

SEPTEMBER 2017

COMMERCIAL

33%

INFRASTRUCTURE

17%

SPENDING BY SECTOR



RESIDENTIAL

40%

INDUSTRIAL

10%

**MICHIGAN'S  
CONSTRUCTION  
INDUSTRY:**

# BY THE NUMBERS



**MICHIGAN  
CONSTRUCTION**

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*by Brindley Byrd*

In July 2017, the State of Michigan announced that the unemployment rate hit a 17-year low of 3.8 percent. This news, however, was tempered by another statistic that was not good news. According to the Michigan Bureau of Labor Market Information and Strategic Initiatives (LMISI), the overall labor force — those able and actively seeking work — dropped for a second consecutive month. This means the unemployment rate dropped because fewer people are looking for work, let alone careers.

This trend was highlighted in a report by the Michigan League for Public Policy issued in early September 2017, showing that not only is Michigan's labor force shrinking, but that more and more young people are choosing to not enter the workforce at all.

A disenfranchised generation is yet another alarming reality to face when trying to supply the demand for the best and brightest to work in Michigan's construction industry.

On the demand side of construction labor: often when industry members are talking, the topic of conversation is the lack of workers. The bench of talented workers is empty. The pipeline to more workers is broken. Construction employers are desperate for workers today and are concerned about finding them in the future. Contractors are saying no to customers because there are no workers to do additional work.

On the supply side, many people working today are classified as underemployed, meaning they are working in jobs or for pay far below what their experience or qualifications warrant. There are others who seem so uninspired, disconnected, and in debt that they don't even know how or where to start. Employers of traditionally blue-collar workers are finding it increasingly difficult to find people who have any skills or qualification, the willingness to work hard, and the ability to pass a drug test.

# SOMETHING IS NOT RIGHT. THERE MUST BE A BETTER WAY.

The mission of the Michigan Construction Foundation is to help more people across our state get good paying jobs in Michigan's construction industry. In so doing, construction employers get a bigger and better-qualified pool from which to choose the best candidates to get the work done.

We at Michigan Construction thought now is a good time to share information on Michigan's construction industry. This information we gathered and analyzed sets a benchmark to begin seriously addressing Michigan's construction talent supply gap.

## THIS REPORT LAYS THE GROUNDWORK BY EXAMINING FOUR ASPECTS OF MICHIGAN CONSTRUCTION INDUSTRY LABOR DATA:



Organizing the industry into four subsectors and five occupational categories.



A breakdown of Michigan's construction labor force.



A look back at construction's lost decade.



An overview of the construction trades workforce.



# ORGANIZING THE INDUSTRY

## INTO FOUR SUBSECTORS AND FIVE OCCUPATIONAL CATEGORIES

To make it easier to navigate the complex landscape of the construction industry and establish the full spectrum of opportunities throughout the entire construction supply chain, Michigan Construction organized the industry into four main subsectors and construction occupations into five main categories.



# INDUSTRY SUBSECTORS

The construction industry's four subsectors each have different owner types, contractual requirements, licensing, regulations, scopes of work, and data sets kept by various government agencies and industry interests:



## RESIDENTIAL

The residential sector builds, remodels, and maintains the buildings where we all live. Approximately 50 percent of residential builders construct new homes or apartments. Remodeling, service, and maintenance comprise the remaining 50 percent of activity in this sector.



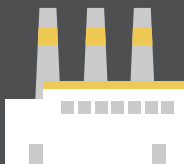
## COMMERCIAL

The commercial sector builds, remodels, and maintains the buildings where we work, learn, heal, and worship. Also known as nonresidential building construction, the commercial sector represents approximately one-third of overall construction spending on a national level.



## INFRASTRUCTURE

The infrastructure sector builds and maintains roads, bridges, water and sewer systems, and other critical public works. Infrastructure workers truly change the world by providing the essential services we humans rely on.



## INDUSTRIAL

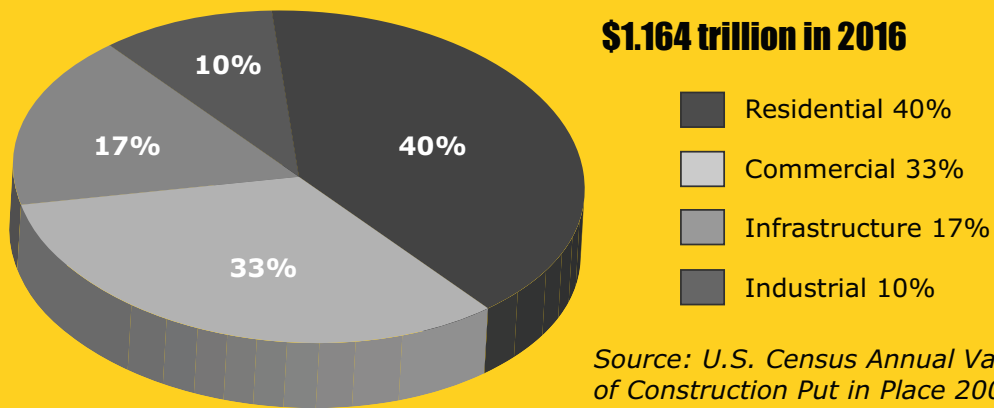
The most specialized of the subsectors, industrial workers build complex buildings and facilities all around the globe. Power plants, chemical plants, and refineries are built by the industrial construction sector.



Data on the number of workers and companies that make up the construction industry are not hard to find. However, it does take a bit of work to assemble and understand construction economic data to make sense of the industry, and the various industry subsectors to then align an improved talent development system.

To give size and scale to the four subsectors identified above: Americans spend the most money on residential construction, either building single-family homes and apartments or conducting the various types of renovation, repair, maintenance, or remodeling of houses. The other three sectors comprise the remaining 60 percent of construction spending on a national basis, as seen in Figure A (below).

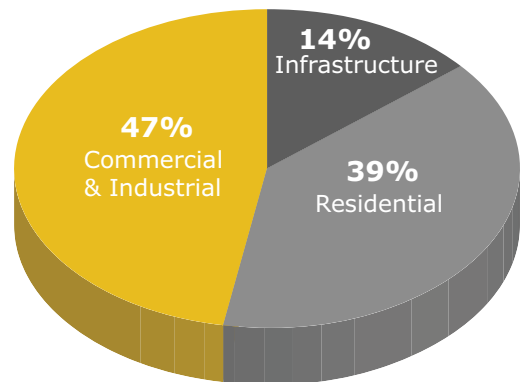
### Figure A. **SPENDING BY SECTOR**



The residential sector maintains its 40 percent share of the market when it comes to number of workers in each sector’s labor force, as seen in Figure B (below). The commercial, infrastructure and industrial construction workforce totals the same 60 percent as in spending.

### Figure B. **U.S. CONSTRUCTION WORKFORCE PERCENTAGE**

Source: U.S. Bureau of Labor Statistics Employment Report Table B1.



# CONSTRUCTION OCCUPATIONAL CATEGORIES

The jobs people do in construction are best divided into five categories. It is important to note that the specific terms used to describe occupations vary greatly. For example, a commercial carpenter is not the same as a residential carpenter. Licensing requirements, qualifications, skills, tasks, and access points for carpentry careers in the residential sector are not the same as for carpenters who want to work in the commercial sector. So just the term carpenter is not sufficient. Most construction occupations have different career paths specific to each of the four industry subsectors.

## CONSTRUCTION MANAGEMENT

Specific occupations include:  
Project Administrator, Cost Estimator,  
Construction Manager Supervisor, etc.



## ARCHITECTURE, DESIGN & ENGINEERING

Specific occupations include:  
Architect, Civil Engineer, Surveyor  
Interior Designer, etc.



## CONSTRUCTION TRADES

Specific occupations include:  
Bricklayer, Carpenter, Plumber,  
Heavy Equipment Operator, etc.



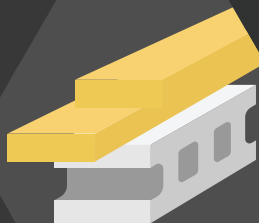
## TESTING AND INSPECTION

Specific occupations include:  
Building inspector, Construction  
Material Testing Technician, etc.



## EQUIPMENT, MATERIALS & SUPPLIES

Specific occupations include:  
Materials Engineer, Product  
Representative, Material Handlers, etc.







## **CONSTRUCTION MANAGEMENT**

Typically found in the commercial subsector, construction management (CM) firms assemble experts to manage entire construction projects from design to occupancy, including the permitting process and often all financing and financial aspects of a project. Construction managers represent the owner or end-user of the building or facility. Residential builders are the construction managers of the residential sector. CM firms and residential builders hire other companies called general contractors or sub-contractors to construct the projects.

**Specific occupations include:** Project Administrator, Project Coordinator, Project Engineer, Project Manager, Cost Estimator, and Construction Manager Supervisor.



## **ARCHITECTURE, DESIGN & ENGINEERING**

After an owner identifies the need to construct or alter a building, a team of professional designers goes to work. Long before the project begins construction, the project's design team has been hard at work transforming the owner's idea into workable construction drawings, plans, and specifications. These are then used to determine project costs, obtain necessary government approvals, and guide the construction phase of the project.

**Specific occupations include:** Architect, Architectural Technician, Civil Engineer, Environmental Engineer, Structural Engineer, Mechanical Engineer, Engineering Technician, Interior Designer, Landscape Architect, and Surveyor.

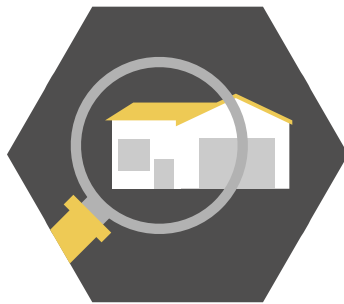


## CONSTRUCTION TRADES

If you are ready to lace-up your boots, put on that hard hat, and get down to some real work, then the construction trades are for you. Numerous trades are utilized to build and finish a building. These occupations are hired by the many specialty trades contractors who are the true employment base of the construction industry.

In Michigan, the mechanical trades —electricians, plumbers, HVAC contractors, or boiler operators/engineers — must be licensed by the State of Michigan. Residential builders and residential maintenance and alteration contractors must also maintain a state-issued license. Commercial general contractors or specialty trades contractors not included in the four mechanical trades have no licensing requirements. Michigan’s union building and construction trades are organized into 17 different apprenticed construction trades. The construction trades employ by far the greatest total number of workers in the construction industry.

**Specific occupations include:** Bricklayer, Carpenter, Helper/Laborer, Electrician, Plumber, Heating, Ventilation and Air Conditioning (HVAC) Technician, Heavy Equipment Operator, Insulator, Iron Worker, Painter, Truck Driver, and many, many more.



## TESTING & INSPECTION

A building will stay standing only if the workers built the structure according to the plans, specifications, and codes. Teams of people receive specialized education and training to test many types of construction materials or inspect projects for compliance with design specifications and building codes.

**Specific occupations include:** Building Inspector, Concrete Testing Technician, Construction Materials Testing Technician, and Industrial Hygienist.



## **EQUIPMENT, MATERIALS & SUPPLIES**

No building or project gets built without wood, concrete, wire, paint, or any of the other products and materials used in construction.

The companies that manufacture, distribute, or sell the millions of products consumed by the construction industry also need a wide range of people to handle and sell their lines. Grounded by the hundreds of wholesale distributors, lumberyards, and retail building product outlets in

most every community across the state, a description of the construction industry would not be complete without including product manufacturers, suppliers, and distributors.

**Specific occupations include:** Materials Engineer, Territory Manager, Product Representative, Counter Person, Material Handlers, Sales Person, and Delivery Driver.

# A BREAKDOWN OF MICHIGAN'S CONSTRUCTION WORKFORCE

Bringing together our four industry subsectors and five occupational categories proves quite a task. Michigan Construction has derived its own analysis from data extracted from the LMISI data to answer two crucial baseline questions:



**1** How many workers are in each occupation category?

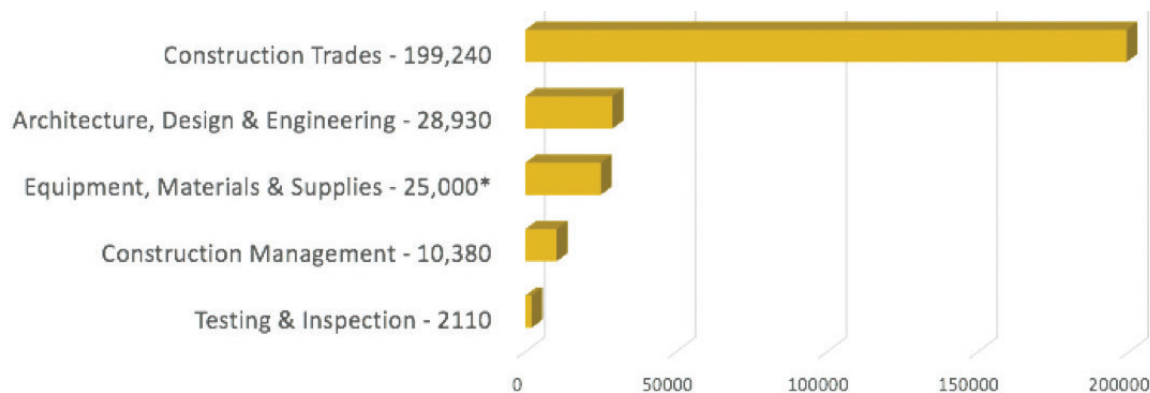


**2** How many companies service each sector?

Looking first at the number of workers, Figure C (below) shows a total Michigan construction industry workforce of 265,000 workers employed anywhere in the entire construction supply chain from raw material to finished project. The largest number of people work in the Construction Trades, at almost 200,000 people. Design professionals make up the next largest segment of the workforce, followed closely by our estimate of Equipment, Materials, and Supply workers. Construction management firms employ just over 10,000 workers, with the State tracking an underrepresented number of jobs found in Testing and Inspection with many embedded in engineering firms.

A breakdown of occupations tracked by LMISI and included in Michigan Construction's workforce calculations can be found in Appendix 1.

**Figure C. EMPLOYMENT BY OCCUPATIONAL CATEGORY**



\*Note: MCF Estimate

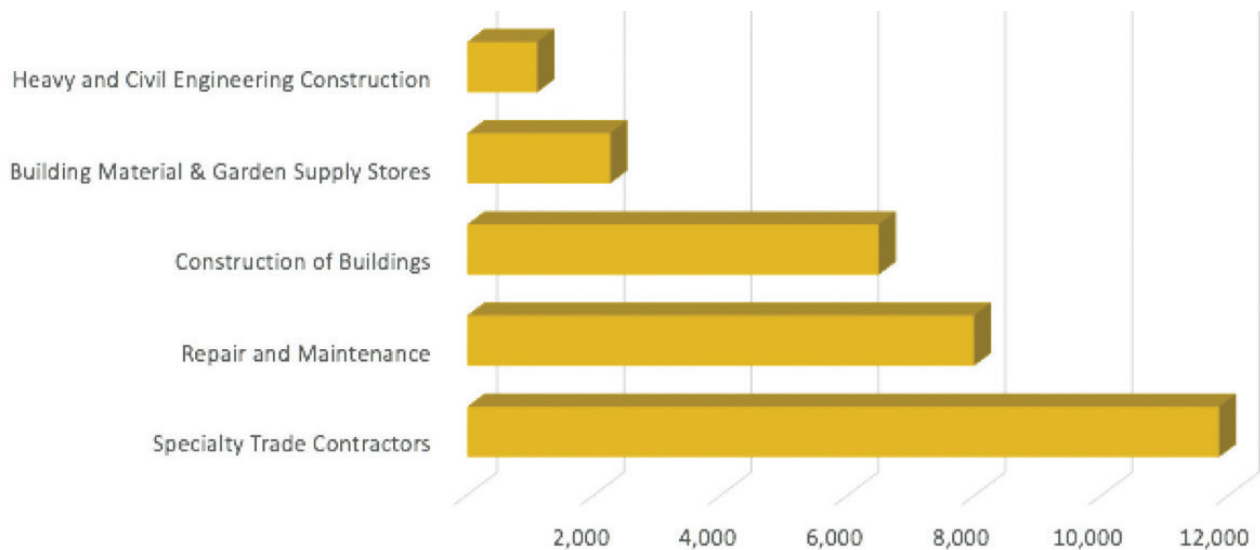
Source: MI DTMB LMISI Occupational Employment Statistics

Our formula for this baseline starts with the LMISI Occupational Employment Statistics dataset, drilling down to the six-digit occupation codes level. We then categorized each listed occupation as relevant to one of our five occupational categories. For those relating directly to the industry, the numbers are pretty straight forward. For the Equipment, Materials, and Supplies category, we made an estimate of workers in this occupation category working for companies that manufacture or supply any of the millions of parts and pieces that make up Michigan’s built environment.

The challenge of a straight crosswalk from LMISI data to Michigan Construction categories is amplified when we look at the number of companies or establishments per sector.

Figure D (below) shows the number of establishments in categories as tracked by LMISI and totals 29,648 establishments. The largest employer group contains those companies that actually perform construction: specialty trades contractors. These companies hire the majority of construction trades workers. However, data separating a commercial electrical company from a residential electrical company is not available.

## Figure D. **NUMBER OF ESTABLISHMENTS**



Source: MI DTMB LMISI Quarterly Census of Employment Data 2016

This combining of sectors is also found as LMISI tracks construction of buildings along with repair and maintenance. These two categories are not split between construction or repair of commercial versus residential buildings. The most direct sector crosswalk is found with Heavy and Civil Engineering and Infrastructure. As Figure D shows, heavy/civil comprises the smallest number of employers.

# CONSTRUCTION'S LOST DECADE

During the period of 2006 through 2016, Michigan's construction industry underwent a complete labor cycle. Reaching peak employment in 2006 with 178,400 construction workers, the industry then shed over 55,000 workers, dropping to 120,000 in 2010. Since then, construction employment has steadily increased. The latest LMISI data shows the Michigan construction industry employing 174,600 workers.

Note: Michigan Construction utilized the Occupational Employment Statistics dataset, based on employer count through 2016 to establish the total construction industry workforce at 265,000. LMISI uses the Current Employment Statistics estimate of current construction workforce.

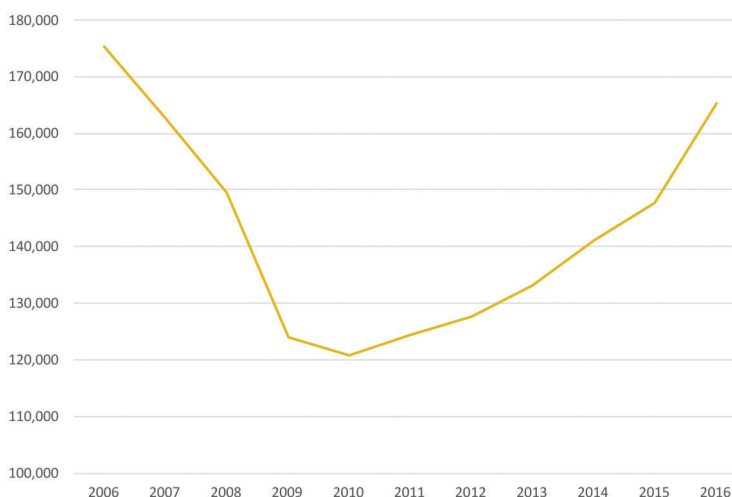
## Figure E. MICHIGAN CONSTRUCTION ANNUAL EMPLOYMENT 2006-2016

During this decade, we lost almost a third of the workforce. We have gained almost all of those workers back now, having gone full cycle. However, during the same period, we lost a future construction workforce that would fill the openings created by an aging workforce and to meet the ever-growing demands placed on construction companies.

It is easy to understand why no one wanted to enter construction. For so long there were very few openings.

Add the collapse in demand for construction services with the mantra that the only way to get a better life than your parents is a college degree — in STEM (science, technology, engineering and math) — and it is easier to understand why finding construction workers has become a challenge.

Now, after a full seven years of growth, demand for construction has out-paced the supply of workers with repeated pleas for more workers coming from all sectors of the construction industry. The challenge now is to inspire and attract a larger pool of candidates with the right skills, qualifications, and character to work construction.



Source: LMISI Current Employment Statistics

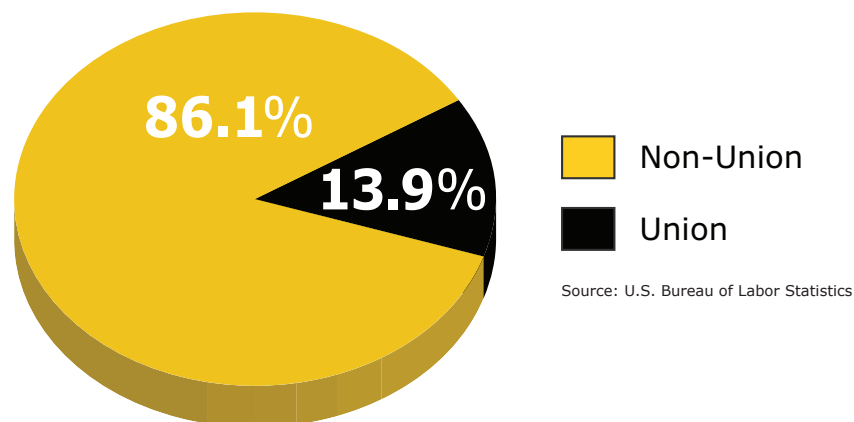
# THE CONSTRUCTION TRADES WORKFORCE

In recent months, Governor Snyder has envisioned a revitalization strategy for what used to be called the skilled trades. He has mobilized the new leadership at the Department of Talent & Economic Development (TED) to showcase the many great careers in the professional trades. TED is enthusiastically pushing the Going PRO message, letting Michiganders know they can achieve their Pure Michigan dream without a college degree. Going PRO identifies four industries that utilize professional trades: construction, healthcare, information technology, and manufacturing.

As a state sponsored initiative, Going PRO must serve the broader interests of the entire state and endure change in government. As an employer driven effort, Michigan Construction will attract a larger pool of workers, promote a positive industry image and simplify the way individuals find and connect to opportunities in the construction industry. In a real sense, construction is in competition with the other three Going PRO industries for the best and brightest professional trades workers.

Invariably, when skilled or professional trades and construction are mentioned together, many people automatically think that all construction trades occupations are unionized. Union construction workers play a valuable role in Michigan's construction industry. The U.S. Bureau of Labor Statistics keeps track of the percentage of the labor force that is affiliated with a union through representation or membership. In Michigan, the overall or all-industry union labor force percentage is 14.4 percent. Drilling down to the per industry level, the national percentage of unionized construction trades is 13.9 percent.

Figure F. **CONSTRUCTION TRADES WORKFORCE**



# CONCLUSION

The only way to identify a problem is to face the reality. The data shows us that Michigan's construction industry faces a very real labor shortage that is only going to get worse. Furthermore, one key solution — bringing in a new generation of skilled workers — is not happening on its own. Social and educational forces have and are pulling those in their 30s, 20s, and teens away from the tremendous opportunities in the construction industry. There is an acute need to rewrite the narrative of working America to include the language of the professional trades.

The only way to begin to solve a problem of this magnitude is to work together as a united industry. Again, the information is available, but every firm in the industry doesn't have the time or the energy to do this analysis work alone.

Michigan Construction is here to do that work. To name the problem. To work toward solutions. We are your source for breakdowns, analyses, and forecasts on Michigan's construction industry. We are working every day to understand and explain the magnitude of the labor problem so that the industry can find ways to work together toward solutions.

Michigan Construction is currently working on a construction industry workforce forecast for Michigan. We will release this forecast at the end of the year with one of our valuable Association Partners, the Construction Association of Michigan (CAM). This report will serve as a tool for employers, education or training providers, and other stakeholders in Michigan's construction talent development system as they find solutions to the construction talent gap.

Together we will understand where the construction industry is going. Only together can the industry inspire more people to want to work in construction.





# APPENDIX

Source: MI DTMB LMISI Occupational Employment Statistics  
Broken Down in Tables 1 - 5

**Table 1. ARCHITECTURE, DESIGN & ENGINEERING (A,D&E)**

Occupation Codes	Occupation	Type	Number of Employed
119041	Architectural and Engineering Managers	A,D&E	10,090
171011	Architects, Except Landscape and Naval	A,D&E	2,130
171012	Landscape Architects	A,D&E	490
171022	Surveyors	A,D&E	1,210
172051	Civil Engineers	A,D&E	7,590
173011	Architectural and Civil Drafters	A,D&E	1,860
173012	Electrical and Electronics Drafters	A,D&E	540
173022	Civil Engineering Technicians	A,D&E	2,420
173031	Surveying and Mapping Technicians	A,D&E	1,120
271025	Interior Designers	A,D&E	1,480
271027	Set and Exhibit Designers	A,D&E	100

**Table 2. CONSTRUCTION MANAGEMENT (CM)**

Occupation Codes	Occupation	Type	Number of Employed
119021	Construction Managers	CM	3,900
131051	Cost Estimators	CM	6,480

**Table 3. CONSTRUCTION TRADES**

Occupation Codes	Occupation	Type	Number of Employed
472011	Boilermakers	CT	210
472021	Brickmasons and Blockmasons	CT	1,950
472031	Carpenters	CT	18,160
472041	Carpet Installers	CT	1,030
472042	Floor Layers, Except Carpet, Wood, and Hard Tiles	CT	280
472043	Floor Sanders and Finishers	CT	10
472044	Tile and Marble Setters	CT	750
472051	Cement Masons and Concrete Finishers	CT	4,070
472053	Terrazzo Workers and Finishers	CT	30
472061	Construction Laborers	CT	22,510
472071	Paving, Surfacing, and Tamping Equipment Operators	CT	1,220
472073	Operating Engineers and Other Construction Equipment	CT	7,070
472081	Drywall and Ceiling Tile Installers	CT	1,290
472082	Tapers	CT	120
472111	Electricians	CT	20,370
472121	Glaziers	CT	1,260
472131	Insulation Workers, Floor, Ceiling, and Wall	CT	680
472141	Painters, Construction and Maintenance	CT	3,880
472151	Pipelayers	CT	380
472152	Plumbers, Pipefitters, and Steamfitters	CT	11,870
472161	Plasterers and Stucco Masons	CT	210
472181	Roofers	CT	2,660
472211	Sheet Metal Workers	CT	3,480
472221	Structural Iron and Steel Workers	CT	1,450
473011	Helpers—Brickmasons, Blockmasons, Stonemasons	CT	410
473012	Helpers—Carpenters	CT	560
473013	Helpers—Electricians	CT	600
473015	Helpers—Pipelayers, Plumbers, Pipefitters, and Steamfitters	CT	670
473016	Helpers—Roofers	CT	90
473019	Helpers, Construction Trades, All Other	CT	190
474021	Elevator Installers and Repairers	CT	310
474031	Fence Erectors	CT	170
474041	Hazardous Materials Removal Workers	CT	970
474051	Highway Maintenance Workers	CT	3,390
474071	Septic Tank Servicers and Sewer Pipe Cleaners	CT	930
474099	Construction and Related Workers, All Other	CT	260
475021	Earth Drillers, Except Oil and Gas	CT	610
492021	Radio, Cellular, and Tower Equipment Installers	CT	200

*Continued on the next page >*

**Table 3. CONSTRUCTION TRADES (CONTINUED)**

Occupation Codes	Occupation	Type	Number of Employed
492022	Telecommunications Equipment Installers & Repairer	CT	5,960
492098	Security and Fire Alarm Systems Installers	CT	1,190
499011	Mechanical Door Repairers	CT	330
499012	Control and Valve Installers and Repairers	CT	1,530
499021	Heating, Air Conditioning, and Refrigeration Mechanics	CT	8,170
499051	Electrical Power-Line Installers and Repairers	CT	4,680
499052	Telecommunications Line Installers and Repairers	CT	960
499071	Maintenance and Repair Workers, General	CT	41,710
512041	Structural Metal Fabricators and Fitters	CT	3,530
514121	Welders, Cutters, Solderers, and Braziers	CT	12,080
517011	Cabinetmakers and Bench Carpenters	CT	1,680
518021	Stationary Engineers and Boiler Operators	CT	820
537021	Crane and Tower Operators	CT	1,180
537032	Excavating and Loading Machine and Dragline Operators	CT	1,120

**Table 4. EQUIPMENT, MATERIALS & SUPPLY (E, M & S)** \*MC Estimates that 25,000 are in the construction sector.

Occupation Codes	Occupation	Type	Number of Employed
172131	Materials Engineers	E,M&S	1,300
412021	Counter and Rental Clerks	E,M&S	11,790
414011	Sales Rep., Wholesale & Manufacturing, Technical	E,M&S	9,070
414012	Sales Rep., Wholesale & Manufacturing, Except Technical	E,M&S	54,300
419011	Demonstrators and Product Promoters	E,M&S	1,630
419031	Sales Engineers	E,M&S	2,550
419099	Sales and Related Workers, All Other	E,M&S	1,580
493042	Mobile Heavy Equipment Mechanics, Except Engines	E,M&S	2,540
533032	Heavy and Tractor-Trailer Truck Drivers	E,M&S	53,040
533033	Light Truck or Delivery Services Drivers	E,M&S	27,620
537051	Industrial Truck and Tractor Operators	E,M&S	16,590

**Table 5. TESTING AND INSPECTION**

(mostly local code and building inspectors – others are categorized above as A,D&E)

Occupation Codes	Occupation	Type	Number of Employed
474011	Construction and Building Inspectors	T&I	2,110

# MICHIGAN'S CONSTRUCTION INDUSTRY: BY THE **NUMBERS**



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