

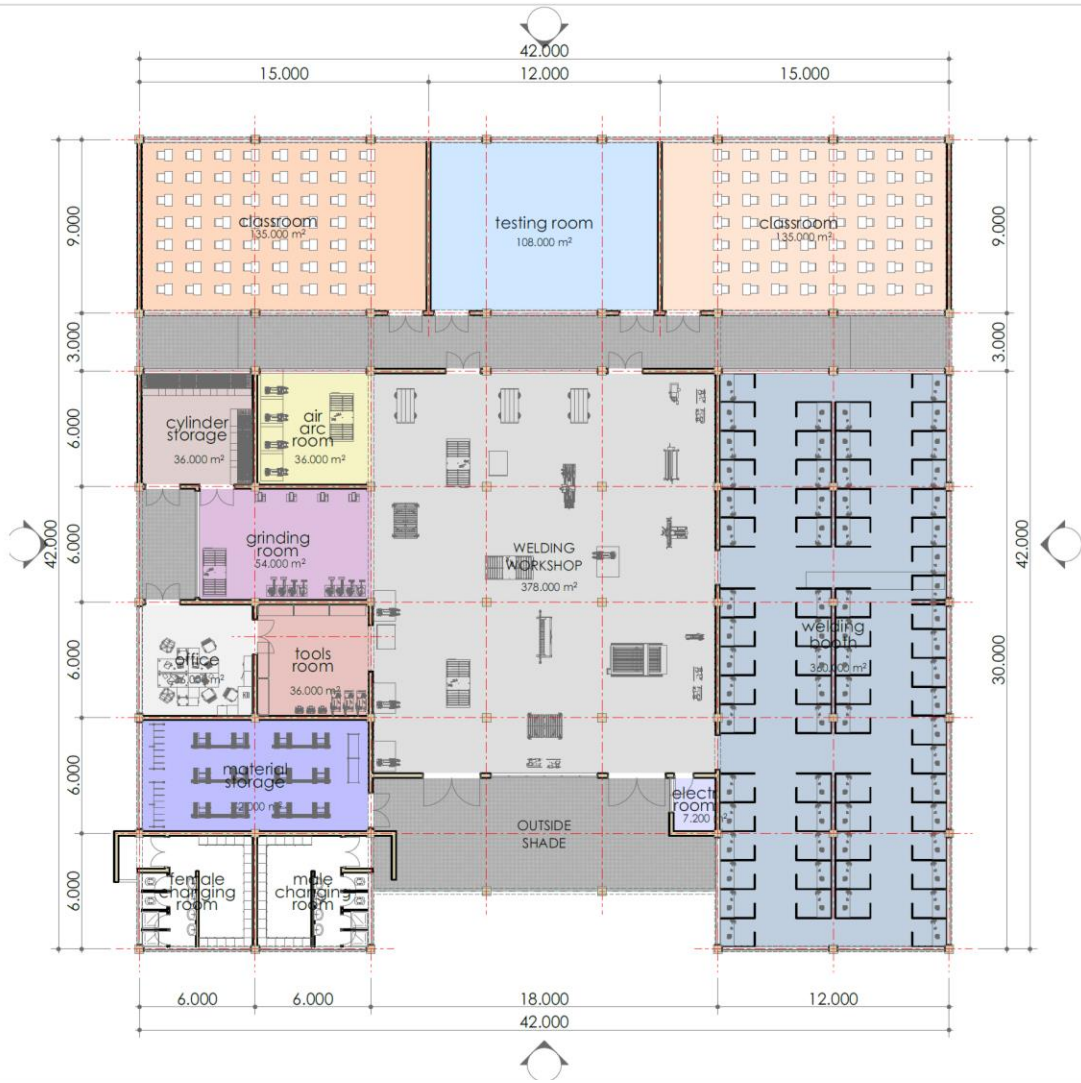
Modern Industrial Welding School Design Guide

Welding School Centers of Excellence



GFP International is a proud member of the
American Welding Society





Example of a 60-booth modern welding school

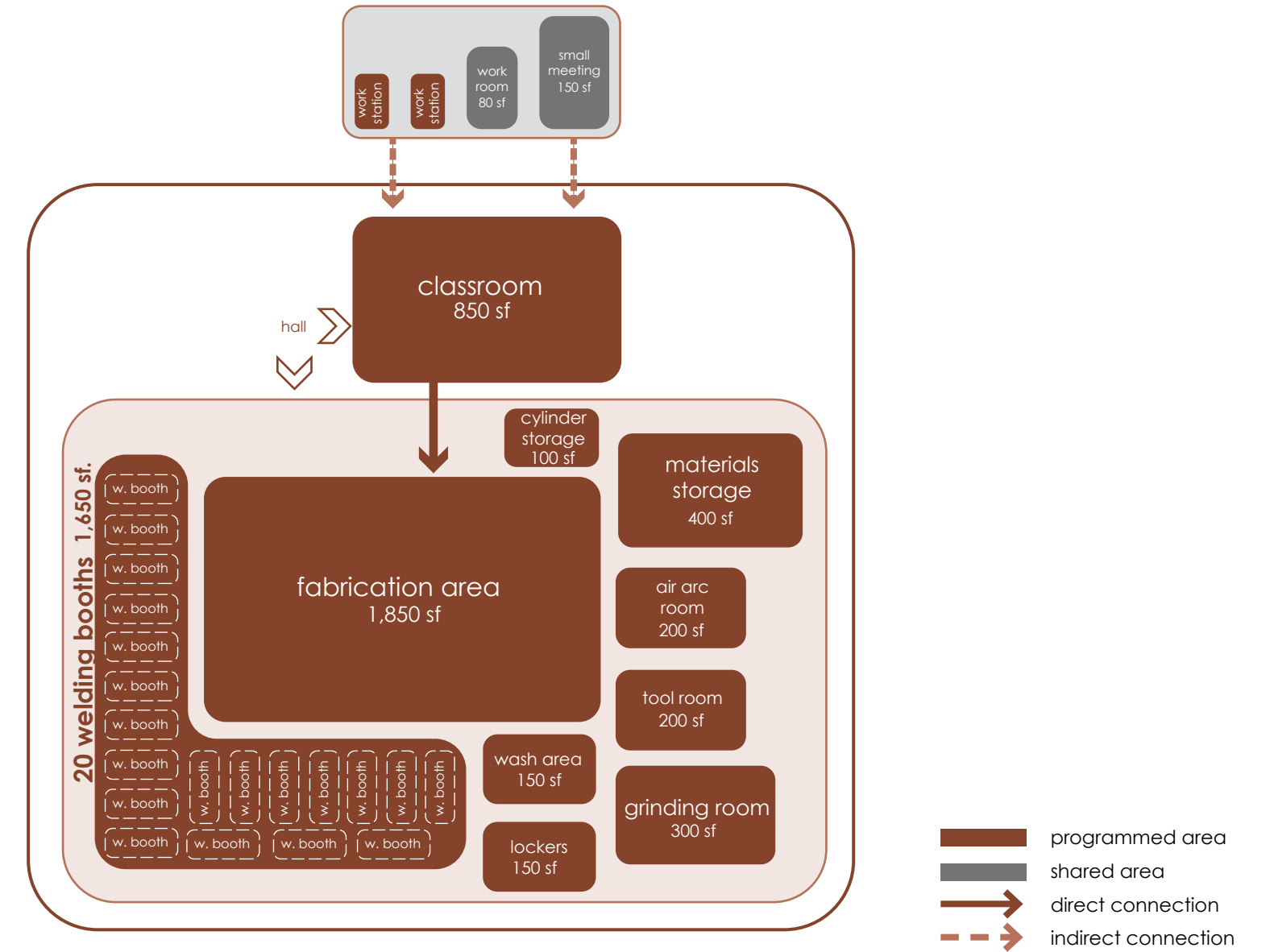
**The following design guide information was provided courtesy of Jill Jones
Architects, Salt Lake City, Utah, USA**

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trades - welding

trades - welding						
space	space name	occ.	sf/occ.	size (sf)	quantity	total nsf
a. classrooms						
a.1	welding	25	34	850	1	850
b. labs and support storage						
b.1.1	welding lab - welding booths			1,650	1	1,650
b.1.2	welding lab - fabrication area			1,850	1	1,850
b.1.3	welding lab - grinding room			300	1	300
b.1.4	welding lab - air arc room			200	1	200
b.1.5	welding lab - locker and changing			150	1	150
b.1.6	welding lab -wash area			150	1	150
b.1.7	welding lab - tool room			200	1	200
b.1.8	welding lab - materials storage			400	1	400
b.1.9	welding lab - cylinder storage			100	1	100
c. offices-workstations-touchdowns-office support						
c.1	welding	1	36	36	2	72
department total:						5,922 sf



trades: welding

a. classroom

a.1 welding classroom

space summary

purpose	flat floored classroom with flexible seating
function	lecture/instruction
occupancy	25 people
access	staff and students

adjacency

relationships	fabrication area
connection	direct connection to fabrication area

environment

walls	painted gypsum board
floor	carpet with rubber base
ceiling type	lay-in acoustic tile
ceiling height	10' min. aff
windows	storefront glazing
doors	storefront door with vision glazing
acoustical/sound	stc 50 / nc 30-35
other	

furniture + equipment

flexible desks and (24) chairs
laptop cart
white boards

mechanical

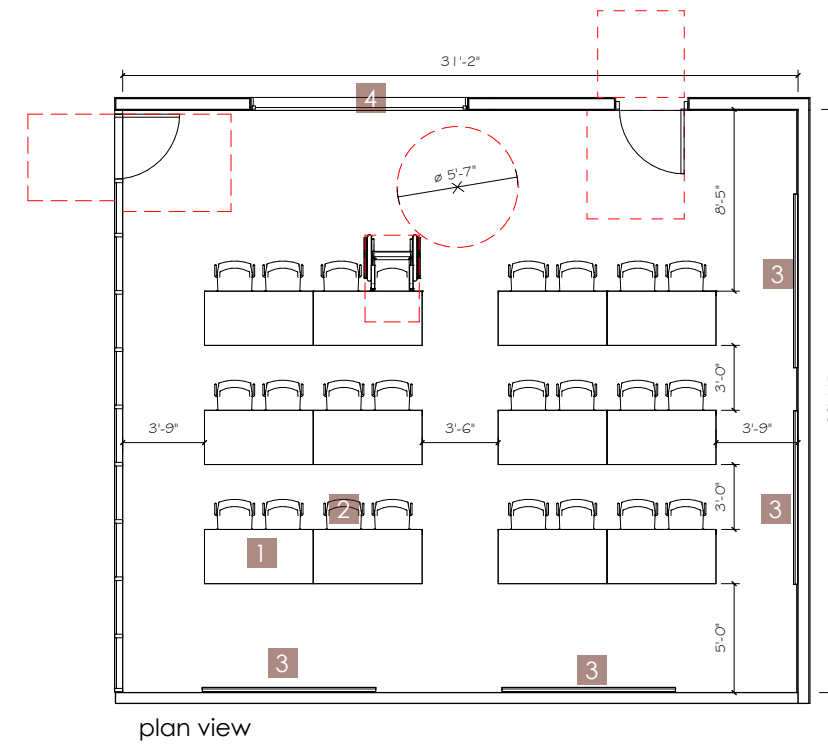
	summer	winter
temperature	75°F	72°F
setpoint adjust	yes	yes
range, idle	+/- 4	+/- 4
setback	85°F	60°F
dewpoint	55°F	38°F
ventilation, rp	10 cfm/person	
ventilation, ra	0.12 cfm/sf	
pressurization	positive	
exhaust	n/a	
plumbing	n/a	
fire protection	yes - per nfpa	

electrical

power	power @ students stations, quad @ teacher station, duplexes @ 10 ft o.c.
phone/data	hard wired to all stations + wireless
audio/video	projector and screen with speakers
security	general building security

lighting

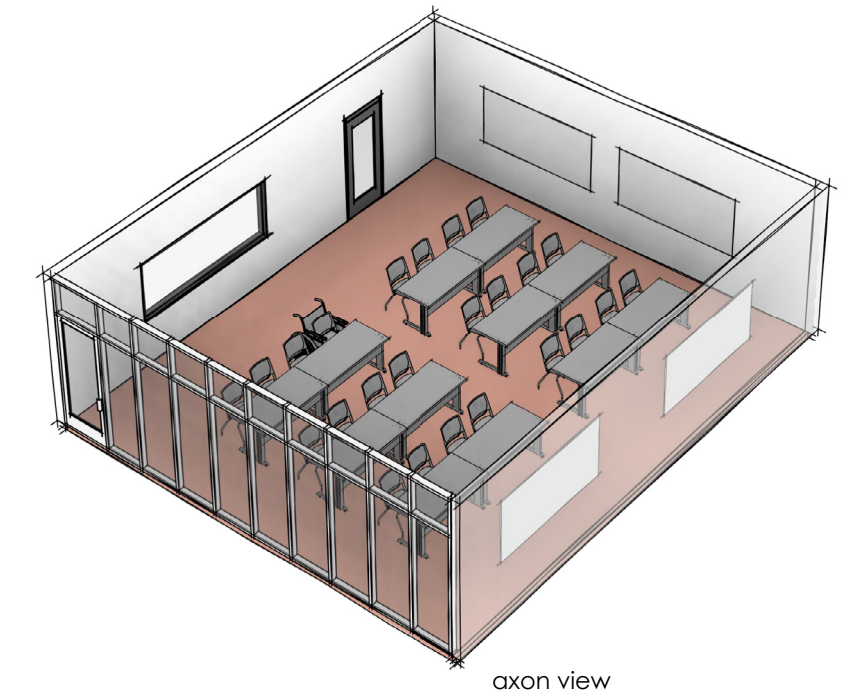
lighting level	40 fc
lighting control	dual-tech vacancy sensors, manual on/off with dimming and presets for scene control
fixture type	led, indirect or direct



plan view

furniture/equipment

- 1 mobile desks
- 2 stacking chairs
- 3 dry erase board
- 4 connection to lab



axon view

a.1 welding classroom (850 sf)



trades: welding

b. labs and support storage

b.1.1 welding lab - welding booths

space summary

purpose	training and teaching room
function	practical experience training with hands-on learning equipment
occupancy	--
access	staff and students

adjacency

relationships	fabrication area
connection	arranged around fabrication area

environment

walls	painting gypsum board
floor	stained concrete flooring with resilient base
ceiling type	exposed duct-work
ceiling height	20' min. aff
windows	storefront glazing
doors	metal
acoustical/sound	stc 55 -60/ nc 50-55
other	

furniture + equipment

- (20) welding booths
- (1) booth to be ada height

mechanical

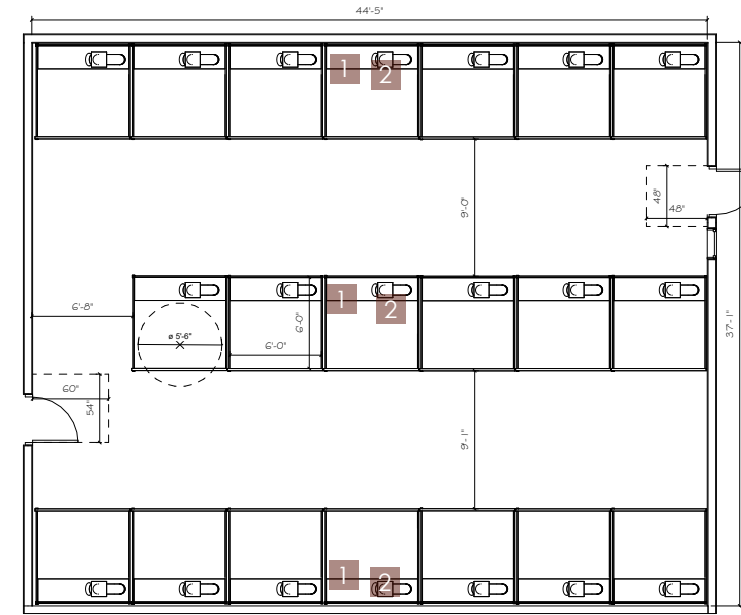
	summer	winter
temperature	75°f	72°f
setpoint adjust	yes	yes
range, idle	+/- 4	+/- 4
setback	85°f	60°f
dewpoint	55°f	38°f
ventilation, rp	10 cfm/person	
ventilation, ra	0.18 cfm/sf	
pressurization	negative	
exhaust	0.5 cfm/sf general exhaust, plus welding booth filtration exhaust system	
plumbing	oxygen, argon, acetylene piped from cylinder storage to welding booths, general shop compressed air and water	
fire protection	yes - per nfpa	

electrical

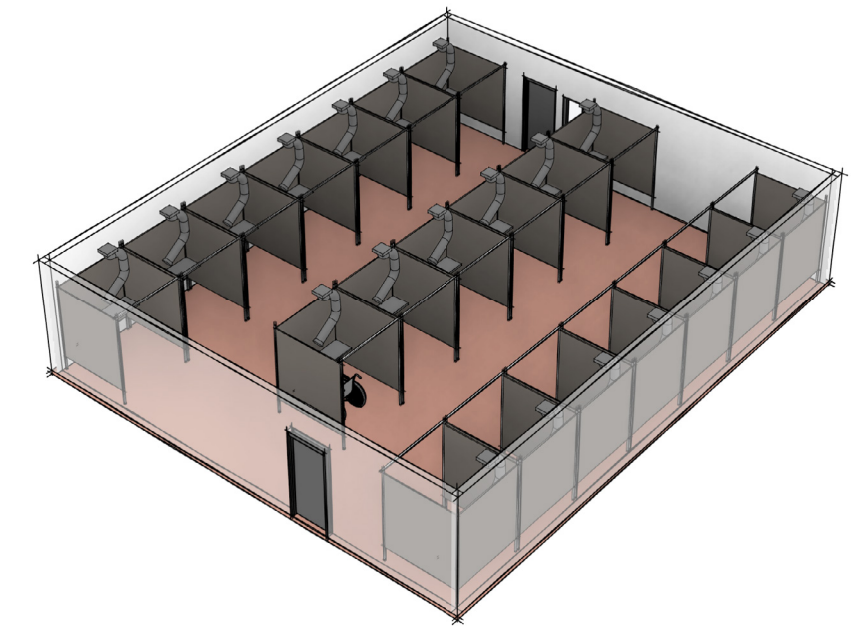
power	power to equipment, duplex outlets on non-equipment walls
phone/data	hardwired and wireless
audio/video	none
security	general building security

lighting

lighting level	40-50 fc
lighting control	manual on, timed off through relay, with dimming
fixture type	led, high-bay, task-lighting at welding booths



plan view



axon view

furniture/equipment

- 1 welding surface
- 2 fume extractor

b.1.1 welding labs — welding booths (1,650 sf)



trades: welding

b. labs and support storage

b.1.2 welding lab - fabrication area

space summary

purpose	training and teaching room
function	practical experience training with hands-on learning equipment
occupancy	--
access	staff and students

adjacency

relationships	classroom, welding booths
connection	direct connection to classroom

environment

walls	painted gypsum board
floor	stained concrete flooring with resilient base
ceiling type	exposed duct-work
ceiling height	20' min. aff
windows	n/a
doors	metal
acoustical/sound	stc 55 -60/ nc 50-55
other	

furniture + equipment

overhead crane
large overhead door
various welding tools for fabrication

mechanical

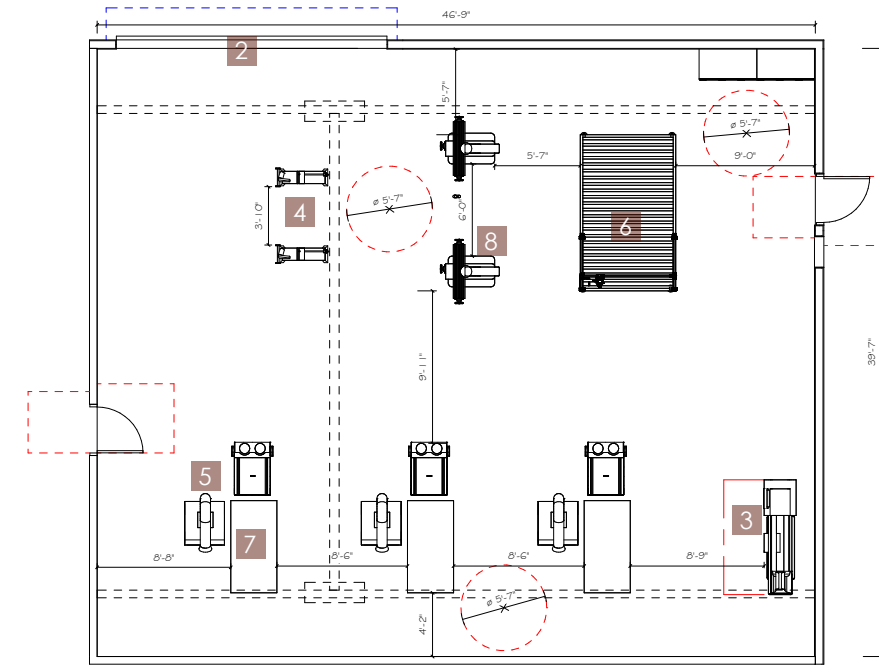
summer temperature	75°f	winter temperature	72°f
setpoint adjust	yes	setpoint adjust	yes
range, idle	+/- 4	range, idle	+/- 4
setback	85°f	setback	60°f
dewpoint	55°f	dewpoint	38°f
ventilation, rp	10 cfm/person		
ventilation, ra	0.18 cfm/sf		
pressurization	negative		
exhaust	0.5 cfm/sf general exhaust, plus local source capture exhaust		
plumbing	compressed air and water drops		
fire protection	yes - per nfpa		

electrical

power	power to support lab equipment, duplex outlets @ 10 ft o.c.
phone/data	hardwired and wireless
audio/video	none
security	general building security

lighting

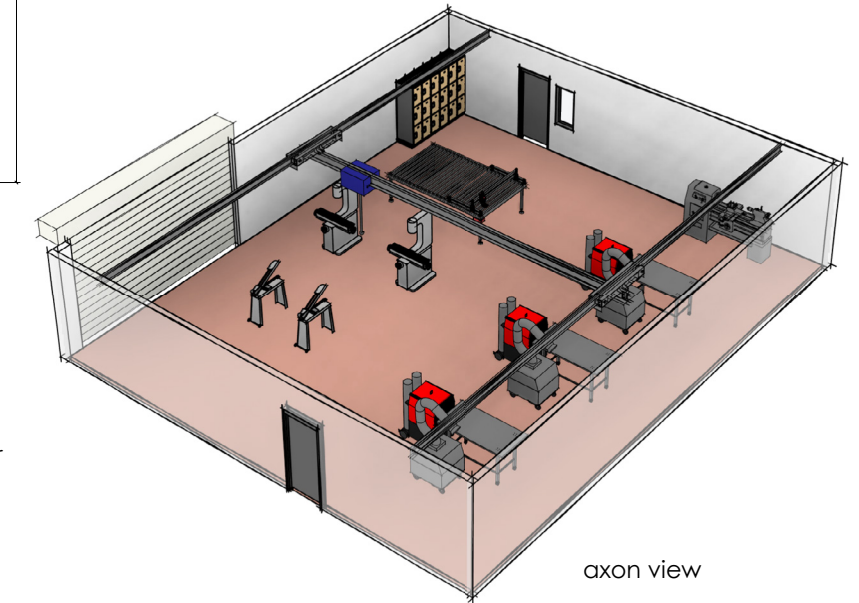
lighting level	40-50 fc
lighting control	manual on, timed off through relay, with dimming
fixture type	led, high-bay, task-lighting at welding booths



plan view

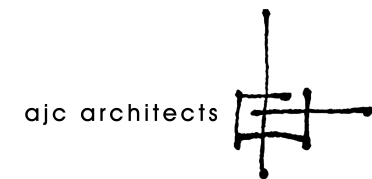
furniture/equipment

- | | | | |
|---|----------------|---|--------------------------------|
| 1 | overhead crane | 5 | mobile welder & fume extractor |
| 2 | overhead door | 6 | plasma cutter |
| 3 | metal lathe | 7 | work surface |
| 4 | metal bandsaw | 8 | metalworking mill |



axon view

b.1.2 welding labs — fabrication area (1,850 sf)



trades: welding

b. labs and support storage

b.1.3 welding lab - grinding room

space summary

purpose	training and teaching room
function	practical experience training with hands-on learning equipment
occupancy	--
access	staff and students

adjacency

relationships	fabrication area
connection	direct connection to fabrication area

environment

walls	painted gypsum board
floor	stained concrete floor with resilient base
ceiling type	exposed duct-work
ceiling height	12' min. aff
windows	n/a
doors	metal
acoustical/sound	stc 55 -60/ nc 50-55
other	

furniture + equipment

	(2) long work tables
	grinders
	tool chests and shelving

mechanical

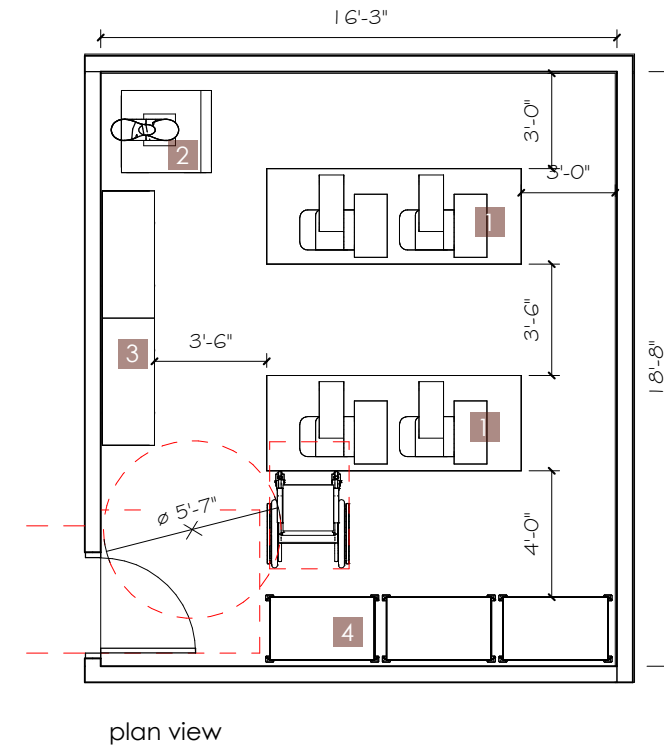
	summer	winter
temperature	75°F	72°F
setpoint adjust	yes	yes
range, idle	+/- 4	+/- 4
setback	85°F	60°F
dewpoint	55°F	38°F
ventilation, rp	10 cfm/person	
ventilation, ra	0.18 cfm/sf	
pressurization	negative	
exhaust	0.5 cfm/sf general exhaust, plus local source capture exhaust	
plumbing	compressed air and water drops	
fire protection	yes - per nfpa	

electrical

power	power to support lab equipment, duplex outlets @ 10 ft o.c.
phone/data	hardwired and wireless
audio/video	none
security	general building security

lighting

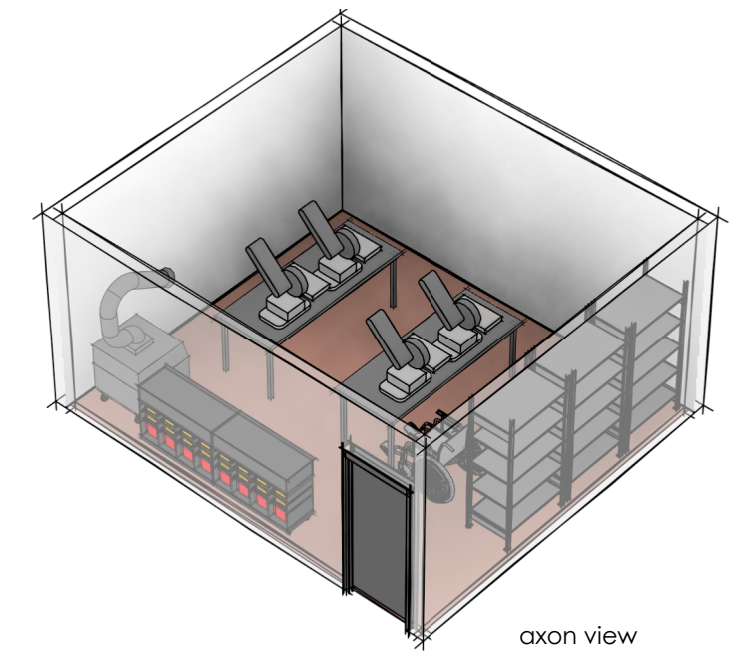
lighting level	40-50 fc
lighting control	dual-tech vacancy sensors, manual on/off with dimming
fixture type	led, high-bay, task-lighting at welding booths



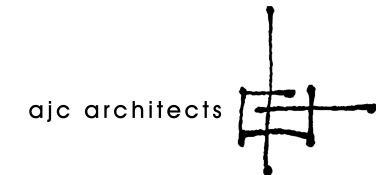
plan view

furniture/equipment

- 1 table top belt grinders
- 2 fume extractor
- 3 tool chest
- 4 shelving/storage



axon view



b.1.3 welding labs — grinding room (300 sf)

trades: welding

b. labs and support storage

b.1.4 welding lab - air arc room

space summary

purpose	training and teaching room
function	practical experience training with hands-on learning equipment
occupancy	--
access	staff and students

adjacency

relationships	fabrication area
connection	direct connection to fabrication area

environment

walls	plywood
floor	stained concrete floor with resilient base
ceiling type	exposed duct-work
ceiling height	10' min. aff
windows	n/a
doors	metal
acoustical/sound	stc 55 -60/ nc 50-55
other	

furniture + equipment

(2) work tables
various welding tools

mechanical

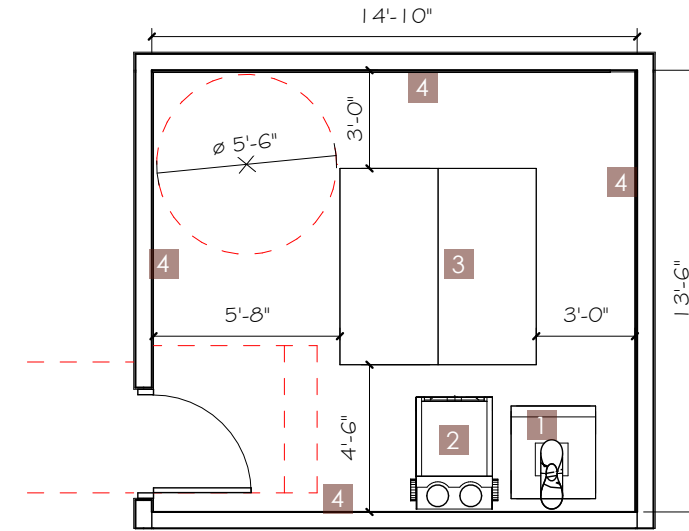
	summer	winter
temperature	75°F	72°F
setpoint adjust	yes	yes
range, idle	+/- 4	+/- 4
setback	85°F	60°F
dewpoint	55°F	38°F
ventilation, rp	10 cfm/person	
ventilation, ra	0.18 cfm/sf	
pressurization	negative	
exhaust	0.5 cfm/sf general exhaust, plus local source capture exhaust	
plumbing	compressed air and water drops	
fire protection	yes - per nfpa	

electrical

power	power to support lab equipment, duplex outlets @ 10 ft o.c. along walls
phone/data	hardwired and wireless
audio/video	none
security	general building security

lighting

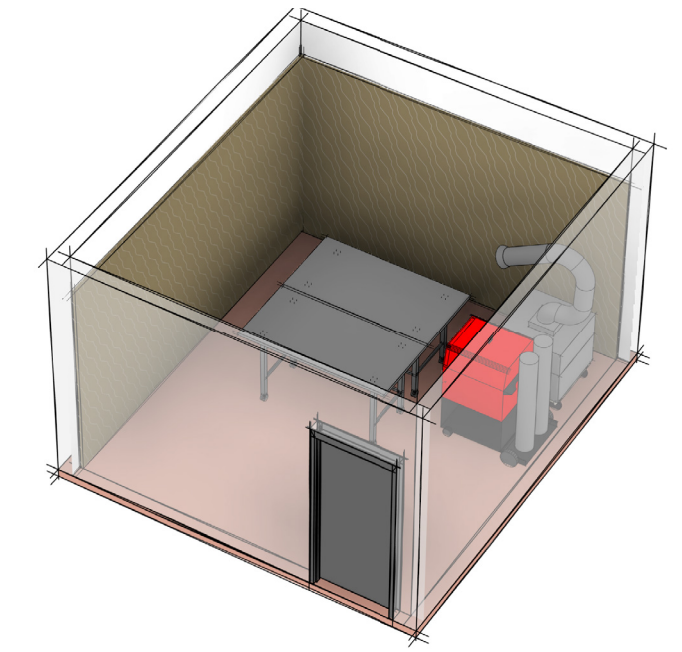
lighting level	40-50 fc
lighting control	dual-tech vacancy sensors, manual on/off with dimming
fixture type	led, direct



plan view

furniture/equipment

- 1 fume extractor
- 2 air arc welder
- 3 work table
- 4 plywood sheathing wall cover



axon view



b.1.4 welding labs — air arc room (200 sf)

trades: welding

b. labs and support storage

b.1.5 welding lab - locker and changing

space summary

purpose	locker room
function	area for students to change and store personal belongings
occupancy	--
access	staff and students

adjacency

relationships	fabrication area, classroom
connection	direct connection to fabrication area

environment

walls	painting gypsum board
floor	stained concrete with cove base
ceiling type	lay-in acoustic tile
ceiling height	10' min. aff
windows	n/a
doors	metal
acoustical/sound	stc 50/ nc 35-40
other	

furniture + equipment

lockers
benches

mechanical

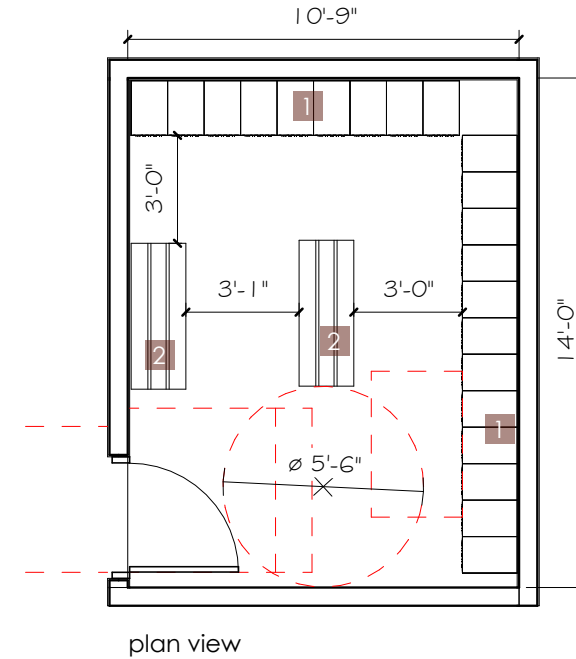
summer temperature	75°f	winter temperature 72°f
setpoint adjust	no	no
range, idle	+/- 4	+/- 4
setback	85°f	60°f
dewpoint	55°f	38°f
ventilation, rp	n/a cfm/person	
ventilation, ra	n/a cfm/sf	
pressurization	negative	
exhaust	0.25 cfm/sf general exhaust	
plumbing	n/a	
fire protection	yes - per nfpa	

electrical

power	duplex outlets @ 10 ft o.c.
phone/data	hardwired and wireless
audio/video	none
security	general building security

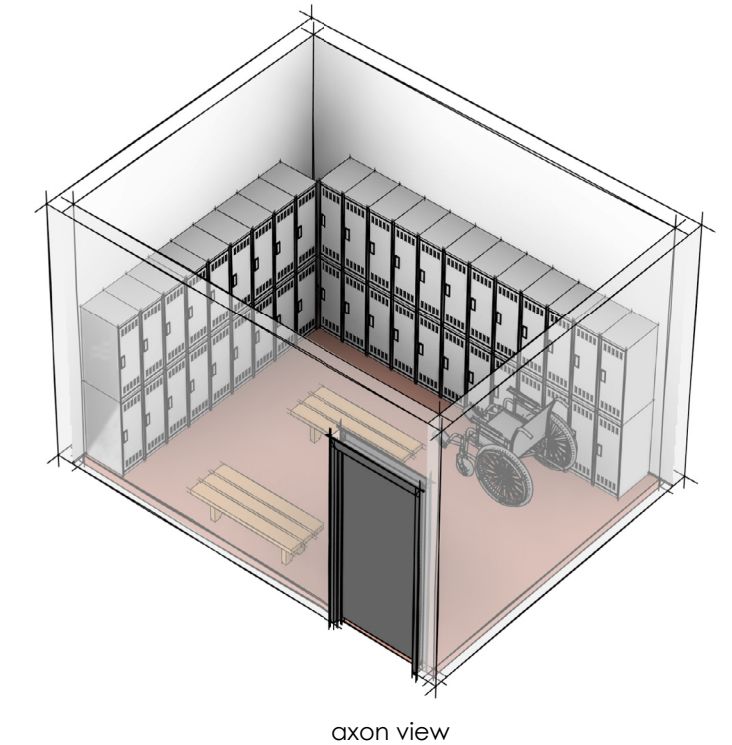
lighting

lighting level	30 fc
lighting control	dual-tech vacancy sensor, manual on/off
fixture type	led, direct

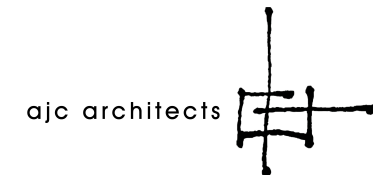


furniture/equipment

- 1 metal lockers
- 2 changing bench



b.1.5 welding lab - locker and changing (150 sf)



trades: welding

b. labs and support storage

b.1.6 welding lab - wash area

space summary

purpose	wash area
function	area for students to wash hands and tools
occupancy	--
access	staff and students

adjacency

relationships	lockers and changing, fabrication area
connection	direct connection to lockers and changing

environment

walls	painted gypsum board and tile
floor	stained concrete with cove base
ceiling type	lay-in acoustic tile
ceiling height	10' min. aff
windows	n/a
doors	metal
acoustical/sound	stc 50/ nc 35-40
other	

furniture + equipment

- (3) hand wash utility sinks (1) to be ada
- (1) 3 compartment utility sink
- (1) floor sink

mechanical

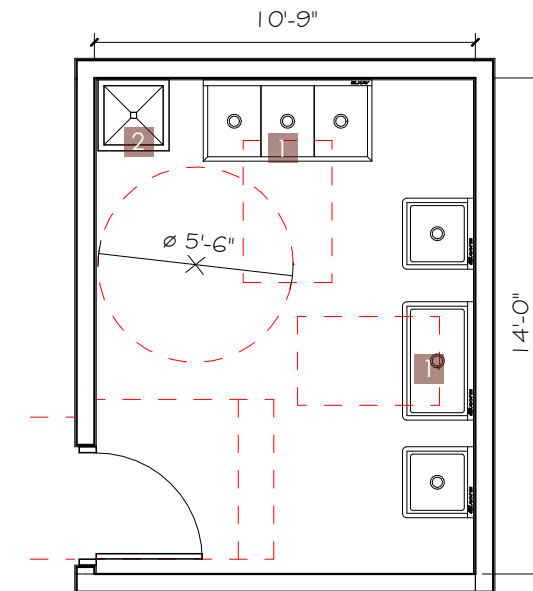
	summer	winter
temperature	75°f	72°f
setpoint adjust	no	no
range, idle	+/- 4	+/- 4
setback	85°f	60°f
dewpoint	55°f	38°f
ventilation, rp	n/a cfm/person	
ventilation, ra	n/a cfm/sf	
pressurization	negative	
exhaust	0.25 cfm/sf general exhaust	
plumbing	scrub sinks and floor sink	
fire protection	yes - per nfpa	

electrical

power	gfcı duplex outlets @ 10 ft o.c. along walls
phone/data	wireless
audio/video	none
security	general building security

lighting

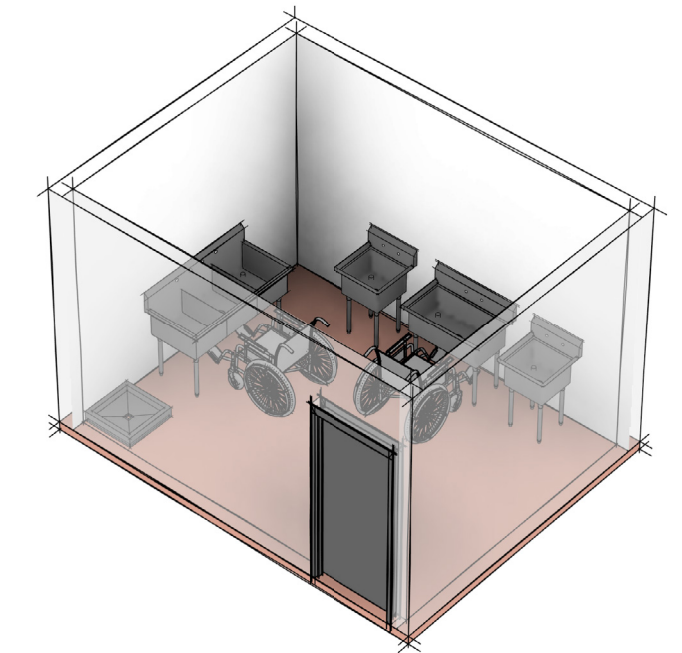
lighting level	30 fc
lighting control	dual-tech vacancy sensor, manual on/off
fixture type	led, direct



plan view

furniture/equipment

- 1 sink
- 2 mop sink



axon view



b.1.6 welding lab - wash area (150 sf)

trades: welding

b. labs and support storage

b.1.7 welding lab - tool room

space summary

purpose	storage
function	open cage storage for students tools
occupancy	--
access	staff and students

adjacency

relationships	fabrication area
connection	direct connection to fabrication area

environment

walls	caged
floor	stained concrete flooring with resilient base
ceiling type	exposed
ceiling height	10' min. aff
windows	n/a
doors	caged/metal
acoustical/sound	stc n/a
other	

furniture + equipment

toolboxes
extra welding equipment

mechanical

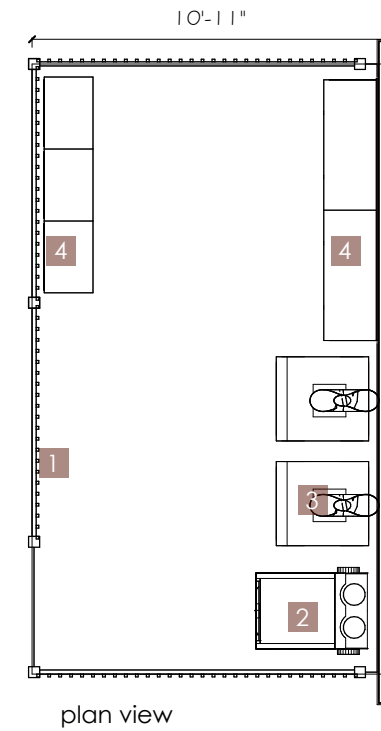
summer	75°f	winter	72°f
temperature			
setpoint adjust	no		no
range, idle	+/- 4		+/- 4
setback	85°f		60°f
dewpoint	55°f		38°f
ventilation, rp	n/a cfm/person		
ventilation, ra	0.18 cfm/sf		
pressurization	negative		
exhaust	0.5 cfm/sf general exhaust		
plumbing	n/a		
fire protection	yes - per nfpa		

electrical

power	none
phone/data	wireless
audio/video	none
security	general building security, locked gate

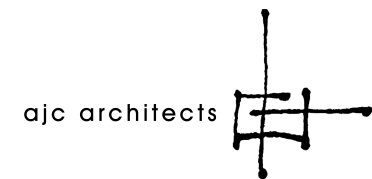
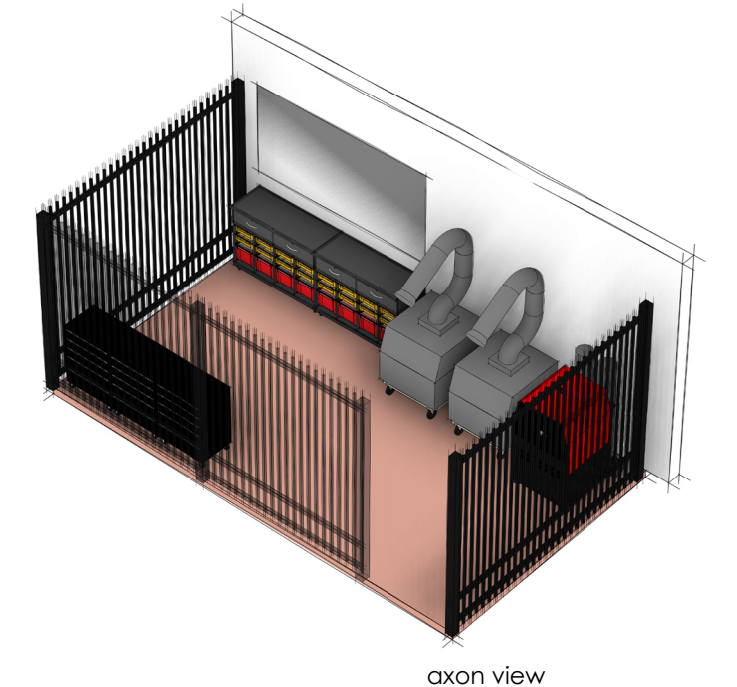
lighting

lighting level	30 fc
lighting control	pir vacancy sensor, manual on/off
fixture type	led, direct



furniture/equipment

- 1 open cage
- 2 mobile welder
- 3 mobile fume extractor
- 4 tool storage unit



b.1.7 welding lab - tool room (200 sf)

trades: welding

b. labs and support storage

b.1.8 welding lab - materials storage

space summary

purpose	storage
function	space to store welding materials
occupancy	--
access	staff and students

adjacency

relationships	fabrication area
connection	direct connection to fabrication area

environment

walls	painted gypsum board
floor	stained concrete floor with resilient base
ceiling type	exposed
ceiling height	10' min. aff
windows	n/a
doors	metal
acoustical/sound	stc 50/ nc 35-40
other	

furniture + equipment

open shelving
cabinets
carts to transport materials

mechanical

summer	75°f	winter	72°f
temperature			
setpoint adjust	no		no
range, idle	+/- 4		+/- 4
setback	85°f		60°f
dewpoint	55°f		38°f

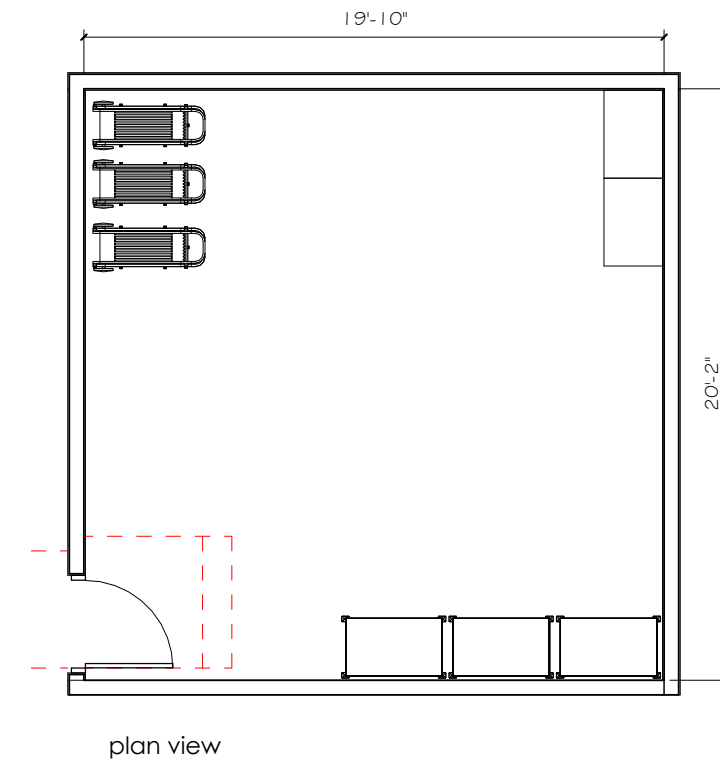
ventilation, rp	0.18cfm/person
ventilation, ra	n/a cfm/sf
pressurization	negative
exhaust	0.5 cfm/sf general exhaust
plumbing	n/a
fire protection	yes - per nfpa

electrical

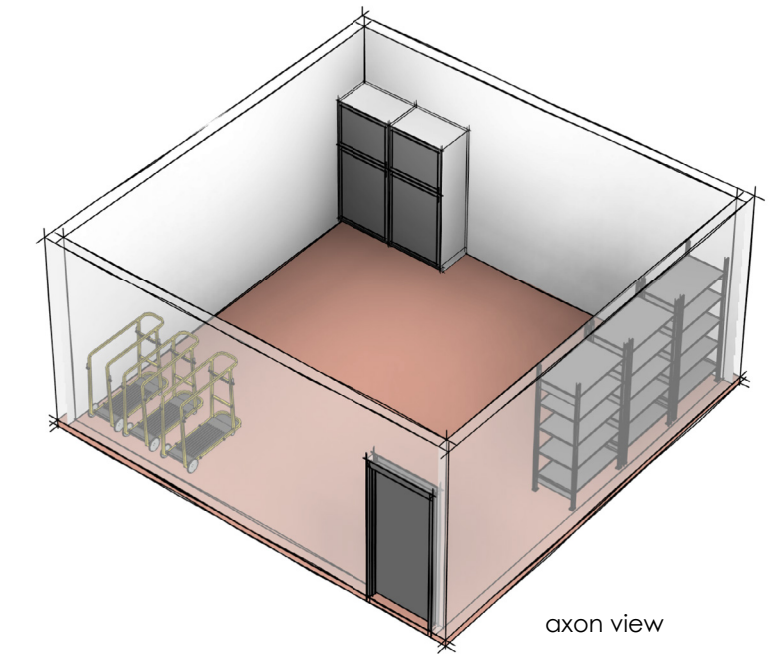
power	duplex outlets @ 12 ft o.c.
phone/data	wireless
audio/video	none
security	general building security

lighting

lighting level	30 fc
lighting control	dual-tech vacancy sensor, manual on/off
fixture type	led, direct



furniture/equipment



b.1.8 welding lab - materials storage (400 sf)



trades: welding

b. labs and support storage

b.1.9 welding lab - cylinder storage

space summary

purpose	storage
function	space to store cylinders
occupancy	--
access	staff and students

adjacency

relationships	fabrication area
connection	direct connection to fabrication area

environment

walls	painted gypsum board
floor	stained concrete floor with resilient base
ceiling type	exposed
ceiling height	10' min. aff
windows	n/a
doors	metal
acoustical/sound	stc 50/ nc 35-40
other	

furniture + equipment

cylinder racks

mechanical

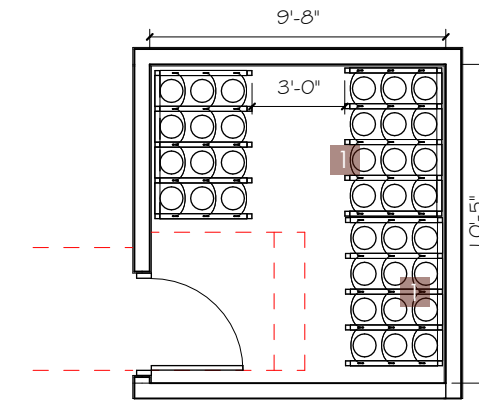
	summer	winter
temperature	75°f	72°f
setpoint adjust	no	no
range, idle	+/- 4	+/- 4
setback	85°f	60°f
dewpoint	55°f	38°f
ventilation, rp	n/a cfm/person	
ventilation, ra	0.18 cfm/sf	
pressurization	negative	
exhaust	0.5 cfm/sf general exhaust	
plumbing	hard piped manifolds - welding oxygen, argon, acetylene	
fire protection	yes - per nfpa	

electrical

power	duplex outlets @ 12 ft o.c.
phone/data	wireless
audio/video	none
security	general building security

lighting

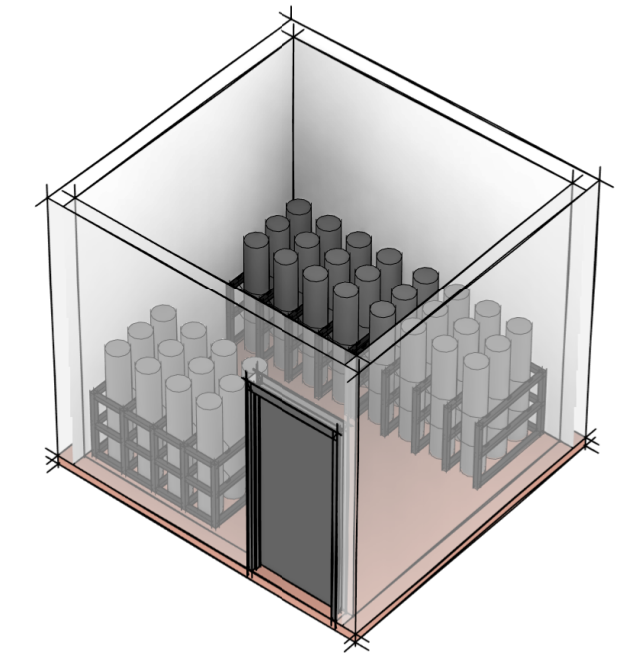
lighting level	30 fc
lighting control	dual-tech vacancy sensor, manual on/off
fixture type	led, direct



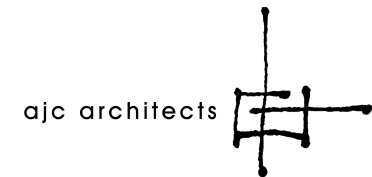
plan view

furniture/equipment

- 1 cylinder storage rack



axon view



b.1.9 welding labs — cylinder storage (100 sf)