Modern Industrial Welding School Design Guide



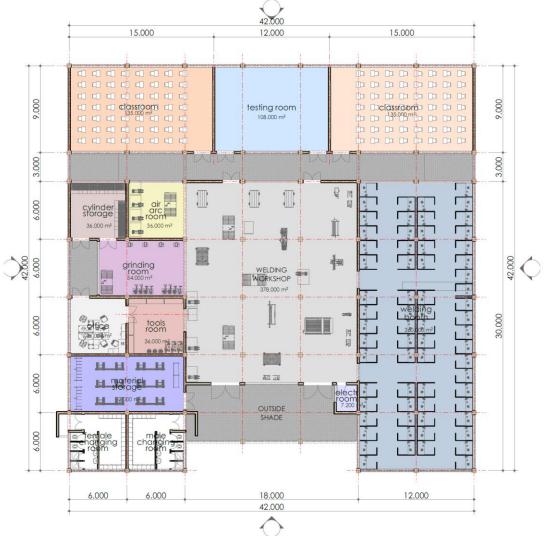
Welding School Centers of Excellence



GFP International is a proud member of the American Welding Society







Example of a 60-booth modern welding school

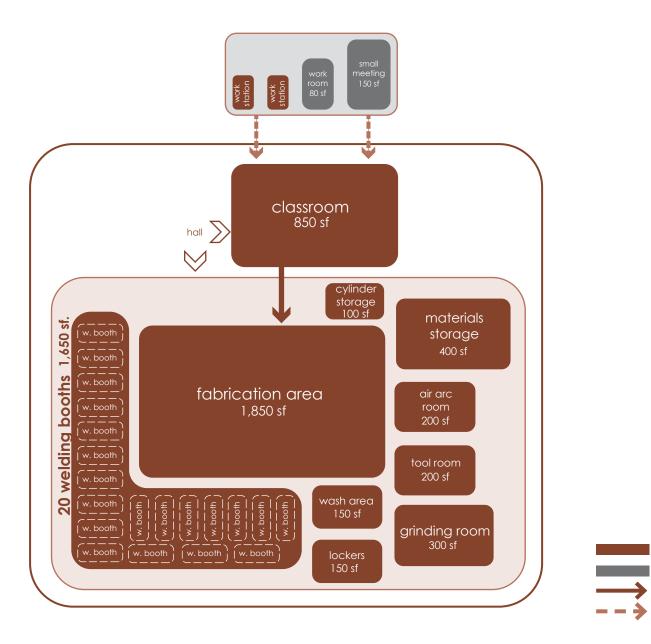
The following design guide information was provided courtesy of Jill Jones Architects, Salt Lake City, Utah, USA

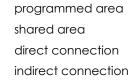
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frades -	welding					, i
space	space name	occ.	sf/occ.	size (sf)	quantity	total nsf
a.	classrooms					
a.1	welding	25	34	850	1	850
b.	labs and support storage					
b.1.1	welding lab - welding booths			1,650	1	1,650
b.1.2	welding lab - fabrication area			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
с.	offices-workstations-touchdowns-office support					
c.1	welding	1	36	36	2	72
	·			departm	ent total:	5,922 sf







a. classroom

a.1 welding classroom

space summary		mechanical	summer
purpose	flat floored classroom with flexible seating	temperature	75°f
function	lecture/instruction	setpoint adjust	yes
occupancy	25 people	range, idle	+/- 4
access	staff and students	setback	85°f
		dewpoint	55°f
adjacency		ventilation, rp	10 cfm/person
relationships	fabrication area	ventilation, ra	0.12 cfm/sf
connection	direct connection to fabrication area	pressurization	postive
		exhaust	n/a
environment		plumbing	n/a
walls	painted gypsum board	fire protection	yes - per nfpa
floor	carpet with rubber base		
ceiling type	lay-in acoustic tile	electrical	
ceiling height	10' min. aff	power	power @ studer
windows	storefront glazing		teacher station,
doors	storefront door with vision glazing	phone/data	hard wired to al
acoustical/sound	stc 50 / nc 30-35	audio/video	projector and so
other		security	general building

furniture + equipment

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flexible desks and (24) chairs laptop cart white boards

lighting lighting level lighting control

40 fc dual-tech vacancy sensors, manual on/off with dimming and presets for scene control

fixture type

ents stations, quad @ on, duplexes @ 10 ft o.c. al stations + wireless I screen with speakers general building security

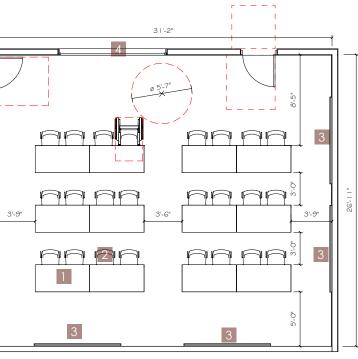
winter

72°f

yes +/- 4 60°f

38°f

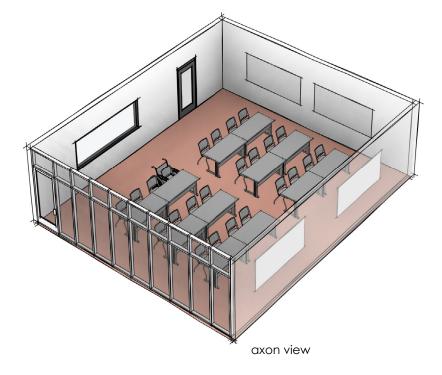
led, indirect or direct



plan view

furniture/equipment

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



a.1 welding classroom (850 sf)

b. labs and support storage

b.1.1 welding lab - welding booths

space summary

purpose function

occupancy

access staff and

adjacency

relationships connection

environment

walls floor ceiling type ceiling height windows doors

acoustical/sound other

> furniture + equipment

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training and teaching room practical experience training with hands-on learning equipment staff and students	
fabrication area arranged around fabrication area	
painted gypsum board stained concrete flooring with resilient base exposed duct-work 20' min. aff storefront glazing metal stc 55 -60/ nc 50-55	
(20) welding booths (1) booth to be ada height	

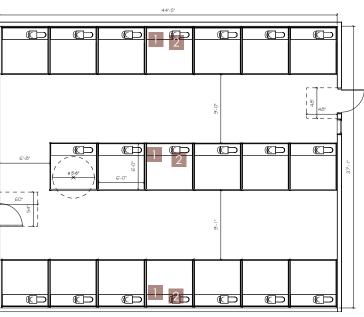
mechanical	summer	winter	
temperature	75°f	72°f	
setpoint adjust	yes	yes	
range, idle	+/- 4	+/- 4	
setback	85°f	60°f	
dewpoint	55°f	38°f	
ventilation, rp	10 cfm/person		
ventilation, ra	0.18 cfm/sf		
pressurization	negative		
exhaust	0.5 cfm/sf general exhaust, plus welding booth filtration exhaust system		
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 equipr on non-equipme	ment, duplex outlets ent walls	
phone/data	hardwired and v	wireless	
audio/video	none		
security	general building	security	
lighting	40.50 %		
lighting level	40-50 fc	a al a ff diama conta a chi	
lighting control	ntrol manual on, timed off through relay		

fixture type

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

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plan view

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axon view

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

furniture/equipment

1 welding surface

2 fume extractor

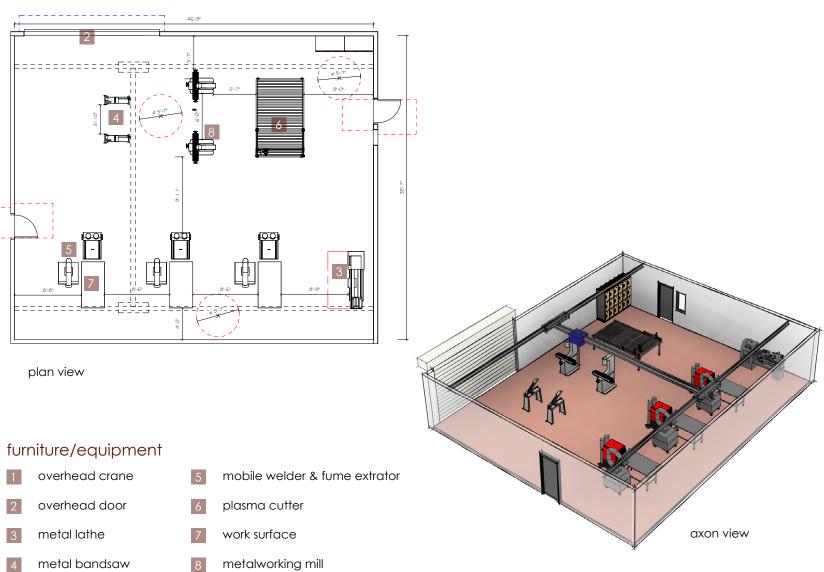
b. labs and support storage

b.1.2 welding lab - fabrication area

space summary		mechanical	summer	winter
purpose	training and teaching room	temperature	75°f	72°f
function	practical experience training with hands-on	setpoint adjust	yes	yes
	learning equipment	range, idle	+/- 4	+/- 4
occupancy		setback	85°f	60°f
access	staff and students	dewpoint	55°f	38°f
		ventilation, rp	10 cfm/person	
adjacency		ventilation, ra	0.18 cfm/sf	
relationships	classroom, welding booths	pressurization	negative	
connection	direct connection to classroom	exhaust	0.5 cfm/sf gene	eral exhaust, plus local
			source capture e	xhaust
environment		plumbing	compressed air	and water drops
walls	painted gypsum board	fire protection	yes - per nfpa	
floor	stained concrete flooring with resilient base			
ceiling type	exposed duct-work	electrical		
ceiling height	20' min. aff	power	power to suppo	rt lab equipment,
windows	n/a		duplex outlets @	10 ft o.c.
doors	metal	phone/data	hardwired and	wireless
acoustical/sound	stc 55 -60/ nc 50-55	audio/video	none	
other		security	general building	g security
				- · ·
furniture +	overhead crane	lighting		
equipment	large overhead door	lighting level	40-50 fc	
	various welding tools for fabrication	lighting control		ned off through relay,
Ţ			with dimming	ied on moogh relay,
		fixture type	led, high-bay, to	ask-lighting at welding
ajc architects			booths	
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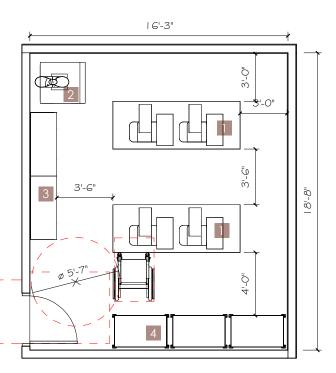
b.1.2 welding labs — fabrication area (1,850 sf)

b. labs and support storage

b.1.3 welding lab - grinding room

space summary		mechanical	summer	winter
purpose	training and teaching room	temperature	75°f	72°f
function	practical experience training with hands-on	setpoint adjust	yes	yes
	learning equipment	range, idle	+/- 4	+/- 4
occupancy		setback	85°f	60°f
access	staff and students	dewpoint	55°f	38°f
		ventilation, rp	10 cfm/person	
adjacency		ventilation, ra	0.18 cfm/sf	
relationships	fabrication area	pressurization	negative	
connection	direct connection to fabrication area	exhaust	0.5 cfm/sf gen	eral exhaust, plus local
			source capture e	exhaust
environment		plumbing	compressed ai	r and water drops
walls	painted gypsum board	fire protection	yes - per nfpa	
floor	stained concrete floor with resilient base			
ceiling type	exposed duct-work	electrical		
ceiling height	12' min. aff	power	power to supp	ort lab equipment,
windows	n/a		duplex outlets	@ 10 ft o.c.
doors	metal	phone/data	hardwired and	wireless
acoustical/sound	stc 55 -60/ nc 50-55	audio/video	none	
other		security	general buildir	ig security
furniture +	(2) long work tables	lighting		
equipment	grinders	lighting level	40-50 fc	
	tool chests and shelving	lighting control		ancy sensors, manual
ł		0 0 1 1	on/off with dim	,
		fixture type	led, high-bay,	task-lighting at welding
•	1		booths	
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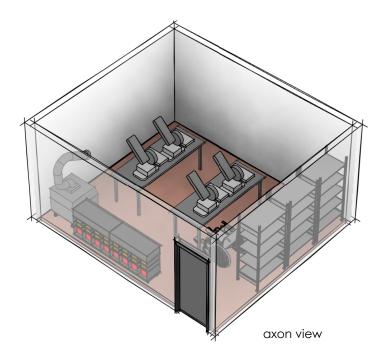


plan view

furniture/equipment

1 table top belt grinders

- 2 fume extrctor
- 3 tool chest
- 4 shelving/storage



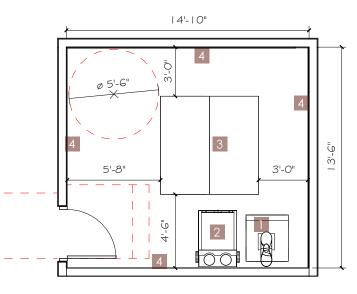
b.1.3 welding labs — grinding room (300 sf)

b. labs and support storage

b.1.4 welding lab - air arc room

space summary		mechanical	summer	winter
purpose	training and teaching room	temperature	75°f	72°f
function	practical experience training with hands-on	setpoint adjust	yes	yes
	learning equipment	range, idle	+/- 4	+/- 4
occupancy		setback	85°f	60°f
access	staff and students	dewpoint	55°f	38°f
		ventilation, rp	10 cfm/person	
adjacency		ventilation, ra	0.18 cfm/sf	
relationships	fabrication area	pressurization	negative	
connection	direct connection to fabrication area	exhaust	0.5 cfm/sf gene	eral exhaust, plus local
			source capture e	exhaust
environment		plumbing	compressed air	r and water drops
walls	plywood	fire protection	yes - per nfpa	
floor	stained concrete floor with resilient base			
ceiling type	exposed duct-work	electrical		
ceiling height	10' min. aff	power	power to suppo	ort lab equipment,
windows	n/a		duplex outlets @	@ 10 ft o.c. along walls
doors	metal	phone/data	hardwired and	wireless
acoustical/sound	stc 55 -60/ nc 50-55	audio/video	none	
other		security	general building	g security
furniture +	(2) work tables	lighting		
equipment	various welding tools	lighting level	40-50 fc	
		lighting control		ancy sensors, manual
1		0 0	on/off with dim	
		fixture type	led, direct	
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furniture/equipment1fume extractor2air arc welder3work table4plywood sheathing wall cover



plan view

axon view

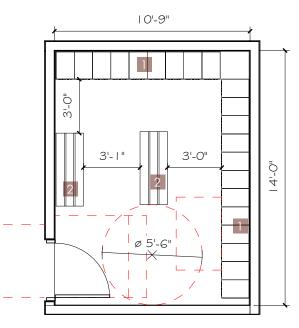
b.1.4 welding labs — air arc room (200 sf)

b. labs and support storage

b.1.5 welding lab - locker and changing

space summary		mechanical	summer	winter
purpose	locker room	temperature	75°f	72°f
function	area for students to change and store	setpoint adjust	no	no
	personal belongings	range, idle	+/- 4	+/- 4
occupancy		setback	85°f	60°f
access	staff and students	dewpoint	55°f	38°f
		ventilation, rp	n/a cfm/perso	n
adjacency		ventilation, ra	n/a cfm/sf	
relationships	fabrication area, classroom	pressurization	negative	
connection	direct connection to fabrication area	exhaust	0.25 cfm/sf gene	ral exhaust
		plumbing	n/a	
environment		fire protection	yes - per nfpa	
walls	painted gypsum board			
floor	stained concrete with cove base	electrical		
ceiling type	lay-in acoustic tile	power	duplex outlets	@ 10 ft o.c.
ceiling height	10' min. aff	phone/data	hardwired and	wireless
windows	n/a	audio/video	none	
doors	metal	security	general buildir	g security
acoustical/sound	stc 50/ nc 35-40			
other		lighting		
		lighting level	30 fc	
furniture +	lockers	lighting control	dual-tech vad	cancy sensor.
equipment	benches		on/off	
_		fixture type	led, direct	
			•	
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nsor, manual

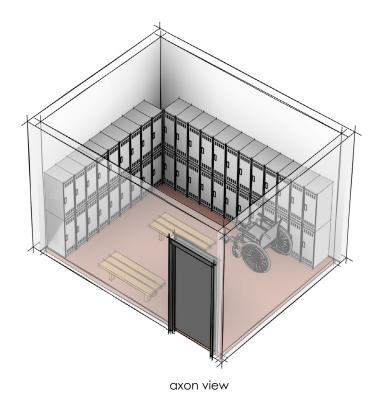


plan view

furniture/equipment

1 metal lockers

2 changing bench



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

b. labs and support storage

b.1.6 welding lab - wash area

wash area

space summary

purpose
function
occupancy
access

adjacency

relationships connection

environment

walls floor ceiling type ceiling height windows doors acoustical/sound other

furniture + equipment

area for students to wash hands and tools
staff and students
lockers and changing, fabrication area
direct connection to lockers and changing
painted gypsum board and tile
stained concrete with cove base
lay-in acoustic tile
10' min. aff
n/a
metal
stc 50/ nc 35-40
(3) hand wash utility sinks (1) to be ada

(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 genero	al exhaust
plumbing	scrub sinks and f	100r sink
fire protection	yes - per nfpa	

electrical

phone/data audio/video security

lighting

power

lighting level lighting control

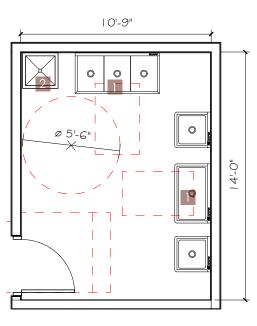
fixture type

gfci duplex outlets @ 10 ft o.c. along walls wireless none general building security

30 fc dual-tech vacancy sensor, manual on/off led, direct

1 sink

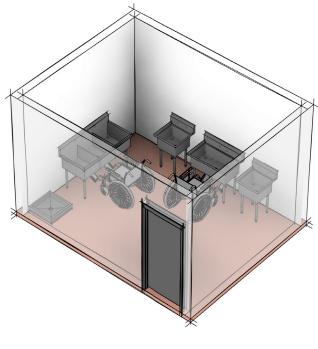
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plan view

furniture/equipment

2 mop sink



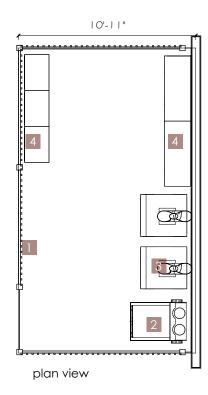
axon view

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

b. labs and support storage

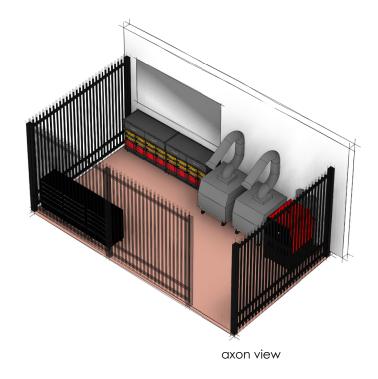
b.1.7 welding lab - tool room

space summary		mechanical	summer	winter
purpose	storage	temperature	75°f	72°f
function	open cage storage for students tools	setpoint adjust	no	no
occupancy		range, idle	+/- 4	+/- 4
access	staff and students	setback	85°f	60°f
		dewpoint	55°f	38°f
adjacency		ventilation, rp	n/a cfm/person	I
relationships	fabrication area	ventilation, ra	0.18 cfm/sf	
connection	direct connection to fabrication area	pressurization	negative	
		exhaust	0.5 cfm/sf genera	l exhaust
environment		plumbing	n/a	
walls	caged	fire protection	yes - per nfpa	
floor	stained concrete flooring with resilient base			
ceiling type	exposed	electrical		
ceiling height	10' min. aff	power	none	
windows	n/a	phone/data	wireless	
doors	caged/metal	audio/video	none	
acoustical/sound	stc n/a	security	general building security, locked gate	
other				
		lighting		
furniture +	toolboxes	lighting level	30 fc	
equipment	extra welding equipment	lighting control	pir vacancy ser	nsor, manual on/off
		fixture type	led, direct	
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furniture/equipment

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

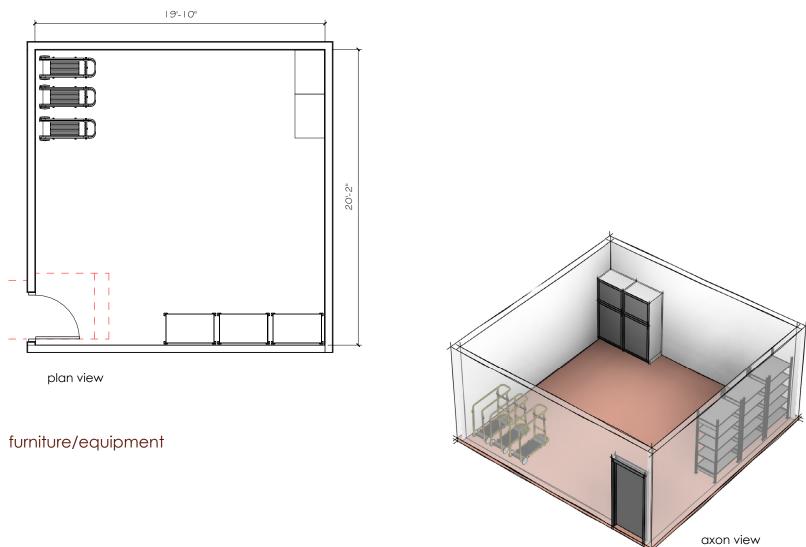


b.1.7 welding lab - tool room (200 sf)

b. labs and support storage

b.1.8 welding lab - materials storage

space summary		mechanical	summer	winter
purpose	storage	temperature	75°f	72°f
function	space to store welding materials	setpoint adjust	no	no
occupancy		range, idle	+/- 4	+/- 4
access	staff and students	setback	85°f	60°f
		dewpoint	55°f	38°f
adjacency		ventilation, rp	0.18cfm/person	
relationships	fabrication area	ventilation, ra	n/a cfm/sf	
connection	direct connection to fabrication area	pressurization	negative	
		exhaust	0.5 cfm/sf genera	l exhaust
environment		plumbing	n/a	
walls	painted gypsum board	fire protection	yes - per nfpa	
floor	stained concrete floor with resilient base			
ceiling type	exposed	electrical		
ceiling height	10' min. aff	power	duplex outlets @ 12 ft o.c.	
windows	n/a	phone/data	wireless	
doors	metal	audio/video	none	
acoustical/sound	stc 50/ nc 35-40	security	general building security	
other		,		, , ,
		lighting		
furniture +	open shelving	lighting level	30 fc	
equipment	cabinets	lighting control		ancy sensor, manual
	carts to transport materials	lighting control	on/off	ancy sensor, mandar
		fixture type	led, direct	
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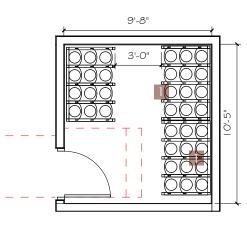


b.1.8 welding lab - materials storage (400 sf)

b. labs and support storage

b.1.9 welding lab - cylinder storage

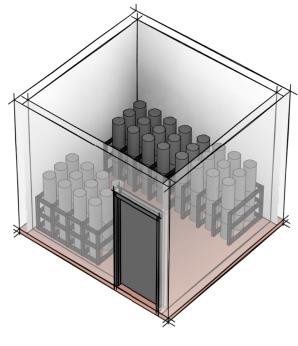
space summary		mechanical	summer	winter	
purpose	storage	temperature	75°f	72°f	
function	space to store cylinders	setpoint adjust	no	no	
occupancy		range, idle	+/- 4	+/- 4	
access	staff and students	setback	85°f	60°f	
		dewpoint	55°f	38°f	
adjacency		ventilation, rp	n/a cfm/perso	on	
relationships	fabrication area	ventilation, ra	0.18 cfm/sf		
connection	direct connection to fabrication area	pressurization	negative		
		exhaust	0.5 cfm/sf gene	ral exhaust	
environment		plumbing	hard piped	manifolds - welding	
walls	painted gypsum board		oxygen, argor	n, acetylene	
floor	stained concrete floor with resilient base	fire protection	yes - per nfpa		
ceiling type	exposed				
ceiling height	10' min. aff	electrical			
windows	n/a	power	duplex outlets @ 12 ft o.c.		
doors	metal	phone/data	wireless		
acoustical/sound	stc 50/ nc 35-40	audio/video	none		
other		security	general building security		
furniture +	cylinder racks	lighting			
equipment		lighting level	30 fc		
		lighting control		cancy sensor, manual	
		0 0	on/off		
Ţ		fixture type	led, direct		
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plan view

furniture/equipment

1 cylinder storage rack



axon view

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