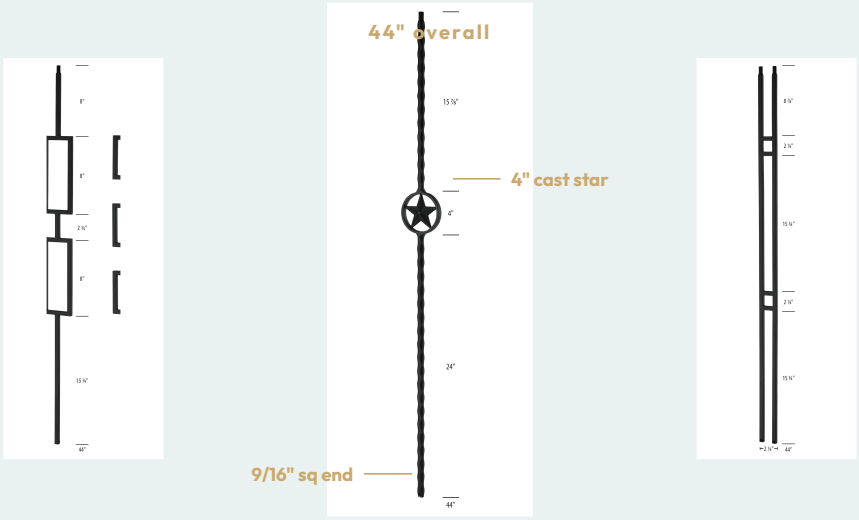
UNIQUE
WOOD PRODUCTS

INSTALLATION GUIDE · STAIR PARTS

Iron Baluster
Installation Guide.

M-SERIES · SIDE ELEVATION · NOT TO SCALE

UWP · TANNER RD YARD



UW-M302
1/2" Sq

UW-M673 Single Star
Hammered Iron · Satin Black

UW-M304
1/2" Sq

TREAD SURFACE · SHOE SEATS HERE

A field reference for installing Unique Wood Products iron balusters — the UW M-series shapes, the matched shoe and epoxy accessories, the IRC spacing rules, and the drill-and-set method that holds a stair guard the way the code expects. Written for the builders, finish carpenters, and stair shops who set balusters every week.

1. PLAN
2. LAY OUT
3. DRILL & SET
4. FINISH

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A STAIR GUARD, NOT A DECORATION

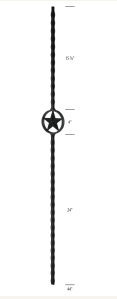
Iron carries the *guard load.*

A baluster is the vertical infill between the handrail and the tread that turns a stair rail into a code-compliant guard. Iron does this work mechanically — the baluster is set into the rail above and the tread below with structural epoxy, and the matched shoe hides the joint. No nails, no screws, no shoe-mounted set-screws as the primary fastener.

Iron balusters also carry a visual job. The shape (plain, twist, basket, star, rectangle, industrial) and finish (Satin Black, Antique Bronze, Oil Rubbed Bronze, Oil Rubbed Copper, Silver Vein) set the tone of the staircase before the first piece of furniture arrives. Plan the rhythm — 1-in-3 or 1-in-4 accent balusters between plain shafts — before you order, so the staircase reads finished, not busy.

> **ACCLIMATE. STAGE. LAY IT OUT.**
>
> Open every carton and lay the run on the stair before any cutting or drilling. Confirm the shape counts, the finish, and the rod size (9/16" vs 1/2" square) all match the order — the matched shoe and the drill bit are sized to that rod, so a finish swap mid-run will not work. Iron does not need to acclimate the way wood does; the treads and handrail underneath it do.

- Verify finish across every shape — SB is most common, but the AB / ORB / ORC / PC lines exist by shape, not by job.
- Count plain vs. accent balusters before the first cut and lay them in the planned rhythm.
- Confirm rod size (9/16" or 1/2") drives the drill bit & shoe — do not mix sizes in one run.
- Order one EPOXY bottle per ~30 balusters — short-shipping epoxy stops the install.



ANATOMY OF AN IRON BALUSTER

Three regions, one part.

Top square end – ~1" mortise into the underside of the handrail. Cut here to fit rail height.

Shaft – hammered or twisted along 36"–38" of length, sometimes interrupted by a cast detail (star, basket, rectangle).

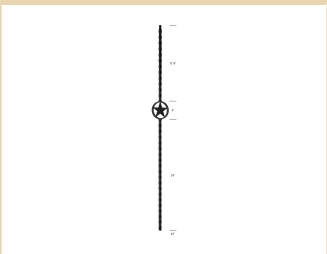
Bottom square end – 1-1/2" mortise into the tread, hidden by the flat or rake shoe that sits on the tread surface.

WHAT YOU'RE INSTALLING

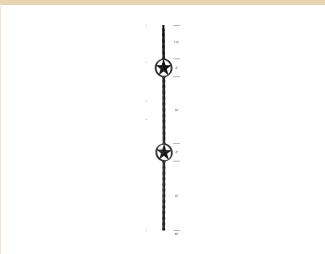
One system, *every shape and finish.*

The UW M-series — UW-M673 / M674 / M301–M304 and the rest of the line — is built around two interchangeable rod sizes (9/16" and 1/2" square) and matched finishes. The star-medallion and rectangle shapes ship in Satin Black only; other shapes add Oil Rubbed Bronze, Oil Rubbed Copper or Silver Vein by profile.

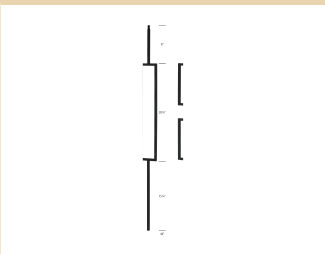
SEVEN SHAPES · ALL 44" OVERALL



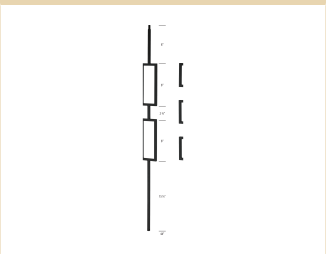
UW-M673 Single Star
9/16" Sq · SB



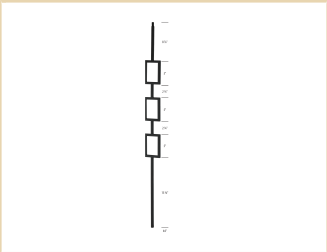
UW-M674 Double Star
9/16" Sq · SB



UW-M301 Single Rectangle
1/2" Sq · SB



UW-M302 Double Rectangle
1/2" Sq · SB



UW-M303 Triple Rectangle
1/2" Sq · SB



UW-M304 Industrial
1/2" Sq · SB

FIVE MATCHED IRON FINISHES

Satin Black (SB) · Antique Bronze (AB) · Oil Rubbed Bronze (ORB) · Oil Rubbed Copper (ORC) · Silver Vein (PC). The full set runs on every plain, twist, basket, and rectangle shape; star-medallion shapes ship in Satin Black only.

WHAT SHIPS WITH THE BALUSTERS

EPOXY – iron-baluster construction adhesive (CSD 1034793). One bottle sets ~30 balusters. **Shoes –** flat shoe for level runs (UW-ALM06-LSB, or UW-06 in other finishes), rake shoe for the stair angle (UW-ALPSH02-LSB, or UW-02), and an adjustable knuckle under the handrail (UW-M798SB). Order the shoes in the matched finish and rod size — 9/16" shoes (UW-07 / UW-03) do not fit a 1/2" baluster.

SET UP FOR A CLEAN INSTALL

The right bit, *the matched shoe.*

TOOLS & MATERIALS

- Cordless drill — hammer-drill optional for hardwood treads
- 9/16" or 1/2" brad-point or Forstner bit (matched to baluster rod size)
- 3/8" spade bit for handrail mortises (centered in rail)
- Iron-baluster construction adhesive (EPOXY · CSD 1034793)
- 4-foot level, 6" torpedo level, plumb bob
- Tape measure, combination square, pencil
- Painter's tape — mask the shoe-line on the tread before drilling
- Hacksaw or 14 TPI metal-cutting bandsaw blade — to trim top end to rail height
- Mineral spirits + rag for epoxy clean-up before it cures

A polyurethane construction adhesive can substitute for the iron-baluster epoxy in a pinch — the listed EPOXY is the spec'd product and what every UWP-supplied job ships with.

WHAT SHIPS WITH THE BALUSTER

A baluster does not install alone.

Every job needs the epoxy plus three matched shoes per baluster line: a flat shoe at the level run, a rake shoe at the stair angle, and an adjustable knuckle under the handrail. Order the rod size, finish, and shoe set together — the parts are not interchangeable across sizes.

UW-EPOXY · CSD 1034793
Iron-baluster adhesive – ~30 balusters / bottle

UW-ALM06-LSB / UW-06-XX · Flat shoe
UW-ALPSH02-LSB / UW-02-XX · Rake shoe
UW-M798SB · Adjustable knuckle

XX = SB / AB / ORB / ORC / PC finish code

CUTTING IRON TO LENGTH

The 44" baluster is cut from the top end (the square end that goes into the handrail) with a hacksaw, a 14 TPI bandsaw blade, or an abrasive chop-saw wheel. Do not cut the decorative shaft. Deburr the cut end with a file so it seats clean into the handrail mortise.

PLAN & LAY OUT

The 4" sphere *rules every layout.*

1 *Plan the rhythm before you cut*

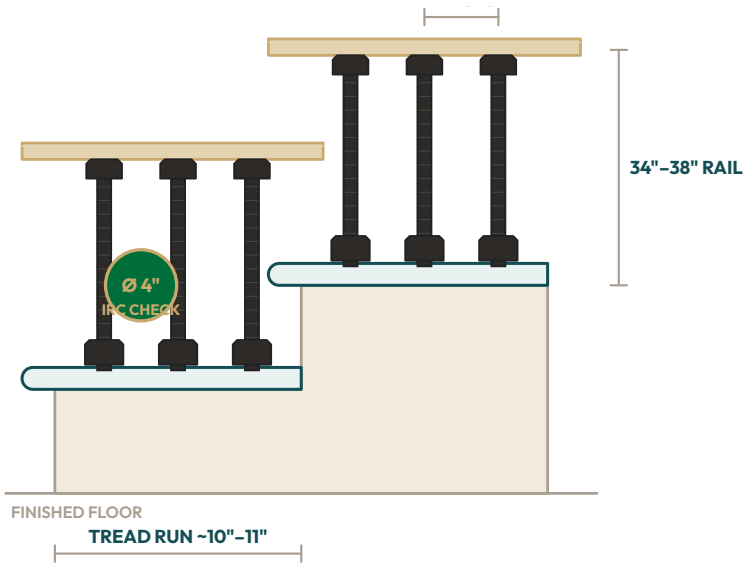
Decide the pattern — all plain balusters, or plain with accents. The standard accent rhythm is 1-in-3 or 1-in-4 (every third or fourth baluster carries the cast detail: star, basket, rectangle). Count the accents before the first hole goes in.

Mask a pencil line on the top of each tread and on the underside of the handrail where the shoe will sit — painter's tape keeps the finish clean and gives you a target to mark to.

2 *Lay out the spacing*

IRC R312.1.3 — a 4-inch sphere must not pass between adjacent balusters (4-3/8" is allowed on the open side of a stair; 4" is the safe layout target). On a typical 10–11" tread, three balusters per tread, evenly spaced, holds the rule with room to spare.

Spacing formula: ((tread run − baluster width) / (n + 1)) · spacing center-to-center. With three 9/16" balusters on a 10" run, that is roughly 2-3/8" to 2-1/2" between shafts — well under 4".



3 BALUSTERS PER TREAD · THE CODE-COMPLIANT DEFAULT

THREE BALUSTERS PER TREAD — THE 4" SPHERE CHECK BETWEEN EVERY ADJACENT PAIR

CODE RULE OF THUMB (IRC)

Handrail 34" to 38" above the nosings (R311.7.8.1); guard 34" minimum on the stair and 36" at the landing (R312.1.2). 4" sphere between balusters (4-3/8" allowed on the stair side); 6" sphere at the triangle formed by the tread, riser and bottom rail (R312.1.3). Confirm against your local code.

TOP FIRST, THEN THE BOTTOM

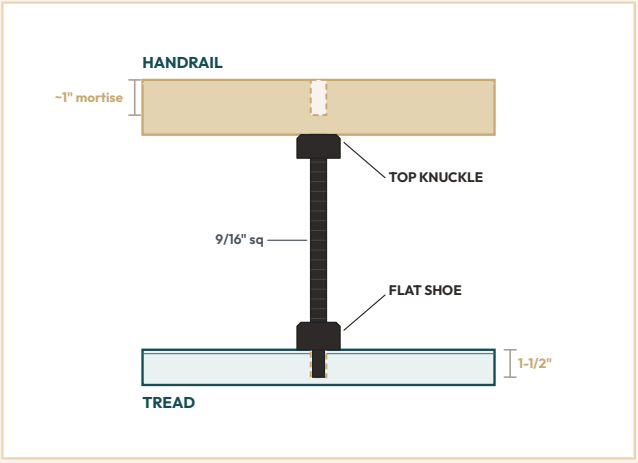
Two holes. *One straight line.*

3 *Drill the top mortise first*

With the handrail set at code height (34"–38" to nosing on the rake, 36" minimum at the landing), mark each baluster center on the underside of the rail. A 3/8" hole × ~1" deep accepts the 9/16" or 1/2" square top end with room for epoxy.

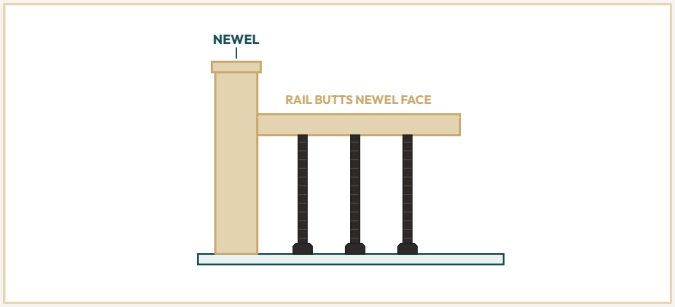
Drop a plumb bob from each top hole and mark the tread. The plumb mark is where the bottom mortise goes — drill a 9/16" or 1/2" hole (match the rod) about 1-1/2" deep, square to the tread surface.

Drill before any balusters are set. Doing the rail and treads in one pass keeps the line plumb across the whole run.



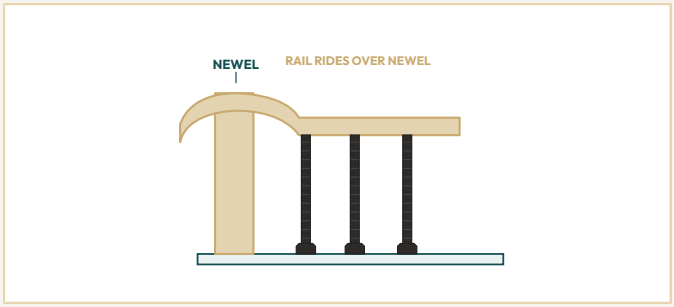
MORTISE DEPTHS — ~1" TOP, 1-1/2" BOTTOM

KNOW YOUR RAIL SYSTEM BEFORE YOU DRILL



A · Post-to-post

Handrail meets the face of each newel. Drill the rail mortises between newels only — the newel sits in the layout but takes no baluster.



B · Over-the-post

Continuous handrail rides over the newels on turn-out and rake fittings. Drill the rail mortises across the full run, including over the newel.

STEPS 4–5 · DRY-FIT, EPOXY & SET

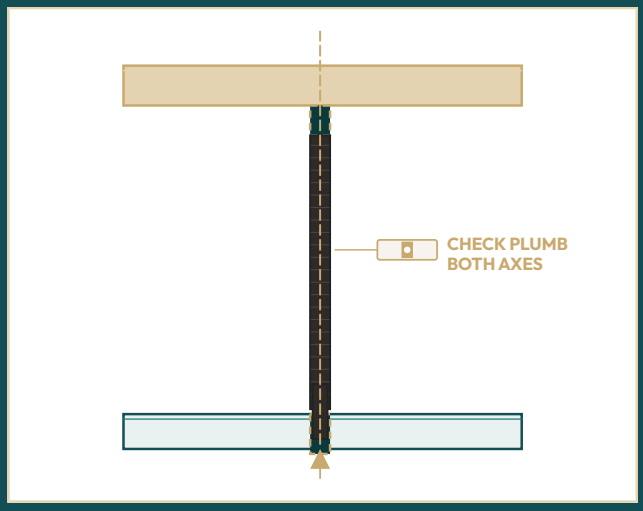
Dry-fit every baluster. *Then commit.*

With every mortise drilled, set the entire run dry first — no epoxy. This is where you catch a mortise drifted off plumb, a baluster cut too long, or a shoe in the wrong finish. Fix it before the epoxy locks anything in.

4 · *Dry-fit & plumb*

Drop each baluster bottom into its tread mortise and the top into the handrail. Hold a 6" torpedo level against the shaft and check plumb on both axes — front-to-back and side-to-side. Any baluster that will not seat plumb gets called out now; a mortise is far easier to re-drill before the epoxy cures.

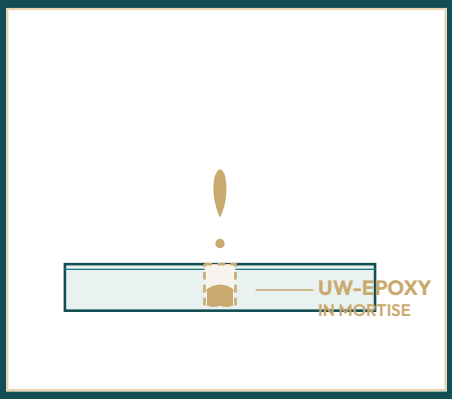
If the top end is long, mark, pull the baluster, trim with a hacksaw from the top, deburr, and refit. Confirm the rail height (34"–38" from nosing) holds across the run.



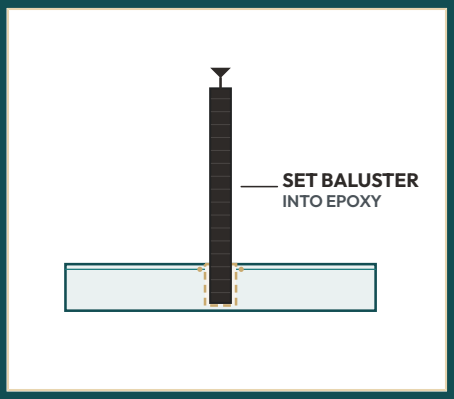
DRY-FIT — PLUMB ON BOTH AXES

5 · *Epoxy & set*

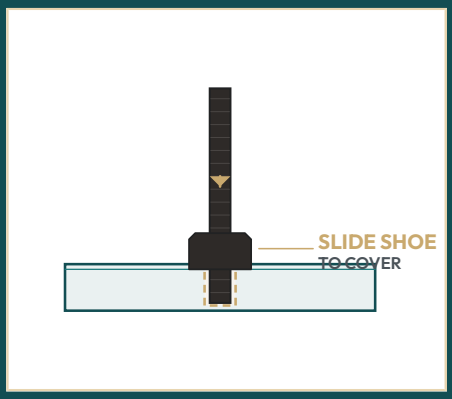
Work one baluster at a time. Fill the bottom mortise about half-full with iron-baluster epoxy, slide the matching shoe down over the shaft, drop the bottom into the epoxy, slide a bead of epoxy into the top mortise, then push the top into the handrail. Slide the shoe down to the tread, square it to the rail, and let the epoxy cure undisturbed for the manufacturer's working time — usually 30 minutes to tack, 24 hours to full strength.



STAGE 1 · EPOXY IN MORTISE



STAGE 2 · SET BALUSTER



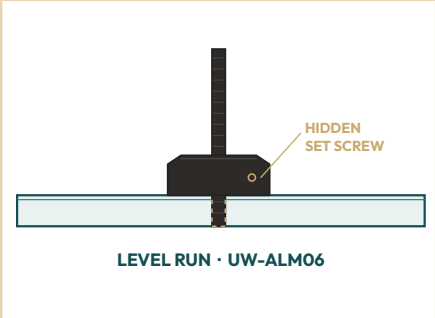
STAGE 3 · SLIDE SHOE DOWN

> *Epoxy is the structural fastener. The shoes are a cover — they hide the mortise and finish the joint, but the epoxy carries the guard load.*

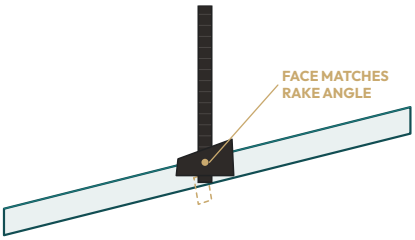
MATCH THE ANGLE & THE FINISH

Three shoes *per baluster line.*

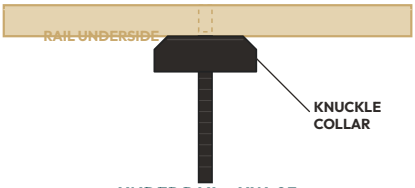
Every iron baluster on a residential staircase needs three shoes: a flat shoe on the level run, an adjustable rake shoe on the stair pitch, and a top knuckle / shoe under the handrail. The shoes match the rod size (9/16" or 1/2") and the finish of the baluster — verify both before set.



LEVEL RUN · UW-ALM06



STAIR ANGLE · UW-ALPSH02



UNDER RAIL · UW-03

UW-ALM06-LSB · Flat shoe

The square shoe block that sits flat on a level run — landing tops and level upper guards. Set with the optional set-screw on the back side facing the wall, not the room.

UW-ALPSH02-LSB · Rake shoe

Angled shoe whose face matches the stair pitch so it sits flush on the tread at the rake. Order it in the same rod size and finish as the baluster.

UW-M798SB · Adjustable knuckle

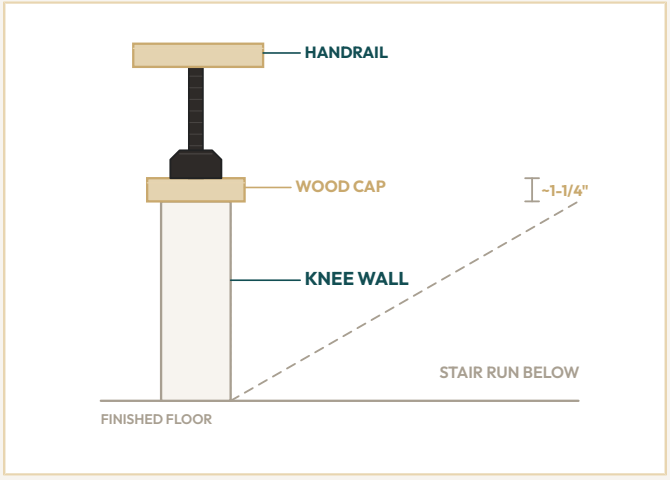
The collar that caps the baluster at the underside of the handrail. Hides the top mortise and gives the rail-to-baluster joint a finished shadow line.

FINAL PASS

Once every baluster is epoxied and shoed, walk the run. Each shoe square to the rail, each shaft plumb, each top tight to the handrail. Wipe any epoxy squeeze-out with mineral spirits before it skins over — cured epoxy on a SB finish has to be scraped, not solvent-cleaned.

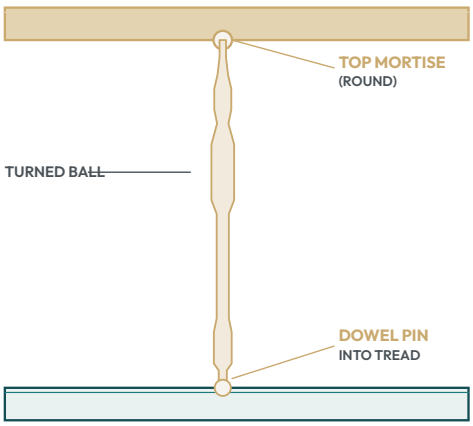
TWO INSTALLS THAT CHANGE THE DETAIL

When the rail *is not over a tread.*



Knee-wall (pony wall)

On an open stair with a half-height knee wall replacing the open guard, the baluster sets into a wood cap on top of the wall instead of the tread itself. Drill the cap to mortise depth (~1"), set with epoxy, finish with the same flat shoe as a level run. The cap thickness is included in the rail-height math — measure from the cap face, not the wall framing.



WOOD BALUSTER · TURNED PROFILE

Wood balusters

Turned wood balusters use a 1/2" or 5/8" dowel pin at the bottom (preformed on the baluster) into a matching tread mortise, and a top end glued into a round hole in the handrail. No shoes — a wood fillet between balusters spans the rail underside instead. Same 4" sphere rule applies.

CARE ONCE INSTALLED

Iron is low-maintenance. Wipe with a dry cloth; spot-clean with a damp cloth and mild soap. No solvents, no abrasives.

The matched finishes are powder-coat over forged iron — durable, but a sharp gouge will show the base steel. Touch-up paint in the matching finish code (SB / AB / ORB / ORC / PC) is available from the Tanner Rd yard. For a freshly installed run, leave the epoxy untouched for 24 hours; do not run a hand up the rail or hang anything from the balusters until the adhesive is fully cured.

FORGED IRON · POWDER-COAT FINISH · EPOXY-SET CONSTRUCTION

SETTING AN IRON STAIR?

Balusters, shoes & epoxy — *from one Houston yard.*

The full M-series — plain, twist, basket, star, rectangle, and industrial — in 9/16" and 1/2" square, five matched finishes, through our NW Houston branch (9915 Tanner Road). The core 1/2" Satin Black patterns, standard shoes and epoxy are stocked for will-call; every other pattern and finish is special order, timing confirmed at quote.

CALL

(713) 462-5045

EMAIL

orders@uniquewoodproducts.com

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uniquewoodproducts.com/stair-parts/iron-balusters

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