BIG FLOOR PLANS · SAMPLE TEACHING PLAN · TEACHER GUIDE

BFP-TP-04 The Tiny House

Tiny house on a trailer · the cheapest complete building to print

An 8'-6" x 24'-0" tiny house (204 SF, the road-legal width) with a living and dining end under a sleeping loft, a galley kitchen on a 40-inch aisle, and a wet bath that runs the full depth of the house so its water closet can hold real code clearances. Small enough to tape out inside one classroom.

Best for: The Tiny Home Challenge; area optimisation and trade-offs; ratios and percent; IRC Appendix Q lofts and ladders; fixture clearances at full scale; a first print for any budget.

Licence: CC BY 4.0. Copy it, print it, change it, hand it to another teacher, sell a lesson built on it — the only condition is the credit line at the end of this guide. **It is an instructional drawing, not a construction document**: not stamped, not engineered, not for permitting, bidding or building.

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-04-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 24'-0" x 8'-6"	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 24'-0" x 8'-6" = 204 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 28'-6" x 14'-10" = 423 sq ft. The clean edition has no grid margin and measures 28'-0" x 14'-4" = 401 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 391 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'-4" exterior, 0'-3 1/2" interior); this is not a framing detail.

Room	Clear size	Area	Perim.	Diag.	SW corner (x, y)	Why it is here
Living / Dining	10'-0" x 7'-10"	78.3 SF	35'-8"	12'-8 1/2"	(0'-0", 0'-0")	10'-0" x 7'-10" = 78.3 SF; loft above
Galley Kitchen	7'-6" x 7'-10"	58.8 SF	30'-8"	10'-10 1/4"	(10'-4", 0'-0")	7'-6" x 7'-10"; 40" aisle between counters
Wet Bath	5'-2" x 7'-10"	40.5 SF	26'-0"	9'-4 1/2"	(18'-2", 0'-0")	5'-2" x 7'-10": full depth, so the WC holds 21" clear in front
Sleeping Loft (above)	8'-0" x 7'-10"	62.7 SF	31'-8"	11'-2 1/4"	(loft)	8'-0" x 7'-10" = 62.7 SF; IRC Appendix Q minimum is 35 SF and a 5 ft least dimension

Gross footprint: 24'-0" x 8'-6" = 204 SF. **Sum of clear room areas inside the walls:** 177.6 SF. **Walls and the corner mass:** 26.4 SF = 13.0% 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. 8'-6" wide: the maximum road-legal width without a permit. 24 feet long. 204 SF of floor - the smallest complete building in the set, and the only one a class can tape out inside a single classroom. **CCSS 7.G.B.6**
2. The loft is 8 x 7'-10" (IRC Appendix Q minimum: 35 SF and a 5 ft least dimension) and it carries its own egress window in the west gable. Loft area is NOT floor area: 204 SF stays 204 SF. The loft ladder must sit at 70-80 degrees from horizontal - a trigonometry check with a tape and a protractor. **IRC Appendix Q AQ104; IRC R310; CCSS G-SRT.C.8**
3. The wet bath runs the full 7'-10" depth of the house for one reason: so the water closet can hold 21 inches of clear space in front of it and 15 inches from its centreline to the side wall. Tape both, then try taping the bath at 3'-6" deep - the depth this plan used to be - and sit down. In a 204 square foot house, two clearance numbers decide the entire floor plan. **IRC R307.1**
4. The galley keeps a 40-inch aisle between counters (36" is the minimum for one cook). Measure it, then tape it at 30 and try to cook. **NKBA Guideline 6**
5. Percent problems come out clean: the living end is 78.3 SF of 204 (38%), the kitchen 58.8 SF (29%), the wet bath 40.5 SF (20%), and the rest is wall. Students allocate sleep, cook, wash, store and sit inside a hard area budget and defend every trade. **CCSS 7.RP.A.3, MS-ETS1-1**
6. Every door in this house passes the 32-inch clear-opening rule, and the living end holds a 60-inch turning circle while the wet bath does not. A small building can be accessible in the places that matter and honest about the places it is not. **2010 ADA Standards 304.3.1, 404.2.3**
7. A marked 23'-4" inside length in 40-inch steps: 280 / 40 = 7. Unit conversion between feet-and-inches and inches, on foot. **CCSS 4.MD.A.1, 5.MD.A.1**

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
Living end turning space	10'-0" x 7'-10" clear - 60" circle fits	**PASSES**
Wet bath turning space	5'-2" x 7'-10" - 60" circle does not fit; the living end is the accessible turning space	**FAILS**
Water closet clearance	66" clear in front, 28" centreline to side wall - passes comfortably	**PASSES**
Kitchen aisle	40" - meets the 36" one-cook minimum; below the 60" turning space	**FAILS**
Entry door	32" - passes	**PASSES**
Bath door	32" - passes	**PASSES**
Wet bath door location	DECLARED TRADE-OFF: the bath opens off the galley - in 204 SF there is nowhere else. Allowed in a dwelling; it would NOT be allowed in a commercial kitchen. Compare with the cafe (TP-03), where a service corridor exists precisely to prevent it.	**FAILS**

Door schedule: 1 x cased 84", 2 x door 32". Windows: 7.

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)
Whole footprint	24'-0" x 8'-6"	25'-5 1/2"

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	fit a life in 204 SF	Living / Dining
2	measure the aisle	Galley Kitchen
3	wet bath clearances	Wet Bath
4	ladder angle	Living / Dining

Lessons in the free library that use this plan

The Tiny Home Challenge, Area Architects, The Remodel Budget, Reach and Clearance, Roll the Route: ADA Clearance Study, Volume Builder, Fraction Floors, Scale Detective, The Energy Envelope, Dream Home Addition, Convert the House. 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, 404.2.3, 5.MD.A.1, CCSS 4.MD.A.1, CCSS 7.G.B.6, CCSS 7.RP.A.3, CCSS G-SRT.C.8, IRC Appendix Q AQ104, IRC R307.1, IRC R310, MS-ETS1-1, NKBA Guideline 6

Credit line (the only condition of the licence)

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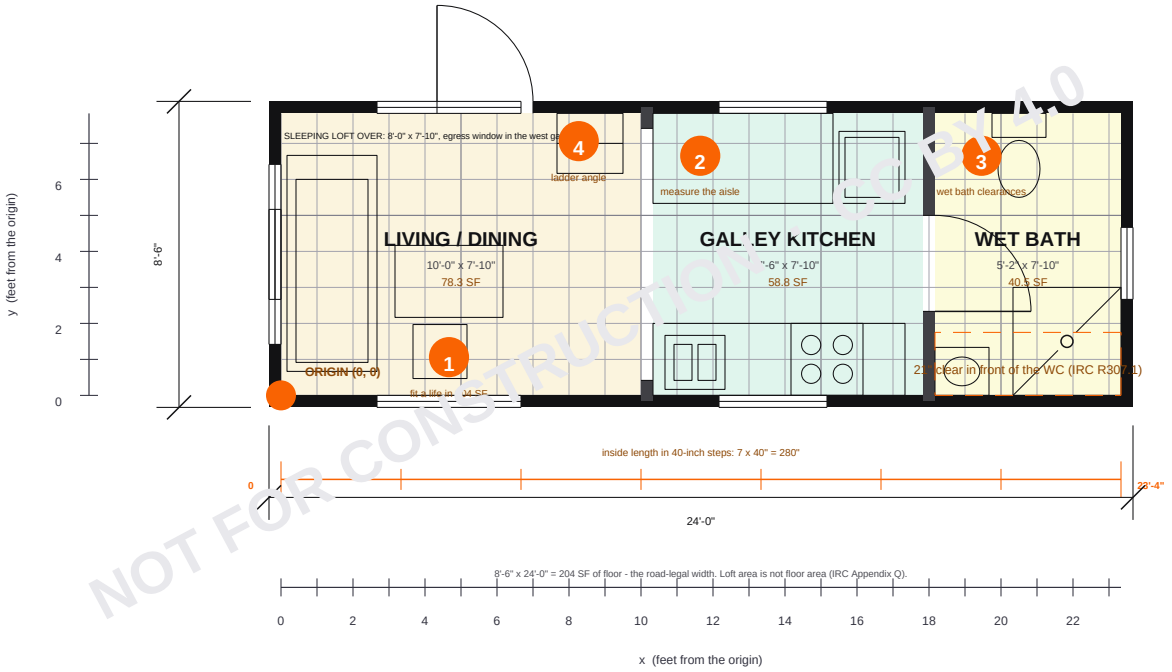
Big Floor Plans prints floor plans at true 1:1 scale for design review and for classrooms. $0.45 per printed square foot, $100 minimum, shipping quoted separately. Questions: estimating@bigfloorplans.com · 937-901-3402.



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BIG FLOOR PLANS · SAMPLE TEACHING PLAN

BFP-TP-04 The Tiny House

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

Bar = 1.88 in at 100%

NOT A CONSTRUCTION DOCUMENT

Instructional drawing - not for permitting or building.

TEACHING EDITION (grid, axes, areas)

Tiny house on a trailer · the cheapest complete building to print

0 10 ft

12" at scale

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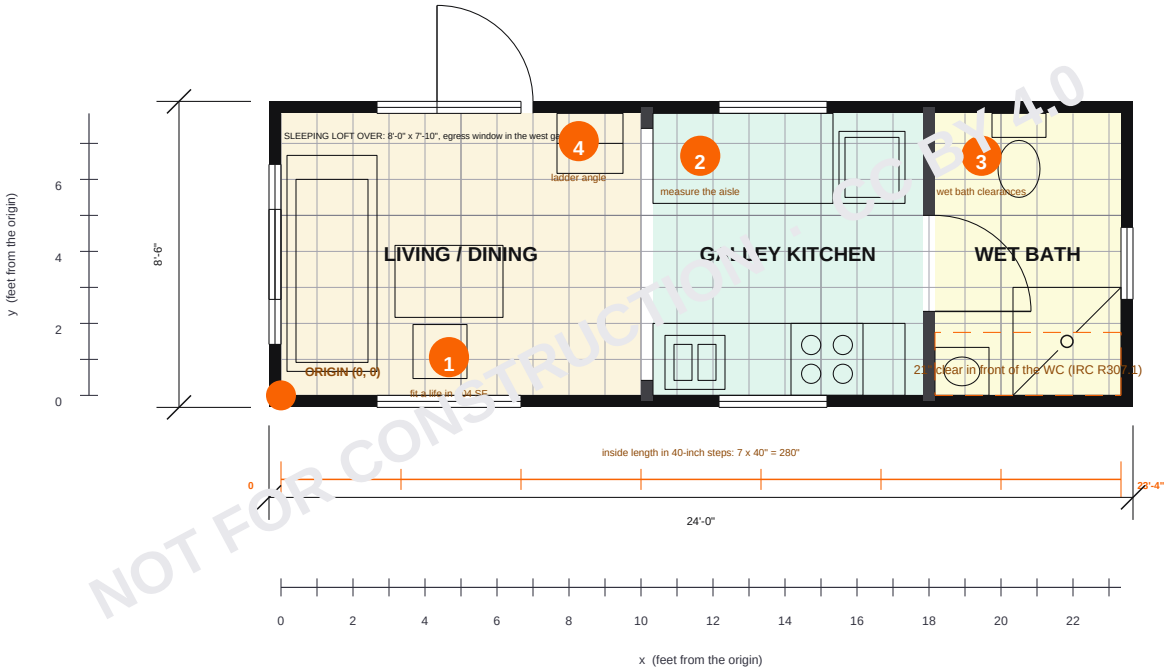
Walk-pace only on a printed floor. No running.

N



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

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0 10 ft

12" at scale

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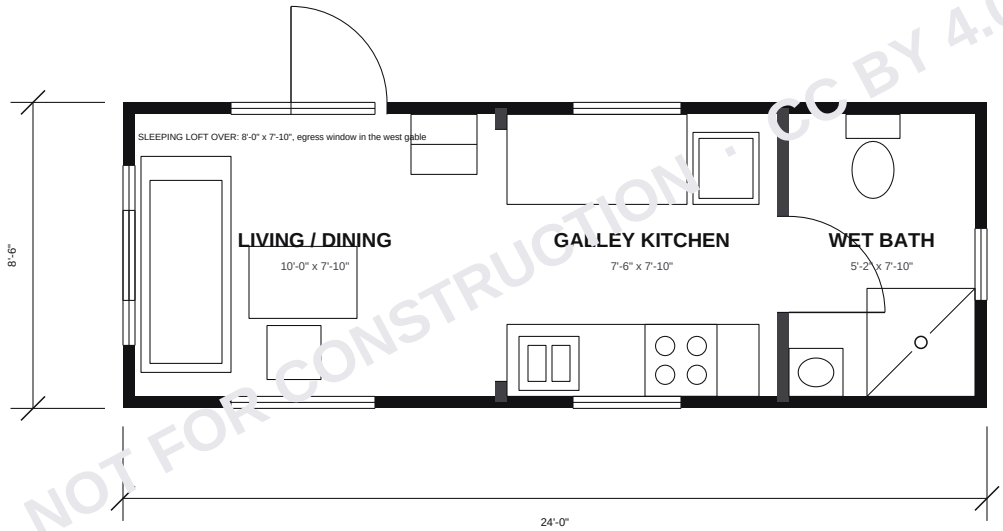

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8'-6" x 24'-0" = 204 SF of floor - the road-legal width. Loft area is not floor area (IRC Appendix Q).

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BFP-TP-04 The Tiny House

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CLEAN EDITION

Tiny house on a trailer · the cheapest complete building to print

0 10 ft

12" at scale

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

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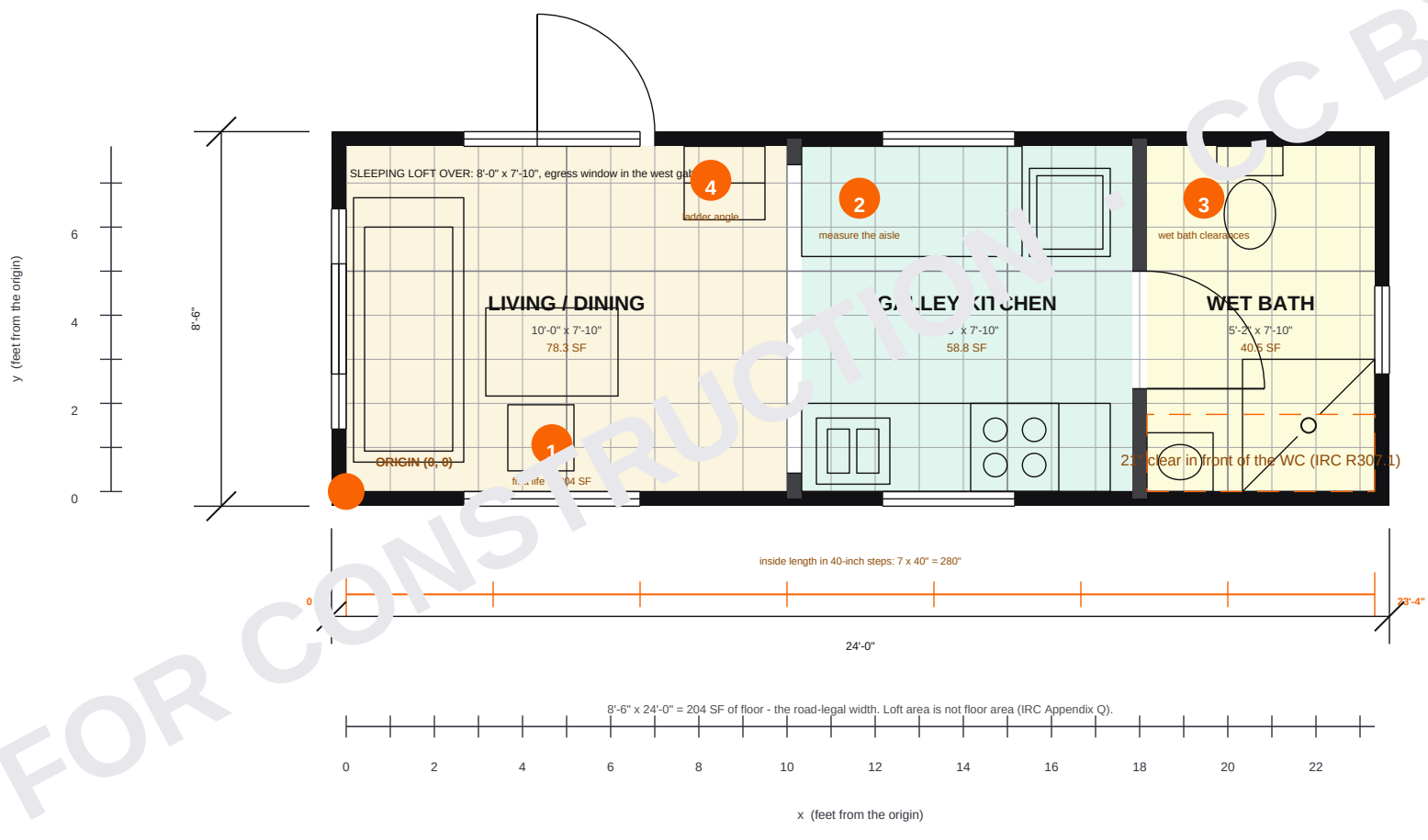

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BIG FLOOR PLANS · SAMPLE TEACHING PLAN

BFP-TP-04 The Tiny House

SCALE 1/4"=1'-0" (1:48)

NOT A CONSTRUCTION DOCUMENT

Drawn at 1 plan inch = 48 real inches. The stamped, not measured, scale is correct when printed at 100%.

TEACHING EDITION (grid, axes, areas)

Tiny house on a trailer · the cheapest complete building to print · footprint 24'-0" x 8'-6" · gross 204 SF

0 10 ft 12" at scale

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

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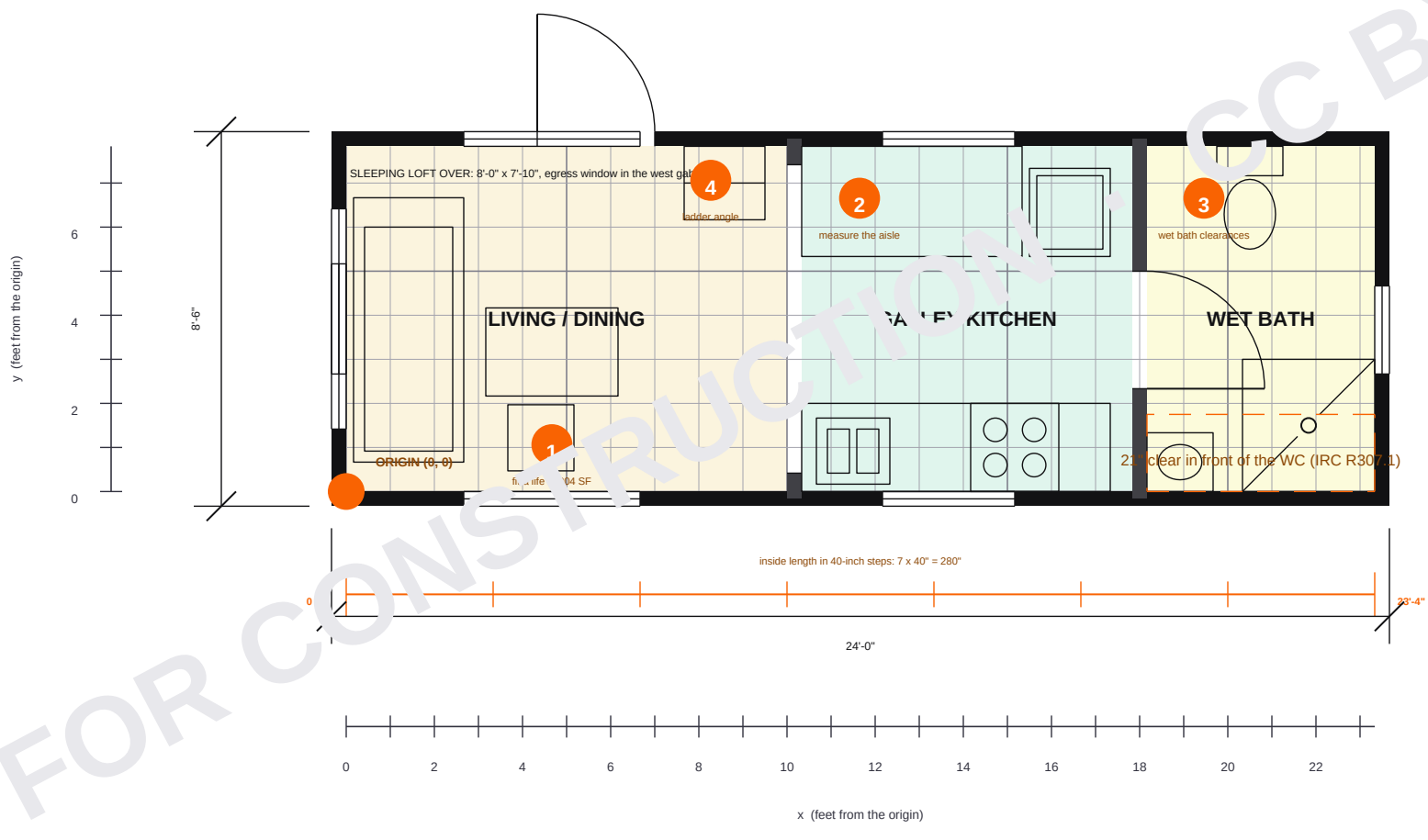

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BIG FLOOR PLANS · SAMPLE TEACHING PLAN

BFP-TP-04 The Tiny House

SCALE 1/4"=1'-0" (1:48)

Drawn at 1 plan inch = 48 floor inches. The bar above must measure 2.5 in when printed at 100%.

NOT A CONSTRUCTION DOCUMENT

Insulated drawing. Not stamped, not engineered, not for permit or building.

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

Tiny house on a trailer · the cheapest complete building to print · footprint 24'-0" x 8'-6" · gross 204 SF

0 10 ft

12" at scale

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

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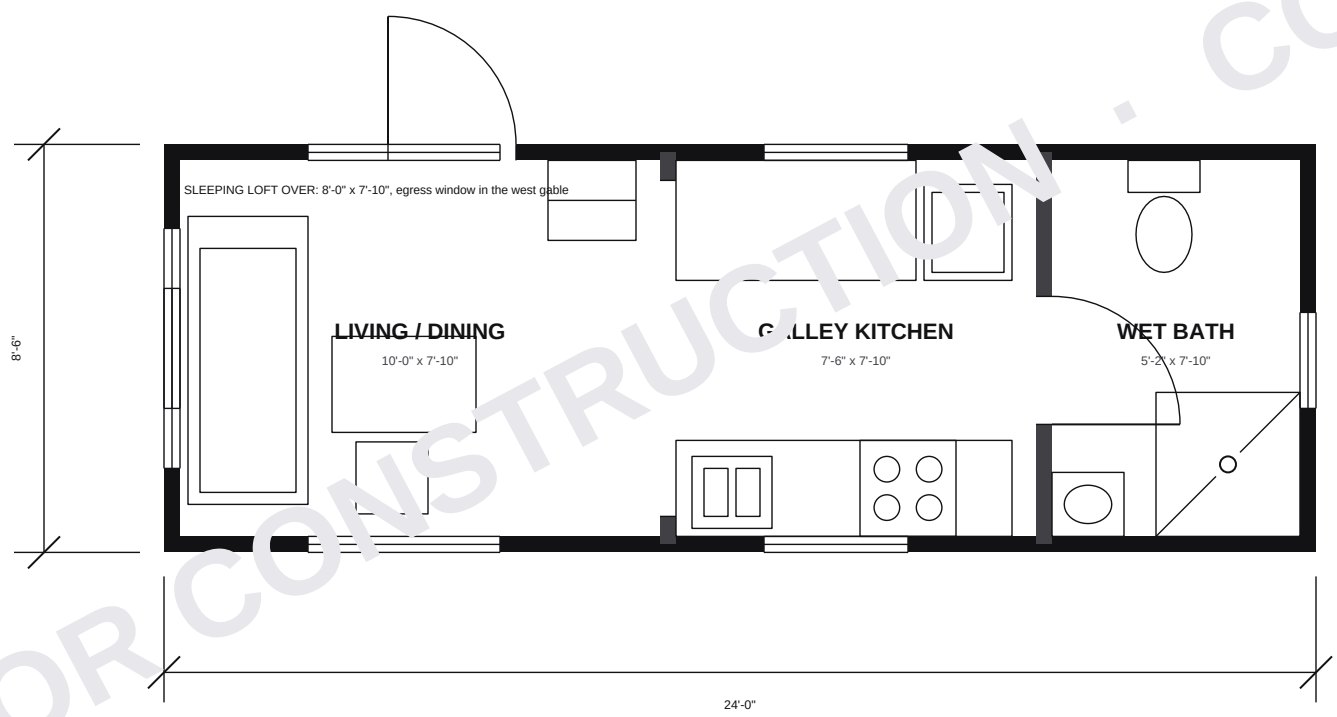

8'-6" x 24'-0" = 204 SF of floor - the road-legal width. Loft area is not floor area (IRC Appendix Q).

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BIG FLOOR PLANS · SAMPLE TEACHING PLAN

BFP-TP-04 The Tiny House

SCALE 1/4"=1'-0" (1:48)

NOT A CONSTRUCTION DOCUMENT

Drawn at 1 plan inch = 48 real inches. The stamped number measures 2.5 in when printed at 100%.

Installed dimensions, not measured on the printed page.

CLEAN EDITION

Tiny house on a trailer · the cheapest complete building to print · footprint 24'-0" x 8'-6" · gross 204 SF

0 10 ft 12" at scale

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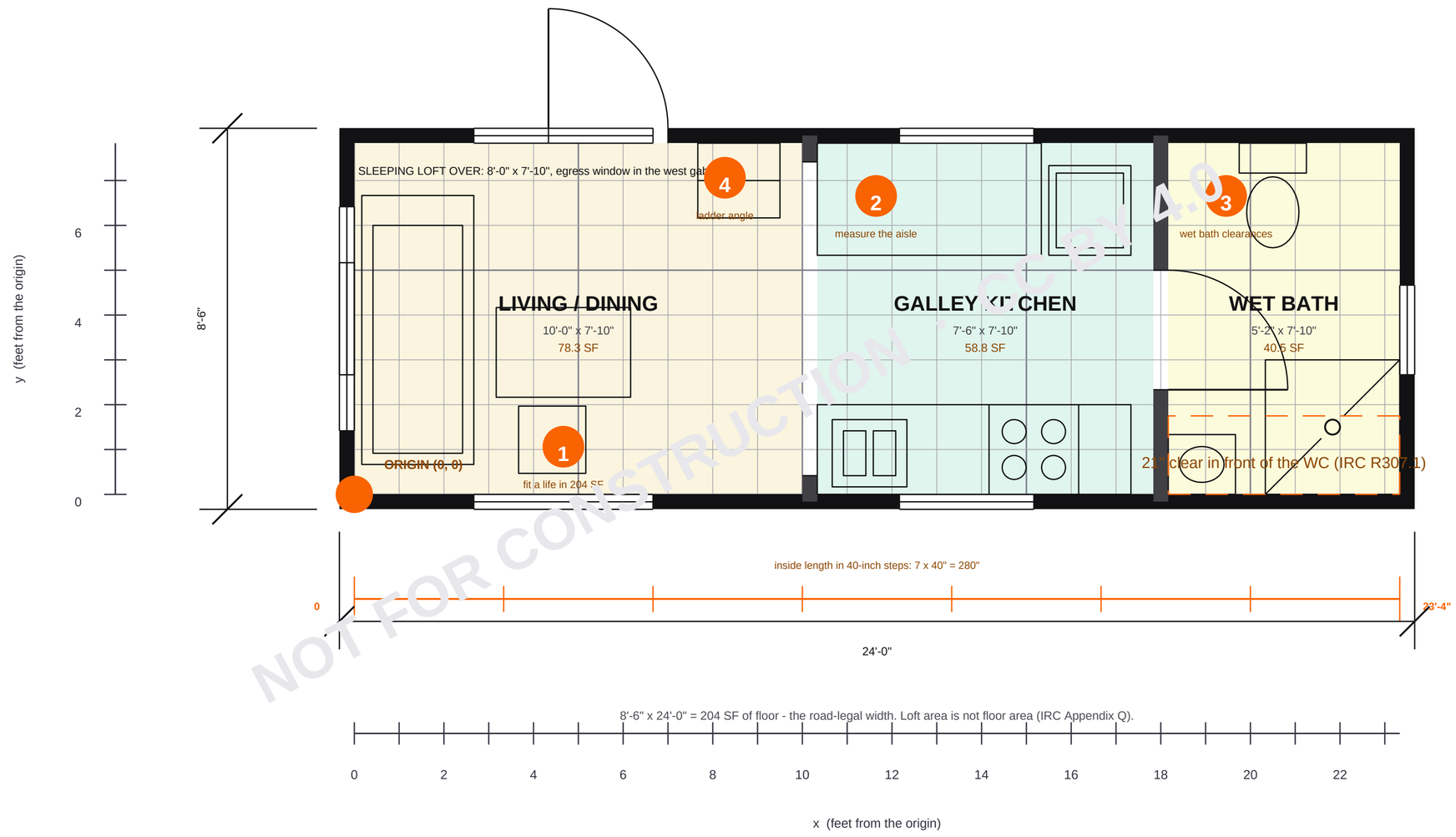

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BIG FLOOR PLANS · SAMPLE TEACHING PLAN

BFP-TP-04 The Tiny House

TEACHING EDITION (grid, axes, areas)
Tiny house on a trailer · the cheapest complete building to print · footprint 24'-0" x 8'-6" · gross 204 SF

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%.

0 10 ft
12" at scale

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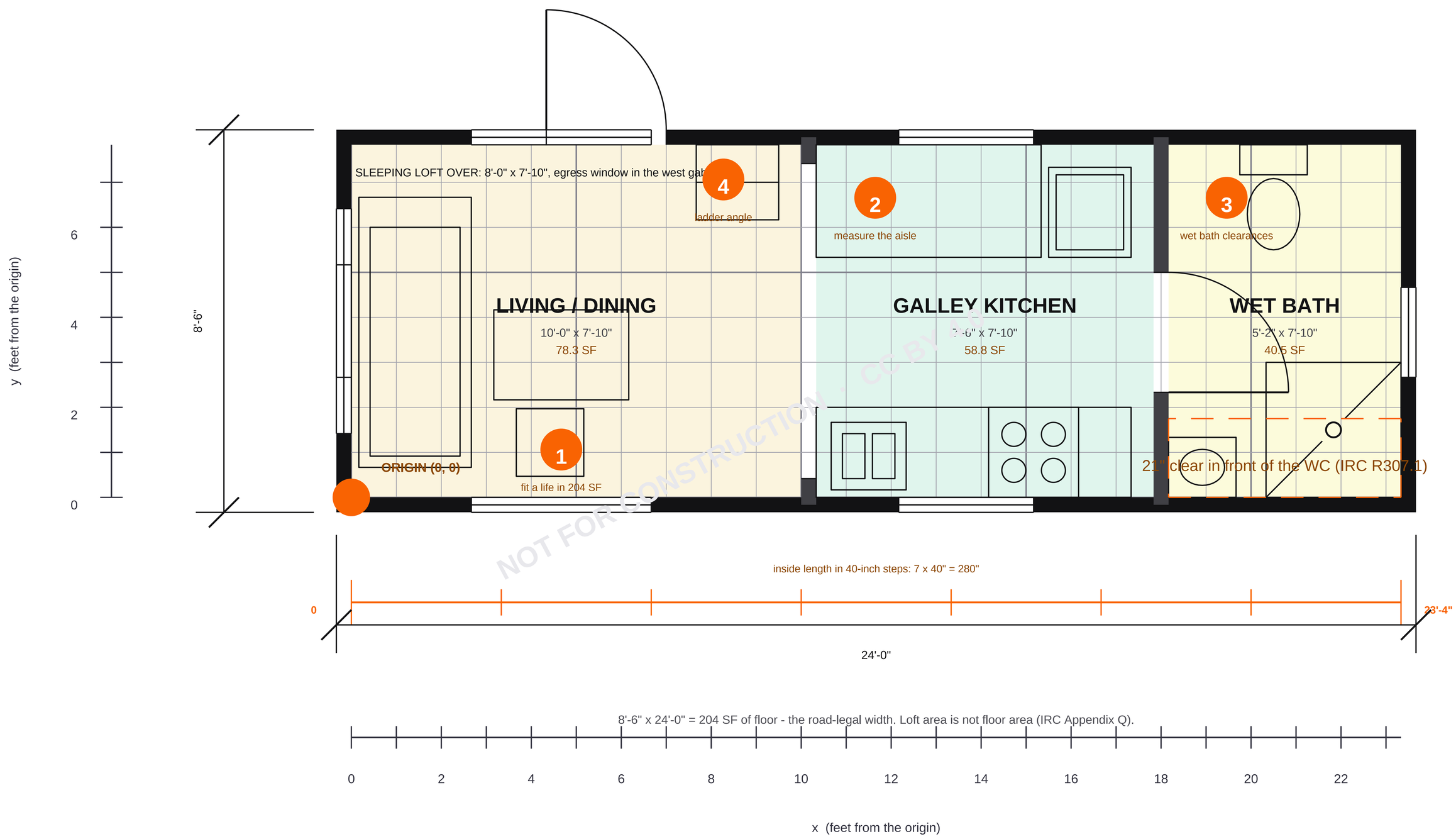

BIG FLOOR PLANS · SAMPLE TEACHING PLAN

BFP-TP-04 The Tiny House

TEACHING EDITION (grid, axes, areas)
Tiny house on a trailer · the cheapest complete building to print · footprint 24'-0" x 8'-6" · gross 204 SF

SCALE 1"=1'-0" (1:12)
Drawn at 1 plan inch = 12 sheet inches. The bar above must measure 10 in when printed at 100%.

0 — 10 ft
1" at scale

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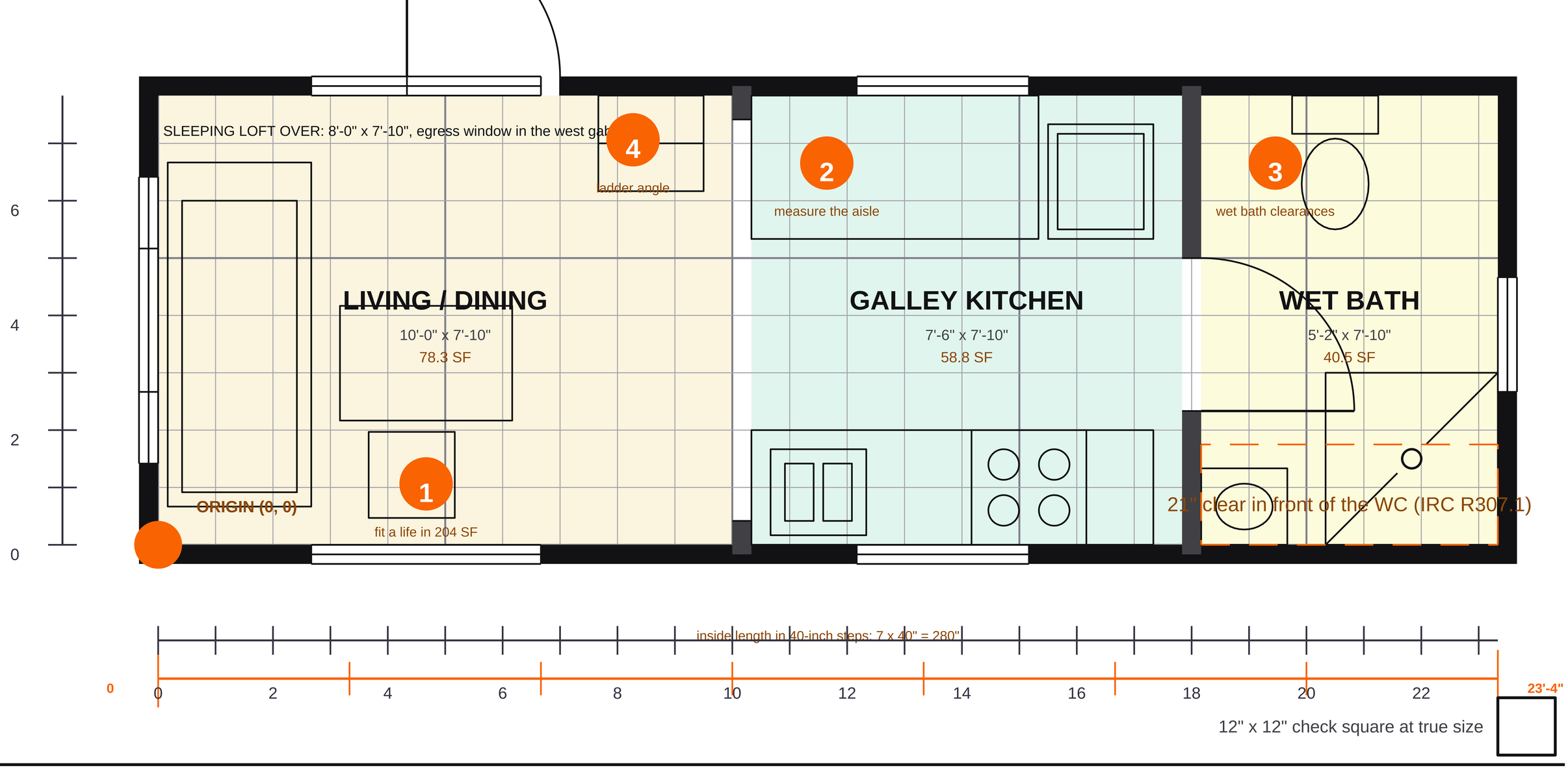

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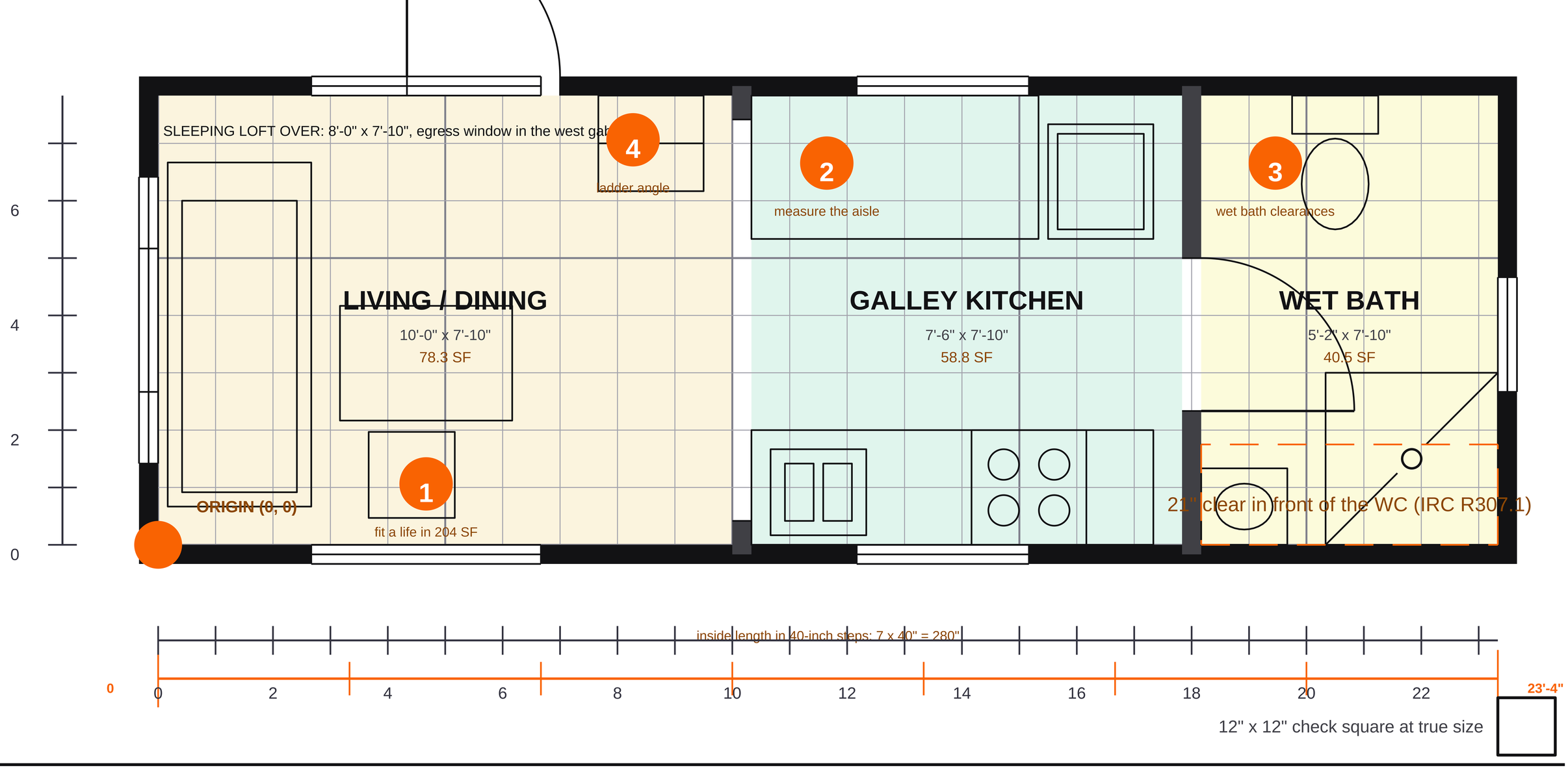

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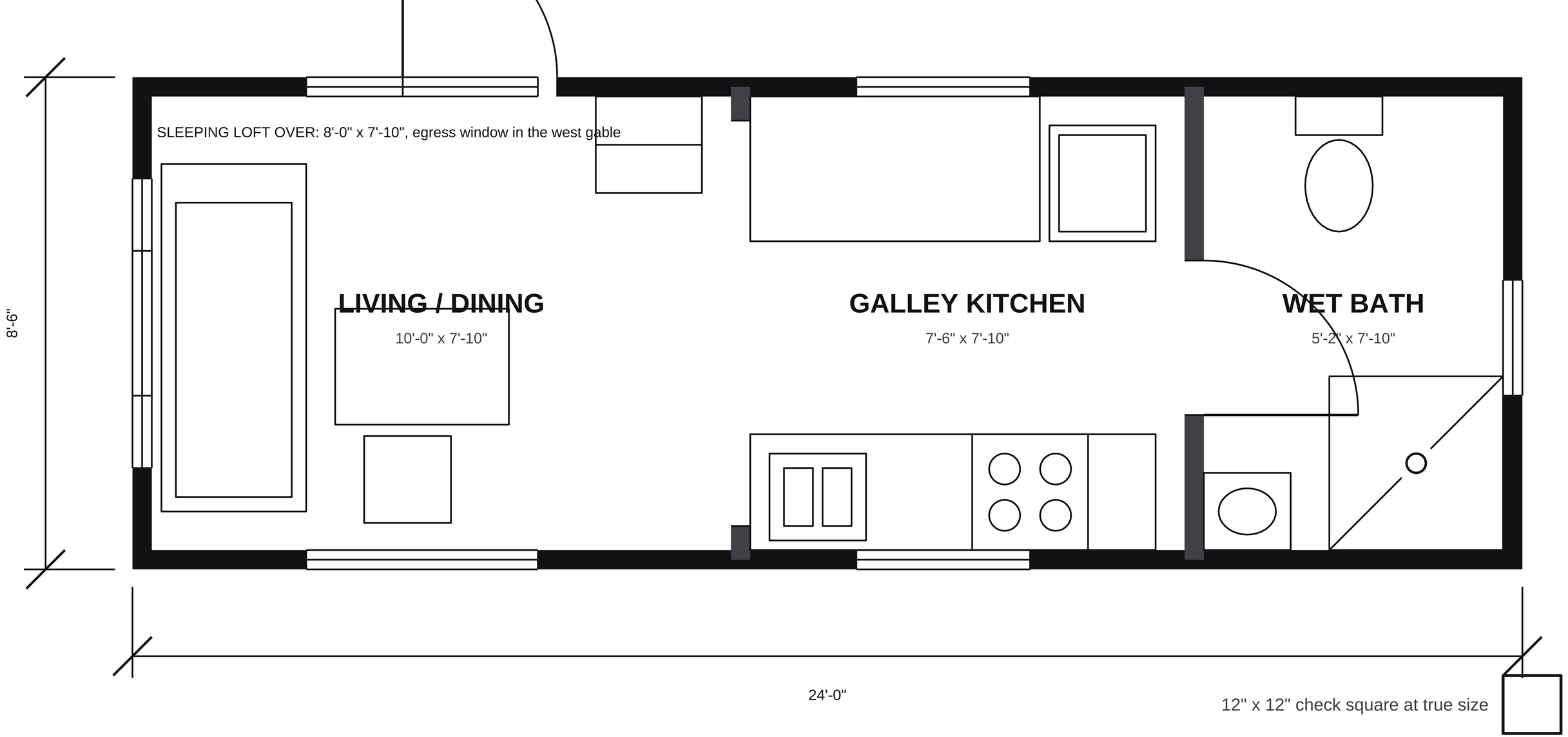

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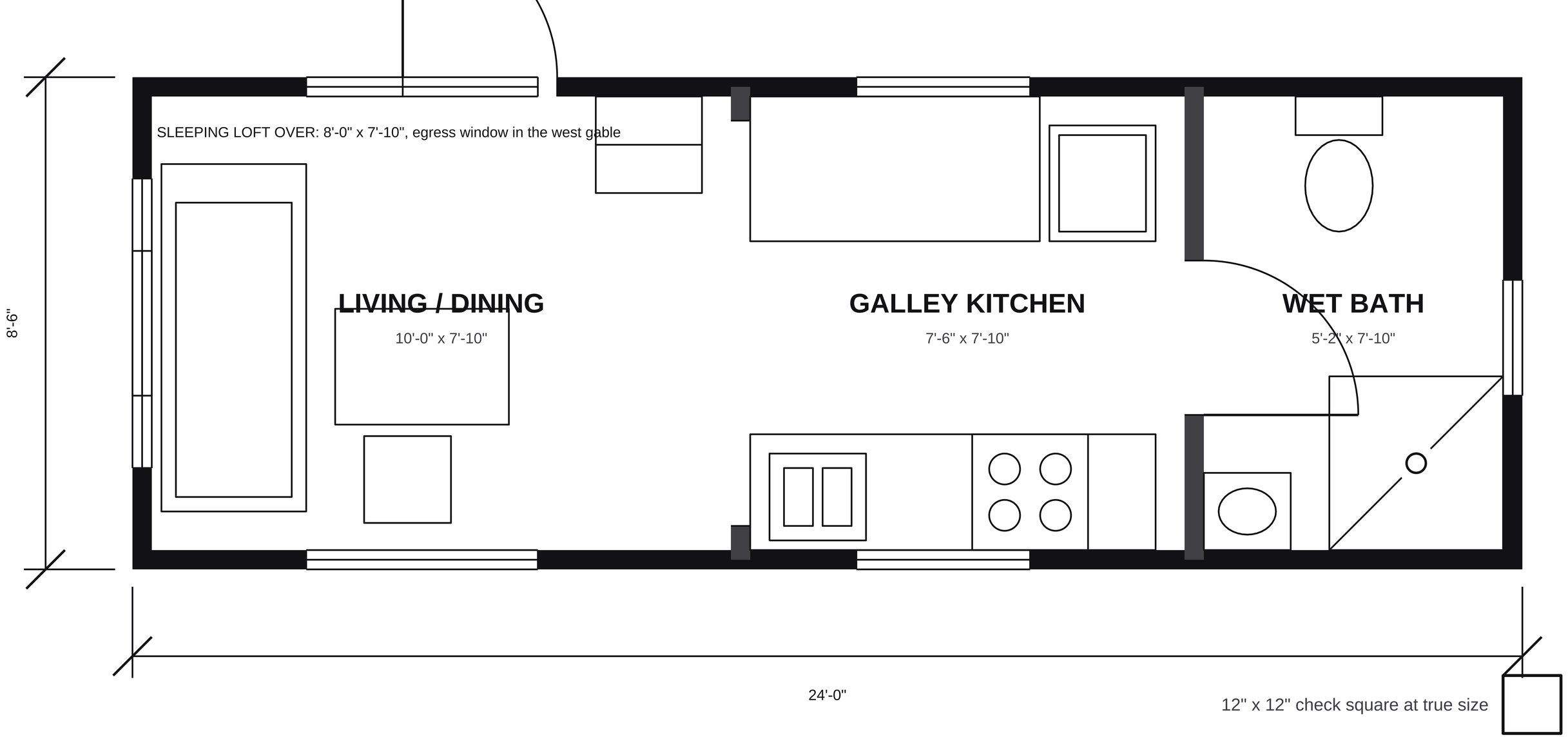

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