

CASE  
MODULAR  
Instruction Manual  
Version 4

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# Preface

Congratulations on the purchase of a Case-Modular staircase! You have chosen a staircase that will be solid, quiet and handsome. Its unique patented adjustability allows you to make on-site and last minute adjustments, thereby ensuring that every step has exactly the same rise.

The following steps will guide you through the Case-Modular stair-building project.

Staircases are notoriously difficult to build. Even with the simplicity of the Case-Modular system the builder must remain patient and attentive. Please take the time to read the manual and, if you can, take advantage of our “how to” videos at [casemodular.com](http://casemodular.com)



## SAFETY PRECAUTIONS

Please remember that staircases are heavy and awkward structures that can challenge the most careful of builders. For these reasons we urge you to review the basic rules of safety provided in Annex I.

# 1

## Preparation

### 1.1 Verify the Measurements

#### A. Height

Although you have already taken measurements prior to purchase, it is advisable to measure the key dimensions again. It is most important to accurately determine the **Total Rise** - from the Finished Floor to Finished Floor (**FF to FF**) height. If there happen to be any variations from your original measurements, Case-Modular's adjustability will accommodate any necessary changes.



#### REMINDER

If the floor is unfinished, remember to account for the thickness of the finished flooring.

*Write this number down: FF to FF \_\_\_\_\_ inches*

#### B. Width

Verify that the width between walls corresponds to the width of the Case-Modular product you have ordered. An opening that is too narrow can result in damage to the drywall, or the staircase not fitting at all. Likewise, an excessively large opening will require shimming and extra trim to cover the gap.

From 36½ " to 38" for 36" steps

From 39 ½ " to 41" for 39" steps

From 42 ½ " to 44" for 42" steps

Measured free space between finished walls:

Minimum \_\_\_\_\_ Maximum \_\_\_\_\_

Final pre-installation **Total Rise (FF to FF)**: \_\_\_\_\_

## C. Measuring for a staircase with a landing

If you are building a landing, you must determine the precise height of the finished floor of the landing. The landing should be regarded as a step in the staircase when calculating. Ideally, the top finished surface of the landing will be exactly the same rise as the overall calculated Unit Rise. In a staircase with a landing, each flight is considered a separate staircase; thus a Floor to Floor (**FF to FF**) measurements needs to be taken for both the lower and the upper sections.

Total Rise, lower floor to landing: \_\_\_\_\_

Total Rise, lower floor to upper floor: \_\_\_\_\_



### REMINDER

The upper flight requires a minimum 3" footing on the landing. Therefore, the landing should be built slightly larger than you might anticipate.

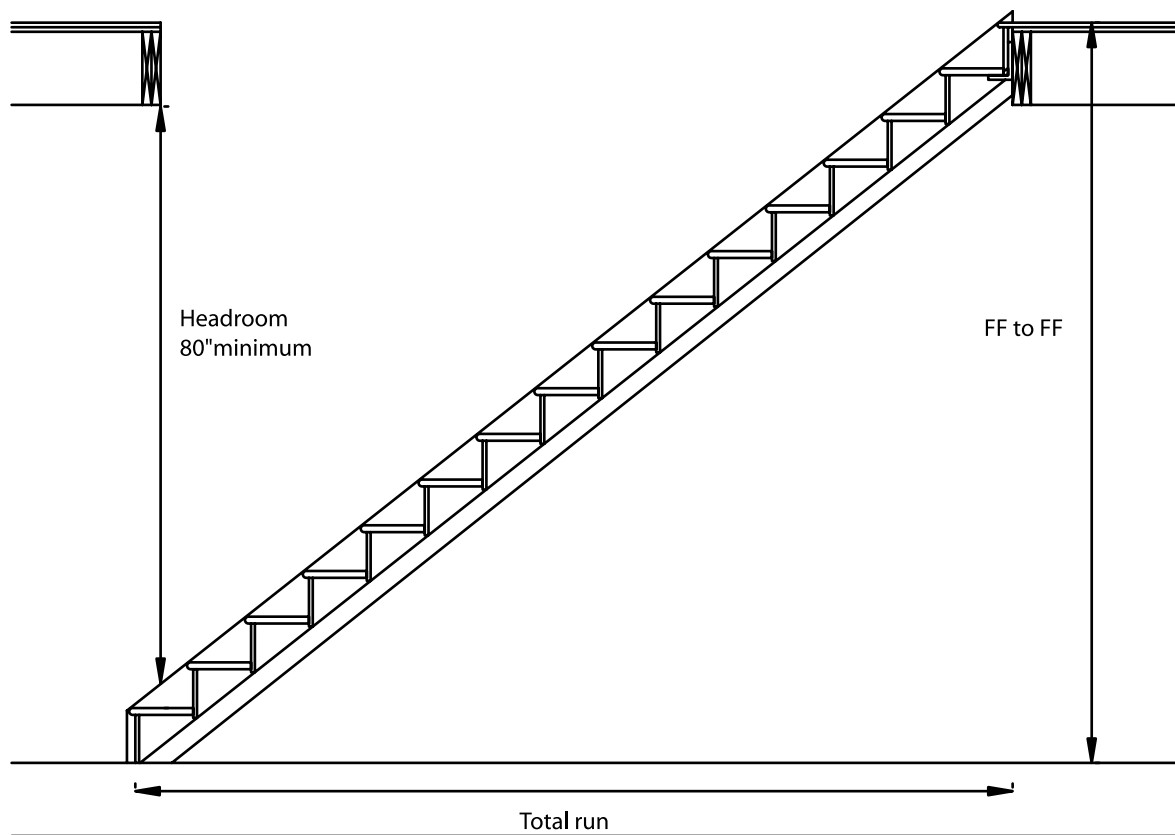
## D. The Case-Modular Calculator

When the key dimensions have been determined they can be entered into the Case-Modular Calculator which can be found under the "support" link at [www.casemodular.com](http://www.casemodular.com). The calculator will provide the **stair nose line (hypotenuse)**, as well as the **Layout Run**, the **Total Rise**, and the total number of steps.

Refer to **ANNEX III** for the manual calculation methods.

## 1.2 Layout the Case-Modular staircase on the wall

It is strongly recommended that you scribe the **Nose Line Hypotenuse** on to the wall in order to verify the headroom clearance and detect any other variances that may have been missed in planning. At this stage it is still possible to make alterations to the stair configuration for example by adding or removing a step module to adjust headroom clearance and **Total Run**.



# 1.3 Assembly of the stair flight

- Cut the bottom **Step Module** of the Case-Modular staircase to match the **Unit Rise** before assembling.

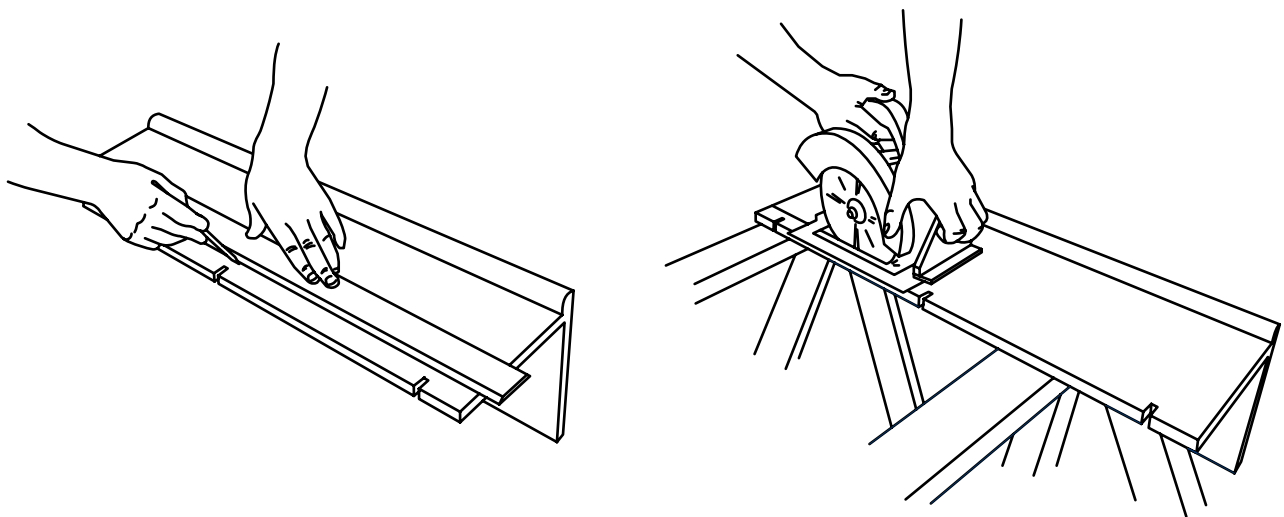
*Tip: Your stair tread is 1 inch thick. Therefore when cutting your bottom riser you can measure down on the face of your riser from the underside of the bull nose to locate and draw your cut line accurately. You simply subtract tread thickness from the unit rise. For instance, if the unit rise is 7 ¼ inches, then measure 6 ¼ inches from the underside of the bull nose to locate the cut line on the riser.*

- The unit rise should be from the top of the finished floor surface to the top of the first step.
- If the floor is not level it is possible to cut the bottom module to conform the uneven floor profile. It is also possible to make a straight cut and use shims and floor moulding.
- Once the cut line is marked, the module can be set up on sawhorses (with some scrap lumber underneath) and the cut can be made with a circular saw and, if necessary, lightly sand any rough edges. Finally it is not unusual to add a small moulding to the bottom of the stairs to finish the trim.

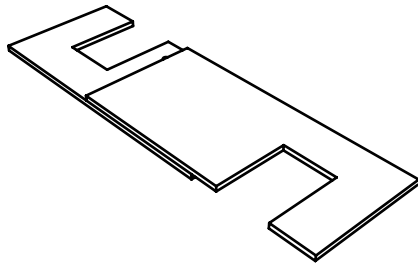


## REMINDER

If you are installing on an unfinished floor, remember to account for the finished floor thickness when cutting the bottom riser.



- Adjust the Casemodular riser jigs to accommodate the predetermined Unit rise



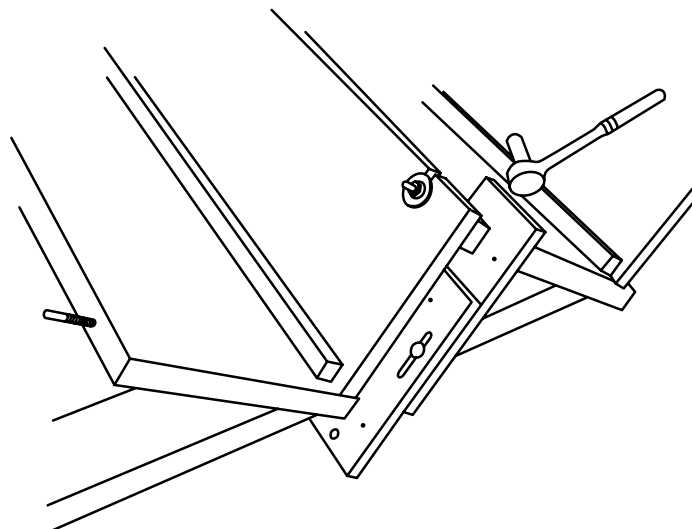
*Tip: Once you have set your riser jigs, drive a couple of small screws right through the side of them so that they don't slip out of position.*



#### REMINDER

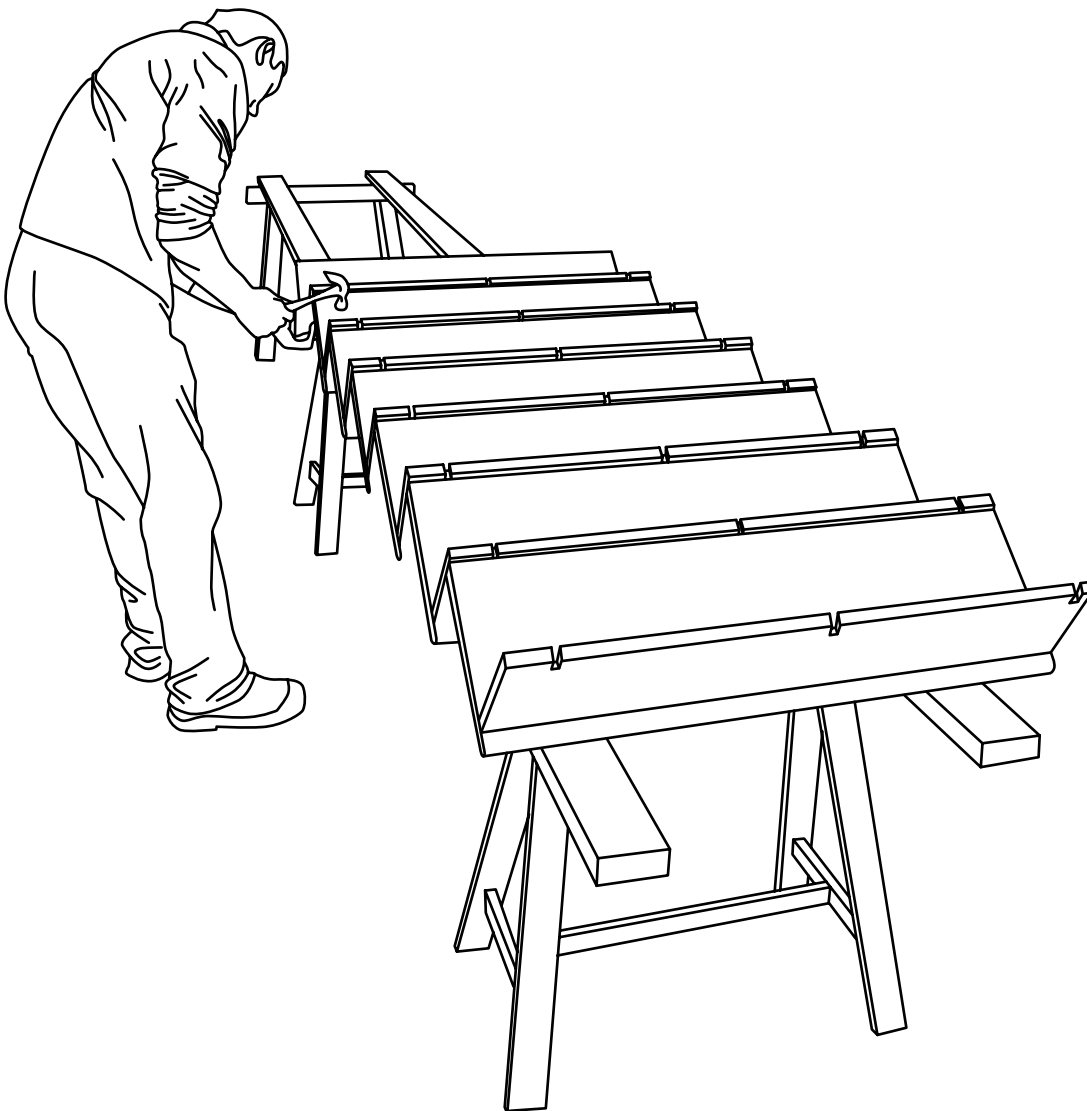
The total run is slightly less than the calculated Nose Hypotenuse.

- Set up saw horses with two 2x4's long enough to support the entire flight of stairs. Place the now altered first step and the second step with the noses pointing toward the workbench.
- Insert the bolts of the first step into the corresponding slots of the second step.
- Add washers and lock nuts, then finger tighten.
- Now place the two **Riser Jigs** onto the two-step modules, one on each side, to fix the riser height accurately.



**Note:** Some people prefer to use either a set square or simply wooden blocks cut to your specific riser height to set risers during installation.

- Tighten the nuts with a wrench. Stop tightening when the veneer begins to compress under the washer.
- Repeat this process until the flight is complete.
- Lift the complete assembly and place it on its side.



# 1.4 Install the Inside Stringer

- Place the 8' **inside stringer** onto the flight.
- If the flight is longer than 8' then butt two stringers. The **joint line** can be concealed behind a nosing. Glue and screw a small plywood triangle to the underside of the two stringer pieces beneath the step to tie them together and reinforce the stringer joint.
- Before fastening, line up the stringer with the nosings of each module. A consistent space must be left so that the stringer is about 1/8th of an inch the nosings.



## REMINDER

Be sure the finished side of the stringer is facing the staircase.

- Working from one end, and close to the nose of each step, one screw should be driven through the stringer into each tread. This should lock the flight into a straight line.

**Note:** The staircase will still have a considerable amount of flex in it until the stringer has been attached. The use of some squeeze clamps or a second set of hands may be necessary to work the modules into place so that they are in line with the stringer.

**Tip:** Make sure you are doing this on a flat plane.

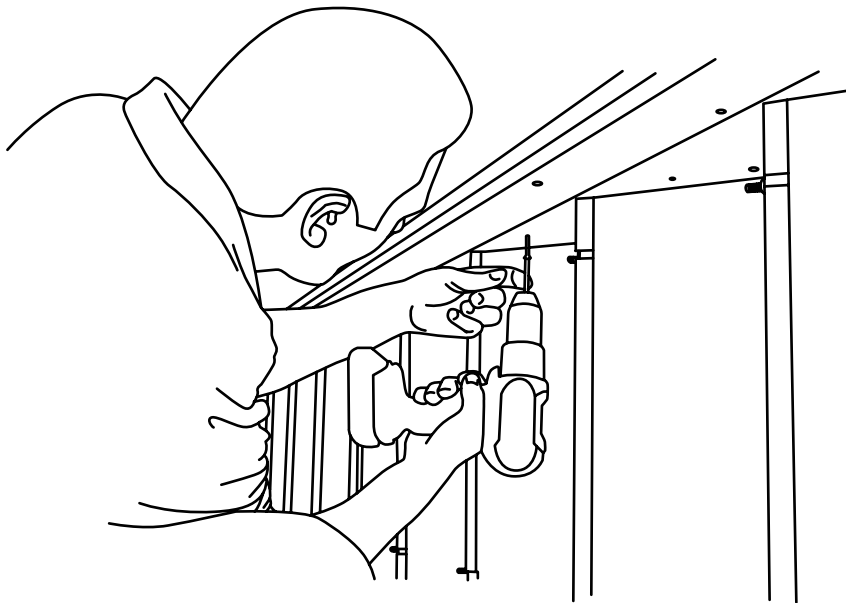
- Insert the Marking Jig, from the finished side of the staircase to locate the treads and risers along the outside of the stringer. This will reduce the risk of driving a screw through the finished side. Drive 3 screws into each tread and 2 into each rise (1½ "screws)



# 1.5 Install the Outside Stringer

**Note:** On a staircase that is open and without a support wall, it is necessary to attach an outside stringer

- Adding an **Outside Stringer** to the Case-Modular assembly will create a **Structural Stringer**.
- Apply polyurethane construction adhesive between the **Outside and Inside stringers**, and clamp (we recommend PL Premium Polyurethane Adhesive).
- To draw in the Outside Stringer, drive 1 ¼ " screws from the underside of the stair assembly. Be careful not to drive these screws so far that they penetrate the finished side of your staircase.



## REMINDER

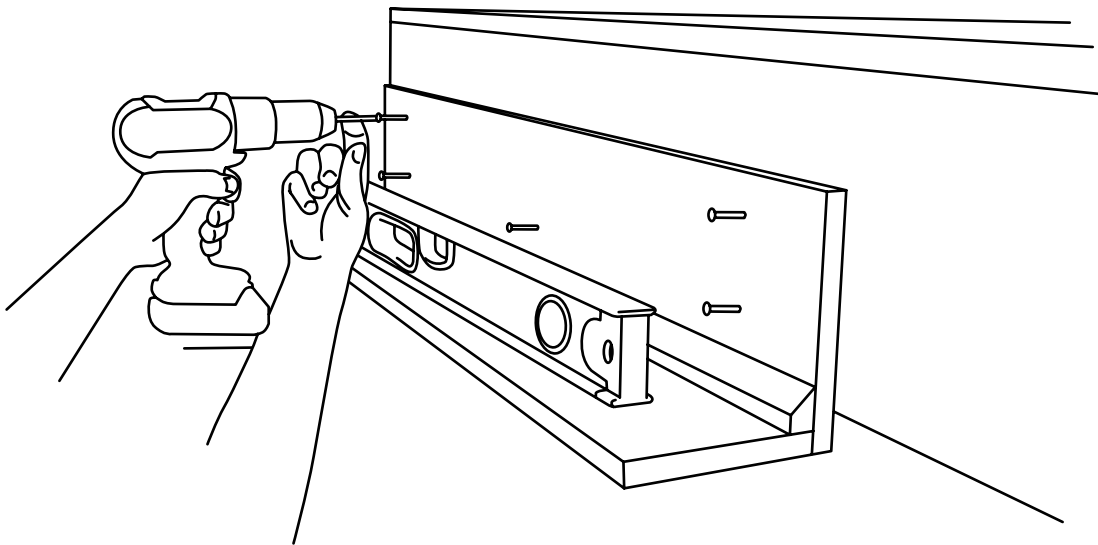
If the glued stringers are not perfectly flush along the top edge, the **Finishing Cap Trim** will conceal any minor discrepancies.

# 2

## Installing the Staircase

### 2.1 Prepare the stairwell

- When preparing the stairwell, the most important considerations are a level header and straight walls. The “truer” the construction the smoother the installation.
- Attach the **Mounting Bracket** to the **Header or Trimmer** that the stair flight will be mounted to. Position it at a height that accounts for both the thickness of the top tread as well as the final riser.



## 2.2 Build the Open Side Support Wall

(This procedure is for a staircase with an open stringer)

- Once you're sure that this is the style of staircase you are building, you can consider the framing process for this Open Side Support Wall.
- **Revisit the layout you did in step 1.2.** This Layout will show you roughly where the staircase will land and how the wall's **Nose Line Hypotenuse (Angle)** will look.
- We suggest you frame this wall **ONLY** after you have assembled the **Staircase** and have put it in place. This allows you use the staircase's **Wall Stringer** (after it has mounted) as a reference for the **Open Side Support Wall**. You can adjust the support wall to accommodate for any out-of-level floor surfaces so that the stair **Treads** are level.



### ATTENTION

Be sure that you understand that this **Open Side Support Wall** is only necessary for the staircase that is built with the **Open step modules**. This style is designed to sit on top of a support wall.

### USER TRICKS

We recommend framing this wall in place, one stud at a time. As you add the studs, check the step above each stud for level. This will ensure that the support wall is right every time.

First use the **Saddle Brackets** to attach the top plate of the support wall to the underside of the **open step modules**.

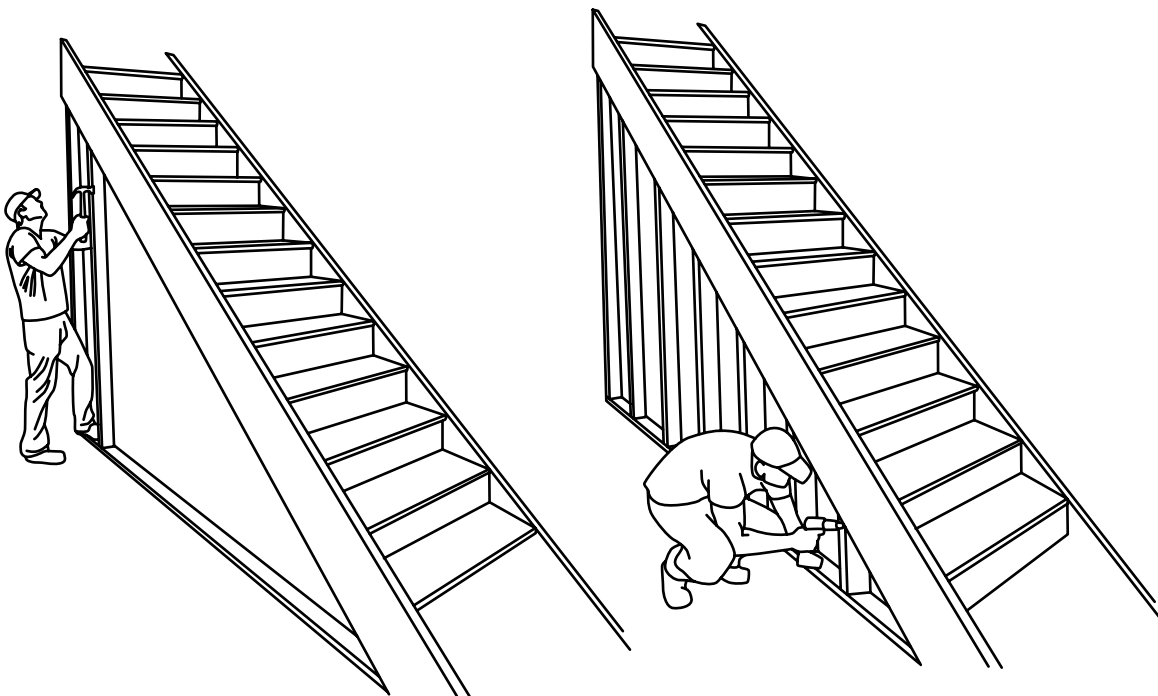
See the back of the modules for the proper location of the top plate. This guide will help you space the wall just right inside and under the open side so that  $\frac{1}{2}$ " drywall and the outside trim piece fit well together.

## USER TRICKS (CON'T)

Use the Support Wall Trim and a scrap of drywall to make sure you frame the wall in the right place for these three to come together. If you attached the top plate where indicated on the backside of the modules, you should be able to accommodate ½ inch drywall and the trim.

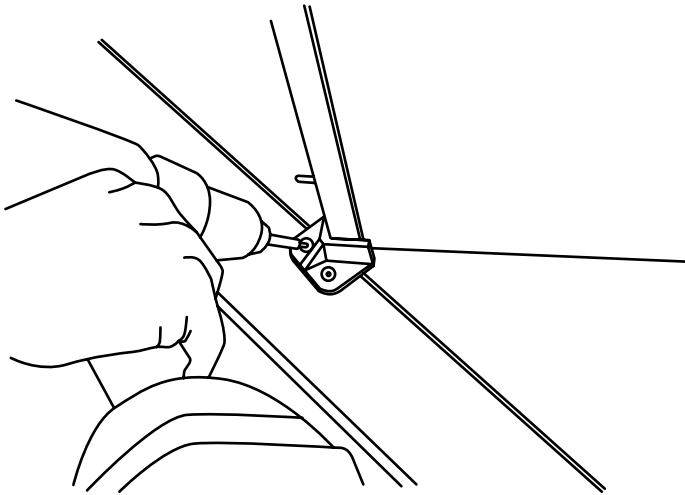
Start framing the wall. With a Plumb bob or a level, locate the wall's bottom plate position directly below the top plate which you have fastened to the underside of the staircase already.

Fasten a bottom plate to the floor and then add studs every 16 inches.



## 2.3 Finish assembly & apply adhesive

- Place the flight of stairs nose down on the floor or on a protective surface (Cardboard or a couple of studs).
- Screw the Saddle Brackets to the bottoms of the risers as well as to the stringers, being careful not to allow screws to penetrate through to any exposed or finished surfaces.



### REMINDER

The objective is to fill the slot between the riser and the treads around the bolts. The adhesive can also be used to lock the nut to the bolt.

- Using polyurethane construction adhesive (PL Premium Polyurethane is recommended), insert the nozzle of the adhesive cartridge into the slot above and/or below each nut and washer and inject adhesive into the space around the bolt.
- Apply adhesive on the underside of the stair assembly, along all joint lines. Be sure to force the adhesive into contact using the nozzle to spread it. This is most easily done with the staircase upside down on the floor, but it can also be done from underneath the staircase after it is fixed in place.

## 2.4 Install the stair flight



### WARNING

Do not walk on the staircase until it has been fastened with screws.

- Put the stair flight into place. It should rest on the **Mounting Bracket** and sit solidly on the floor. If necessary, shim one or both of these to assure a snug fit.
- Screw through the **Mounting Bracket** from below into the top Tread. Be careful not to penetrate the finished surface above.
- From under the staircase, screw through the wall side stringers into the wall studs, if necessary use shims between the drywall and the stringer, to make sure the fit is snug before driving the screw.
- If you haven't already done so, install the **2x4 Support Cleat** on the underside of the wall side stringer

***Note:** A 2x4 cleat should be mounted wherever a stringer makes contact with a wall. Screwed securely to the studs for the stringer to sit on, the cleat can be accurately positioned by mounting it 8" below and parallel to the Nose line Hypotenuse. In most cases, this 2x4 cleat can be mounted after the staircase is in place, thus ensuring accurate positioning.*

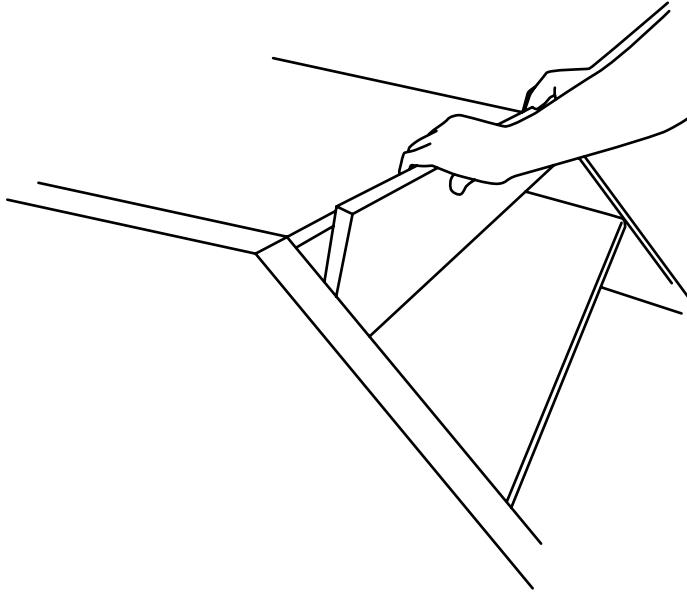
- Fasten a 2x4 block with pre-applied construction adhesive on the floor behind the first riser to anchor the bottom of the flight to the floor. Alternatively you can fasten a 2x4 block with pre-applied construction adhesive on the floor beneath the staircase to each of the stringers to accomplish the same result.

# 3

## Trim out the staircase

### 3.1 Install the top riser trim

- The **top riser** is purely decorative and is held in place with adhesive on its backside. In some cases finishing nails may be necessary. The riser should be flush with the subflooring.

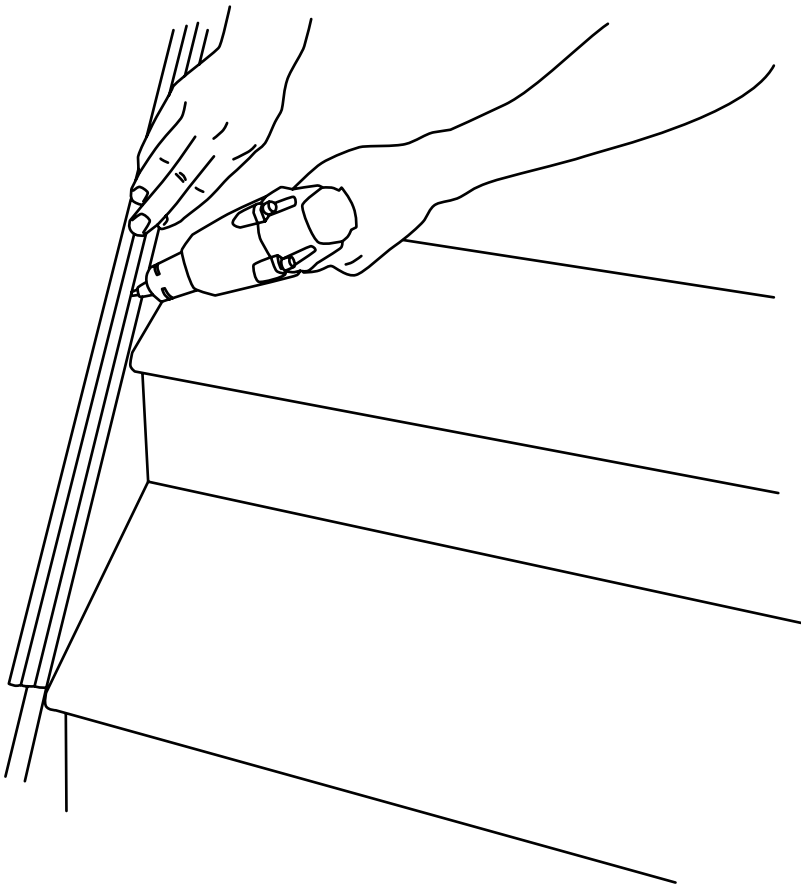


#### REMINDER

It is best to install the flooring bull nose after the staircase is done. If the flooring is going to be installed first, then leave the bull nose aside until you have finished the **Top Riser Trim**.

## 3.2 Install the wall side trim

- The **Inside Stringers** are grooved on top to receive Case-Modular's patented flex-trim™ to insure a clean finish against the wall.
- Set the trim piece into place and fasten with finishing nails.



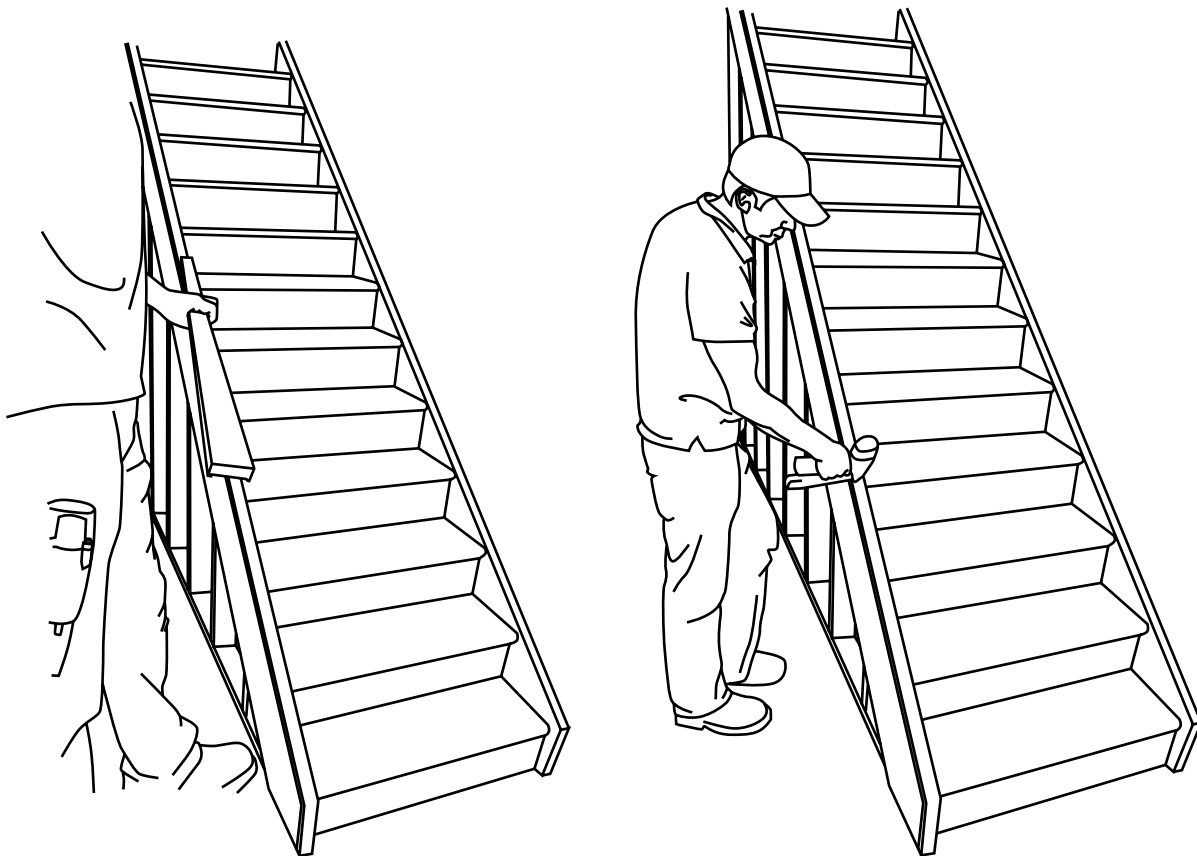
## 3.3 Install the outside trim

(This procedure is only necessary for staircases that are not attached to a wall on one side or the other)

There are two options:

### Option 1.

If the open side of the staircase is a closed stringer, simply add the Closed Structural Stringer Cap.



### Option 2.

If the open side of the staircase is an open stringer style, you will need to install the outside false stringer by fitting the groove onto the modules between the drywall and the stairs. This trim needs to be installed in two pieces so that you can slide it into place and still cover the whole stringer.

# ANNEX I: Safety

**While there is no substitute for common sense, it is important to emphasize some of the fundamental “dos and dont’s” of carpentry.**

**Always** use caution, care and good judgment when following the procedures described in this manual.

**Always** check the local building codes when planning new construction. The codes are intended to protect public safety and should be observed to the letter.

**Always** wear a disposable facemask when sawing and sanding. Use a special filtering respirator when working with toxic substances and solvents.

**Always** be aware that there is seldom enough time for the body’s reflexes to save you from injury when using power tools. Be alert and avoid dangerous situations.

**Always** use a drill with an auxiliary handle to control the torque when large-size bits are used.

**Never** change a saw blade, a drill, or router bit unless the power cord is unplugged. Do not depend on the switch being off; you might accidentally hit it.

**Never** saw a work piece that spans a large distance between horses without close support on each side of the cut. The piece might bend, closing and thus jamming the blade, causing the saw to kick back.

**Never** support a work piece from underneath with the leg or another part of you body when sawing.

**Always** secure the staircase before walking on it.

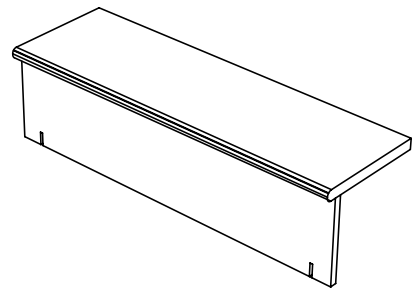
**Always** work in pairs while securing a staircase into place so it cannot slip and fall before it is attached.

# ANNEX II: Checklist / Tool Requirements

## A) Checklist

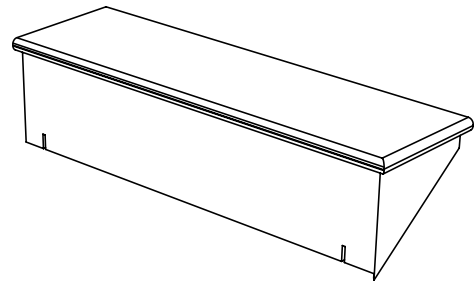
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Closed Step Module



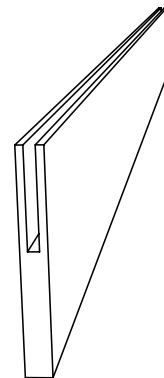
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Open Step Module



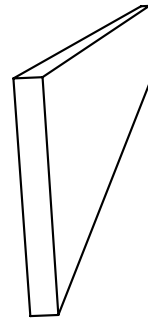
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Support Wall Trim



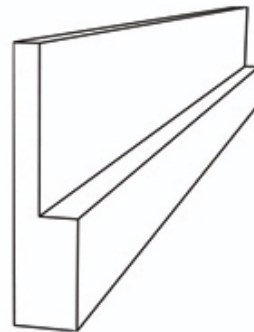
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## Inside Stringer



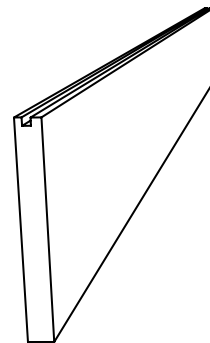
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## Outside Stringer



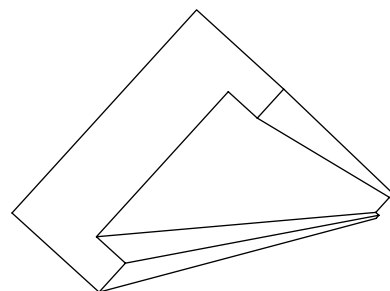
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## Wall-side Stringer



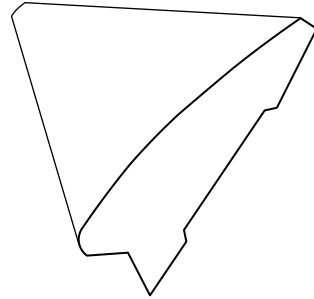
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## Base Rail/Cap



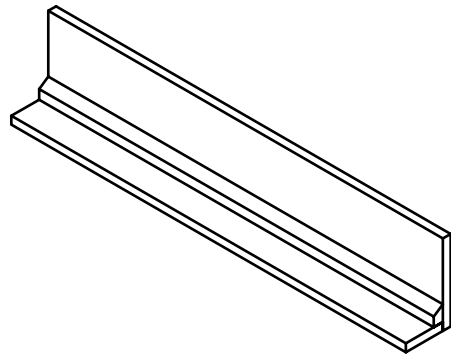
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## Flexible Wall Trim



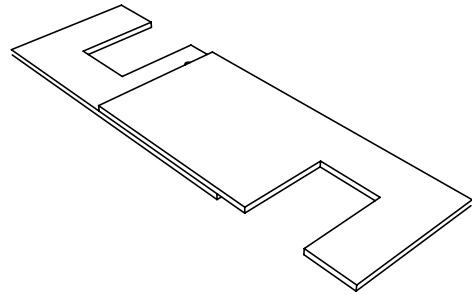
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## Mounting Bracket



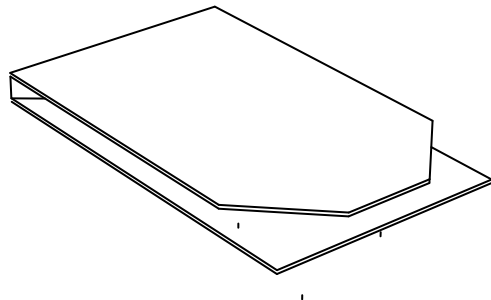
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## Riser Jig (2)



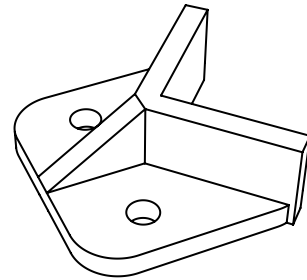
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## Stringer Marking Jig



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## Saddle Brackets



### B) Tool Requirements

- Circular saw
- Framing square
- 4' level
- Power drill
- Utility knife
- Construction adhesive
- Saw horses
- Measuring tape
- Ratchet set
- Screw gun
- Hand saw

# ANNEX III: Dimensions worksheet

Write down the measurements and calculations required to proceed with the installation.

Steps to Follow:

Finished Floor to Finished Floor height (FF to FF) \_\_\_\_\_

Select Step width \_\_\_\_\_

the following calculations are necessary. If you are using our website you may refer to the calculator.

Total number of steps: \_\_\_\_\_

Total Run: \_\_\_\_\_ Nose Line slope run (total run + 9.5'): \_\_\_\_\_

Unit Rise: \_\_\_\_\_ Riser Height: \_\_\_\_\_

Nose Diagonal: \_\_\_\_\_

Minimum Stairwell Opening in order to achieve a minimum Header Clearance of 6' 5":  
\_\_\_\_\_

# ANNEX IV: Total Run Guide

See below to determine the total run of your staircase.

Note: There is always one more riser than the number of steps. i.e. 13 risers = 12 steps

|                      |              |
|----------------------|--------------|
| 1 step (2 risers)    | 11 inches    |
| 2 steps (3 risers)   | 20 ½ inches  |
| 3 steps (4 risers)   | 30 inches    |
| 4 steps (5 risers)   | 39 ½ inches  |
| 5 steps (6 risers)   | 49 inches    |
| 6 steps (7 risers)   | 58 ½ inches  |
| 7 steps (8 risers)   | 68 inches    |
| 8 steps (9 risers)   | 77 ½ inches  |
| 9 steps (10 risers)  | 87 inches    |
| 10 steps (11 risers) | 96 ½ inches  |
| 11 steps (12 risers) | 106 inches   |
| 12 steps (13 risers) | 115 ½ inches |
| 13 steps (14 risers) | 125 inches   |
| 14 steps (15 risers) | 134 ½ inches |
| 15 steps (16 risers) | 144 inches   |
| 16 steps (17 risers) | 153 ½ inches |
| 17 steps (18 risers) | 163 inches   |
| 18 steps (19 risers) | 172 ½ inches |
| 19 steps (20 risers) | 182 inches   |
| 20 steps (21 risers) | 191 ½ inches |



## REMINDER

The Mounting Bracket adds 1 ½" to the total run of your staircase. Our stair systems work with a standard unit run of 9 ½"

# ANNEX V: Case-Modular Terminology

## Tread

The stepping surface of a step.

## Nosing

The overhanging part of the tread.

## Riser

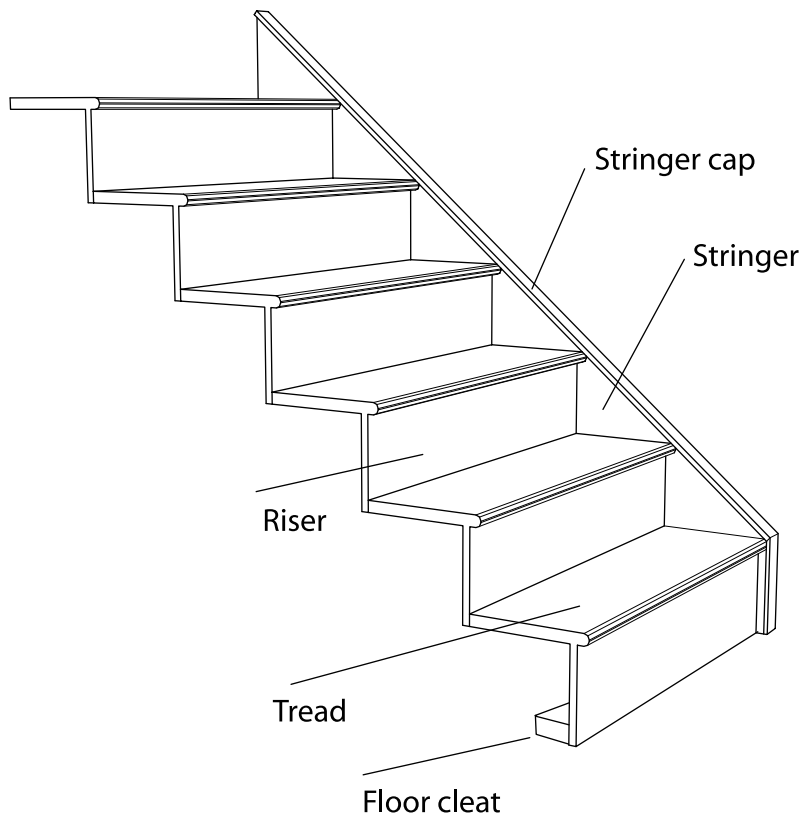
The vertical faceboard between steps.

## Riser Height

The distance from the top of one step to the underside of the step above it.  
*ie. the visible part of a riser.*

## Unit Rise

The vertical distance from the top of one tread to the top of the next.



## **Total Rise**

The total height of all the unit rises. In the industry it is often interchanged with the terms “floor to floor” or Finished Floor to Finished Floor or “FF to FF” The total vertical dimension of your staircase.

## **Unit Run**

The horizontal depth of each step, not counting the nosing overhang. This is the total distance measured from the face of one riser to the face of the next riser.

## **Total Run**

The total horizontal dimension of a staircase. It is measured from the face of the top riser to the face of the bottom riser.

## **Nose Line Hypotenuse**

This is the slope line of the staircase step-by-step along the nosing.

## **Open Right**

A staircase that doesn't have a wall on its right side. (The right side is referenced while looking up from the bottom of the staircase.)

## **Open Left**

A staircase that doesn't have a wall on its left side. (The left side is referenced while looking up from bottom of the staircase.)

## **Closed Step Module**

A step that is closed in on both sides by walls or structural stringers.

## **Open Step Module**

A step that has no wall or structural stringer on one side. The nosing of the step returns down one side and a wall (or stringer) sits below the tread to support these steps.

## **Closed Staircase**

A section of stairs with walls on both sides.

## **Open Staircase**

A section of stairs that is open to the room. There will be no wall above the steps on one or both sides. They can be open left, open right, or open on both sides. An open flight can be built with Open or Closed steps. Same rule applies for referencing your open side. Stand at the bottom staircase and look up to reference left and right.

## **False Stringer**

The non-structural stringer that is screwed directly to your tread and riser and to the wall studs when your staircase is up against a wall. It closes the step and has a groove in the top to receive the flexible wall trim piece.

## **Outside Stringer**

The larger of the 2 stringer pieces it is glued and screwed to the outside of the staircase providing structural strength when the staircase is not attached to or supported by a wall. The inside and the outside stringer together make up the “The Structural Stringer”.

## **The Structural Stringer**

A free standing stringer used to support a staircase that has no wall support. When the inside stringer and the outside stringer are glued and screwed together then we have a structural stringer.

## **Layout Run**

The Total Run plus 1 more unit run(one more step) which is measured from the nose of the upper flooring overhang to the nose of an imaginary step drawn on the lower floor in front of the first step. This is used to establish the Nose Hypotenuse so that you can visualize your install and check for headroom and any other obstructions before you start.

## **Nose Hypotenuse**

This is a Diagonal line for calculations and layout that would be like a chalk line sitting on top of all the steps from the upper flooring nosing overhang right down to the finished surface of the lower floor. It can be drawn on the wall to line up the steps or build support walls. This is the line referred to for code compliance with headroom and can also be used for calculations.

## **Mounting Bracket**

The wooden shelf screwed to the upper floor. It supports the top step and fastens the staircase to the floor.

## **Trimmer/Header**

The piece of lumber at the top edge of your stairwell framing.

## **Stairwell / Well**

The rough opening in the upper floor.

## **Floor Cleat**

The wooden block attached to the lower floor behind the first riser. It fastens the staircase to the lower floor.

## **Support Wall Trim**

The large trim piece designed to cover the adjustments to finished triangles on Open Steps and fit over the drywall on the support wall.

## **Flexible Wall Trim**

The small shaped trim piece that conceals the joint between the wallside stringer and the drywall.

## **Saddle Brackets**

Brackets that tie down the backside of the riser to a lower support.

## **Headroom**

The free height, measured vertically from the ceiling stairwell (including finishing) straight down to the imaginary line along the nose hypotenuse of the stairs. Code minimum is 6ft. 5in. in most residential codes, but check your local building code as these change in different jurisdictions.

## **2x4 support cleat**

This is a 2x4 screwed through the wall studs and under the stringer to add additional support.

## **Top Riser Trim**

This piece covers the mounting bracket at the top of your stairs.

## **Riser Height**

This is the height of your riser from the lower (finished) floor to underside of the nosing of the first tread. You will need this dimension to measure, mark and cut your bottom riser.

## **Wall Stringer**

This is the Inside Stringer placed against the wall.

## **Open Side Support Wall**

This is the partial wall that is built to support an open side staircase.

## **Finished Wall to Wall Width**

The total distance between two walls ( including finish material -typically drywall)

## **Landing**

This is a floor built into a staircase usually to provide a turning point for a change in direction. The landing should be at least as wide and as long as the width of you stairs - typically a minimum of 36 inches . Check local building codes.

## **Open step modules**

These Modules are designed to sit on top of a support wall rather than to be fastened to a stringer They have a triangle on their open side and a nosing return.

# Notes

# CASE MODULAR

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