

CAREER AND TECHNICAL EDUCATION – SUPPLEMENTAL QUESTIONS

Welding 2023

CTE programs must conduct a full program review every 4 years. The full review includes answering these supplemental questions. Every two years (once between full reviews) these supplemental questions must be answered and submitted to Academic Affairs for posting on the College website.

Use labor market data, advisory committee input, institutional data, and the provided CTE 2-year Program Review data to respond to the following questions:

- 1. How strong is the occupational demand for the program? As you analyze demand over the past 5 years and projected demand for next 5 years, address state and local needs for the program.**

Welding is a versatile skill, and it is used in almost every industrial area. The demand for welders continues to grow. I have added multiple areas of the industry where welding is utilized, to show its versatility. Also, new welding training facilities are being opened in many states to fulfill the need for qualified welders. This signals the need for more welders. Due to the pandemic, many people have been forced to find alternative employment and many have chosen the trades, welding being a popular choice. The projected percent change in employment from 2021 to 2031. The average growth rate according to the Department of Labor & Statistics:

Job Outlook, 2021-31

The projected percent change in employment from 2021 to 2031. The average growth rate for all occupations is 5 percent.

TOPCODE: 095650

Quick Facts: Welders, Cutters, Solderers, and Brazers

\$47,010 per year

\$22.60 per hour

High school diploma or equivalent

None

Moderate-term on-the-job training

Quick Facts: Welders, Cutters, Solderers, and Brazers

428,000

2% (Slower than average)

6,900

[What Welders, Cutters, Solderers, and Brazers Do](#)

Welders, cutters, solderers, and brazers use hand-held or remotely controlled equipment to join, repair, or cut metal parts and products.

[Work Environment](#)

Welders, cutters, solderers, and brazers may work outdoors, often in inclement weather, or indoors, sometimes in a confined area. They may work on a scaffold, high off the ground, and they occasionally must lift heavy objects and work in awkward positions. Most work full time and overtime is common.

[How to Become a Welder, Cutter, Solderer, or Brazier](#)

A high school diploma or equivalent, combined with technical and on-the-job training, is typically required for anyone to become a welder, cutter, solderer, or brazer.

[Pay](#)

The median annual wage for welders, cutters, solderers, and brazers was \$44,190 in May 2020.

[Job Outlook](#)

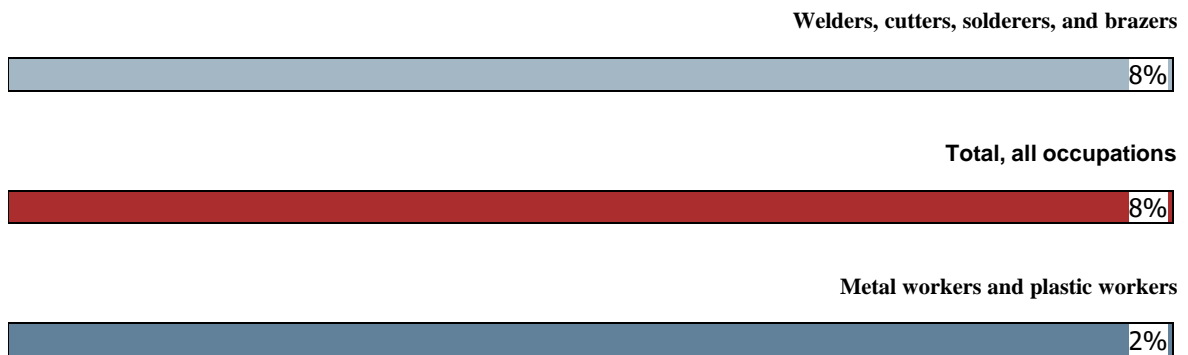
Employment of welders, cutters, solderers, and brazers is projected to grow 8 percent from 2020 to 2030, about as fast as the average for all occupations.

About 49,200 openings for welders, cutters, solderers, and brazers are projected each year, on average, over the decade. Many of those openings are expected to result from the need to replace workers who transfer to different occupations or exit the labor force, such as to retire.

Job Outlook

Welders, Cutters, Solderers, and Brazers

Percent change in employment, projected 2020-30



Note: All Occupations includes all occupations in the U.S. Economy.

Source: U.S. Bureau of Labor Statistics, Employment Projections program

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Employment

The nation's aging infrastructure will require the expertise of welders, cutters, solderers, and brazers to help rebuild bridges, highways, and buildings.

Employment projections data for welders, cutters, solderers, and brazers, 2020-30

Occupational Title	SOC Code	Employment, 2020	Projected Employment, 2030	Change, 2020-31		Employment by Industry
				Percent	Numeric	
	51-4121	418,200	452,200	8%	34,100	

SOURCE: U.S. Bureau of Labor Statistics, Employment Projections program

Avg. Anl Openings

California Welders, Cutters, Solderers, and Brazers 3,800 41,700 3,600 8.6 5,650

Welding, Soldering, and Brazing Workers

Note: The following data reflects the job market in the Compton College 7.5-mile service area.

Job Estimates - 2021: 1,985 (11% above national average in terms of job availability per area)

Percent Change in Number of Jobs from 2015-2020: +0.7% (National average: +4.5%)

Projected Change in Jobs from 2019-2023: -1.7% (National average: +4.6%)

Area Location Quotient: 1.11 (Numbers above 1.00 mean the occupation is more concentrated in the area compared to the nation. Numbers below 1.00 mean the occupation is less concentrated in the area.)

Top 10 Industries Employing Welding, Soldering, and Brazing Workers (Compton College Service Area)

Industry	% of Occupation in Industry (2015)	% Change in Industry Jobs (2016-2021)
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	19.1%	0%
Sheet Metal Work Manufacturing	4.7%	+11%
Machine Shops	4.1%	+4%
Ornamental and Architectural Metal Work Manufacturing	3.6%	-1%
All Other Miscellaneous Fabricated Metal Product Manufacturing	2.5%	+25%
Nonferrous Forging	2.5%	+23%

Temporary Help Services	2.4%	+14%
Travel Trailer and Camper Manufacturing	2.2%	+42%
Other Industrial Machinery Manufacturing	2.2%	0%
Motor Vehicle Body Manufacturing	1.9%	+15%

Note: The following data reflects the job market in California.

Job Estimates - 2021: 47,335 (33% below national average in terms of availability per state)

Percent Change in Number of Jobs from 2016-2021: +10.5% (National average: +7.5%)

Projected Change in Jobs from 2021-2025: +5.9% (National average: +6.6%)

State Location Quotient: 0.65 (Numbers above 1.00 mean the occupation is more concentrated in the state compared to the nation. Numbers below 1.00 mean the occupation is less concentrated in the state.)

Top 10 Industries Employing Welding, Soldering, and Brazing Workers (California Statewide)

Industry	% of Occupation in Industry (2021)	% Change in Industry Jobs (2016-2021)
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	10.6%	+3%
Sheet Metal Work Manufacturing	5.9%	+20%
Machine Shops	5.5%	+10%
Temporary Help Services	5.3%	+21%
Framing Contractors	3.6%	+94%
Fabricated Structural Metal Manufacturing	3.2%	+16%
Metal Window and Door Manufacturing	3.0%	+33%
Semiconductor Machinery Manufacturing	3.0%	+39%
Commercial and Institutional Building Construction	2.8%	+39%
Ship Building and Repairing	2.6%	-9%

Since welding is such a versatile trade, meaning it is compatible with almost every other counterpart of the construction trades, some of the various occupations that can be attained by having welding knowledge and skills will be listed.

Summary

Quick Facts: Plumbers, Pipefitters, and Steamfitters	
2021 Median Pay	\$56,330 per year \$27.08 per hour
Typical Entry-Level Education	High school diploma or equivalent
Work Experience in a Related Occupation	None
On-the-job Training	Apprenticeship
Number of Jobs, 2021	469,900
Job Outlook, 2021-31	5% (Slower than average)
Employment Change, 2021-31	23,400

Summary

Quick Facts: Ironworkers	
2021 Median Pay	\$53,210 per year \$25.58 per hour
Typical Entry-Level Education	High school diploma or equivalent
Work Experience in a Related Occupation	None
On-the-job Training	Apprenticeship
Number of Jobs, 2021	93,100
Job Outlook, 2021-31	6% (As fast as average)
Employment Change, 2021-31	5,400

Summary

Quick Facts: Sheet Metal Workers	
2021 Median Pay	\$51,370 per year \$24.70 per hour
Typical Entry-Level Education	High school diploma or equivalent
Work Experience in a Related Occupation	None
On-the-job Training	Apprenticeship
Number of Jobs, 2021	135,400
Job Outlook, 2021-31	4% (Slower than average)
Employment Change, 2021-31	4,800

Summary

Quick Facts: Boilermakers	
2021 Median Pay	\$65,360 per year \$31.42 per hour
Typical Entry-Level Education	High school diploma or equivalent
Work Experience in a Related Occupation	None
On-the-job Training	Apprenticeship
Number of Jobs, 2021	14,900
Job Outlook, 2021-31	-1% (Little or no change)
Employment Change, 2021-31	-200

Summary

Quick Facts: Jewelers and Precious Stone and Metal Workers	
2021 Median Pay	\$41,900 per year \$20.14 per hour
Typical Entry-Level Education	High school diploma or equivalent
Work Experience in a Related Occupation	None

Quick Facts: Jewelers and Precious Stone and Metal Workers	
On-the-job Training	Long-term on-the-job training
Number of Jobs, 2021	32,400
Job Outlook, 2021-31	-1% (Little or no change)
Employment Change, 2021-31	-300

Excerpt taken from Compton College’s Institutional Effectiveness:

*COVID-19, Unemployment, and Forecasting
Enrollment at Compton College
April 2020*

Compton College is responding to the new reality under the COVID-19 pandemic. The College has transitioned its classes online during the spring 2020 term, and college leadership is currently planning for the summer and fall 2020 terms. Through this unprecedented time, Compton College recognizes the jump in unemployment spurred by COVID-19, the anticipated recession, and efforts of the Federal Government through the CARES Act will likely have implications for Compton College in the months to come. This report outlines the relationship between high unemployment and local college enrollment, provides a timeline for anticipated benefits under the CARES Act for residents, and suggested ways that Compton College may plan to best support more residents to reach their goals during this difficult time. Enrollment’s Relationship to the Economy
Compton College, like other community colleges, tends to experience higher enrollment when unemployment rates are high. From the last financial crisis that began in December 2007, we see that enrollment peaked with over 16,203 unique students in 2010-2011. In more recent years, with markedly low unemployment in Los Angeles (around 4.4%), Compton College enrollment decreased with the most recent count of 11,473 students in 2018-2019.

2. How does the program address needs that are not met by similar programs in the region?

Presently, our program offers morning, evening, Saturday and Summer classes to accommodate our students' needs. We have working students and they need the flexibility of days and times to complete their training. Many community colleges are not offering classes at these intervals. Also, our students have voiced their opinions about what they would like to have available for their welding training. They loved the idea that we plan to incorporate an onsite certification lab under both entities, LA City and AWS.

3. What are the completion, success, and employment rates for the students? Discuss any factors that may impact completion, success, and employment rates. If applicable, what is the program doing to improve these rates?

Factors that may impact completion are sequence and or time frame of courses offered. Student employment needs such as licensing and or personal issues. By implementing an onsite testing facility under two organizations, LADBS and AWS, we plan to assist with licensing (practical portion) issues.

Associate Degrees Awarded

	2018-2019	2019-2020	2020-2021	2021-2022
Welding Technology	<5	<5	<5	1

Certificates Awarded

	2018-2019	2019-2020	2020-2021	2021-2022
Welding Technology	<5	<5	<5	0

Success Rates

	FA2017	SP2018	FA2019	SP2020	FA2021	SP2022
Welding	8	4	5	0	0	4

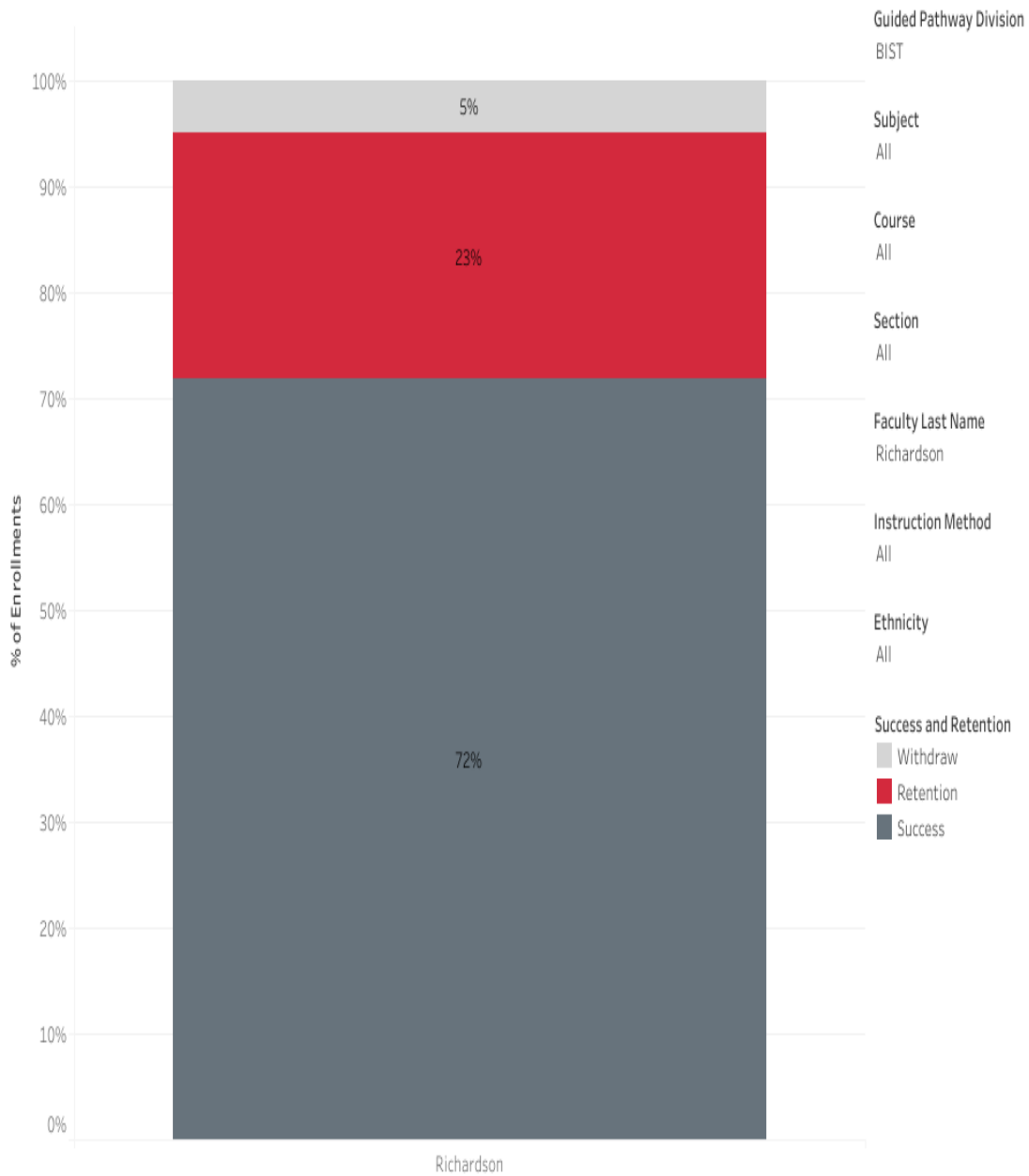
Employment Rates

	2018-2019	2019-2020	2020-2021	2021-2022
Welding Technology (TOP Code: 095650)	8	2	2	2

Source: Institutional Effectiveness Website

The information that I was able to locate, is only for the years of 2016-2021, which show a decent percentage for success. The retention rate of 27%, reflects both students that either stopped coming to class or found welding employment. Again, our enrollment and completion rates were impacted by the pandemic, closure of the campus, which hurt our hands-on training time. In addition, closure of testing facilities for example, the LADBS and Urban Test Labs, prevented any practical testing.

Compton College Course Success and Retention, 2016-2021: Faculty View



4. If there is a licensure exam for students to work in their field of study, please list the exam and the pass rate. If there are multiple licensure exams in the program, include them all. Discuss any factors that may impact licensure exam pass rates. If applicable, what is the program doing to improve these rates?

<u>License</u>	<u>Passage Rate in</u>	<u>2021-22</u>	<u>2023</u>
• <i>AWS 3G/4G Practical exam</i>		<i>5</i>	<i>1</i>
• <i>Los Angeles City Structural Steel Certification</i>		<i>3</i>	<i>2</i>
• <i>GTAW Certification</i>		<i>1</i>	<i>0</i>
• <i>GMAW Certification</i>		<i>0</i>	<i>0</i>
• <i>FCAW Certification</i>		<i>1</i>	<i>0</i>

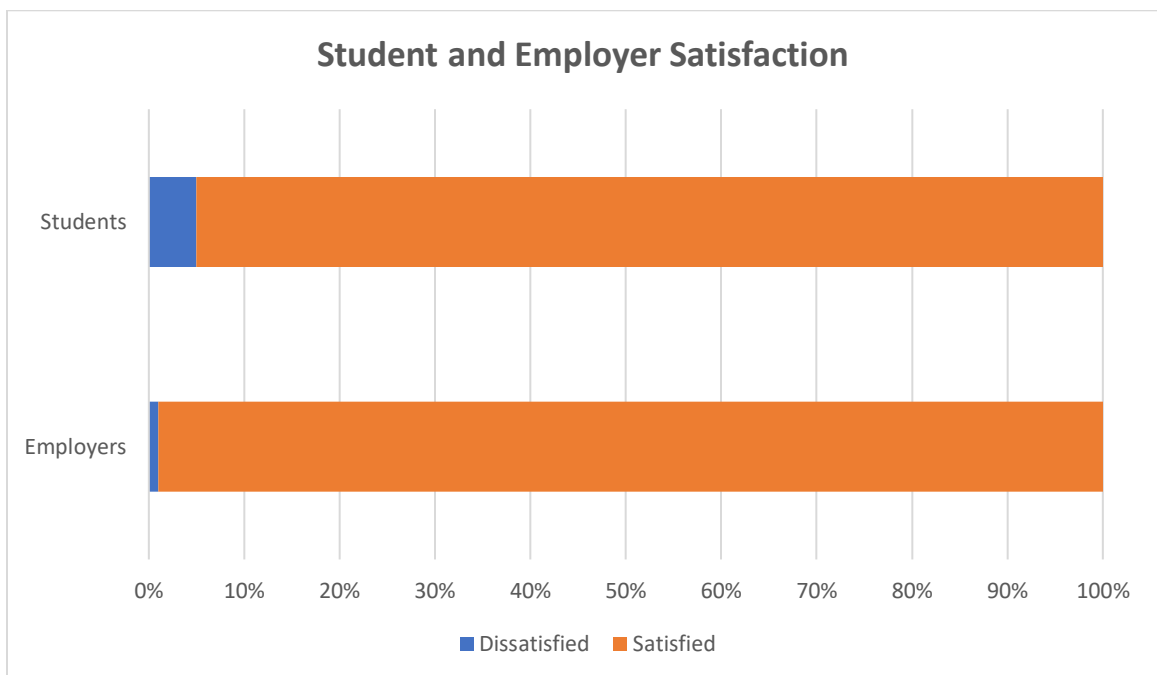
In 2022, we had approximately 2 students attempt and pass 3G/4G Practical exams either under an AWS or at a non -AWS certified testing lab. One out of the 2 students also passed the LADBS written exam, which qualified the student to receive LA City Certification.

One factor that impacted exam rates, was the shutdown and then slow re-opening of testing facilities that our students would need to go to in order to take their exams, this included the Los Angeles Department of Building and Safety. Two students attempted and passed the LADBS written exam in 2023.

5. Are the students satisfied with their preparation for employment? Are the employers in the field satisfied with the level of preparation of program graduates?

Our students are satisfied with their preparation here at Compton College. Presently, we have put in motion the process of certifying our welding lab as a testing lab under both AWS and LA City. Our students will be able to train and test here onsite. They also like the fact that we have newer eco- friendly equipment to train on and that we are proposing to offer other certificate programs in the future.

Employers have expressed their satisfaction with our training, by actually coming to visit our shop and hiring some of our students that have not yet completed training. Gemma Garcia, Emily Rubio, and Justin Becerra for example, were hired on the spot to work for LNI MFG and Komax Systems.



- 6. Is the advisory committee satisfied with the level of preparation of program graduates? How has advisory committee input been used in the past two years to ensure employer needs are met by the program? Describe any advisory committee recommendations that the program is either unable to implement or is in the process of implementing.**

The advisory committee is satisfied with the level of preparation that Compton's welding program provides and is still in preparation to implement. The committee recommends that we open a pipe training program to be competitive with other local colleges. There was an attempt to push a pipe curriculum this year in CurricUNET, but we were halted due to other requirements needed at the administrative level. The committee also recommends that we continue to pursue setting up a certified testing lab under AWS and LADBS, which we are currently in the process of completing. Input from the advisory committee has been documented and included in both present and past program reviews in support of each program recommendation.

We have also proposed to add a new ventilation system, but this has not started. The committee suggests that we continue equipment upgrades, attain a certified testing lab, and improve the aesthetics of the training area.

In the future, our welding program plans to expand training. One area that is untapped, is in medical grade welding. We plan to purchase equipment such as orbital, laser, beam and micro-tig welders. With this technology, we can teach welding and repair of medical equipment used in hospitals and clinics. This will open even more opportunities of employment for our students in areas that many training facilities overlook. **The advisory committee is all on board for our program to certify our welding lab as an official testing site for our trainees.**

Welding

Program Review Goals 2023-2027

Compton College's welding program is on target with most of its previous years' goals. We have future to make our program even more robust and in demand.

Goals	Action to be Taken	Time Frame	Results
Goal # 1 Increase student success and maintain student enrollment	Open a certified testing lab under both entities, AWS and LADBS This will draw students to the program because they can train and test practical plates onsite	Fall 2023	In Progress Documents for LADBS are in draft mode, AWS formation documents will follow
Goal # 2 Increase program's retention ratio	Increase class enrollment in beginner courses; Weld 101, Weld 140, Weld 105	Fall 2023	On-going process
Goal # 3 Teach medical-grade welding	Purchase laser, beam and micro-tig welding equipment	Spring 2024	Not started
Goal # 4 New ventilation system installed	Industrial building will be remodeled in 2 years, expecting a new ventilation system	Spring 2024-2025	Planning stages
Goal # 5 Teach orbital GTAW welding	Purchase orbital GTAW welding equipment	Spring 2024	Not started
Goal # 6 Create a student retention tracking system	Develop a computer-based system to track students entering/exiting after completing program	2023-2026	On-going process

LONG TERM GOALS			
Goal #1 Complete establishing a pipe training course	Continue working with administrators to get pipe curriculum approved	Fall 2026?	On Hiatus
Goal # 2 Develop robotic welding programming certificate program	Continue drafting short-term curriculum to teach robotic welding for an OTC Daihen robot	Spring 2027	Draft status
Goal # 3 Create certificate programs for medical grade welding	Consult appropriate staff for direction in establishing a certificate program	Fall 2027	Not started

California Education Code 78016 requires that the review process for CTE programs includes the review and comments of a program's advisory committee. **Provide the following information:**

- a. Advisory committee membership list and credentials
 - *Pamela Richardson – Associate Welding Professor – Compton College*
 - *Lisa Legohn – Lead Associate Welding Professor – LATTC/AWS Committee Member*
 - *Alan Ojerio- Account Manager - Airgas*
 - *Ed Campbell – Assistant Teacher – Compton College*
 - *Gregory Gayles- LA Certified Welder/Journeyman Ironworker – Union member Local 433 Ironworkers*

- b. Meeting minutes or other documentation to demonstrate that the CTE program review process has met the above Education Code requirement.

(Following page)



ADVISORY COMMITTEE MEETING

Compton College

January 20, 2023 –4:00 pm – 5:00 pm (ZOOM)

MEMBERS PRESENT

Pamela Richardson -Lead Associate Welding Professor/Compton College

Lisa Legohn - Lead Associate Welding Professor/LA Trade Tech College

Alan Ojerio - Account Manager/Airgas

Edmund Campbell - Assistant Teacher/Tool Attendant/Compton College

Gregory Gayles – Union Member Local 433 Ironworkers

OTHERS ATTENDING: N/A

Handouts · Agenda · Certified Testing Lab Documents (AWS and LADBS) Part II

- I. Call to Order The meeting was called to order at 4:00 p.m. by Pamela Richardson.
- II. Approval of Minutes: January 20, 2023, was approved and seconded by Gregory Gayles.
- III. Responsibilities: Discussion of requirements for a certified AWS/LADBS Testing Lab. How to get the lab certified.

Ms. Richardson told the committee that she wanted to implement a certified testing lab under the protocols of both the American Welding Society and LADBS. In addition, a pipe training course was again mentioned, and the committee agreed that offering pipe training would be a good idea.

Gregory Gayles agreed since he is presently in the field working as a welder and he hears first- hand about what is needed to be successful in today's welding market.

Ms. Legohn agreed that Compton College should add a pipe training course. She stated that LA Trade Tech College already had a pipe course in operation, and it has helped to improve her enrollment.

Mr. Ojerio also urged us to continue getting the welding shop certified under both LADBS and AWS because it will be beneficial to our program. Having an in-house certification lab would allow our students to feel more confident in testing.

- IV. Testing Stations locations? We are re-visiting this since we have decided where to place the testing machines. We have two possible outside booths that can be redone as well.
- V. V RECAP · Ms. Richardson stated that there would be an additional meeting on June 1, 2023, if needed.
- VI. Mr. Ojerio requested to visit to see where we planned to set up the testing booth station, and the test machine, the Tinus Olsen.
- VII. Adjournment Ms. Richardson officially adjourned the meeting at 5:00 p.m.