

20 Booth Welding School Space Planning and Cost Guide

Welding School Centers of Excellence

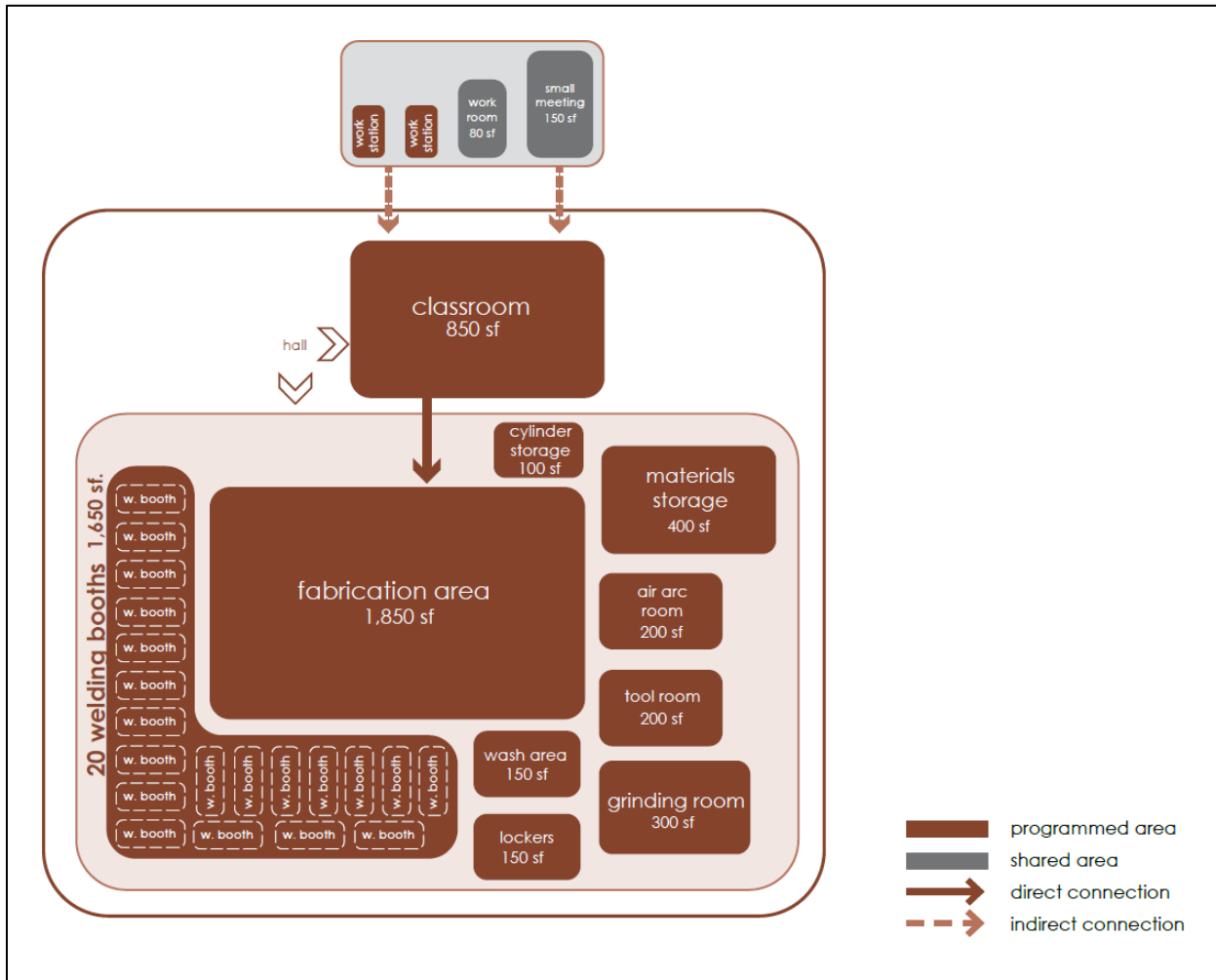


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Notes regarding the design and cost information contained below:

1. Design requirements can vary considerably depending on the availability of existing facilities to provide classroom and storage space.
2. The building cost of \$393.50 USD per square meter is based on a BOQ estimate performed on the schematic design shown below for a school built in Tanzania, Africa. The actual building cost will vary between locations within a given country and between countries in Africa. It will also vary depending on the details of construction, finish, sitework and utilities. This building cost estimate is for reference only. For feasibility studies cost estimates, we recommend the cost guidance of the AACE (American Association of Cost Engineers) International Recommended Practice No. 56R-08, Cost Estimate Classification System. Actual cost estimates should be performed on schematic designs, resulting in a -10% / +20% accuracy range. In other words, to determine the cost range for a schematic design based estimate, a range of -10% to +20% should be considered.
3. The list of shop equipment is considered necessary to not only teach welding, but also teach practical fabrication skills that are necessary to apply welding skills to the workplace.
4. The unit cost of \$3,333.33 USD for welding machines is for a high quality single process welding machine, using some of the best equipment available on the world market. This is for general budget purposes only. The cost of high quality multifunction machines can be budgeted at approximately \$7,500.00 USD per machine. The actual cost of welding machines should take into consideration the actual planned curriculum and welding processes planned for each school. This will define the number, type and quality of machines actually needed.
5. The cost of welding consumables is addressed in a separate report.



**Example of a 547 Square Meter 60-booth Welding School
(Original drawing is in square feet)**

| Area | 20 Booth School | | 60 Booth School | |
|----------------------|-----------------|----------|-----------------|----------|
| | SQ Meters | SM/Booth | SQ Meters | SM/Booth |
| Welding Booth Areas | 153.3 | 7.66 | 360 | 6.00 |
| Fabrication Area | 153.3 | 7.66 | 378 | 6.30 |
| grinding room | 27.9 | 1.39 | 54 | 0.90 |
| air arc room | 18.6 | 0.93 | 36 | 0.60 |
| wash area / lockers | 13.9 | 0.70 | 72 | 1.20 |
| tool room | 18.6 | 0.93 | 36 | 0.60 |
| material storage | 37.2 | 1.86 | 72 | 1.20 |
| cylinder storage | 9.3 | 0.46 | 36 | 0.60 |
| classroom | 79.0 | 3.95 | 79 | 1.32 |
| Office | 36.0 | 0.60 | 36 | 0.60 |
| Electrical Room | Depending | | 7 | 0.12 |
| Female Changing Room | Depending | | 36 | 0.60 |
| Male Changing Room | Depending | | 36 | 0.60 |
| Total Square Meters | 547.0 | | 1238 | |

Space Planning Guidelines for 20 and 60 Booth Welding Schools

| Cost Model for 20 Booth Welding School | | | | |
|---|------------------------------|----------------------|--------------|---------------------|
| Prepared by GFP, March 28, 2024 | | | | |
| | | | | Totals |
| Owners Project Administration Cost | Allowance | | \$100,000.00 | \$100,000.00 |
| Architectural and Design Fees | | | | |
| Phase 1 - Outline Proposal = 15% of professional fee | | | \$4,824.30 | |
| Phase 2 - Scheme Design = 20% of professional fee | | | \$6,432.40 | |
| Phase 3 - Detail Design = 20% of professional fee | | | \$6,432.40 | |
| Phase 4 - Production Information and BOQ =20% of professional fee | | | \$6,432.40 | |
| Phase 5 – Post contract = 25% of professional fee | | | \$8,038.55 | |
| Total (Architect quote for 20 booth school) | | | \$32,160.05 | \$32,160.05 |
| Building Construction Cost (Schematic Stage Estimate) | | | | |
| | Cost per Square Meter | Square Meters | | |
| Total | \$393.50 | 547 | \$215,244.50 | \$215,244.50 |
| Shop Floor Equipment | | | | |
| | Unit Price | Quantity | Total | |
| Plazma cutting table | \$20,000.00 | 1 | \$20,000.00 | |
| Plazma Cutter | \$3,499.00 | 1 | \$3,499.00 | |
| Horizontal Band Saw | \$3,633.00 | 1 | \$3,633.00 | |
| Lathe | \$5,995.00 | 1 | \$5,995.00 | |
| Bend Testing Equipment | \$2,717.00 | 1 | \$2,717.00 | |
| Bug-o Track Cutter | \$4,600.00 | 1 | \$4,600.00 | |
| 25 - 50 ton Press machine | \$5,999.00 | 1 | \$5,999.00 | |
| Bench Grinding machines | \$2,010.00 | 1 | \$2,010.00 | |
| Pencil grinder (not compulsory) | \$493.00 | 1 | \$493.00 | |
| Angle Grinder 115mm | \$1,152.00 | 1 | \$1,152.00 | |
| Angle Grinder 230mm | \$1,152.00 | 1 | \$1,152.00 | |
| Cutting torch set | \$1,049.00 | 1 | \$1,049.00 | |
| Air Compressor | \$4,074.00 | 1 | \$4,074.00 | |
| Manual Pipe Bevel Machine | \$2,086.00 | 1 | \$2,086.00 | |
| 8' x 3/8" hydraulic shears | \$11,849.75 | 1 | \$11,849.75 | |
| 13" x 40" manual lathes | \$6,070.89 | 1 | \$6,070.89 | |
| 10" x 54" Manual Milling Machine | \$9,184.73 | 1 | \$9,184.73 | |
| 66 Ton Ironworker | \$11,679.47 | 1 | \$11,679.47 | |
| Total- Floor Equipment | \$97,243.84 | | \$97,243.84 | \$97,243.84 |
| Other Equipment and Components Allowances | | | | |
| | Unit Price | Quantity | | |
| Welding Machines | \$3,333.33 | 20 | \$66,666.60 | |
| Welding Booths | \$1,700.00 | 20 | \$34,000.00 | |
| Fume Exhaust System (Assisted Natural Ventilation) | \$50,000.00 | 1 | \$50,000.00 | |
| Testing and Quality Control Equipment Allowance | \$30,000.00 | 1 | \$30,000.00 | |
| Virtual Welding Units | \$30,000.00 | 3 | \$90,000.00 | |
| Robotic Welding Machines | \$30,000.00 | 2 | \$60,000.00 | |
| Furniture, Fixtures and Equipment Allowance | \$50,000.00 | 1 | \$50,000.00 | |
| Tools Allowance | \$50,000.00 | 1 | \$50,000.00 | |
| Total Other | | | \$430,666.60 | \$430,666.60 |
| Subtotal | | | | \$875,314.99 |
| Contingency at 13% | | | | \$113,790.95 |
| Subtotal | | | | \$989,105.94 |
| Other Items Not Yet Included | | | | |
| Value Added Tax | | | | |
| Extraordinary Electrical Feed to Building | | | | |
| Extraordinary Sitework | | | | |
| Train the trainer costs | | | | |