The Economic Impact of the Construction Industry on the Economy of Rhode Island in 2013


Source: RI DLT

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RHODE ISLAND

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THE ECONOMIC IMPACT OF THE CONSTRUCTION INDUSTRY ON THE ECONOMY OF RHODE ISLAND IN 2013

A REPORT PREPARED FOR AND FUNDED BY:

ASSOCIATED BUILDERS & CONTRACTORS (ABC)
ASSOCIATED GENERAL CONTRACTORS (AGC)
CONSTRUCTION INDUSTRIES OF RI (CIRI)
RI BUILDERS ASSOCIATION (RIBA)
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by

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MARCH 2014

ECONOMIC IMPACT OF THE CONSTRUCTION INDUSTRY IN RHODE ISLAND

This report examines the economic contribution of the construction industry and shows that it has a significant impact on the economy of the State of Rhode Island. The construction industry provides the necessary infrastructure for many productive activities and contributes to the creation of jobs and income in the state. Its across-the-board interactions with other sectors of the economy make it a key industry for fostering economic development. This study estimates that in 2013 the construction industry:

- Supported 29,916 jobs (6.4 percent of nonfarm employment) in Rhode Island, from which 16,307 are direct jobs and 13,609 are induced jobs.
- Added $3.9 billion to the state's output, which represents 7.7 percent of the state's Gross Domestic Product. This figure includes $2.07 billion in direct output and $1.83 billion in induced output.
- Created $1.35 billion in income for Rhode Island households. Direct earnings totaled $857 million and induced earnings totaled $489 million.
- Generated $29 million in personal income tax revenues for the State of Rhode Island. The direct personal income tax revenue is estimated at $18.8 million plus induced personal income tax revenue of $10.2 million.
- Generated $156.6 million in non-income (nonpersonal property taxes, licenses, sales, and gross receipts taxes) state and local tax revenue. The *direct* non-income tax revenue is estimated at $24 million, plus induced sales tax revenue of $132.6 million.

Multiplier analysis shows that in Rhode Island:

- **$10 million of construction output supports 146 direct and induced jobs in the state.**
- **Each 100 jobs created in the construction industry supports 83 jobs in other sectors via induced economic activity.**

THE COST OF THE CONTRACTION IN CONSTRUCTION

The Rhode Island economy lost a significant share of its GDP because of difficulties in the construction industry. This study estimates the *additional* contribution to the state economy if the construction industry could operate at the level observed in 2001. Increasing construction Real GDP from $2.073 billion (2012 RGDP) to $2.75 billion (2001 RGDP) would:

- Support 9,880 new jobs in Rhode Island, from which 5,436 would be direct jobs and 4,444 would be induced new jobs.
- Create $404 million in additional income for Rhode Island households.
- Generate $60.2 million in additional tax revenues for the State of Rhode Island.
- Reduce the Rhode Island unemployment rate from 9.2 percent (as of January 2014) to 7.3 percent. This change would make the unemployment rate in Rhode Island drop from the highest rate in the country to the 14th highest rate in the country.

The direct contribution of the construction industry to the state's GDP fell from 6 percent in 1998 to 5.7 percent in 2001, and to 3.9 percent in 2012.

CONSTRUCTION INDUSTRY PROFILE

- In 2012 in Rhode Island, construction average annual earning was $53,498, which is 20 percent higher than the average wage for all industries, 3.4 percent higher than the average wage in manufacturing ($51,724), and two times the average wage in the retail trade sector ($27,065).
- Construction average wage in Rhode Island is lower than that in Massachusetts ($66,200) and in Connecticut ($58,957), but higher than the average wage in New Hampshire ($53,073), Vermont ($45,627), and Maine ($42,511).
- The construction Real GDP (adjusted for inflation) declined 31 percent between 2003 and 2009. From 2009 to 2012, construction RGDP increased 2.7 percent, compared to an increase of 2.4 percent in the state's total RGDP.
- The *direct* contribution of the construction industry to the state's GDP fell from 6 percent in 1998 to 3.9 percent in 2009, staying at this low rate until 2012.
- Rhode Island construction employment increased from 18,889 in 2001 to 21,704 in 2005, stayed roughly constant in 2006, and then plummeted between 2007 and 2010. From 2005 to 2010, Rhode Island's construction industry lost about 7,550 jobs or 26% of employment. Employment in construction did not change significantly between 2010 and 2013.
- Construction employment is geographically concentrated in the greater Providence area (57 percent of all construction employment in Rhode Island).
- Rhode Island's construction industry comprises Specialty Trade Contractors (10,410 workers), Residential Building Construction (2,323 workers), Nonresidential Construction (1,616 workers), and Heavy and Civil Engineering Construction (1,957 workers).
- The economic impact of construction activities is dispersed over the sectors with particular strong employment linkages with retail trade, health care and social assistance, manufacturing, food, drinking, recreation, and accommodation, and real estate, rental and leasing services.
- The construction industry is yet to rebound from the Great Recession, and construction activity is still significantly lower than the levels observed prior to the housing boom.
- The current weak national construction outlook makes the short term a difficult time for construction in Rhode Island. The state has to align its cost-structure, improve productivity, and seize all opportunities to expand construction activities.

Policy recommendations aimed at strengthening the construction industry

- Review and implement reforms in the construction permitting process;
- Identify issues that delay development and increase construction costs in RI;
- Assess opportunities to build and remodel public & private properties across cities and towns.

THE ECONOMIC IMPACT OF THE CONSTRUCTION INDUSTRY ON THE ECONOMY OF RHODE ISLAND

INTRODUCTION

The construction industry provides the necessary infrastructure for many productive activities and contributes to the creation of jobs and income in the state. Its across-the-board interactions with other sectors of the economy make it a key industry for fostering economic development. The economic impact of construction activities is dispersed over the sectors with particular strong linkages to retail trade, manufacturing, wholesale, warehousing, transportation, and real estate, rental and leasing services.

This report examines the economic contribution of the construction industry and shows that it has a significant impact on the economy of the State of Rhode Island. The construction industry creates direct jobs, income, and tax revenue for the state. In addition, construction activities contribute to the state economy via a multiplier effect.

This study uses input-output (I-O) multipliers to account for inter-industry relationships within the state and to determine how the state economy is affected by the construction industry. Multiplier analysis is based on the notion of feedback through input-output linkages among businesses and households who interact in regional markets. Businesses buy and sell goods and services to other firms and pay wages to households. In turn, households buy goods from businesses within the economic region. The economic impact of the construction industry spreads to local businesses through direct purchases of goods and services from firms and service providers including inputs, services, maintenance, and repairs, etc. Economic activity affects local businesses via the multiplier effect, working through the economy as purchases of locally produced goods and services arising from the income created by employment in construction activities. Local firms require more inputs to meet rising demand for their output, which has been stimulated.

THE CONSTRUCTION INDUSTRY OUTLOOK

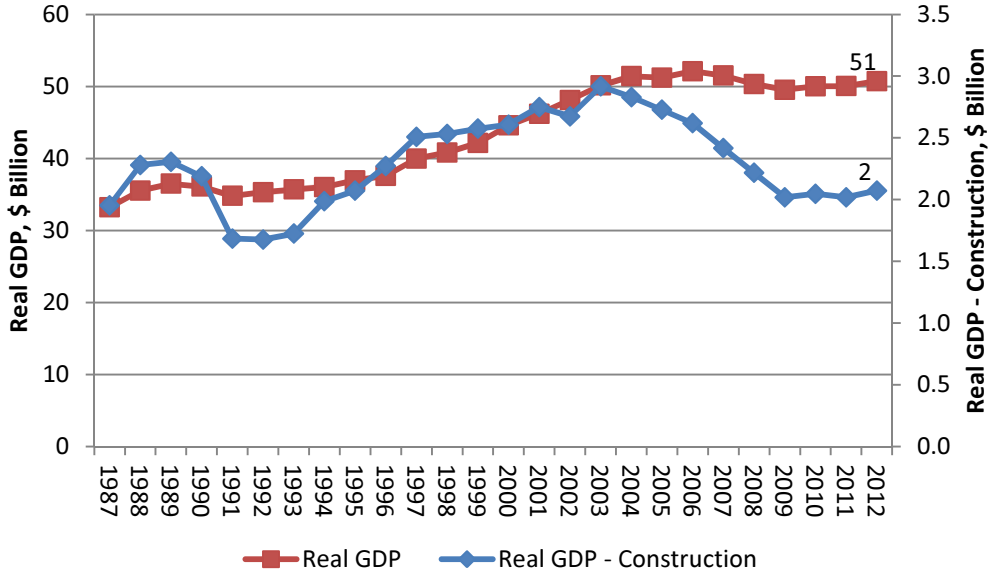
The 2008 Great Recession took a big toll on Rhode Island's economy, causing significant job losses, high unemployment rates, and economic stagnation. However, no industry was more negatively affected than the construction industry, which was already experiencing major structural adjustments since the early 2000s.

Figure 1 reports the Real Gross Domestic Product (RGDP)[1] for both the construction industry and for the economy as a whole and highlights two key issues: first, the construction industry was greatly affected by the recessions of 1991 and 2008, but the recovery of construction activity was much faster during the recession in the early 1990s than in the 2008 recession.

[1] RGDP is adjusted for inflation using the GDP deflator calculated by the U.S. BEA.

Second, construction activity started to contract as early as 2004 in Rhode Island, about 3 years before the recession hit the economy. Precisely, the construction real GDP (adjusted for inflation) reached $2.9 billion in 2003 and then started to shrink at a very fast pace until 2009, when it reached just $2 billion, a decline of 31 percent. During the same period, total GDP declined just 1.2 percent. Hence, the performance of the construction industry has been markedly poor compared to the rest of the state economy in the second half of the 2000s. In addition, the recovery has been sluggish. From 2009 to 2012, construction RGDP increased 2.7%, compared to an increase of 2.4% in the size of the state's total RGDP. Construction RGDP reached $2.1 billion in 2012, which is only higher than the $1.95 billion construction RGDP observed in 1987 in the state.

Figure 1: Gross Domestic Product, Rhode Island, 1987-2012

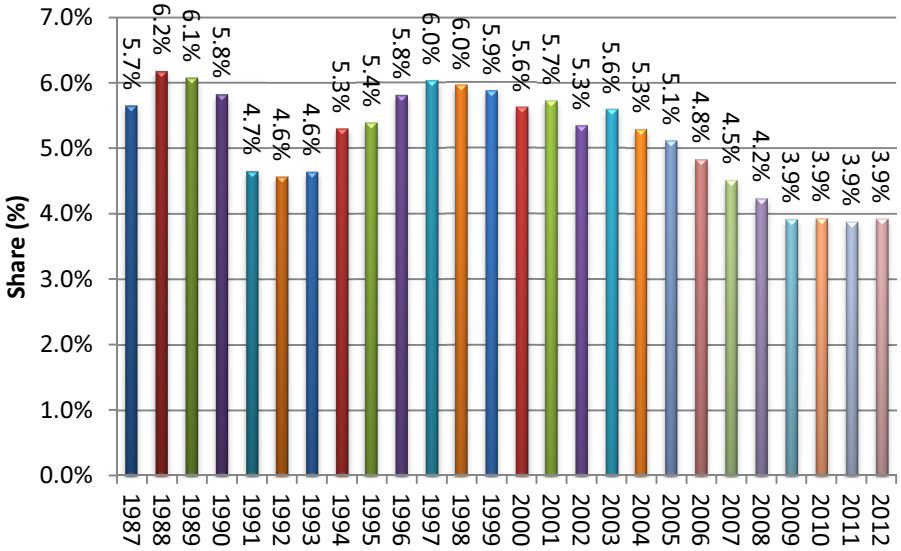


Source: Author's compilation using data from the U.S. Bureau of Economic Analysis.

Figure 2 shows the construction GDP as a percent of the state's economy and clearly indicates that construction activity has significantly diminished over the last decade. The *direct* contribution of the construction industry to the state's GDP fell from 6.2 percent in 1988 to 4.6 percent in 1992-1993 (1990s recession), but then rebounded in subsequent years and reached 6 percent in 1988. However, the 2000s have been very difficult for the Rhode Island construction industry, as highlighted above, causing the *direct* contribution of the construction industry to the state's GDP to decrease to 3.9 percent in 2009 and remain at this low rate until 2012. These figures suggest that the Rhode Island economy lost a significant share of its GDP because of difficulties in the construction industry. Rhode Island's construction performance, however, follows the national trend. The direct contribution of the construction industry to the U.S. GDP fell from 6.7 percent in 1988 to 6.1 percent in 2000 and 3.6 percent in 2012.

These figures illustrate how hard the construction industry was hit by the housing crisis as well as the stagnation of the construction industry for several years. This is worrisome because the construction industry is a key driver of both income and job creation.

Figure 2: Construction GDP as a % of Total GDP, Rhode Island, 1987-2012



Source: Author's compilation using data from the U.S. Bureau of Economic Analysis.

REGIONAL ANALYSIS

Table 1 puts the construction industry in a regional perspective. It shows that all New England states have followed a similar trend since the early 1990s. It also shows that between 1992 and 2003 the Rhode Island construction industry's RGDP expanded faster than the average growth rate in New England and the nation. However, from 2003 (peak) to 2009 the construction industry was significantly affected across New England states including Rhode Island. The New England construction RGDP declined 5.4 percent (annual rate) between 2003 and 2007 and 10.6 percent (annual rate) between 2007 and 2009. These rates are significantly higher than the national average of a 2.3 percent decline between 2003 and 2007 and 9.3 percent decline between 2007 and 2009. It is worth noticing that the Rhode Island construction's RGDP shrank 2.4 percent between 2003 and 2007 and 8.3 percent between 2007 and 2009.

Table 1: Annual Growth Rate of Construction GDP by State, 2000-2012

Area	1992-2000	2000-2003	2003-2007	2007-2009	2009-2012
United States	5.3%	-1.8%	-2.3%	-9.3%	0.5%
New England	5.6%	-1.6%	-5.4%	-10.6%	2.3%
Connecticut	1.9%	-3.5%	-1.8%	-11.3%	0.4%
Maine	2.2%	1.5%	-6.1%	-9.8%	3.5%
Massachusetts	8.7%	-2.3%	-6.9%	-10.6%	3.4%
New Hampshire	7.3%	0.8%	-7.5%	-12.2%	2.3%
Rhode Island	6.9%	4.0%	-2.4%	-8.3%	0.9%
Vermont	3.5%	-2.0%	-6.0%	-8.4%	3.8%

Source: Author's compilation using data from the U.S. Bureau of Economic Analysis.

The construction industry across New England continues to struggle post-recession, but some encouraging signs of a potential recovery can be observed in several states. From 2009 to 2012,

construction GDP increased on average of 2.3 percent in New England, 3.8 percent in Vermont, 3.5 percent in Maine, 3.4 percent in Massachusetts, and 2.3 percent in New Hampshire. However, construction RGDP increased just 0.9 percent in Rhode Island and 0.4 percent in Connecticut. This suggests that the construction industry is still in neutral in both Rhode Island and Connecticut.

During the 2000s, employment in the construction sector was characterized by two different periods. The first period, between 2001 and 2005, was defined by an upward trend in employment. Table 2 shows that during this period, Rhode Island construction employment increased from 18,889 to 21,704, an increase of 2,815 jobs. The second phase started in 2006 with the slowdown of construction activity; then the number of jobs in construction plummeted between 2007 and 2010. From 2005 to 2010, Rhode Island's construction industry lost about 7,550 jobs or 26% of employment. This downward trend in construction employment between 2005 and 2010 was not a particular phenomenon of Rhode Island. It was a regional and national phenomenon. Construction employment fell 26% in Rhode Island, 24% in New England states, and 24% in the nation during 2005 and 2010. Between 2010 and 2013, employment in construction increased by 230,000 in the nation, but stayed roughly constant in Rhode Island. In 2010, construction employed 15,957 workers, compared to just 16,307 workers in 2013.

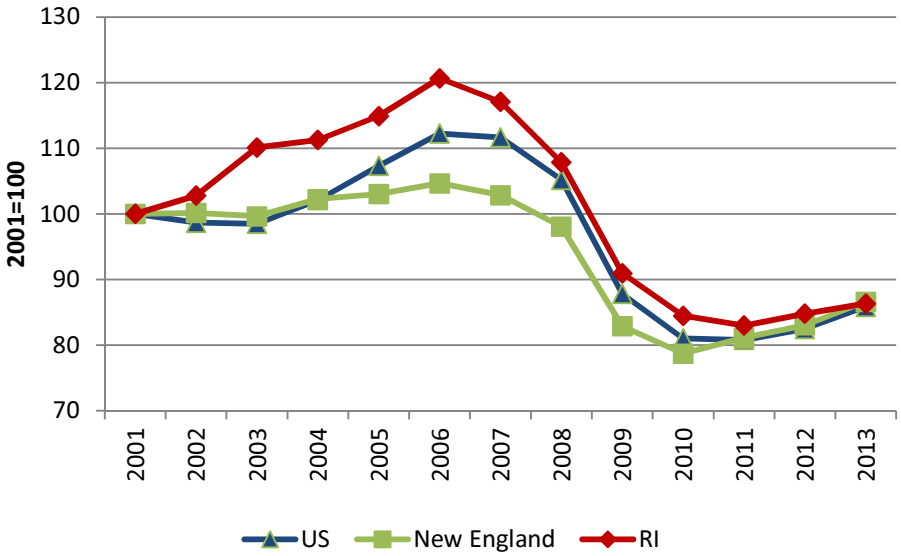
Table 2: Total Employment in Construction by State, 2001-2013

	2001	2005	2007	2010	2012	2013*
US	6,773,512	7,269,317	7,562,732	5,489,499	5,586,553	5,815,042
New England	295,124	304,055	303,589	232,309	245,093	255,626
CT	65,384	65,963	68,621	49,963	51,580	54,242
ME	29,751	30,659	30,889	24,327	25,582	25,692
MA	138,713	139,440	137,631	107,103	115,566	122,560
NH	27,170	29,434	27,483	21,410	22,153	22,899
RI	18,889	21,704	22,112	15,957	16,016	16,307
VT	15,217	16,855	16,853	13,549	14,196	13,925

*Source: U.S. Bureau of Labor Statistics, QECW Program. * 2013 figures are* average employment *for the second quarter of 2013. The RI 2013 employment in construction is consistent with preliminary data revisions from the Rhode Island Department of Labor and Training, but are slightly larger than the BLS/CES estimates.*

Figure 3 reports an employment index normalized to 100 in 2001. It allows for a long-run comparison of the performance of Rhode Island's construction employment to that of New England and the nation's performance. It shows that Rhode Island's construction employment increased slightly faster between 2001 and 2005 and then decreased slightly faster between 2005 and 2010. It also shows that as of 2013, the index is roughly the same for Rhode Island, New England, and the nation as a whole. This implies that construction employment in Rhode Island follows a trend very similar to that of the New England area as well as the nation. This figure also shows that employment in construction is yet to rebound from the Great Recession and is still significantly lower than the levels observed prior to the housing boom. Precisely, in Rhode Island, New England, and the nation, construction employment is about 14 percent lower than the employment levels observed in 2001.

Figure 3: Construction Employment Index, 2001-2013



Source: U.S. Bureau of Labor Statistics, QECW Program. * *2013 figures are* average employment *for the second quarter of 2013.*

Table 3 shows that during the 2000s in Rhode Island, the average wage in construction was significantly higher than the average construction wages in New England and in the nation, but the housing crisis and the depressed construction industry caused this wage differential to vanish. In 2013, the average wage in Rhode Island's construction industry was just under $53,500, compared to an average of $53,300 across all New England states and $53,000 in the United States. Construction average wage in Rhode Island is lower than that in Massachusetts ($66,200) and in Connecticut ($58,957), but higher than average wage in New Hampshire ($53,073), Vermont ($45,627), and Maine ($42,511).

Table 3: *Real Wages in Construction, Rhode Island (2013 US$)*

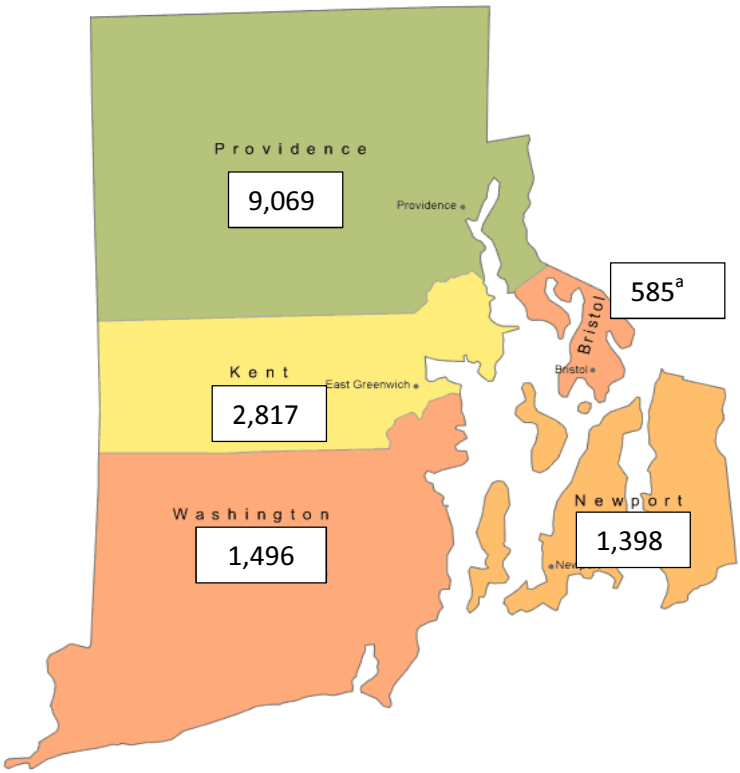
State	2001	2005	2007	2010	2012	2013
US	48,782	48,685	51,132	52,130	52,985	53,054
New England	52,235	51,407	52,950	53,350	53,274	53,303
CT	61,187	59,476	61,181	61,558	60,031	58,957
ME	41,259	40,973	42,184	42,283	42,988	42,511
MA	64,508	61,842	64,537	65,307	66,009	66,234
NH	53,494	52,341	52,863	51,902	52,171	53,073
RI	51,337	51,795	53,217	54,156	54,200	53,419
VT	41,626	42,013	43,720	44,893	44,243	45,627

Source: U.S. BLS, QECW Program. * *2013 figures are* average employment *for the second quarter of 2013.*

COMPOSITION OF THE RHODE ISLAND CONSTRUCTION INDUSTRY

Construction employment is geographically concentrated in the greater Providence area. In 2012, Providence County employed 9,069 construction workers (57 percent of construction employment in the state), followed by Kent County with 2,817 workers (18 percent), Washington County with 1,496 workers (9.3 percent), Newport County with 1,398 workers (8.7 percent), and Bristol County with 585 workers (3.7 percent). The percentages do not add up to 100 because of measurement errors and disclosure issues in the county-level data.

Figure 4: ***Construction Employment by County, 2012****



*Source: BLS/CEW; * adding county employment will not produce total state employment because of unknown observations and disclosure issues; [a]=2011 data.*

Rhode Island's construction industry comprises four subsectors:

Residential building: includes new work, additions, alterations, or maintenance and repairs. Part or all of the production work for which the establishments in this subsector have responsibility may be subcontracted to specialty trade contractors.

Specialty trade contractors: 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 construction, but that are not responsible for the entire project.

Nonresidential building: establishments primarily responsible for the construction of industrial and commercial buildings including nonresidential general contractors,

nonresidential operative builders, nonresidential design-build firms, and nonresidential project construction management firms.

The Heavy and Civil Engineering Construction: 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 projects.

Appendix A provides a detailed description of each of these subsectors.

Figure 5 and Table 4 show that in 2013, specialty trade contractors employed 10,410 workers, which represents 64 percent of all construction workers in Rhode Island. Residential building construction employed 2,323 workers (14 percent), nonresidential construction employed 1,616 people (9 percent), and heavy and civil engineering construction employed 1,957 people (12 percent).

Figure 5: Construction Employment by Subsector, Rhode Island, 2013

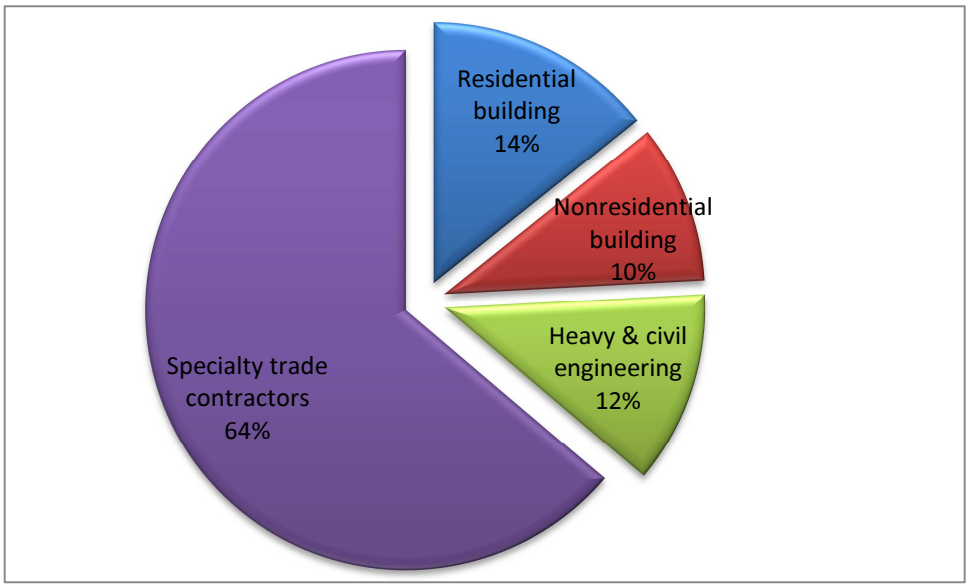


Table 4 shows that between 2001 and 2013, the relative composition of employment in Rhode Island's construction industry did not change significantly. However, specialty trade contractors lost about 2,000 jobs during this period, which represents 77 percent of all construction jobs lost.

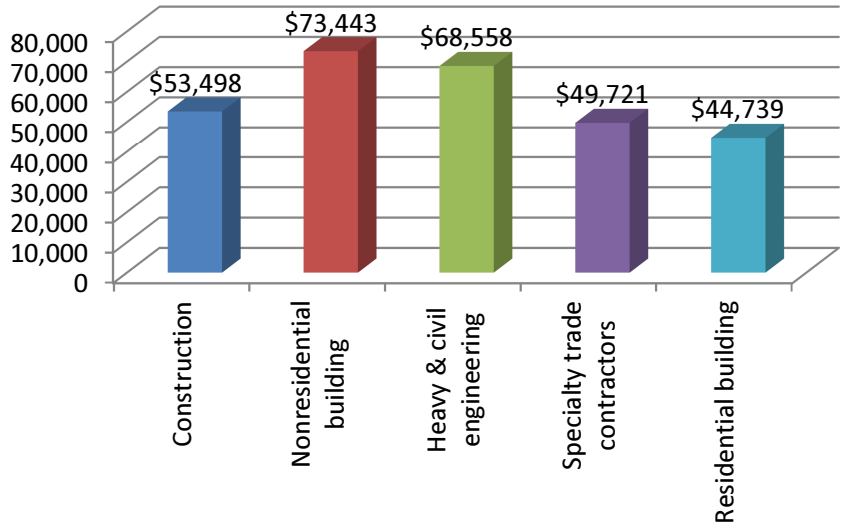
Table 4: Construction FTE Employment by Subsector, Rhode Island

	2001	2005	2007	2010	2012	2013*
Construction	**18,889**	**21,704**	**22,112**	**15,957**	**16,016**	**16,307**
Residential building construction	2,893	3,794	3,444	2,351	2,275	2,323[a]
Nonresidential building construction	1,785	1,889	1,994	1,409	1,580	1,616[a]
Heavy and civil engineering construction	1,824	2,064	2,086	1,691	1,824	1,957
Specialty trade contractors	12,387	13,956	14,588	10,507	10,338	10,410

*Source: U.S. Bureau of Labor Statistics, QECW Program; * 2013 figures are* average employment *for the second quarter of 2013.* [a] estimate.

Figure 6 reports 2012 average wages by subsectors and shows that wages in nonresidential construction ($73,443) and in heavy and civil engineering construction were 37 percent and 28 percent, respectively, greater than average construction wages statewide. On the other hand, average wages in specialty trade contractors ($49,721) and in residential building construction ($44,739) were 7 percent and 12 percent lower than the average wage.

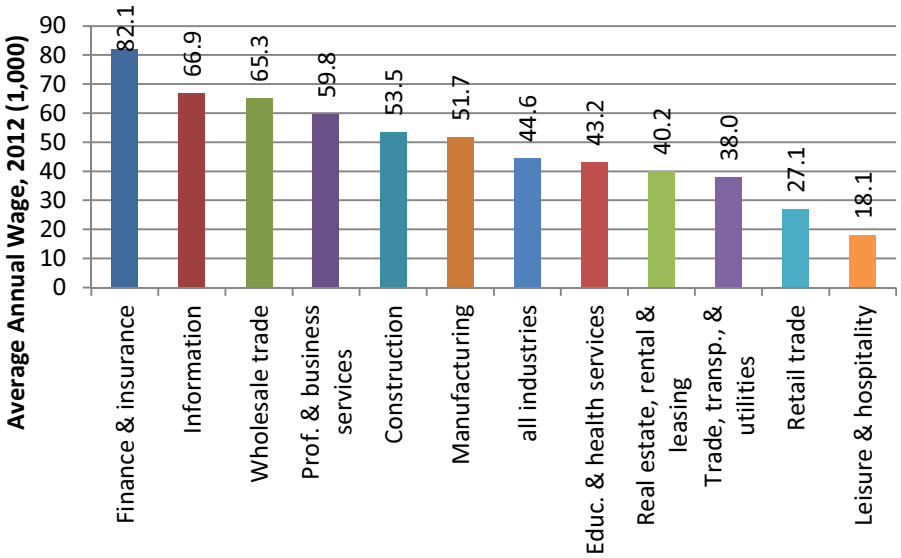
Figure 6: Average Wages in Construction by Subsector, Rhode Island, 2012



Source: U.S. Bureau of Labor Statistics, QECW Program.

In 2012 in Rhode Island, the average wage in construction ($53,498) was 20 percent higher than the average wage in all-industries ($44,633), 3.4 percent higher than the average wage in manufacturing ($51,724), and two times the average wage in the retail trade sector ($27,065). The average wage in construction is lower than the average wage in finance and insurance ($82,069), information ($66,854), professional and business services ($65,318), and wholesale trade (65,318).

Figure 7: Average Wages by Industry, Rhode Island, 2012



Source: U.S. Bureau of Labor Statistics, QECW Program.

MULTIPLIER ANALYSIS

As discussed in the introduction, this study uses input-output (I-O) multipliers to account for inter-industry relationships within the state and to determine how the state economy is affected by the construction industry. Multiplier analysis is based on the notion of feedback through input-output linkages among businesses and households who interact in regional markets. Businesses buy and sell goods and services to other firms and pay wages to households. In turn, households buy goods from businesses within the economic region. The economic impact of the construction industry spreads to local businesses through direct purchases of goods and services from firms and service providers including inputs, services, maintenance, and repairs, etc. Economic activity impacts local businesses via the multiplier effect working through the economy as purchases of locally produced goods and services arising from the income created by employment in construction activities. Local firms require more inputs to meet rising demand for their output, which has been stimulated.

This study measures the economic impact of the construction industry using *multipliers* that are specific for the state of Rhode Island. The multipliers used in this study are provided by the U.S. Bureau of Economic Analysis (BEA) and have been widely used by economists to analyze the impact of economic activities on regional economies. This study uses BEA RIMS Type II multipliers because they include both the *inter-industry* effect and *household-spending effect.* More precisely, the *inter-industry* effect is the sum of the *direct* and *indirect* impact: The *direct impact* relates to the first round of inputs purchased by the final-demand industry. The *indirect impact* relates to the subsequent rounds of inputs purchased by supporting industries. The *household-spending effect* accounts for the *induced impact* related to the spending of workers whose earnings are affected by a final-demand change for construction services. Hence, the BEA Type II multipliers used in this study account for both the *inter-industry effect* and for the *induced impact*. For the sake of simplicity, in this report we use the term *induced* to refer to the total impact (*Indirect impact + household-spending effect)* from construction activities.

Table 5 shows which sectors of the Rhode Island economy are affected by construction activities and identifies the output, value-added, earnings, and employment effect for each of these sectors.[2] These figures are final-demand multipliers measured as the resulting effect from an increase of $1 million in construction activity. This table shows that the construction industry has a significant economic impact on retail trade, health care, manufacturing, real estate, rental, among other industries. For instance, a $10 million increase in demand for construction contributes to the creation of $0.989 million in output (10*0.0989=0.989), $0.655 million in value-added (10*0.0655=0.655), $0.303 million in earnings (10*0.0303=0.303), and 15 jobs via *induced* economic activity in the retail trade industry in Rhode Island.

[2] The difference between value-added and output (GDP) is that the value-added excludes intermediate inputs. Earnings are a part of value-added. The rest of value-added consists of taxes on production and imports and of gross operating surplus, which is a profits-like measure.

Table 5: The Construction Economic Linkages by Sector, Rhode Island

Sector	Final Demand Multipliers			
	Output (A)	Value-Added (B)[a]	Earnings (C)[a]	Employment (D)
Construction	1.0059	0.5204	0.3604	8.0296
Retail trade	0.0989	0.0655	0.0303	1.1508
Health care & social assistance	0.0875	0.0550	0.0373	0.8810
Other services/activities [b]	0.0554	0.0325	0.0229	0.7037
Food, drinking, recreation, & accommodation	0.0411	0.0228	0.0119	0.6680
Real estate, rental and leasing	0.1096	0.0765	0.0081	0.6386
Professional, scientific, & technical services	0.0752	0.0537	0.0322	0.5945
Manufacturing	0.1364	0.0520	0.0264	0.5604
Management, administrative, waste manag't.	0.0417	0.0269	0.0162	0.4907
Wholesale, warehousing, transp., utilities	0.0907	0.0575	0.0249	0.4468
Finance & insurance	0.1035	0.0556	0.0198	0.3308
Information	0.0427	0.0229	0.0059	0.0994

Source: Regional Input-Output Modeling System (RIMS II), Regional Product Division, Bureau of Economic Analysis. [a] Earnings is also included into the value-added; [b] Includes educational services, other services, and agriculture, forestry, fishing, hunting, and mining. The induced economic impact across these industries is imprecisely estimated to be reported separately.

Table 6 reports the aggregate RIMS Type II employment multipliers for select industries in Rhode Island. The *final-demand employment* multiplier (Column A) measures the total number of job (*direct + induced*) created in the State of Rhode Island for every $1 million dollars of output that is produced in a particular industry. The *total employment* multiplier for construction is 14.595, which implies that $10 million of construction output supports (10*14.595=146) 146 *direct and induced* jobs in the state. The *final-demand employment* multiplier for construction is higher than the multipliers of wholesale, warehousing, transportation and utilities, finance and insurance, manufacturing, real estate, rental and leasing, and Information.

Column B of Table 6 shows the *job-effect* multiplier, which measures the total number of jobs created in all Rhode Island industries for each job created in a particular industry. The *job-effect* multiplier for the construction industry is 1.828, which implies that for every 100 jobs created in construction; another 83 jobs are generated via *induced* economic activity in the Rhode Island economy. The *job-effect* multiplier for construction is higher than the multipliers of health care and social assistance, real estate, rental and leasing, retail trade, and food, drinking, recreation, and accommodation.

Table 6: The Aggregate Employment Multiplier across Industries, Rhode Island

Industry	Aggregate Employment Multiplier	
	Final-demand (A)	Job-effect (B)
Construction	14.595	1.828
Retail trade	17.244	1.482
Health care and social assistance	17.931	1.782
Food, drinking, recreation, and accommodation	23.503	1.476
Real estate, rental and leasing	9.120	1.714
Professional, scientific, and technical services	14.549	1.840
Manufacturing	10.042	2.200
Management, administrative, waste management	18.161	1.844
Wholesale, warehousing, transportation, utilities	12.697	2.162
Finance and insurance	11.825	2.534
Information	8.407	3.320

Source: Regional Input-Output Modeling System (RIMS Type II), Regional Product Division, Bureau of Economic Analysis.

THE ECONOMIC IMPACT OF THE CONSTRUCTION INDUSTRY

Table 7 reports the *direct* effect of the construction industry in Rhode Island. The construction industry generated $2.07 billion in Gross Domestic Product (GDP), $857 million in earnings, and employed just over 16,300 workers in Rhode Island in 2013.

Table 7: The Direct Effect of the Construction Industry, Rhode Island

Indicator	Direct Impact
Output[a]	$2,073 billion
Earnings[b]	$ 857 million
Employment[b]	16,307 jobs

[a] *2012 figure (most recent available);* [b] Average *for the second quarter of 2013.*

Table 8 provides the *induced* impact of the construction industry by sector of the Rhode Island economy. These figures are calculated using BEA RIMS Type II multipliers for each industry reported in

Table 5 and the construction GDP, which measures the total production of the construction industry.

Table 8 shows that the construction industry, with a GDP of $2.07 billion (2012) adds $1.83 billion in economic activities across other sectors of the state economy. The *induced* output effect of construction is estimated to be $227 million in real estate, rental and leasing, $215 million in finance and insurance, $205 million in retail trade, $188 million in wholesale, warehousing, transportation, and utilities, $181 million in health care and social assistance, $156 million in management, administrative, and waste management, $115 million in manufacturing, $89 million in information, $86 million in professional, scientific, and technical services, $85 million in food, drinking, recreation, and accommodation, and $283 million in other services and activities.

Table 8: The Indirect/Induced Impact of the Construction Industry, Rhode Island

Industry	Output ($ Million)	Value-added ($ Million)	Earnings ($ Million)	Employment (FTE Jobs)
Retail trade	205	136	63	2,386
Health care and social assistance	181	114	77	1,826
Manufacturing	115	67	47	1,459
Food, drinking, recreation, and accommodation	85	47	25	1,385
Real estate, rental and leasing	227	159	17	1,324
Management, administrative, waste management	156	111	67	1,232
Other services/activities	283	108	55	1,162
Professional, scientific, and technical services	86	56	34	1,017
Wholesale, warehousing, transportation, utilities	188	119	52	926
Finance and insurance	215	115	41	686
Information	89	47	12	206
Total Indirect + Induced Economic Impact	**1,830**	**1,080**	**489**	**13,609**

Source: Author's calculation using RIMS Type II Multipliers. The Output, Value-added, and Earnings effects are measured in million dollars. Employment is measured in FTE jobs.

The construction industry contributed to the creation of $489 million in *induced* income for households in Rhode Island in 2013. Earnings are dispersed across sectors as reported in Table 8.

Construction activities are estimated to support 13,609 jobs -- via *induced* effect -- in several sectors of the Rhode Island economy. The biggest *induced* job effects are retail trade, health care and social assistance, and manufacturing. Precisely, the construction industry supports 2,386 jobs in retail trade, 1,826 jobs in health care and social assistance, and 1,459 jobs in manufacturing. The induced job impact is also significant in food, drinking, recreation, and accommodation (1,385 jobs), real estate, rental, and leasing (1,324 jobs), management, administrative, and waste management (1,232 jobs), and professional, scientific, and technical

services (1,017 jobs), finance and insurance (686 jobs) wholesale, warehousing, transportation, and utilities (926 jobs), and information (206 jobs).

Overall, in 2013 the construction industry supported 29,916 jobs in Rhode Island, from which 16,307 are direct jobs and 13,609 are induced jobs. In terms of output, in 2012, the construction industry added $3.9 billion to the state's GDP, from which $2.07 billion was in direct GDP and $1.83 billion in induced GDP. The construction industry also created $1.35 billion in income for Rhode Island households. Direct earnings totaled $857 million and induced earnings totaled $489 million.

Tax Revenues

This study estimates the impact of the construction industry on personal income tax (PIT) revenues and on non-income tax (NIT) revenues, which is the sum of state and local nonpersonal property taxes, licenses, and sales and gross receipts taxes.[3]

The calculations of PIT assume that all workers employed in industries with an average salary under $30,000 would file as married (joint returns) and take the standard deductions ($16,000). Thus, this is the most conservative estimate for this income bracket. The following sectors fit within this category: Retail trade, food, drinking, recreation, and accommodations, real estate, rental leasing. For all other sectors, the taxable income is calculated as the average wage for each sector times the share of the Adjusted Gross Income (AGI) that is taxable in Rhode Island for that income level as reported in the 2011 annual Rhode Island Statistics of Income, published by the Rhode Island Division of Taxation, Department of Revenue. It is also assumed that all *taxable* income is subject to a 3.75 percent rate. Overall, this set of assumptions is expected to produce the most conservative estimate of the impact of the construction industry on income tax revenues.

The calculations of NIT are based on statistics from the U.S. BEA that show how much of each industry's GDP consists of state and local tax liabilities including general sales and property taxes, nonpersonal property taxes, and licenses. We combine this information with estimates of the induced impact of the construction industry reported in Table 8 to generate the NIT figures reported in Table 9.

Table 9 provides the tax revenues estimates. Under the assumptions above, the construction industry supported the generation of $29 million in personal income tax (PIT) revenues for the State of Rhode Island in 2013. The *direct* income tax revenue is estimated at $18.8 million, plus an *induced* income tax revenue of $10.2 million.

[3] TOPI also includes Federal excise taxes on goods and services, but it represents a small fraction of TOPI. At the federal level, as of 2013, federal excise taxes represent just 3.2% of total tax revenues or 0.5% of the U.S. GDP.

Table 9 also provides the estimates of the impact of construction on non-income tax (NIT) revenues. It is worth noticing that construction has significant forward and backward linkages, thus it induces significant economic activity in other sectors, leading to significant creation of NIT across other industries, particularly in retail trade, wholesale, warehousing, transportation, and utilities, real estate, rental and leasing, and manufacturing. This study estimates that the construction industry supported the generation of $156.6 million in non-income tax (NIT) revenues for the State of Rhode Island in 2013. The *direct* NIT revenue is $24 million, plus an *induced* NIT revenue of $132.6 million. Overall, this study estimates that the construction industry supported the generation of $185.5 million in tax revenues for the State of Rhode Island in 2013.

Table 9: The Impact of the Construction Industry on Tax revenues

Sector	Tax Revenues[a] ($ Million)		
	Non-income Tax (NIT)	Personal Income Tax (PIT)	Total
Direct effect (A)	*24.0*[b]	*18.8*	*42.8*
Induced Effect (B)	*132.6*	*10.2*	*142.7*
Retail trade	34.4	1.0	35.4
Health care and social assistance	11.1	1.7	12.8
Other services/activities	2.5	1.0	3.6
Food, drinking, recreation, and accommodation	16.3	0.1	16.4
Real estate, rental and leasing	17.1	0.0	17.1
Professional, scientific, and technical services	2.4	1.5	3.9
Manufacturing	12.2	1.2	13.4
Management, administrative, waste management	2.0	0.9	2.8
Wholesale, warehousing, transportation, utilities	22.6	1.4	24.0
Finance and insurance	7.9	1.1	9.0
Information	4.1	0.3	4.4
Total Effect (A+B)	*156.6*	*29.0*	*185.5*

Source: Author's calculation using RIMS Type II Multipliers. [a] Estimates. [b] Actual 2012 figure from the U.S. BEA.

THE COST OF THE CONTRACTION IN CONSTRUCTION ACTIVITIES

The figures above show that the construction industry has significant linkages with other sectors of the economy, thus a contraction in construction activities spills over several important industries in Rhode Island including retail trade, manufacturing, wholesale, warehousing, transportation, and real estate, rental and leasing services. This section of the report asks a simple question: what would be the potential additional contribution to the state economy if the construction industry -- as of 2013 -- was operating at the same levels observed

in 2001 (pre-housing boom and bust). In 2001, construction RGDP reached $2,750 million, which is $677 million larger than the construction RGDP in 2012.

Table 10 shows the estimates of the economic impact of increasing construction RGDP from $2.073 billion (2012 RGDP) to $2.75 billion (2001 RGDP). This study estimates that this increase in construction activities would support 9,880 new jobs in Rhode Island, of which 5,436 would be direct jobs and 4,444 would be induced new jobs. It would also create an additional $404 million in income for Rhode Island households.

Table 10: The Economic Impact of Raising Construction RGDP to 2001 level Job and Income

Sector	Output ($ Million)	Earnings ($ Million)	Employment (FTE Jobs)
Direct Effect (A)	***681***	***244***	***5,436***
Induced Effect (B)	***598***	***160***	***4,444***
Retail trade	67	21	779
Health care & social assistance	59	25	596
Other services/activities	38	16	476
Food, drinking, recreation, & accommodation	28	8	452
Real estate, rental and leasing	74	5	432
Professional, scientific, & technical services	51	22	402
Manufacturing	92	18	379
Management, administrative, waste management	28	11	332
Wholesale, warehousing, transportation, utilities	61	17	302
Finance & insurance	70	13	224
Total Effect (A+B)	***1,279***	***404***	***9,880***

Source: Author's calculation using RIMS Type II Multipliers.

Table 11 shows that the $677 million increase in construction activities would generate an additional $60.2 million in tax revenues for the State of Rhode Island in 2013.

Table 11: The Economic Impact of Increasing Construction RGDP to 2001 level Tax Revenues, ($ Million)

	Non-income Tax (NIT)	Personal Income Tax (PIT)	Total
Direct (A)	8.3	5.3	13.7
Induced Effect (B)	43.3	3.3	46.6
Total Effect (A + B)	*51.6*	*8.6*	*60.2*

Source: Author's calculation using RIMS Type II Multipliers.

Table 12 presents a simulation of the impact on Rhode Island's unemployment rate. Considering the actual January 2014 labor market conditions and assuming that the size of the labor force would stay constant, increasing construction RGDP from $2.073 billion (2012 RGDP) to $2.75 billion (2001 RGDP) would add 9,880 new jobs in Rhode Island and thus reduce the unemployment rate from 9.2 percent (as of January 2014) to 7.3 percent. This change would make the unemployment rate in Rhode Island drop from the highest rate in the country to the 14th highest rate.

Table 12: Impact on the Unemployment Rate

Metric	Actual[a] January/14	Potential
Labor Force	550,316	550,316
Employed	499,716	509,596
Unemployed	50,600	40,720
Unemployment Rate	***9.2%***	***7.3%***

Source: Author's calculation using RIMS Type II Multipliers. [a] Rhode Island Department of Labor and Training.

Final Remarks

This report shows that the construction industry is an important sector of the state economy because of its direct job and income creation in the state as well as strong linkages with other industries including retail trade, health care and social assistance, manufacturing, food, drinking, recreation, and accommodation, and real estate, rental and leasing services.

The widespread difficulties in the housing market and weak construction outlook in the nation makes the short term a difficult time for the construction industry in Rhode Island. While this report does not assess the factors driving construction activity in Rhode Island, its findings suggest that the state has to align its cost-structure, improve productivity, and seize all opportunities to expand construction activities as an strategy for fostering job and income creation in Rhode Island.

It is the opinion of the author of this report that organizations associated with the construction industry should work closely with state and local policymakers to i.) Review and implement reforms in the construction permitting process; ii.) Identify issues that delay development and increase construction costs in Rhode Island; and iii.) Assess opportunities to build and remodel public and private properties across cities and towns.

Disclaimer

This report was prepared by Dr. Edinaldo Tebaldi, Associate Professor of Economics and Director of the Center for Global and Regional Economic Studies at Bryant University at the request and for the Rhode Island Builders Association (RIBA). Neither the Center for Global and Regional Economic Studies nor Bryant University make any warranty, expressed or implied, or assume any legal liability or responsibility for the accuracy, completeness, or usefulness, of any information disclosed herein or represents that its use will not infringe on privately owned rights. The views and opinions of the author expressed herein do not state or reflect those of the Center for Global and Regional Economic Studies or Bryant University.

The author has exercised due and customary care in conducting this research and report. Every effort has been made to ensure the quality of the analysis. The author assumes no liability for any loss resulting from errors, omissions, or misrepresentations made by others.

Appendix A: Detailed Description of Construction Subsectors

Residential building construction (NAICS 2361)

This subsector comprises establishments primarily responsible for the construction of residential buildings. The work performed may include new work, additions, alterations, or maintenance and repairs. Part or all of the production work for which the establishments in this subsector have responsibility may be subcontracted to other construction establishments — usually specialty trade contractors.

Nonresidential building construction (NAICS 2362)

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

Heavy and civil engineering construction (NAICS 237)

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 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 contractors (NAICS 238)

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 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.