BIG FLOOR PLANS · SAMPLE TEACHING PLAN · TEACHER GUIDE

BFP-TP-02 The Trades Bay

CTE / construction shop · blueprint reading, layout, takeoffs, rough-in

A teaching shop zoned by process - receive, stage, lay out, machine, finish - with a table saw that has real infeed and outfeed, floor-marked walk lanes at two different widths, a glazed CAD classroom looking onto the floor, a tool crib, an accessible restroom and a freestanding 20'-0" training wall framed at 16 inches on centre.

Best for: Construction trades, blueprint reading, estimating and takeoffs, electrical and plumbing rough-in, NCCER Core and HBI PACT pathways.

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House rule on any printed floor: walk only, measure kneeling, no running or racing. The rule is printed on the border of the full-size file.

What is in this file, and which page you actually need

This single PDF is the whole plan set. Ninety percent of teachers need exactly two pages: the **Letter teaching sheet** to project or photocopy, and the **Letter worksheet sheet** (same drawing, no dimensions) to hand out. Everything after those is for printing bigger. **Print by page number** — do not send the whole file to a copier, because the poster and full-size pages are much larger than letter paper and will come out shrunk.

Page	What it is	Use it for
1-6	**Teacher Guide** (this document)	Read first. Every room measured, the answer key, the checks, the field card.
7	Letter teaching sheet (grid, axes, dimensions, areas)	Project this one. It is your answer key.
8	Letter worksheet sheet (same drawing, nothing labelled)	Photocopy this one and hand it out. The students measure.
9	Letter clean sheet (plain architectural drawing)	Blueprint reading and CTE: a real drawing, not a worksheet.
10	Tabloid 11 x 17 teaching	Group work: dimensions a table of four can actually read.
11	Tabloid 11 x 17 worksheet	Group work: dimensions a table of four can actually read.
12	Tabloid 11 x 17 clean	Group work: dimensions a table of four can actually read.
13	ARCH D 24 x 36 poster (teaching)	Engineering print at Staples or FedEx Office, a few dollars.
14	ARCH E 36 x 48 poster (teaching)	The biggest sheet a normal print shop runs flat.
15	FULL SIZE teaching edition, drawn at 1:4	Send to a wide-format shop and ask for 400%. Check the 12-inch square.
16	FULL SIZE teaching, /UserUnit twin	Opens at true 1:1 in Acrobat and MuPDF only.
17	FULL SIZE clean edition, drawn at 1:4	Send to a wide-format shop and ask for 400%. Check the 12-inch square.
18	FULL SIZE clean, /UserUnit twin	Opens at true 1:1 in Acrobat and MuPDF only.

The CAD file is attached to this PDF. BFP-TP-02-clean.dxf — AutoCAD DXF R2000, inches, AIA layers — travels inside this file as a standard PDF attachment rather than as a separate download. Open this PDF in Adobe Acrobat Reader and click the paperclip in the left sidebar to save the DXF wherever you want it; Firefox lists it under the attachments tab of its sidebar. The PDF viewer built into Chrome does not show attachments at all, so download this file and open it in a reader rather than working from a browser tab.

How to print it, and what it costs

Size	Pages to send	Scale	Where	Typical cost
Letter 8.5 x 11	7	auto (stated on the sheet)	school copier	pennies; B&W is fine (the drawing is line-only)
Tabloid 11 x 17	10	auto	most school copiers	pennies
ARCH D 24 x 36	13	auto (3/8" or 1/2" = 1 ft)	Staples / FedEx Office engineering print	about $4.50 B&W at Staples list price ($0.75/sq ft)
ARCH E 36 x 48	14	auto (1/2" or 3/4" = 1 ft)	Staples / FedEx Office	about $9.00 B&W at Staples list price
FULL SIZE 40'-0" x 30'-0"	15	1:1 on the floor	Big Floor Plans (bigfloorplans.com/calculator)	priced on the printed sheet at $0.45/sq ft ($100 minimum), confirmed after file review; shipping quoted separately. Ships folded with lawn staples and a mallet

Read the full-size price carefully. The building footprint is 40'-0" x 30'-0" = 1,200 sq ft, but a printed floor is charged on the **sheet**, not the footprint. The teaching sheet carries the numbered grid margin (and any outdoor area drawn beyond the walls), so it measures 43'-4" x 36'-4" = 1,574 sq ft. The clean edition has no grid margin and measures 43'-4" x 35'-10" = 1,553 sq ft — only a little cheaper, so choose the edition you actually want to teach on, not the one that shaves a few dollars. The published rate is $0.45 per printed square foot with a $100 minimum. A sheet this size is produced in panels, so the final figure and the shipping are confirmed after file review. Send the PDF and get a firm number at bigfloorplans.com/calculator before you raise a purchase order.

Do not try to print the full-size pages on a school copier: at letter size the floor would be roughly 2,304 sheets. Tape one room out instead (field card below), or order the print.

Every room, measured (answer key)

Dimensions are **clear** (inside face of wall to inside face of wall). Coordinates are feet-and-inches from the **origin** at the inside south-west corner — the orange dot on the teaching edition. Walls are drawn at schematic thickness (0'-6" exterior, 0'-4" interior); this is not a framing detail.

Room	Clear size	Area	Perim.	Diag.	SW corner (x, y)	Why it is here
Restroom	8'-0" x 6'-0"	48 SF	28'-0"	10'-0"	(0'-0", 0'-0")	8 x 6: accessible, the 60" circle fits
Tool Crib	8'-0" x 7'-4"	58.7 SF	30'-8"	10'-10 1/4"	(0'-0", 6'-4")	
CAD Classroom	8'-0" x 15'-0"	120 SF	46'-0"	17'-0"	(0'-0", 14'-0")	8 x 15: diagonal exactly 17'-0" (8-15-17)
Shop Floor	30'-0" x 29'-0"	870 SF	118'-0"	41'-8 3/4"	(9'-0", 0'-0")	30 x 29 = 870 SF; two walk lanes, one compliant and one not

Gross footprint: 40'-0" x 30'-0" = 1,200 SF. **Sum of clear room areas inside the walls:** 1096.7 SF. **Walls and the corner mass:** 103.3 SF = 8.6% of the footprint. That percentage is a real 7.RP.A.3 problem, and the reason a "1,200 SF house" never has 1,200 SF of rooms.

What was engineered into it

1. Footprint 40'-0" x 30'-0": diagonal exactly 50'-0" (3-4-5 x 10). The first thing a framer does on a slab is check square with this triangle. **NCCER 00102, CCSS 8.G.B.7**
2. A freestanding 20'-0" training wall drawn stud-by-stud at 16" on centre: 15 spaces + 1 = 16 studs. A student who confuses on-centre with clear span lands a stud in the wrong place over a full sheet break, visibly. **HBI PACT Carpentry, NCCER 27111**
3. A 16-foot layout line marked in 16-inch increments (12 marks). 192 inches / 16 = 12 - the arithmetic every sheet-goods layout depends on. **NCCER 00102**
4. The table saw is drawn with 11'-6" of infeed and 14'-6" of outfeed on its rip axis, and the path between them is marked KEEP CLEAR. A saw that cannot take an eight-foot board is a saw nobody can use. Machine clearance is layout, not furniture - measure the run before you place the tool. **OSHA 1910.213; NCCER 27102**
5. Two walk lanes are marked at different widths: one at 36 inches and one at 18. The 36-inch lane is an accessible route. The 18-inch lane is DELIBERATELY too narrow - find it, measure it, and say exactly which rule it fails and by how much. **2010 ADA Standards 403.5.1**
6. The service panel carries its NEC 110.26 working space: 36" deep x 30" wide, drawn on the floor so students can stand in it - and find what is stored there. **NEC 110.26(A)**
7. The CAD classroom is 8 x 15 - diagonal exactly 17'-0" (8-15-17) - and it is glazed to the shop through a 12-inch double-stud sound wall, so the drawing-to-floor comparison is a single glance. **CCSS 8.G.B.7, NCCER 27111**
8. The restroom is a real accessible restroom: 60" turning circle and 36" door both pass, and the water closet holds 21 inches clear in front. **2010 ADA Standards 304.3.1, 404.2.3; IRC R307.1**
9. The shop floor is 30 x 29 = 870 SF. Estimating lessons: flooring at $/SF, wall paint from measured perimeter, drywall sheets at 32 SF each with a waste factor. **CCSS G-MG.A.3, Perkins V**

Doors, and the accessibility checks

The 2010 ADA Standards used here: accessible route **36 in** minimum clear width (403.5.1); door clear opening **32 in** minimum (404.2.3); circular turning space **60 in** diameter (304.3.1); clear floor space **30 x 48 in** (305.3). A door drawn at 30" fails; 32" and 36" pass. This is a clearance study for a lesson, not an accessibility audit or a code review. **Some rows below fail on purpose.** Every failure in this table is real and is stated in its own words - a plan that only ever passes teaches students nothing about what failing looks like.

Check	What the plan shows	Result
Restroom turning space	8'-0" x 6'-0" clear - 60" circle fits	**PASSES**
Restroom door	36" - passes the 32" minimum	**PASSES**
Primary walk lane	36" - meets the accessible route minimum	**PASSES**
Secondary walk lane	18" - DECLARED FAILING EXAMPLE: half the 36" minimum. This one is wrong on purpose.	**FAILS**
Classroom door	36" - passes	**PASSES**

Door schedule: 1 x cased 144", 5 x door 36". Windows: 6.

Tape-It-Out field card: one room at full size in 12 minutes, no print needed

Pick one room from the table (start with a rectangle). You need: a 25-ft tape measure, a chalk line or a second tape, painter's tape or sidewalk chalk, four objects to hold corners, and two students who can read a tape.

1. Choose the surface first (see the warning below). Blacktop with sidewalk chalk is the safest default. A tiled cafeteria or hallway with low-tack painter's tape is next.
2. Mark corner A. Run the tape along your long side and mark corner B at the room's clear length.
3. Square the corner with 3-4-5: from A measure 3 ft along AB and mark; measure 4 ft from A in the direction of the short side and mark; adjust that second mark until the two marks are exactly 5 ft apart. Now the short side is square. (For big rooms use 6-8-10 or 9-12-15.)
4. Mark corner D at the clear width along the squared short side. Mark corner C by measuring the length from D and the width from B; both must agree.
5. Check the diagonal: measure A to C. It must equal the diagonal in the table. If it is off by more than an inch, the rectangle is not square - fix it before you tape.
6. Snap or tape the four sides. Add the door openings from the plan (width from the door schedule).
7. Set the origin: the inside corner nearest the building's south-west is (0, 0) on the teaching edition; label it so coordinate lessons match the handout.
8. Removal: painter's tape the same day; chalk washes off with a hose.

Gym floor warning: painter's tape can lift the finish coat of a maple gym floor and the repair is a sanding and refinish job. Do not tape a gym floor without the athletic director's sign-off; use dry-erase gym-floor markers or white shoe polish there, and remove the same day.

Rooms with a whole-foot diagonal you can verify with one tape pull:

Room	Clear size	Diagonal (predict, then measure)
Restroom	8'-0" x 6'-0"	10'-0"
CAD Classroom	8'-0" x 15'-0"	17'-0"
Whole footprint	40'-0" x 30'-0"	50'-0"

Running a class on the floor: the station map

The teaching edition prints four numbered stations. Rotate 3-4 students per station, 10 minutes each, four rotations in a 45-50 minute period; the rest of the class works the letter worksheet at desks. 12-16 students on the floor at once is the practical maximum on a plan this size.

Station	Task	Room
1	stud layout @ 16" O.C.	Shop Floor
2	takeoff	CAD Classroom
3	panel clearance	Shop Floor
4	ADA restroom	Restroom

Lessons in the free library that use this plan

Code Walk, The Finish Takeoff, The Circuit Walk, The Plumbing Wall, Hang the Board, The Cut List, Roll the Route: ADA Clearance Study, Grid the Bedroom, Scale Detective, Angle Hunt, Volume Builder, The Revision Loop, Walk the Hypotenuse. All 75 lessons: **bigfloorplans.com/lesson-plans** — search by standard code at bigfloorplans.com/lesson-plans-standards.

Standards referenced on this plan

2010 ADA Standards 304.3.1, 2010 ADA Standards 403.5.1, 404.2.3, CCSS 8.G.B.7, CCSS G-MG.A.3, HBI PACT Carpentry, IRC R307.1, NCCER 00102, NCCER 27102, NCCER 27111, NEC 110.26(A), OSHA 1910.213, Perkins V

Credit line (the only condition of the licence)

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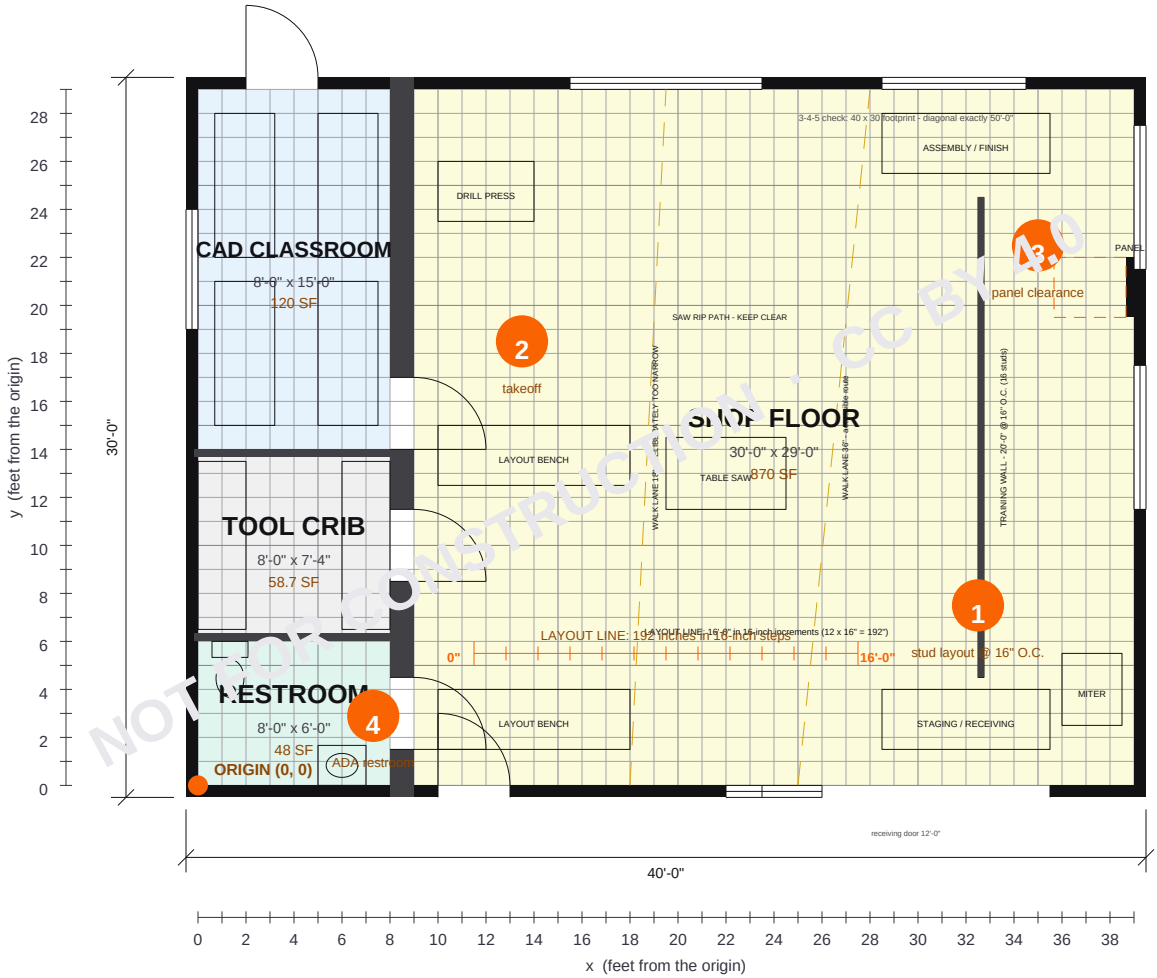
Big Floor Plans prints floor plans at true 1:1 scale for design review and for classrooms. $0.45 per printed square foot, $100 minimum, shipping quoted separately. Questions: estimating@bigfloorplans.com · 937-901-3402.



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BIG FLOOR PLANS · SAMPLE TEACHING PLAN

BFP-TP-02 The Trades Bay

SCALE 1/8"=1'-0" (1:96)

Bar = 1.25 in at 100%

NOT A CONSTRUCTION DOCUMENT

Instructional drawing - not for permitting or building.

TEACHING EDITION (grid, axes, areas)

CTE / construction shop · blueprint reading, layout, takeoffs, rough-in

0 10 ft

12" at scale

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Walk-pace only on a printed floor. No running.

N

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Bar = 1.25 in at 100%

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Instructional drawing - not for permitting or building.

STUDENT WORKSHEET EDITION (grid, axes - no dimensions: you measure)

CTE / construction shop · blueprint reading, layout, takeoffs, rough-in

0 10 ft

12" at scale

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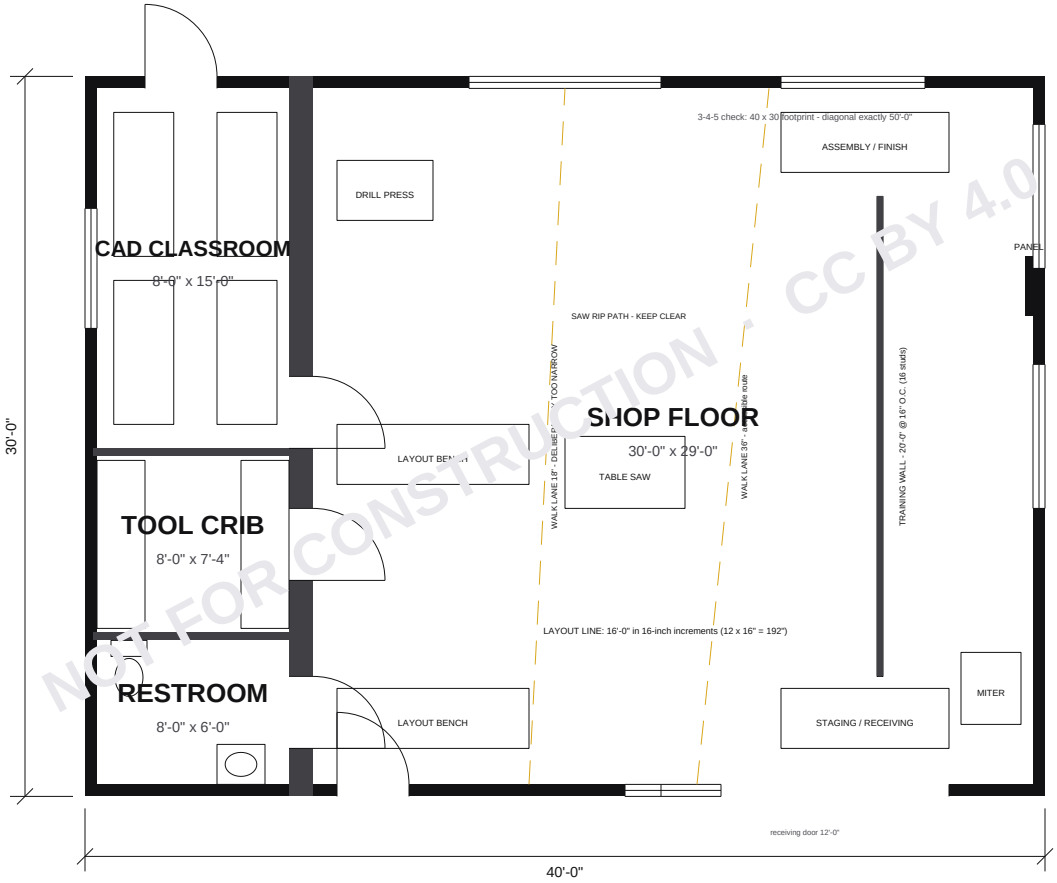

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CLEAN EDITION

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0 10 ft

12" at scale

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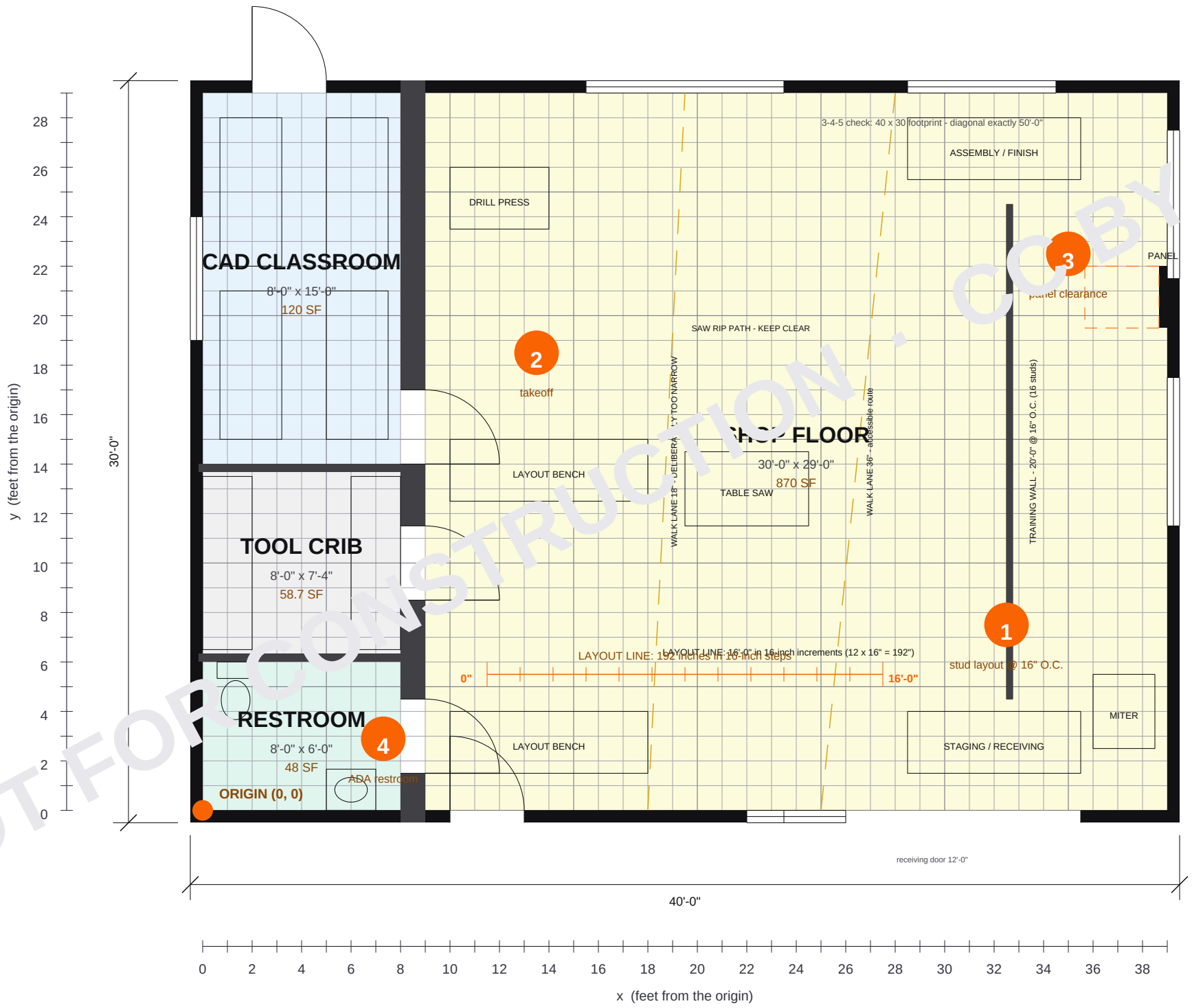

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BIG FLOOR PLANS · SAMPLE TEACHING PLAN

BFP-TP-02 The Trades Bay

SCALE 3/16"=1'-0" (1:64)

Drawn at 1 plan inch = 64 actual inches. The layout above, not measurements, is the teaching content.

NOT A CONSTRUCTION DOCUMENT

Scale bar: 0 – 10 ft · 12" at scale

N

TEACHING EDITION (grid, axes, areas)

CTE / construction shop · blueprint reading, layout, takeoffs, rough-in · footprint 40'-0" x 30'-0" · gross 1,200 SF

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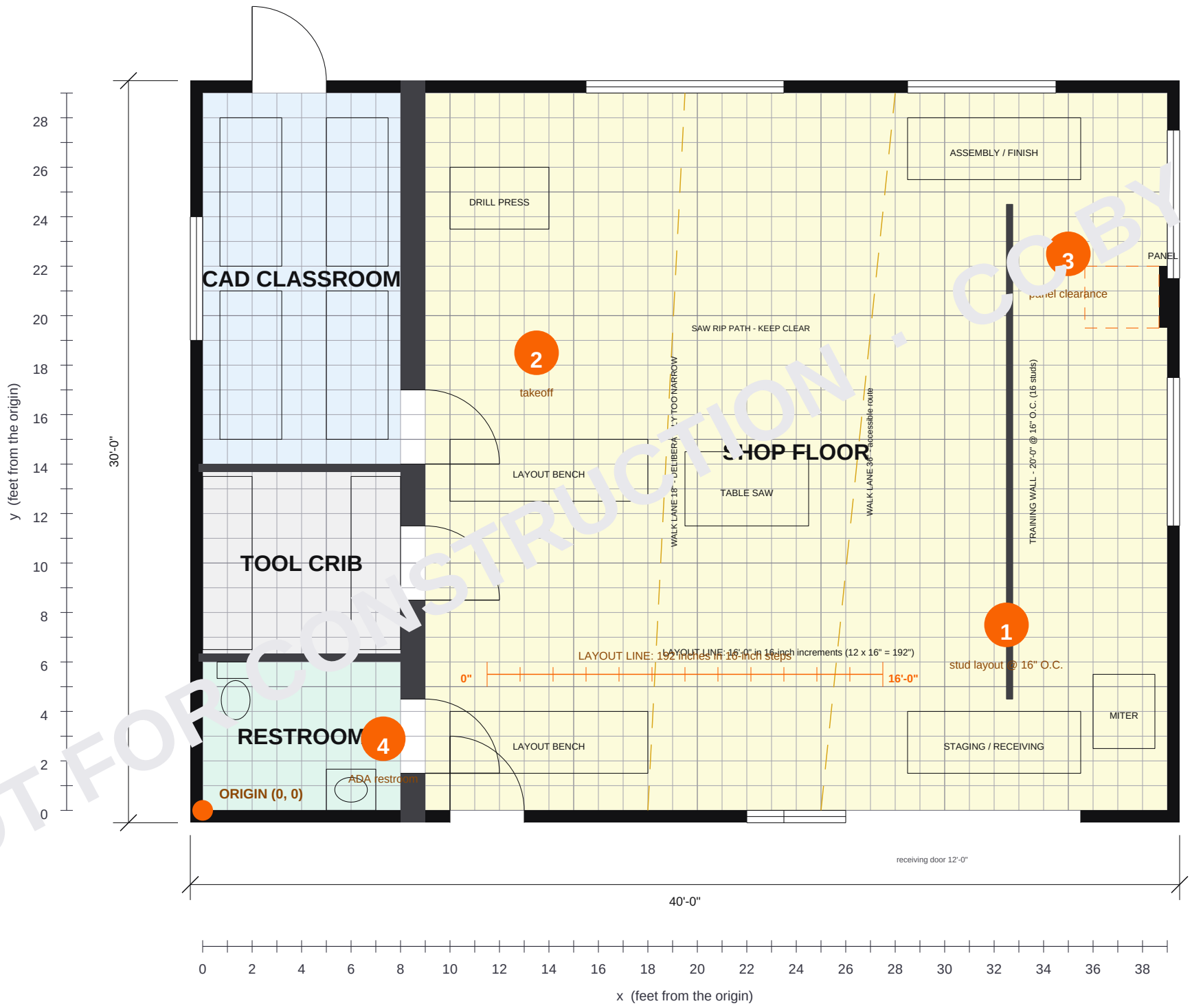
Walk-pace only on a printed floor. No running.



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BIG FLOOR PLANS · SAMPLE TEACHING PLAN

BFP-TP-02 The Trades Bay

SCALE 3/16"=1'-0" (1:64)

Drawn at 1 plan inch = 64 actual inches. The dashed rule above must measure 1.88 in when printed at 100%.

NOT A CONSTRUCTION DOCUMENT

Insulation, drywall, finishes, and structure are not shown. Use for layout practice only.

STUDENT WORKSHEET EDITION (grid, axes - no dimensions: you measure)

CTE / construction shop · blueprint reading, layout, takeoffs, rough-in · footprint 40'-0" x 30'-0" · gross 1,200 SF

0 10 ft 12" at scale

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Walk-pace only on a printed floor. No running.

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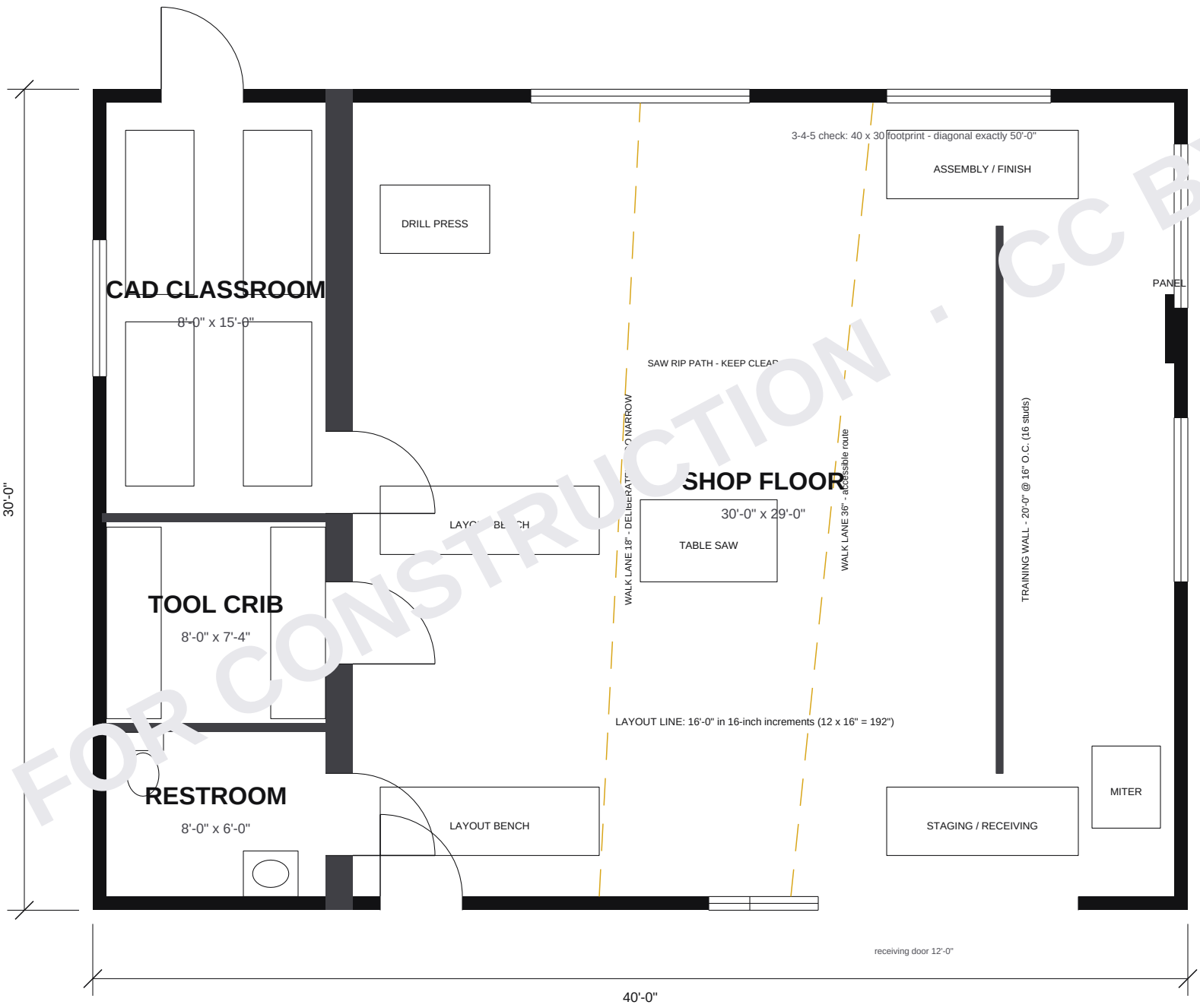

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Drawn at 1 plan inch = 64 actual inches. The layout, not measurements, is to scale.

NOT A CONSTRUCTION DOCUMENT

Insert dimensions. Not stamped, not engineered, not for permitting or building.

0 10 ft

12" at scale

N

CLEAN EDITION

CTE / construction shop · blueprint reading, layout, takeoffs, rough-in · footprint 40'-0" x 30'-0" · gross 1,200 SF

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SCALE 3/8"=1'-0" (1:32)
Drawn at 1 plan inch = 32 sheet inches. The bar above must measure 3.75 in when printed at 100%.

0 — 10 ft
12" at scale

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SCALE 1/2"=1'-0" (1:24)
Drawn at 1 plan inch = 24 sheet inches. The bar above must measure 5 in when printed at 100%.

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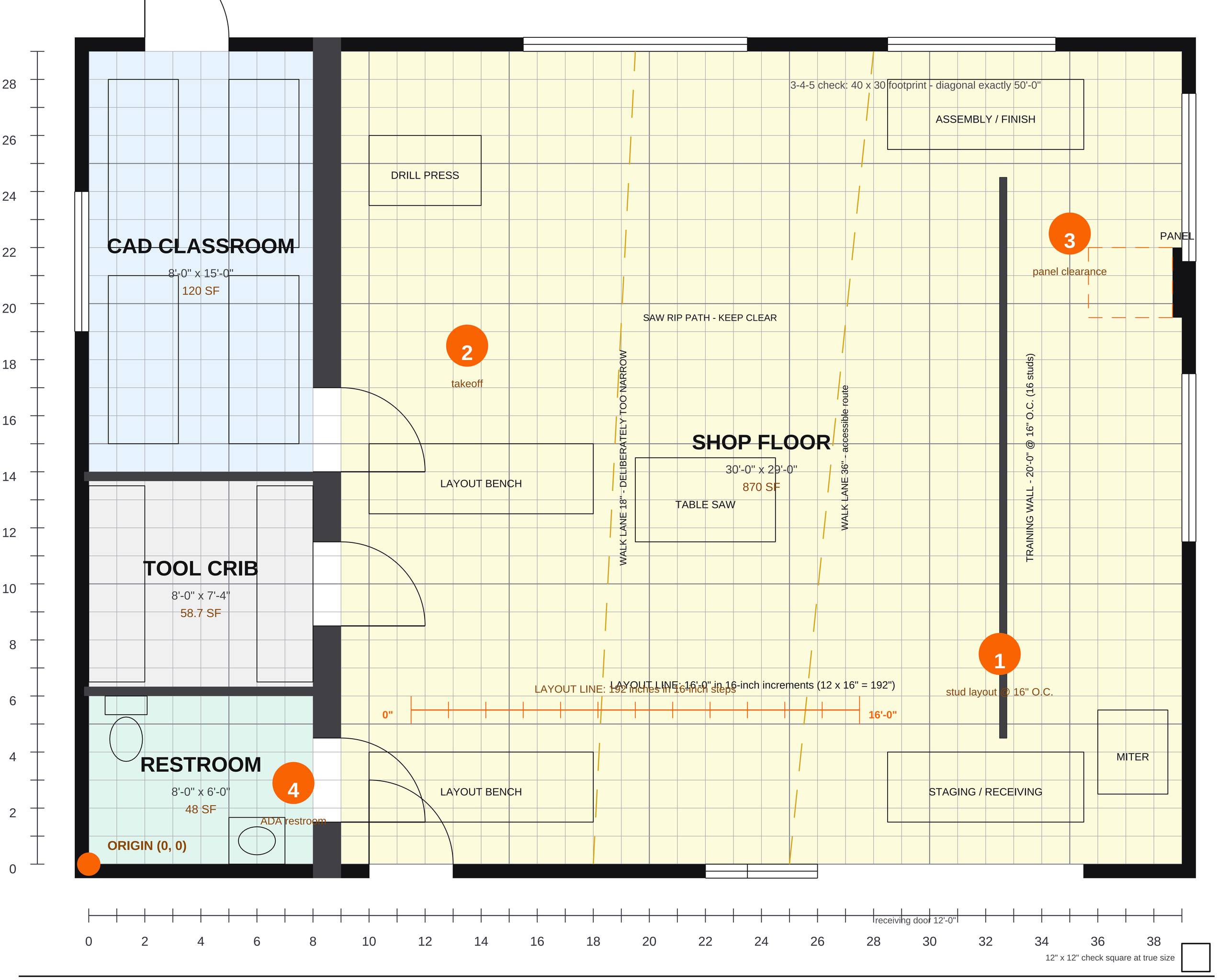

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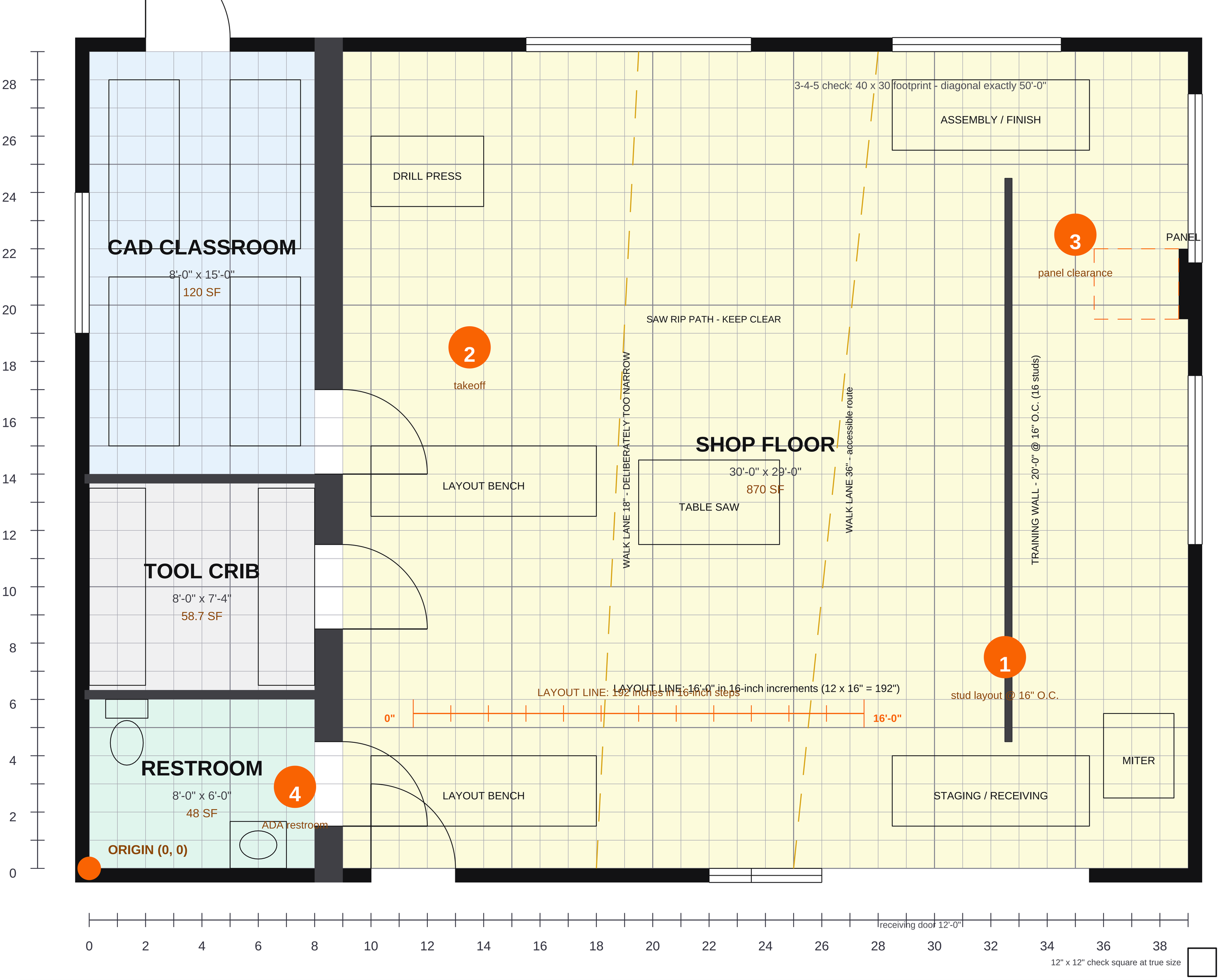

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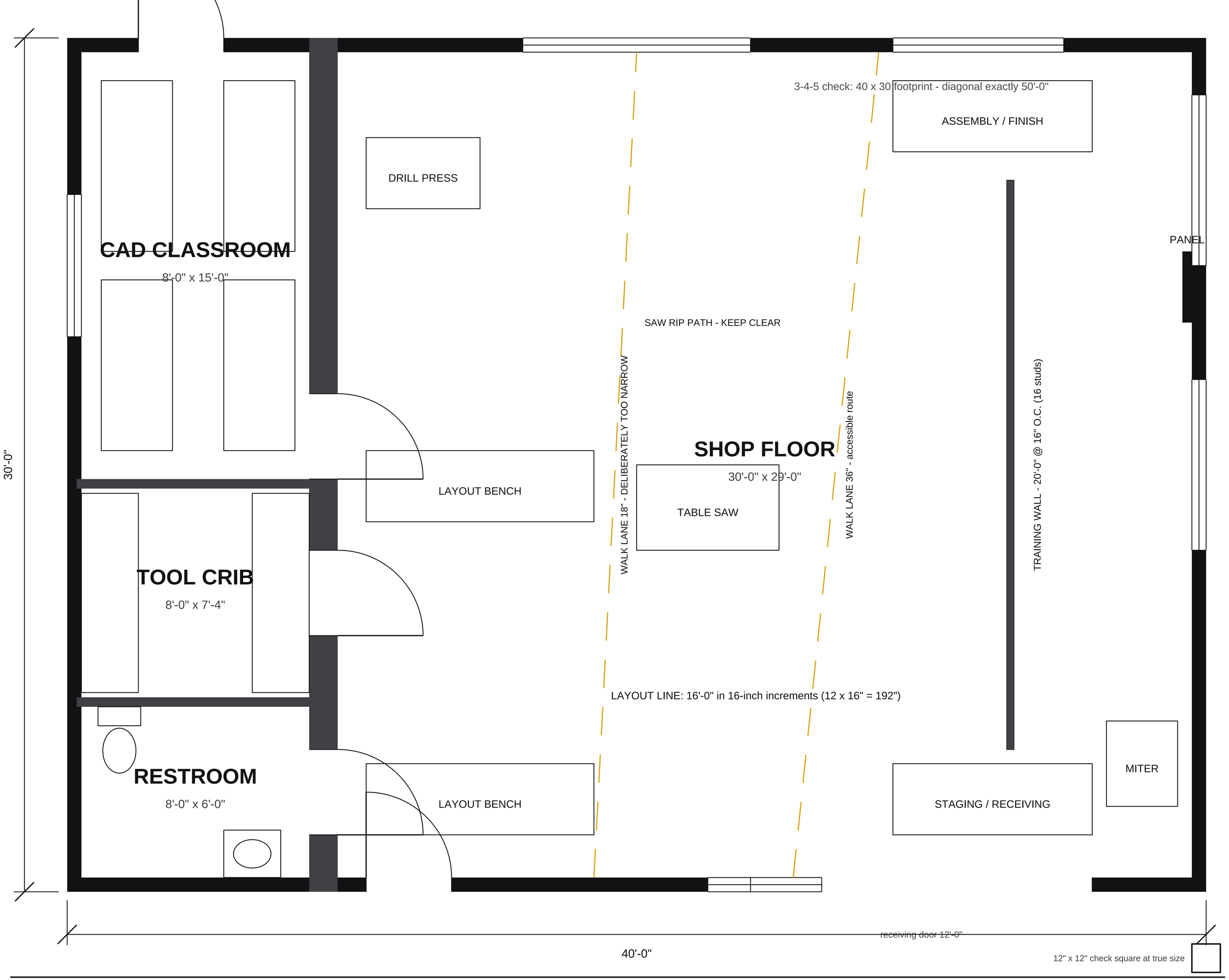

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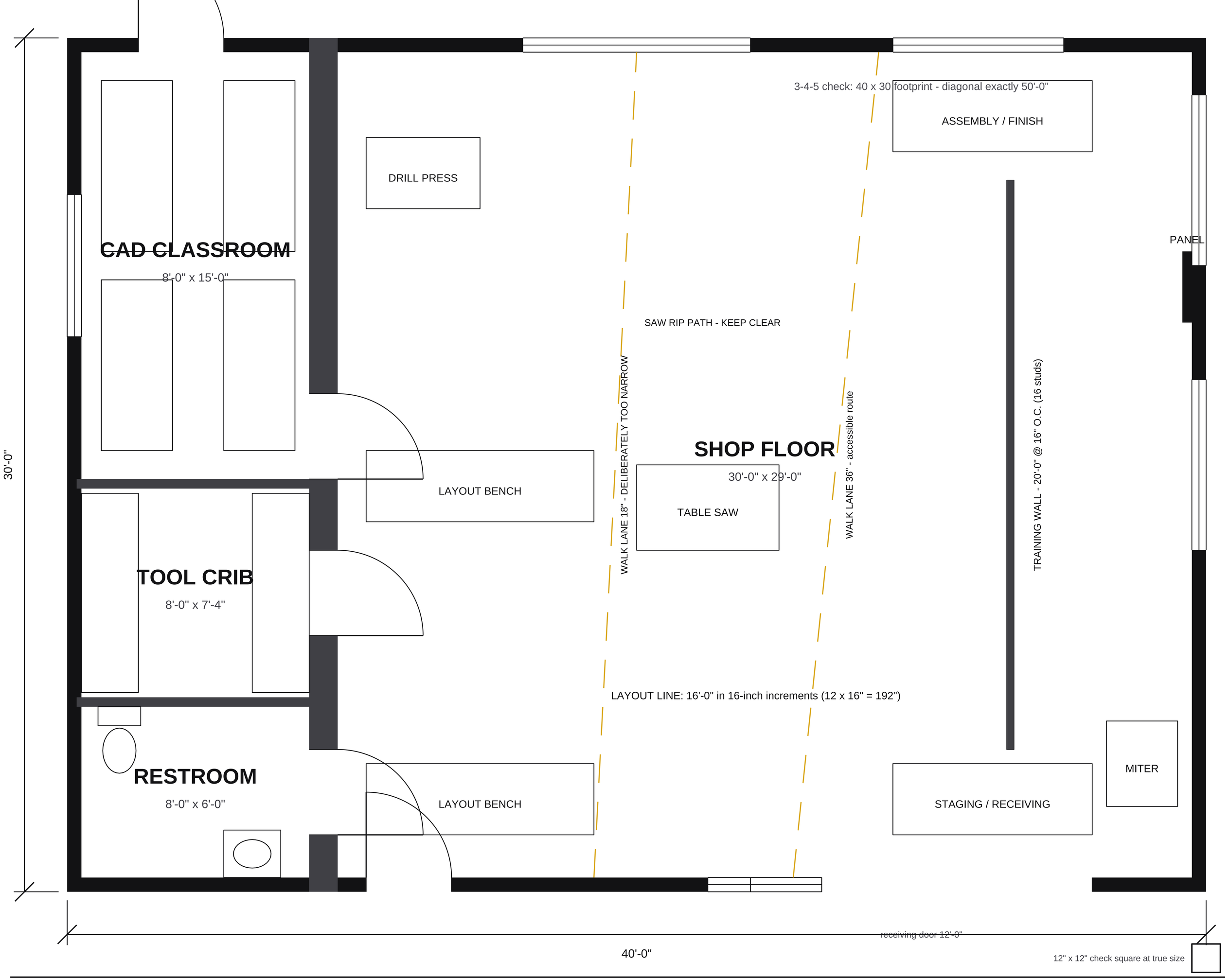

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