . .	1	907 416	880 307	773 462	485 403	315 167	106 846	29 310	34 433	301 932

<sup>1</sup>Construction receipts were obtained from census respondent forms. Data for establishments whose respondent forms were not received at the time data were tabulated 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.

<sup>2</sup>For the 2002 Economic Census, the definitions of value of business done and value of construction work have been modified from the 1997 Economic Census definitions. 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. For geographical definitions, see Appendix D.

**Table 3. 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, nonsampling error, and geographical definitions, 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)
<b>MICHIGAN</b>		
All establishments . . . . . number..	26 014	2
All employees . . . . . number..	219 032	1
Construction workers in March . . . . . number..	151 529	1
Construction workers in May . . . . . number..	165 263	1
Construction workers in August . . . . . number..	171 042	1
Construction workers in November . . . . . number..	158 834	2
Average number of construction workers . . . . . number..	161 667	1
Other employees in March . . . . . number..	59 117	2
Other employees in May . . . . . number..	55 452	2
Other employees in August . . . . . number..	57 424	2
Other employees in November . . . . . number..	57 468	2
Average number of other employees . . . . . number..	57 365	2
Total payroll . . . . . \$1,000..	8 108 488	1
Construction workers . . . . . \$1,000..	5 677 748	1
Other employees . . . . . \$1,000..	2 430 740	1
First-quarter payroll, all employees . . . . . \$1,000..	1 840 259	1
Fringe benefits, all employees . . . . . \$1,000..	2 194 332	1
Legally required expenditures . . . . . \$1,000..	1 171 589	1
Voluntary expenditures . . . . . \$1,000..	1 022 743	1
Value of business done <sup>1</sup> . . . . . \$1,000..	36 536 275	1
Value of construction work <sup>1</sup> . . . . . \$1,000..	36 094 747	1
Value of construction work on government owned projects . . . . . \$1,000..	8 079 790	2
Value of construction work on federally owned projects . . . . . \$1,000..	1 331 288	3
Value of construction work on state and locally owned projects . . . . . \$1,000..	6 748 501	2
Value of construction work on privately owned projects . . . . . \$1,000..	28 014 957	1
Other business receipts . . . . . \$1,000..	441 528	4
Value of construction work subcontracted in from others . . . . . \$1,000..	12 894 262	1
Net value of construction work . . . . . \$1,000..	26 800 774	1
Value added . . . . . \$1,000..	17 388 942	1
Selected costs . . . . . \$1,000..	19 147 332	2
Materials, parts, and supplies . . . . . \$1,000..	9 332 305	2
Construction work subcontracted out to others . . . . . \$1,000..	9 293 972	2
Selected power, fuels, and lubricants . . . . . \$1,000..	521 055	2
Purchased electricity . . . . . \$1,000..	81 866	3
Natural gas and manufactured gas . . . . . \$1,000..	40 273	3
Gasoline and diesel fuel . . . . . \$1,000..	373 727	2
On-highway use of gasoline and diesel fuel . . . . . \$1,000..	276 419	2
Off-highway use of gasoline and diesel fuel . . . . . \$1,000..	97 308	3
All other fuels and lubricants . . . . . \$1,000..	25 190	2
Total rental costs . . . . . \$1,000..	585 816	2
Machinery and equipment . . . . . \$1,000..	374 864	2
Buildings . . . . . \$1,000..	210 952	2
Selected purchased services . . . . . \$1,000..	1 069 786	2
Communication services . . . . . \$1,000..	290 143	2
Repairs to buildings and other structures . . . . . \$1,000..	158 202	3
Repairs to machinery and equipment . . . . . \$1,000..	311 635	3
Legal services . . . . . \$1,000..	55 230	5
Accounting, auditing, and bookkeeping services . . . . . \$1,000..	115 480	9
Advertising and promotional services . . . . . \$1,000..	139 097	6
Beginning-of-year gross book value of depreciable assets . . . . . \$1,000..	5 196 396	2
Capital expenditures, other than land . . . . . \$1,000..	694 276	3
Retirements and disposition of depreciable assets . . . . . \$1,000..	209 194	4
End-of-year gross book value of depreciable assets . . . . . \$1,000..	5 681 477	2
Depreciation charges during year . . . . . \$1,000..	615 519	3
Establishments with inventories . . . . . number..	4 874	—
Value of construction work for establishments with inventories . . . . . \$1,000..	10 866 762	—
End-of-2002, inventories of materials and supplies . . . . . \$1,000..	479 424	8
End-of-2001, inventories of materials and supplies . . . . . \$1,000..	481 644	8
Establishments with no inventories . . . . . number..	19 482	—
Value of construction work for establishments with no inventories . . . . . \$1,000..	23 547 793	—
Establishments not reporting inventories . . . . . number..	1 658	—
Value of construction work for establishments not reporting inventores . . . . . \$1,000..	1 680 192	—

<sup>1</sup>For the 2002 Economic Census, the definitions of value of business done and value of construction work have been modified from the 1997 Economic Census definitions. 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. For geographical definitions, see Appendix D.

**Table 4. Selected Statistics for Establishments by Employment Size Class: 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 meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Employment size class	E <sup>1</sup>	Number of establishments	Total number of employees	Total payroll	Value of business done <sup>2</sup>	Value of construction work <sup>2</sup>	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
<b>MICHIGAN</b>											
All establishments .....	1	26 014	219 032	8 108 488	36 536 275	36 094 747	26 800 774	17 388 942	9 853 360	9 293 972	1
Establishments with—											
1 to 4 employees .....	2	15 639	32 856	787 963	4 671 730	4 628 518	3 523 008	2 060 364	1 505 856	1 105 510	4
5 to 9 employees .....	2	5 580	34 718	1 049 490	4 523 760	4 482 788	3 568 141	2 245 833	1 363 281	914 646	4
10 to 19 employees .....	2	2 693	35 420	1 196 288	4 744 935	4 676 864	3 701 140	2 414 568	1 354 643	975 724	5
20 to 49 employees .....	1	1 502	44 373	1 872 714	7 389 945	7 250 609	5 520 011	3 545 040	2 114 307	1 730 598	3
50 to 99 employees .....	—	382	25 702	1 138 980	5 310 106	5 255 419	3 674 138	2 469 334	1 259 491	1 581 281	2
100 to 249 employees .....	—	176	24 442	1 131 563	4 942 801	4 910 319	3 628 083	2 555 801	1 104 765	1 282 235	2
250 to 499 employees .....	1	30	10 091	441 620	2 865 110	2 844 416	2 030 171	1 311 229	739 636	814 245	—
500 to 999 employees .....	1	9	5 608	315 499	1 398 922	1 398 566	812 520	533 651	279 225	586 046	—
1,000 employees or more .....	—	4	5 823	174 372	688 965	647 248	343 561	253 122	132 156	303 687	—

<sup>1</sup>Construction receipts were obtained from census respondent forms. Data for establishments whose respondent forms were not received at the time data were tabulated 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.

<sup>2</sup>For the 2002 Economic Census, the definitions of value of business done and value of construction work have been modified from the 1997 Economic Census definitions. 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. For geographical definitions, see Appendix D.

**Table 5. Selected Statistics for Establishments by Dollar Value of Business Done Size Class: 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 meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Dollar value size class	E <sup>1</sup>	Number of establishments	Total number of employees	Total payroll	Value of business done <sup>2</sup>	Value of construction work <sup>2</sup>	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
<b>MICHIGAN</b>											
All establishments .....	1	26 014	219 032	8 108 488	36 536 275	36 094 747	26 800 774	17 388 942	9 853 360	9 293 972	1
Establishments with value of business done—											
Less than \$25,000 .....	3	231	262	1 690	4 569	4 569	4 389	3 610	779	\$181	28
\$25,000 to \$49,999 .....	4	984	1 199	12 494	37 442	36 670	32 016	23 635	9 153	4 654	14
\$50,000 to \$99,999 .....	5	2 875	4 412	57 772	214 594	214 266	185 944	119 419	66 853	28 322	9
\$100,000 to \$249,999 .....	3	6 642	16 725	337 373	1 108 897	1 098 583	974 047	630 574	353 786	124 536	5
\$250,000 to \$499,999 .....	2	5 769	22 466	553 554	2 035 706	2 020 150	1 747 784	1 115 204	648 136	272 366	5
\$500,000 to \$999,999 .....	3	3 968	26 027	771 735	2 829 388	2 809 481	2 402 052	1 540 787	881 172	407 429	5
\$1,000,000 to \$2,499,999 .....	2	3 135	36 233	1 267 185	4 869 784	4 807 091	3 943 837	2 483 372	1 523 157	863 254	5
\$2,500,000 to \$4,999,999 .....	1	1 166	25 803	1 071 899	4 075 328	4 015 886	3 220 942	2 095 667	1 184 717	794 944	5
\$5,000,000 to \$9,999,999 .....	1	710	24 923	1 144 049	4 818 247	4 760 475	3 650 396	2 311 553	1 396 615	1 110 080	4
\$10,000,000 or more .....	—	534	60 983	2 890 736	16 542 321	16 327 574	10 639 369	7 065 123	3 788 993	5 688 206	1

<sup>1</sup>Construction receipts were obtained from census respondent forms. Data for establishments whose respondent forms were not received at the time data were tabulated 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.

<sup>2</sup>For the 2002 Economic Census, the definitions of value of business done and value of construction work have been modified from the 1997 Economic Census definitions. 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. For geographical definitions, see Appendix D.

Table 6. **Value of Construction Work for Establishments by Geographic Location of Construction Work: 2002**

[Thousand dollars unless otherwise noted. This table presents selected statistics for establishments according to the geographic location of construction work. Data are not shown for those geographic locations in which construction work is relatively insignificant. 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 meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Geographic location of construction work	Value of construction work <sup>1</sup>	Relative standard error of estimate (percent)
<b>MICHIGAN</b>		
Total .....	36 094 747	1
Construction work done in Illinois .....	184 175	1
Construction work done in Indiana .....	116 677	5
Construction work done in Michigan .....	34 434 806	1
Construction work done in Ohio .....	223 726	10
Construction work done in Pennsylvania .....	88 750	1
Construction work done in Wisconsin .....	76 367	12

<sup>1</sup>For 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 7. Value of Construction Work for Establishments by Type of Construction: 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 meaning of abbreviations and symbols, see introductory text. For explanation of terms, see Appendix A]

Type of construction	Value of construction work <sup>1</sup>				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
<b>MICHIGAN</b>								
Total .....	36 094 747	22 603 431	8 642 205	4 849 111	1	2	2	2
Building construction, total .....	27 968 308	17 387 858	6 958 449	3 622 000	1	2	2	2
Single-family houses, detached and attached .....	10 136 416	7 107 860	1 820 873	1 207 683	3	4	4	4
Single-family houses, detached .....	8 789 191	6 088 521	1 625 524	1 075 146	3	4	5	5
Single-family houses, attached .....	1 347 225	1 019 339	195 349	132 537	9	12	9	7
Apartment buildings (2 or more units), such as rentals, apartment type condominiums and cooperatives .....	969 416	637 211	163 039	169 167	5	7	12	8
Manufacturing and industrial warehouses .....	1 388 863	797 415	388 370	203 078	3	3	8	7
Other manufacturing and light industrial buildings, such as factories, assembly plants, and industrial research laboratories .....	2 863 382	1 176 672	944 719	741 991	4	4	9	3
Hotels, motels, and tourist cabins .....	298 218	208 041	49 595	40 582	13	18	5	7
Office buildings .....	2 906 109	1 789 085	771 461	345 563	2	2	3	5
Stores, restaurants, and automobile service stations, and other commercial buildings .....	2 674 358	1 610 585	714 228	349 545	2	3	4	6
Commercial warehouses such as distribution buildings and mini-storage .....	527 391	336 493	133 801	57 097	5	3	14	9
Religious buildings .....	636 600	364 613	191 892	80 095	8	13	5	5
Educational buildings .....	2 927 469	1 813 788	882 940	230 741	3	3	4	6
Health care and institutional buildings .....	1 436 492	791 224	535 297	109 971	5	8	3	4
Public safety buildings such as prisons, police, and fire stations .....	326 974	201 820	97 965	27 190	6	4	14	9
Amusement, social, and recreational buildings .....	440 035	238 050	183 712	18 274	6	7	9	17
Other building construction .....	436 584	315 002	80 558	41 024	8	9	14	9
Nonbuilding construction, total .....	6 748 729	3 837 863	1 683 756	1 227 110	2	3	2	6
Highways, streets, and related work, such as installation of guardrails and signs .....	1 753 731	972 865	544 119	236 747	3	4	4	9
Private driveways and parking areas .....	587 943	365 920	122 199	99 824	7	9	8	13
Bridges and elevated highways .....	328 873	123 522	126 454	78 897	9	2	3	36
Sewers, water mains, and related facilities .....	1 383 381	923 078	258 426	201 877	5	5	4	16
Sewers, sewer lines, septic systems, and related facilities .....	854 656	588 369	150 036	116 251	7	7	6	25
Water mains, storage, and related facilities .....	528 725	334 709	108 390	85 626	5	5	5	15
Oil and gas pipelines (except gathering), pumping stations, storage tanks, and mains .....	217 462	161 855	21 030	*34 577	28	34	7	*46
Power and communication transmission lines, cables, towers, and related facilities .....	644 624	323 608	139 015	182 002	5	5	2	12
Sewage and water treatment plants .....	493 936	254 627	201 563	37 746	2	3	2	4
Sewage treatment plants .....	237 423	127 219	92 532	17 672	2	2	4	8
Water treatment plants .....	256 512	127 408	109 031	20 073	3	6	2	5
Other nonbuilding construction .....	1 338 779	712 388	270 949	355 441	7	9	4	15
Construction work, nsk .....	1 377 710	1 377 710	—	—	—	—	—	—

<sup>1</sup>For 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 8. 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. 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 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 <sup>1</sup>	Relative standard error of estimate (percent)
<b>MICHIGAN</b>		
Total .....	36 536 275	1
Building construction, total .....	13 390 671	3
Building construction on land owned by you .....	2 717 089	8
Building construction on land owned by others .....	5 901 924	3
Remodeling contractor .....	1 809 509	4
Construction management, at risk (for building construction) .....	1 301 359	4
Construction management, agency or fee only (for building construction) .....	1 660 791	8
Heavy construction and civil engineering construction, total .....	4 951 519	2
Subdividing and servicing of raw land into lots, for sale by you .....	302 571	14
Highway and street general contractor .....	1 019 163	3
Paving contractor -- asphalt or concrete for highways, streets, bridges, or airport runways .....	558 196	5
Heavy construction contractor, such as bridges, tunnels, pipelines, and utility lines .....	1 639 786	5
Cable and conduit laying contractor .....	643 157	5
Excavation work, earthmoving or land clearing contractor, not connected with buildings .....	788 646	6
Special trade contractors, total .....	12 418 966	2
Heating, ventilation and air-conditioning contractor (HVAC) .....	1 512 442	3
Building sprinkler system installation contractor .....	208 660	8
Mechanical contractor .....	1 042 640	4
Plumbing contractor .....	1 107 379	7
Painting contractor .....	411 042	9
Electric power installation and service contractor, including lighting .....	1 936 767	3
Telecommunications installation and service contractor (except transmission lines) .....	287 645	12
Masonry contractor, brick, block, or stone (except brick paving) .....	591 291	9
Drywall contractor .....	523 796	10
Finish carpentry contractor .....	617 928	7
Framing contractor, except steel .....	459 042	9
Roofing contractor, except sheet metal .....	594 946	10
Asphalt, concrete, and brick paving contractor, residential or commercial driveways and parking areas .....	504 805	10
Foundation contractor, concrete .....	416 670	12
Concrete Contractor (except paving or foundation) .....	827 029	7
Glass, glazing, and tinting contractor .....	206 149	9
Excavation work: earthmoving or land clearing contractor, connected with buildings .....	772 016	7
Millwright and machine rigging contractor .....	398 719	3
All other construction activities .....	3 960 719	3
Other business activities secondary to construction activities, total .....	436 650	4
All other business activities secondary to construction activities .....	436 650	4
Kind of business activity, nsk .....	1 377 750	12

<sup>1</sup>For 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

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### **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; 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'

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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.

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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.

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## **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.

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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.

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## **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

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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.

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## **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

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### **SECTOR 23 CONSTRUCTION**

The construction sector 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.

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.

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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.

## **236 CONSTRUCTION OF BUILDINGS**

The Construction of Buildings subsector comprises establishments primarily responsible for the construction of buildings. The work performed may include new work, additions, alterations, or maintenance and repairs. The on-site assembly of precut, panelized, and prefabricated buildings and construction of temporary buildings are included in this subsector. Part or all of the production work for which the establishments in this sector have responsibility may be subcontracted to other construction establishments usually specialty trade contractors.

Establishments in this subsector are classified based on the types of buildings they construct. This classification reflects variations in the requirements of the underlying production processes.

### **2361 RESIDENTIAL BUILDING CONSTRUCTION**

This industry group comprises establishments primarily responsible for the construction or remodeling and renovation of single-family and multifamily residential buildings. Included in this industry are residential housing general contractors (i.e., new construction, remodeling or renovating existing residential structures), operative builders and remodelers of residential structures, residential project construction management firms, and residential design-build firms.

#### **23611 RESIDENTIAL BUILDING CONSTRUCTION**

This industry comprises establishments primarily responsible for the construction or remodeling and renovation of single-family and multifamily residential buildings. Included in this industry are residential housing general contractors (i.e., new construction, remodeling or renovating existing residential structures), operative builders and remodelers of residential structures, residential project construction management firms, and residential design-build firms.

##### **236115 NEW SINGLE-FAMILY HOUSING CONSTRUCTION (EXCEPT OPERATIVE BUILDERS)**

This U.S. industry comprises general contractor establishments primarily responsible for the entire construction of new single-family housing, such as single-family detached houses and town houses or row houses where each housing unit pertains to one or more of the following:

1. is separated from its neighbors by a ground-to-roof wall and
2. has no housing units constructed above or below.

This industry includes general contractors responsible for the on-site assembly of modular and prefabricated houses. Single-family housing design-build firms and single-family construction management firms acting as general contractors are included in this industry.

##### **236116 NEW MULTIFAMILY HOUSING CONSTRUCTION (EXCEPT OPERATIVE BUILDERS)**

This U.S. industry comprises general contractor establishments responsible for the construction of new multifamily residential housing units (e.g., high-rise, garden, and town house apartments and condominiums where each unit is not separated from its neighbors by a ground-to-roof wall). Multifamily design-build firms and multifamily housing construction management firms acting as general contractors are included in this industry.

##### **236117 NEW HOUSING OPERATIVE BUILDERS**

This U.S. industry comprises operative builders primarily responsible for the entire construction of new houses and other residential buildings, single-family and multifamily, on their own account for sale. Operative builders are also known as speculative or merchant builders.

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### **236118 RESIDENTIAL REMODELERS**

This U.S. industry comprises establishments primarily responsible for the remodeling construction (including additions, alterations, reconstruction, maintenance, and repair work) of houses and other residential buildings (single-family and multifamily). Included in this industry are remodeling general contractors, operative remodelers, remodeling design-build firms, and remodeling project construction management firms.

### **2362 NONRESIDENTIAL BUILDING CONSTRUCTION**

This industry group comprises establishments primarily responsible for the construction (including new work, additions, alterations, maintenance, and repairs) of nonresidential buildings. This industry group includes nonresidential general contractors, nonresidential operative builders, nonresidential design-build firms, and nonresidential project construction management firms.

### **23621 INDUSTRIAL BUILDING CONSTRUCTION**

This industry comprises establishments primarily responsible for the construction (including new work, additions, alterations, maintenance, and repairs) of industrial buildings (except warehouses). The construction of selected additional structures, whose production processes are similar to those for industrial buildings (e.g., incinerators, cement plants, blast furnaces, and similar nonbuilding structures), is included in this industry. Included in this industry are industrial building general contractors, industrial building operative builders, industrial building design-build firms, and industrial building construction management firms.

### **236210 INDUSTRIAL BUILDING CONSTRUCTION**

This U.S. industry comprises establishments primarily responsible for the construction (including new work, additions, alterations, maintenance, and repairs) of industrial buildings (except warehouses). The construction of selected additional structures, whose production processes are similar to those for industrial buildings (e.g., incinerators, cement plants, blast furnaces, and similar nonbuilding structures), is included in this industry. Also included in this industry are industrial building general contractors, industrial building operative builders, industrial building design-build firms, and industrial building construction management firms.

### **23622 COMMERCIAL AND INSTITUTIONAL BUILDING CONSTRUCTION**

This industry comprises establishments primarily responsible for the construction (including new work, additions, alterations, maintenance, and repairs) of commercial and institutional buildings and related structures, such as stadiums, grain elevators, and indoor swimming pools. This industry includes establishments responsible for the on-site assembly of modular or prefabricated commercial and institutional buildings. Included in this industry are commercial and institutional building general contractors, commercial and institutional building operative builders, commercial and institutional building design-build firms, and commercial and institutional building project construction management firms.

### **236220 COMMERCIAL AND INSTITUTIONAL BUILDING CONSTRUCTION**

This U.S. industry comprises establishments primarily responsible for the construction (including new work, additions, alterations, maintenance, and repairs) of commercial and institutional buildings and related structures, such as stadiums, grain elevators, and indoor swimming pools. This industry includes establishments responsible for the on-site assembly of modular or prefabricated commercial and institutional buildings. Also included in this industry are commercial and institutional building general contractors, commercial and institutional building operative builders, commercial and institutional building design-build firms, and commercial and institutional building project construction management firms.

### **237 HEAVY AND CIVIL ENGINEERING CONSTRUCTION**

The Heavy and Civil Engineering Construction subsector comprises establishments whose primary activity is the construction of entire engineering projects (e.g., highways and dams), and specialty trade contractors, whose primary activity is the production of a specific component for such

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projects. Specialty trade contractors in Heavy and Civil Engineering Construction generally are performing activities that are specific to heavy and civil engineering construction projects and are not normally performed on buildings. The work performed may include new work, additions, alterations, or maintenance and repairs.

Specialty trade activities are classified in this subsector if the skills and equipment present are specific to heavy or civil engineering construction projects. For example, specialized equipment is needed to paint lines on highways. This equipment is not normally used in building applications so the activity is classified in this subsector. Traffic signal installation, while specific to highways, uses much of the same skills and equipment that are needed for electrical work in building projects and is therefore classified in Subsector 238, Specialty Trade Contractors.

Construction projects involving water resources (e.g., dredging and land drainage) and projects involving open space improvement (e.g., parks and trails) are included in this subsector. Establishments whose primary activity is the subdivision of land into individual building lots usually perform various additional site-improvement activities (e.g., road building and utility line installation) and are included in this subsector.

Establishments in this subsector are classified based on the types of structures that they construct. This classification reflects variations in the requirements of the underlying production processes.

### **2371 UTILITY SYSTEM CONSTRUCTION**

This industry group comprises establishments primarily engaged in the construction of distribution lines and related buildings and structures for utilities (i.e., water, sewer, petroleum, gas, power, and communication). All structures (including buildings) that are integral parts of utility systems (e.g., storage tanks, pumping stations, power plants, and refineries) are included in this industry group.

#### **23711 WATER AND SEWER LINE AND RELATED STRUCTURES CONSTRUCTION**

This industry comprises establishments primarily engaged in the construction of water and sewer lines, mains, pumping stations, treatment plants and storage tanks. The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to water and sewer line and related structures construction. All structures (including buildings) that are integral parts of water and sewer networks (e.g., storage tanks, pumping stations, water treatment plants, and sewage treatment plants) are included in this industry.

##### **237110 WATER AND SEWER LINE AND RELATED STRUCTURES CONSTRUCTION**

This U.S. industry comprises establishments primarily engaged in the construction of water and sewer lines, mains, pumping stations, treatment plants, and storage tanks. The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to water and sewer line and related structures construction. All structures (including buildings) that are integral parts of water and sewer networks (e.g., storage tanks, pumping stations, water treatment plants, and sewage treatment plants) are included in this industry.

##### **23712 OIL AND GAS PIPELINE AND RELATED STRUCTURES CONSTRUCTION**

This industry comprises establishments primarily engaged in the construction of oil and gas lines, mains, refineries, and storage tanks. The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to oil and gas pipeline and related structures construction. All structures (including buildings) that are integral parts of oil and gas networks (e.g., storage tanks, pumping stations, and refineries) are included in this industry.

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## **237120 OIL AND GAS PIPELINE AND RELATED STRUCTURES CONSTRUCTION**

This U.S. industry comprises establishments primarily engaged in the construction of oil and gas lines, mains, refineries, and storage tanks. The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to oil and gas pipeline and related structures construction. All structures (including buildings) that are integral parts of oil and gas networks (e.g., storage tanks, pumping stations, and refineries) are included in this industry.

## **23713 POWER AND COMMUNICATION LINE AND RELATED STRUCTURES CONSTRUCTION**

This industry comprises establishments primarily engaged in the construction of power lines and towers, power plants, and radio, television, and telecommunications transmitting/receiving towers. The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to power and communication line and related structures construction. All structures (including buildings) that are integral parts of power and communication networks (e.g., transmitting towers, substations, and power plants) are included.

## **237130 POWER AND COMMUNICATION LINE AND RELATED STRUCTURES CONSTRUCTION**

This U.S. industry comprises establishments primarily engaged in the construction of power lines and towers, power plants, and radio, television, and telecommunications transmitting/receiving towers. The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to power and communication line and related structures construction. All structures (including buildings) that are integral parts of power and communication networks (e.g., transmitting towers, substations, and power plants) are included.

## **2372 LAND SUBDIVISION**

This industry group comprises establishments primarily engaged in servicing land and subdividing real property into lots, for subsequent sale to builders. Servicing of land may include excavation work for the installation of roads and utility lines. The extent of work may vary from project to project. Land subdivision precedes building activity and the subsequent building is often residential, but may also be commercial tracts and industrial parks. These establishments may do all the work themselves or subcontract the work to others. Establishments that perform only the legal subdivision of land are not included in this industry.

## **23721 LAND SUBDIVISION**

This industry comprises establishments primarily engaged in servicing land and subdividing real property into lots, for subsequent sale to builders. Servicing of land may include excavation work for the installation of roads and utility lines. The extent of work may vary from project to project. Land subdivision precedes building activity and the subsequent building is often residential, but may also be commercial tracts and industrial parks. These establishments may do all the work themselves or subcontract the work to others. Establishments that perform only the legal subdivision of land are not included in this industry.

## **237210 LAND SUBDIVISION**

This U.S. industry comprises establishments primarily engaged in servicing land and subdividing real property into lots for subsequent sale to builders. Servicing of land may include excavation work for the installation of roads and utility lines. The extent of work may vary from project to project. Land subdivision precedes building activity and the subsequent building is often residential, but may also be commercial tracts and industrial parks. These establishments may do all the work themselves or subcontract the work to others. Establishments that perform only the legal subdivision of land are not included in this industry.



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### **2373 HIGHWAY, STREET, AND BRIDGE CONSTRUCTION**

This industry group comprises establishments primarily engaged in the construction of highways (including elevated), streets, roads, airport runways, public sidewalks, or bridges. The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to highway, street, and bridge construction (e.g., installing guardrails on highways).

### **23731 HIGHWAY, STREET, AND BRIDGE CONSTRUCTION**

This industry comprises establishments primarily engaged in the construction of highways (including elevated), streets, roads, airport runways, public sidewalks, or bridges. The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to highway, street, and bridge construction (e.g., installing guardrails on highways).

### **237310 HIGHWAY, STREET, AND BRIDGE CONSTRUCTION**

This U.S. industry comprises establishments primarily engaged in the construction of highways (including elevated), streets, roads, airport runways, public sidewalks, or bridges. The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to highway, street, and bridge construction (e.g., installing guardrails on highways).

### **2379 OTHER HEAVY AND CIVIL ENGINEERING CONSTRUCTION**

This industry group comprises establishments primarily engaged in heavy and engineering construction projects (excluding highway, street, bridge, and distribution line construction). The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to engineering construction projects (excluding highway, street, bridge, distribution line, oil and gas structure, and utilities building and structure construction). Construction projects involving water resources (e.g., dredging and land drainage), development of marine facilities, and projects involving open space improvement (e.g., parks and trails) are included in this industry.

### **23799 OTHER HEAVY AND CIVIL ENGINEERING CONSTRUCTION**

This industry comprises establishments primarily engaged in heavy and engineering construction projects (excluding highway, street, bridge, and distribution line construction). The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to engineering construction projects (excluding highway, street, bridge, distribution line, oil and gas structure, and utilities building and structure construction). Construction projects involving water resources (e.g., dredging and land drainage), development of marine facilities, and projects involving open space improvement (e.g., parks and trails) are included in this industry.

### **237990 OTHER HEAVY AND CIVIL ENGINEERING CONSTRUCTION**

This U.S. industry comprises establishments primarily engaged in heavy and engineering construction projects (excluding highway, street, bridge, and distribution line construction). The work performed may include new work, reconstruction, rehabilitation, and repairs. Specialty trade contractors are included in this group if they are engaged in activities primarily related to engineering construction projects (excluding highway, street, bridge, distribution line, oil and gas structure, and utilities building and structure construction). Construction projects involving water resources (e.g., dredging and land drainage), development of marine facilities, and projects involving open space improvement (e.g., parks and trails) are included in this industry.

### **238 SPECIALTY TRADE CONTRACTORS**

The Specialty Trade Contractors subsector comprises establishments whose primary activity is performing specific activities (e.g., pouring concrete, site preparation, plumbing, painting, and electrical work) involved in building construction or other activities that are similar for all types of

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construction but that are not responsible for the entire project. The work performed may include new work, additions, alterations, maintenance, and repairs. The production work performed by establishments in this subsector is usually subcontracted from establishments of the general contractor type or operative builders but, especially in remodeling and repair construction, work also may be done directly for the owner of the property. Specialty trade contractors usually perform most of their work at the construction site, although they may have shops where they perform prefabrication and other work. Establishments primarily engaged in preparing sites for new construction are also included in this subsector.

There are substantial differences in types of equipment, work force skills, and other inputs required by specialty trade contractors. Establishments in this subsector are classified based on the underlying production function for the specialty trade in which they specialize. Throughout the Specialty Trade Contractors subsector, establishments commonly provide both the parts and labor required to complete work. For example, electrical contractors supply the current-carrying and noncurrent-carrying wiring devices that are required to install a circuit. Plumbing, Heating and Air-Conditioning contractors also supply the parts required to complete a contract.

Establishments that specialize in activities primarily related to heavy and civil engineering construction that are not normally performed on buildings, such as the painting of lines on highways are classified in Subsector 237, Heavy and Civil Engineering Construction.

Establishments that are primarily engaged in selling construction materials are classified in Sector 42, Wholesale Trade, or Sector 44-45, Retail Trade, based on the characteristics of the selling unit.

### **2381 FOUNDATION, STRUCTURE, AND BUILDING EXTERIOR CONTRACTORS**

This industry group comprises establishments primarily engaged in the specialty trades needed to complete the basic structure (i.e., foundation, frame, and shell) of buildings. The work performed may include new work, additions, alterations, maintenance, and repairs.

#### **23811 POURED CONCRETE FOUNDATION AND STRUCTURE CONTRACTORS**

This industry comprises establishments primarily engaged in pouring and finishing concrete foundations and structural elements. This industry also includes establishments performing grout and shotcrete work. The work performed may include new work, additions, alterations, maintenance, and repairs.

##### **238110 POURED CONCRETE FOUNDATION AND STRUCTURE CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in pouring and finishing concrete foundations and structural elements. This industry also includes establishments performing grout and shotcrete work. The work performed may include new work, additions, alterations, maintenance, and repairs.

##### **23812 STRUCTURAL STEEL AND PRECAST CONCRETE CONTRACTORS**

This industry comprises establishments primarily engaged in one or more of the following:

1. erecting and assembling structural parts made from steel or precast concrete (e.g., steel beams, structural steel components, and similar products of precast concrete); and/or
2. assembling and installing other steel construction products (e.g., steel rods, bars, rebar, mesh, and cages) to reinforce poured-in-place concrete.

The work performed may include new work, additions, alterations, maintenance, and repairs.

##### **238120 STRUCTURAL STEEL AND PRECAST CONCRETE CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in:

1. erecting and assembling structural parts made from steel or precast concrete (e.g., steel beams, structural steel components, and similar products of precast concrete) and/or

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2. assembling and installing other steel construction products (e.g., steel rods, bars, rebar, mesh, and cages) to reinforce poured-in-place concrete.

The work performed may include new work, additions, alterations, maintenance, and repairs.

### **23813 FRAMING CONTRACTORS**

This industry comprises establishments primarily engaged in structural framing and sheathing using materials other than structural steel or concrete. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **238130 FRAMING CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in structural framing and sheathing using materials other than structural steel or concrete. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **23814 MASONRY CONTRACTORS**

This industry comprises establishments primarily engaged in masonry work, stone setting, brick laying, and other stone work. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **238140 MASONRY CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in masonry work, stone setting, brick laying, and other stone work. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **23815 GLASS AND GLAZING CONTRACTORS**

This industry comprises establishments primarily engaged in installing glass panes in prepared openings (i.e., glazing work) and other glass work for buildings. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **238150 GLASS AND GLAZING CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in installing glass panes in prepared openings (i.e., glazing work) and other glass work for buildings. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **23816 ROOFING CONTRACTORS**

This industry comprises establishments primarily engaged in roofing. This industry also includes establishments treating roofs (i.e., spraying, painting, or coating) and installing skylights. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **238160 ROOFING CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in roofing. This industry also includes establishments treating roofs (i.e., spraying, painting, or coating) and installing skylights. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **23817 SIDING CONTRACTORS**

This industry comprises establishments primarily engaged in installing siding of wood, aluminum, vinyl or other exterior finish material (except brick, stone, stucco, or curtain wall). This industry also includes establishments installing gutters and downspouts. The work performed may include new work, additions, alterations, maintenance, and repairs.

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### **238170 SIDING CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in installing siding of wood, aluminum, vinyl, or other exterior finish material (except brick, stone, stucco, or curtain wall). This industry also includes establishments installing gutters and downspouts. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **23819 OTHER FOUNDATION, STRUCTURE, AND BUILDING EXTERIOR CONTRACTORS**

This industry comprises establishments primarily engaged in building foundation and structure trades work (except poured concrete, structural steel, precast concrete, framing, masonry, glass and glazing, roofing, and siding). The work performed may include new work, additions, alterations, maintenance, and repairs.

### **238190 OTHER FOUNDATION, STRUCTURE, AND BUILDING EXTERIOR CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in building foundation and structure trades work (except poured concrete, structural steel, precast concrete, framing, masonry, glass and glazing, roofing, and siding). The work performed may include new work, additions, alterations, maintenance, and repairs.

### **2382 BUILDING EQUIPMENT CONTRACTORS**

This industry group comprises establishments primarily engaged in installing or servicing equipment that forms part of a building mechanical system (e.g., electricity, water, heating, and cooling). The work performed may include new work, additions, alterations, or maintenance and repairs. Contractors installing specialized building equipment, such as elevators, escalators, service station equipment, and central vacuum cleaning systems are also included.

### **23821 ELECTRICAL CONTRACTORS**

This industry comprises establishments primarily engaged in installing and servicing electrical wiring and equipment. Electrical contractors included in this industry may include both the parts and labor when performing work. Electrical contractors may perform new work, additions, alterations, maintenance, and repairs.

### **238210 ELECTRICAL CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in installing and servicing electrical wiring and equipment. Electrical contractors included in this industry may include both the parts and labor when performing work. Electrical contractors may perform new work, additions, alterations, maintenance, and repairs.

### **23822 PLUMBING, HEATING, AND AIR-CONDITIONING CONTRACTORS**

This 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.

### **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.

### **23829 OTHER BUILDING EQUIPMENT CONTRACTORS**

This industry comprises establishments primarily engaged in installing or servicing building equipment (except electrical; plumbing; heating, cooling, or ventilation equipment). The repair and maintenance of miscellaneous building equipment is included in this industry. The work performed may include new work, additions, alterations, maintenance, and repairs.

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### **238290 OTHER BUILDING EQUIPMENT CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in installing or servicing building equipment (except electrical; plumbing; and heating, cooling, or ventilation equipment). The repair and maintenance of miscellaneous building equipment is included in this industry. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **2383 BUILDING FINISHING CONTRACTORS**

This industry group comprises establishments primarily engaged in the specialty trades needed to finish buildings. The work performed may include new work, additions, alterations, or maintenance and repairs.

### **23831 DRYWALL AND INSULATION CONTRACTORS**

This industry comprises establishments primarily engaged in drywall, plaster work, and building insulation work. Plaster work includes applying plain or ornamental plaster, and installation of lath to receive plaster. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **238310 DRYWALL AND INSULATION CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in drywall, plaster work, and building insulation work. Plaster work includes applying plain or ornamental plaster, and installation of lath to receive plaster. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **23832 PAINTING AND WALL COVERING CONTRACTORS**

This industry comprises establishments primarily engaged in interior or exterior painting or interior wall covering. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **238320 PAINTING AND WALL COVERING CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in interior or exterior painting or interior wall covering. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **23833 FLOORING CONTRACTORS**

This industry comprises establishments primarily engaged in the installation of resilient floor tile, carpeting, linoleum, and hard wood flooring. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **238330 FLOORING CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in the installation of resilient floor tile, carpeting, linoleum, and hard wood flooring. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **23834 TILE AND TERRAZZO CONTRACTORS**

This industry comprises establishments primarily engaged in setting and installing ceramic tile, stone (interior only), and mosaic and/or mixing marble particles and cement to make terrazzo at the job site. The work performed may include new work, additions, alterations, maintenance, and repairs.

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### **238340 TILE AND TERRAZZO CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in setting and installing ceramic tile, stone (interior only), and mosaic and/or mixing marble particles and cement to make terrazzo at the job site. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **23835 FINISH CARPENTRY CONTRACTORS**

This industry comprises establishments primarily engaged in finish carpentry work. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **238350 FINISH CARPENTRY CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in finish carpentry work. The work performed may include new work, additions, alterations, maintenance, and repairs.

### **23839 OTHER BUILDING FINISHING CONTRACTORS**

This industry comprises establishments primarily engaged in building finishing trade work (except drywall, plaster and insulation work; painting and wall covering work; flooring work; tile and terrazzo work; and finish carpentry work). The work performed may include new work, additions, alterations, or maintenance and repairs.

### **238390 OTHER BUILDING FINISHING CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in building finishing trade work (except drywall, plaster and insulation work; painting and wall covering work; flooring work; tile and terrazzo work; and finish carpentry work). The work performed may include new work, additions, alterations, or maintenance and repairs.

### **2389 OTHER SPECIALTY TRADE CONTRACTORS**

This industry group comprises establishments primarily engaged in site preparation activities and in specialized trades (except foundation, structure, and building exterior contractors; building equipment contractors; building finishing contractors; and site preparation contractors). The specialty trade work performed includes new work, additions, alterations, maintenance, and repairs.

### **23891 SITE PREPARATION CONTRACTORS**

This industry comprises establishments primarily engaged in site preparation activities, such as excavating and grading, demolition of buildings and other structures, septic system installation, and house moving. Earth moving and land clearing for all types of sites (e.g., building, nonbuilding, mining) is included in this industry. Establishments primarily engaged in construction equipment rental with operator (except cranes) are also included.

### **238910 SITE PREPARATION CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in site preparation activities, such as excavating and grading, demolition of buildings and other structures, septic system installation, and house moving. Earth moving and land clearing for all types of sites (e.g., building, nonbuilding, mining) is included in this industry. Establishments primarily engaged in construction equipment rental with operator (except cranes) are also included.

### **23899 ALL OTHER SPECIALTY TRADE CONTRACTORS**

This industry comprises establishments primarily engaged in specialized trades (except foundation, structure, and building exterior contractors; building equipment contractors; building finishing contractors; and site preparation contractors). The specialty trade work performed includes new work, additions, alterations, maintenance, and repairs.

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**238990 ALL OTHER SPECIALTY TRADE CONTRACTORS**

This U.S. industry comprises establishments primarily engaged in specialized trades (except foundation, structure, and building exterior contractors; building equipment contractors; building finishing contractors; and site preparation contractors). The specialty trade work performed includes new work, additions, alterations, maintenance, and repairs.

# Appendix C.

## Methodology

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### 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/](http://help.econ.census.gov/econhelp/resources/).



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A more detailed examination of census methodology is presented in the *History of the Economic Census* at [www.census.gov/econ/www/history.html](http://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](http://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](http://www.census.gov/epcd/ec02/disclosure.htm).

# Appendix D. Geographic Notes

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Not applicable for this report.

# Appendix E. Metropolitan and Micropolitan Statistical Areas

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Not applicable for this report.

