



# Architecture and Construction Careers

When you think of the Upper Texas Gulf Coast region (which includes Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Harris, Liberty, Matagorda, Montgomery, Wharton, Walker, and Waller counties), do you think of oil refineries and petro-chemical plants? Do you think of the Houston Ship Channel and the many seaports in Houston, Galveston and Texas City? Do you also think about the hundreds of hospitals, schools, and the thousands of apartments and houses that are part of the 4<sup>th</sup> largest city in the United States and all the surrounding communities? Do you know that it takes an army of people working 24/7 to construct and maintain these facilities? Many of these people work in careers contained in the Architecture and Construction career cluster.

There is great diversity of jobs in this cluster, and the total number of people employed in architectural and construction jobs in our region totals more than 260,000. While there are many great opportunities in this cluster, some of the best are in commercial construction, particularly in the specialty crafts and occupations -- mechanical drafters; electricians; carpenters; plumbers, pipefitters, and steamfitters; and heating, air conditioning, and refrigeration mechanics and installers. These occupations offer the opportunity to earn good money without years of classroom training.

Here in the Texas Gulf Coast region, National Center for Construction Education and Research (NCCER) certification is the norm. Almost all of the area's community colleges have NCCER or industry-approved craft training programs. Some high schools also offer NCCER certification in crafts such as painting, sheet metal working, and welding. There are also a number of apprenticeship programs that allow you to work and learn.

There are also great opportunities now and in the future for civil engineers, drafters, and cost estimators. These occupations do require college degrees or additional training beyond high school.

So where do you go to learn more about specific occupations in the architecture and construction? Try the internet. You can find lots of good information there. Also, the Gulf Coast Workforce Board has developed a couple of resources for career planning. One is a "*Focus On*" series of short profiles of high growth industries and occupations in demand in the Gulf Coast region. They are designed to help students and parents plan for the future - <http://www.wrksolutions.com/jobs/focuson.html>. Also, check out the Board's *Career Cube*, <http://www.careercube.org/>, which links to many online resources and focuses on four major Gulf Coast industries, including construction. The Career Cube also has a list of colleges and universities in the region where you can pursue your career after high school, and links to financial resources to help pay for your education. Also check out the Texas Education Agency's *Achieve Texas* site, <http://www.achievetexas.org>, which provides information and suggested courses of study for specific occupations. Finally, know that the U.S. Department of

Labor has lots of great career information, [www.careervoyages.gov](http://www.careervoyages.gov), including short videos illustrating what different jobs are really like.

For more specific information on the local architecture and construction job market, check out the following chart. It will tell you how many people are employed in different jobs and the wages people can expect to earn in these jobs.

**In the chart below, highlighted occupations are considered High-Skill/High-Growth Occupations – those that pay well and have considerable opportunities for employment now and in the future.**

**Upper Texas Gulf Coast Region**

SOC <sup>1</sup>	Architecture and Construction Cluster Occupational Title	Annual Average Employment 2006	Percent Growth 2006-2016	Total Annual Average Job Openings <sup>2</sup>	2007 Hourly Wages
<b><u>Short-term on-the-job training(Less than 1 month)</u></b>					
37-3011	Landscaping and Groundskeeping Workers	21,850	22.0%	770	\$9.46
49-9098	Helpers--Installation, Maintenance, and Repair Workers	4,750	22.1%	215	\$11.29
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	3,600	23.6%	175	\$12.55
47-3013	Helpers--Electricians	3,600	16.7%	150	\$12.48
47-3012	Helpers--Carpenters	1,400	21.4%	65	\$11.68
47-3011	Helpers--Brickmasons, Blockmasons, Stonemasons, and Tile and Marble Setters	1,200	20.8%	55	\$11.07
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	550	18.2%	25	\$9.77
47-3016	Helpers--Roofers	400	12.5%	15	\$11.43
49-9096	Riggers	500	10.0%	15	\$17.62
53-7011	Conveyor Operators and Tenders	650	7.7%	15	NA <sup>3</sup>
<b><u>Moderate-term on-the-job training (1 - 12 months)</u></b>					
47-2061	Construction Laborers	39,600	25.0%	1,290	\$10.38
47-2073	Operating Engineers and Other Construction Equipment Operators	11,650	25.3%	515	\$15.09
47-2141	Painters, Construction and Maintenance	8,750	26.3%	390	\$14.03
47-2051	Cement Masons and Concrete Finishers	5,200	22.1%	265	\$13.39
47-2081	Drywall and Ceiling Tile Installers	4,400	21.6%	160	\$14.46
51-2041	Structural Metal Fabricators and Fitters	3,700	17.6%	130	\$13.30
47-2181	Roofers	2,600	21.2%	120	\$14.09
47-2151	Pipelayers	1,950	28.2%	95	\$12.76
53-7032	Excavating and Loading Machine and Dragline Operators	1,900	21.1%	75	\$13.87
49-9012	Control and Valve Installers and Repairers, Except Mechanical Door	2,350	12.8%	70	\$19.29
47-2071	Paving, Surfacing, and Tamping Equipment Operators	1,550	19.4%	65	\$13.78
47-4041	Hazardous Materials Removal Workers	1,350	11.1%	45	\$15.41
47-2131	Insulation Workers, Floor, Ceiling, and Wall	900	22.2%	40	\$13.35
47-2132	Insulation Workers, Mechanical	950	21.1%	40	\$17.10
47-5021	Earth Drillers, Except Oil and Gas	600	25.0%	40	\$23.09
47-4099	Construction and Related Workers, All Other	600	16.7%	30	\$14.96
47-4031	Fence Erectors	600	25.0%	25	\$12.52
47-2041	Carpet Installers	850	11.8%	20	\$17.23
47-4051	Highway Maintenance Workers	650	15.4%	20	\$14.44
47-2082	Tapers	350	28.6%	15	\$14.37
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	250	20.0%	10	NA <sup>3</sup>
49-9011	Mechanical Door Repairers	250	40.0%	10	NA <sup>3</sup>
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	400	0.0%	5	\$17.05
47-2142	Paperhangers	150	0.0%	5	\$16.49
49-9095	Manufactured Building and Mobile Home Installers	250	0.0%	5	\$10.62
47-2043	Floor Sanders and Finishers	100	0.0%	0	\$11.76
47-2072	Pile-Driver Operators	100	0.0%	0	\$19.68
47-4091	Segmental Pavers	50	0.0%	0	\$9.17
49-9045	Refractory Materials Repairers, Except Brickmasons	50	0.0%	0	\$19.43
53-7031	Dredge Operators	50	0.0%	0	NA <sup>3</sup>

SOC Code	Architecture and Construction Cluster Occupational Title	Annual Average Employment 2006	Percent Growth 2006-2016	Total Annual Average Job Openings <sup>2</sup>	2007 Hourly Wages
<b>Long-term on-the-job training (More than 12 months)</b>					
47-2111	Electricians	13,550	20.3%	625	\$19.89
47-2031	Carpenters	16,050	20.9%	550	\$15.30
47-2152	Plumbers, Pipefitters, and Steamfitters	9,350	21.9%	405	\$20.75
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	6,550	24.4%	275	\$17.91
49-9051	Electrical Power-Line Installers and Repairers	2,900	20.7%	150	\$22.32
47-2211	Sheet Metal Workers	2,600	19.2%	115	\$15.97
47-2221	Structural Iron and Steel Workers	2,000	15.0%	100	\$17.27
47-2021	Brickmasons and Blockmasons	2,000	17.5%	75	\$17.58
47-2044	Tile and Marble Setters	1,300	30.8%	60	\$13.57
53-7021	Crane and Tower Operators	1,300	30.8%	60	\$17.98
47-2161	Plasterers and Stucco Masons	1,050	23.8%	50	\$14.98
47-2171	Reinforcing Iron and Rebar Workers	1,050	23.8%	50	\$14.79
47-2121	Glaziers	900	22.2%	35	\$16.46
49-9031	Home Appliance Repairers	750	26.7%	35	\$14.10
51-8021	Stationary Engineers and Boiler Operators	800	25.0%	35	\$19.22
47-4021	Elevator Installers and Repairers	400	12.5%	15	\$26.93
47-2022	Stonemasons	250	20.0%	10	NA <sup>3</sup>
47-2053	Terrazzo Workers and Finishers	100	0.0%	10	\$15.56
<b>Work experience in a related occupation</b>					
47-1011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	18,350	23.2%	680	\$26.14
47-4011	Construction and Building Inspectors	2,150	25.6%	90	\$25.07
<b>Postsecondary vocational training</b>					
17-3013	Mechanical Drafters	2,650	15.1%	120	\$25.65
49-2095	Electrical and Electronics Repairers, Powerhouse, Substation, and Relay	500	0.0%	15	\$23.31
<b>Associate degree</b>					
17-3022	Civil Engineering Technicians	3,750	12.0%	125	\$19.36
27-1025	Interior Designers	1,450	20.7%	70	\$21.07
<b>Bachelor's degree</b>					
11-9021	Construction Managers	19,650	25.2%	800	\$37.63
17-2051	Civil Engineers	9,550	21.5%	455	\$44.14
13-1051	Cost Estimators	4,350	31.0%	225	\$30.19
17-1011	Architects, Except Landscape and Naval	4,250	15.3%	145	\$40.48
17-1022	Surveyors	2,050	22.0%	110	\$29.12
17-1012	Landscape Architects	350	14.3%	10	\$27.11

Sources: U.S. Department of Labor Bureau of Labor Statistics and Texas Workforce Commission

<sup>1</sup> Standard Occupational Classification (SOC) Codes refer to a standardized coding system to categorize occupations. To find out more about an occupation, you can go to <http://online.onetcenter.org/find/>, enter the SOC code, and look at a complete description of an occupation.

<sup>2</sup> Total average openings include total job openings due to both growth and replacements. Job openings due to growth are created by increases in the total number of people employed in an occupation. Job openings due to net replacement estimate the need in existing jobs as workers vacate, change jobs, or leave the labor force.

<sup>3</sup> Wage data for this occupation are not available.



# Architecture and Construction Plan of Study

Recommended Plan \_\_\_\_\_  
Distinguished Achievement Plan

Learner Name \_\_\_\_\_  
Learner Signature \_\_\_\_\_  
Parent/Guardian Signature \_\_\_\_\_

Date \_\_\_\_\_  
Advisor Signature \_\_\_\_\_

High School Graduation Plan	9 <sup>th</sup> Grade	10 <sup>th</sup> Grade	11 <sup>th</sup> Grade	12 <sup>th</sup> Grade
	English I	English II	English III	English IV
	Algebra I	Geometry	Algebra II	<b>Math Elective</b>
	Biology I	IPC or Chemistry	Chemistry or Physics	<b>Science Elective - Lab-based</b>
	World Geography	World History	US History	Economics/Government
	<b>Required Electives</b> PE, Health, Fine Arts, Foreign Language, Communication Application, or Technology Applications _____	<b>Required Electives</b> PE, Health, Fine Arts, Foreign Language, Communication Application, or Technology Applications _____	<b>Required Electives</b> PE, Health, Fine Arts, Foreign Language, Communication Application, or Technology Applications _____	<b>Required Electives</b> PE, Health, Fine Arts, Foreign Language, Communication Application, or Technology Applications _____
	<b>Required Electives</b> PE, Health, Fine Arts, Foreign Language, Communication Application, or Technology Applications _____	<b>Required Electives</b> PE, Health, Fine Arts, Foreign Language, Communication Application, or Technology Applications _____	<b>Career Electives</b> Architecture and Construction Career Elective or Language (distinguished) _____	<b>Career Electives</b> Architecture and Construction Career Elective or Language (distinguished) _____
	<b>Required Electives</b> PE, Health, Fine Arts, Foreign Language, Communication Application, or Technology Applications _____	<b>Career Electives</b> Architecture and Construction Career Elective _____	<b>Career Electives</b> Architecture and Construction Career Elective _____	<b>Career Electives</b> Architecture and Construction Career Elective _____

**Architecture and Construction Elective Courses approved by the Texas Education Agency are Listed on Page 5.**

*This plan of study should serve as a guide. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals*



## **Architecture and Construction Elective Courses**

Architectural Blueprints and Specifications	Introduction to Construction Careers
Architectural Construction	Mill and Cabinetmaking I
Architectural Drafting I	Mill and Cabinetmaking II
Architectural Drafting II	Painting and Decorating
Architectural Drafting III	Piping Trades/Plumbing I
Architectural Materials	Piping Trades/Plumbing II
Building Maintenance I	Piping Trades/Plumbing III
Building Maintenance II	
Bricklaying/Stone Masonry I	
Bricklaying/Stone Masonry II	
Building Trades I	
Building Trades II	
Building Trades III	
Concrete Laying and Finishing	
Construction Systems	
Heating, Ventilation, Air-Conditioning and Refrigeration (HVAC) I	
HVAC II	
HVAC III	
Home Maintenance and Improvement	
Interior Design	