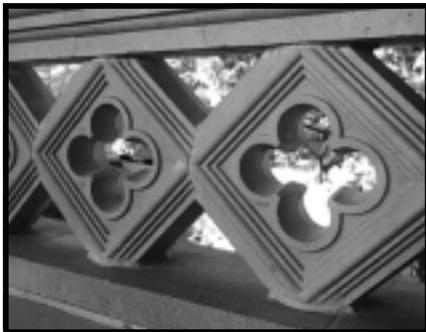
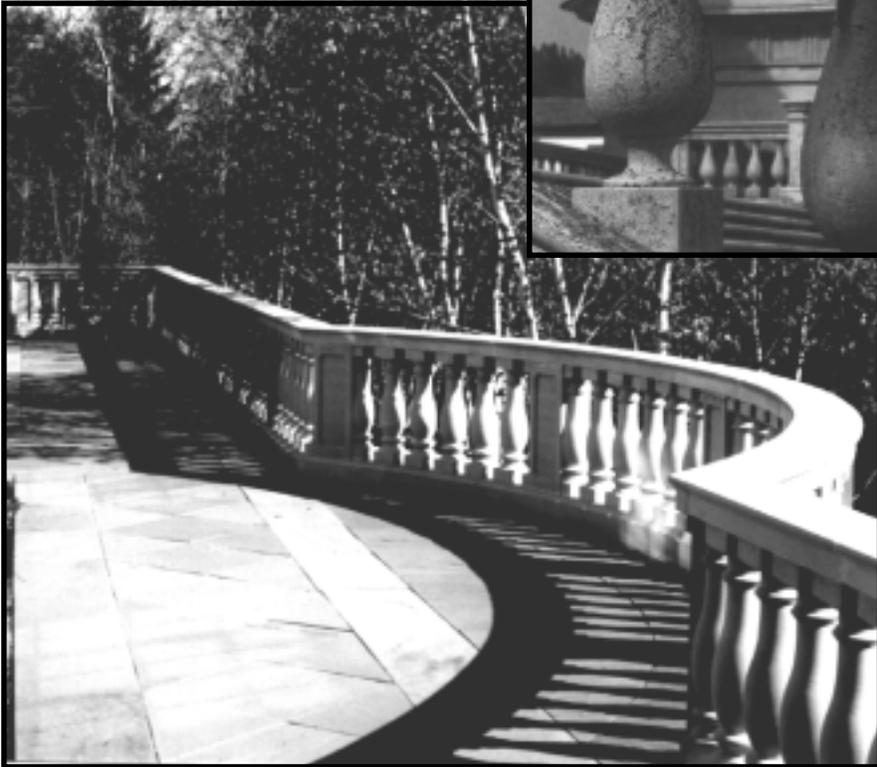


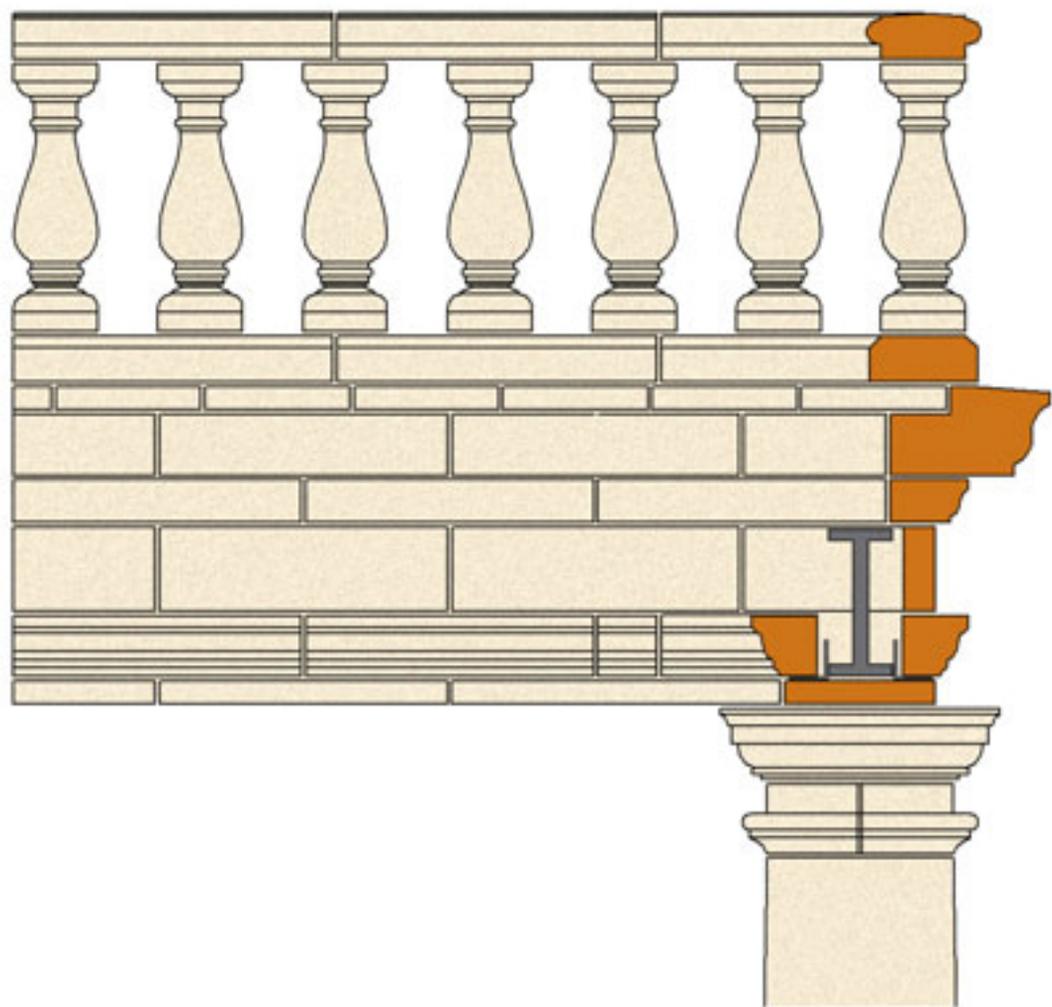
Balustrade Legend

Technical Information on Cast Stone Balustrade and Staircases



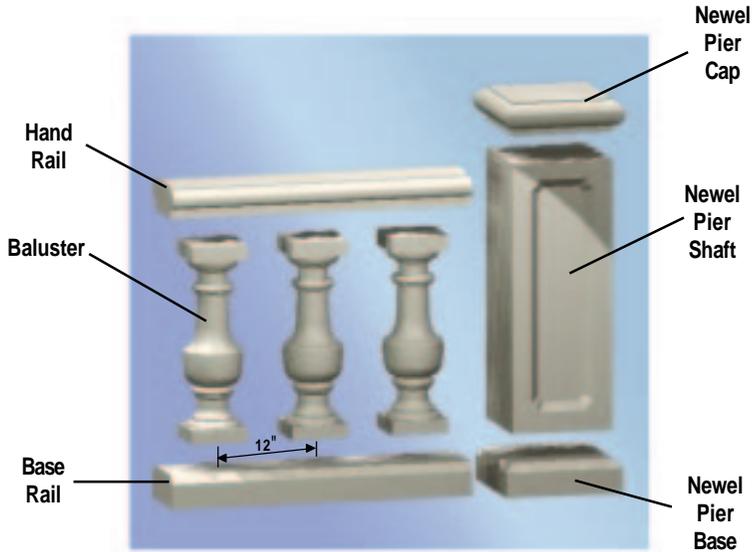
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Balustrade Legend

Balustrade Systems



Typical Balustrade Unit with Standard Newel Pier

Balustrade Units are sold by the linear foot at the cost factors shown in the tables. The pricing of the balustrade unit includes: one foot of base rail, one baluster and one foot of hand rail. Hand and base rails are available in straights, finished ends, corners, or stock radius parts at no additional charge. Custom radii are available at a one-time set up charge plus the linear foot price. Parts such as corners, ends, and radii need to be specified on your drawings or at the time of the order.

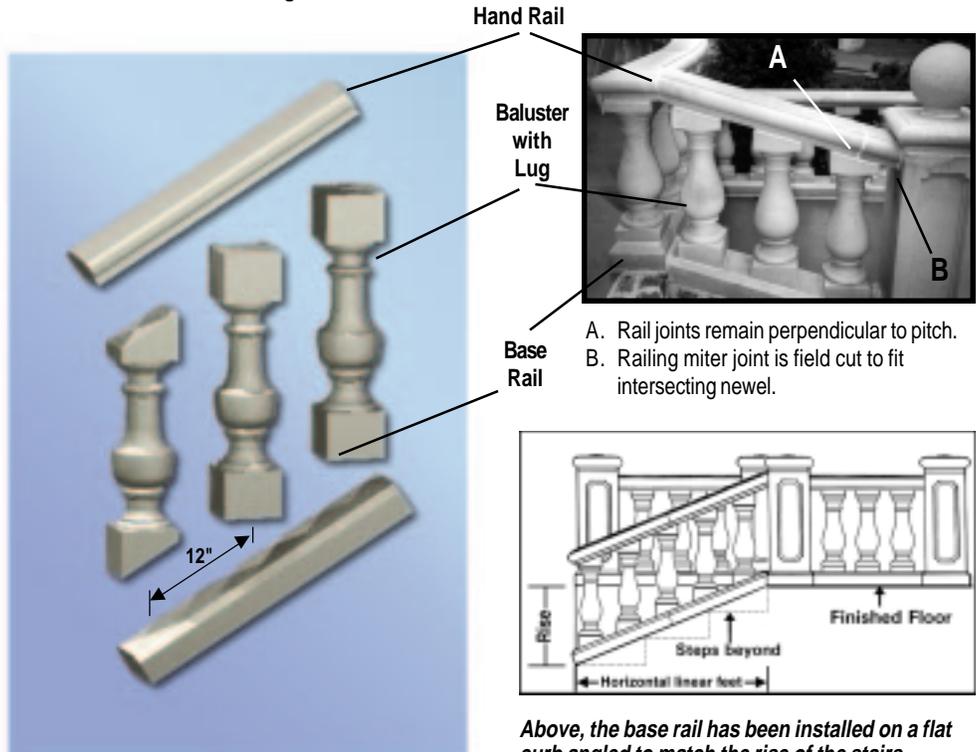
Some areas require that the spacing between balusters meet certain conditions. Ball Code information is shown on a following page. Spacing requirements to meet 4" and 6" ball codes are shown in the Balustrade Part Dimensional Table.

Standard Newel Piers project above the balustrade hand rail and are typically 12" square. Choose 360°, 270°, 180°, or 90° Newel Piers, as required by your design. Optional Pass-Thru Newel Piers are shorter than the standard piers (the same height as the baluster), but still 12" square. The hand rail aligns with the top of the newel cap. In Line Newel Piers are the same height as the balusters and the same width as the hand and base rails. The hand and base rails continue above and below the In Line Newel instead of using a separate cap and base.

Straight Stairs

A stair, derived from the Anglo-Saxon word Staeger meaning ascent, is referred to as a staircase when it includes some, if not all, of the components contained in this catalog. Staircase Units consist of the same parts as the Balustrade Units, with the addition of baluster with lugs that extend the baluster to meet stair pitch and rail height requirements. Straight staircases are available in all of our standard Balustrade Unit styles, excluding screening, and are priced in the tables on the following pages.

Staircase Units are priced by the horizontal linear foot. Stone Legends provides sufficient hand and base rail to accommodate the slope specified. Please see the tables with each balustrade style. Tread and risers are priced separately. In locations that have ball codes, the stairs are subject to ball codes also. See following page.



- A. Rail joints remain perpendicular to pitch.
- B. Railing miter joint is field cut to fit intersecting newel.

Above, the base rail has been installed on a flat curb angled to match the rise of the stairs. Baluster spacing is 12" on center unless local codes or personal taste dictate otherwise.

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Balustrade Legend

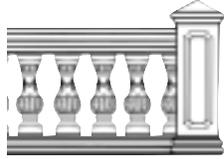
Balustrade Unit Styles

Balustrade Units are dimensionally coordinated designs composed of a Balustrade and a Newel Pier. Balustrade Units consist of a base rail, a baluster, and a hand rail. Newel Pier Units consist of a base, a newel shaft, and a cap.

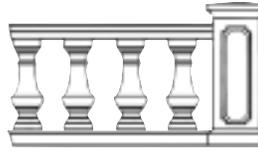
Unit drawings for reference to chart.
(Drawings are not to scale)



Drawing 1:
Belleville1 Extrados1
Chamfer1 with Matching
Newel Pier



Drawing 2:
Florentine1 Benilli1
Verona1 Balustrade
with Matching Newel Pier



Drawing 3:
Jefferson1 Connelly1
Cove1 Balustrade
with Matching Newel Pier



Drawing 4:
Kendal1 Extrados1
Chamfer1 Balustrade
with Matching Newel Pier



Drawing 5:
Kinnard1 Connelly1
Cove1 Balustrade
with Matching Newel Pier



Drawing 6:
Noble1 Binelli2 Verona2
Balustrade
with Matching Newel Pier



Drawing 7:
Oakley1 Ogle3 Chamfer3
Balustrade
with Matching Newel Pier



Drawing 8:
Otterwood1 Extrados1
Chamfer1 Balustrade
with Matching Newel Pier



Drawing 9:
Otterwood2 Extrados1
Chamfer1 Balustrade
with Matching Newel Pier



Drawing 10:
Otwell1 Duran1 Cole1
Balustrade
with Matching Newel Pier

Unit Components Table

Drawing No	Balustrade Parts														Newel Pier Parts																						
	Hand rails					Base rails					Balusters				Bases				Caps			Newel Shafts															
	Binelli1	Binelli2	Connelly1	Duran1	Extrados1	Ogle3	Chamfer1	Chamfer3	Cole1	Cove1	Verona1	Verona2	Belleville1	Florentine1	Jefferson1	Kendal1	Kinnard1	Noble1	Oakley1	Otterwood1	Otterwood2	Otwell1	Chamfer1	Chamfer3	Cole1	Cove1	Verona1	Verona2	Binelli1	Connelly1	Duran1	Extrados1	Ogle1	Caprice	Carriage	Carol	
Drawing 1					•		•						•										•													27.5"	
Drawing 2	•										•		•														•		•						33.25"		
Drawing 3			•						•						•											•		•								27.5"	
Drawing 4					•		•									•								•				•								32"	
Drawing 5			•						•								•									•		•								38"	
Drawing 6	•										•							•									•		•						32"		
Drawing 7						•		•											•					•												32"	
Drawing 8										•										•				•												27.5"	
Drawing 9																					•			•												32"	
Drawing 10					•					•												•				•			•								31"

Dots indicate the parts by profile name that make up the Standard Unit Styles. Newel shaft heights for Standard Newel piers are noted at far right.

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Balustrade Legend

Ball Codes

The purpose of ball codes is to prevent falling accidents. The 4" or 6" delineator refers to the "maximum diameter" of a hypothetical ball that could be used to measure the maximum gap between balusters. A ball is used in order to mimic the size of a small child's head. Theoretically, if a child's head can pass through an opening, a chance exists that the child's body can pass through also. If a ball will not fit through the widest gap, then a child's head should not be able to fit through the gap either. Though a falling hazard does not exist, it is recommended to use a ball code installation around pool areas where drowning hazards exist.

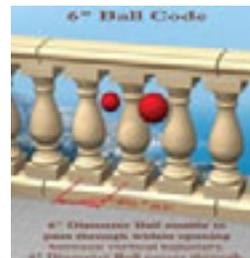
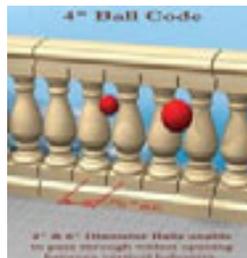
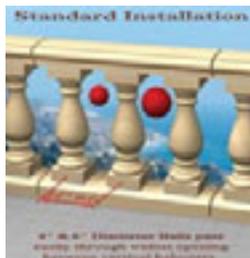
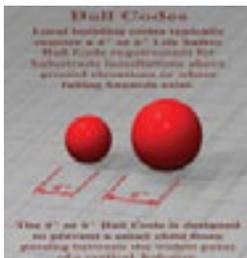
Shown here is a pictorial representation of the two primary ball codes: 4" and 6", compared with Stone Legends standard spacing of 12" on center. The balustrade unit chosen for the illustrations is Otterwood1 Extrados1 Chamfer1. The actual spacing to meet ball code requirements for each balustrade unit is shown in a table.

Stone Legends is not responsible for installation of any kind and will not determine baluster spacing for you. Check local building codes for all Ball Code requirements pertaining to your specific installations.



At left is a photo of Otterwood1 Extrados1 Chamfer1 Balustrade set on 12" centers. Compare with the illustration of standard installation above.

The Uniform Commercial Code known as the UCC publishes code requirements that are adopted by most municipalities in one form or another. In this case the balconies and stairs that are over 48 inches above ground (may vary according to district) will comply with the adopted ball code. The purpose of a ball code is to prevent falling accidents. The size ball code adopted 4" or 6" delineator refers to the "maximum diameter" of a hypothetical ball used to measure the maximum gap between balusters. A ball mimics a small child's head. If a child's head can pass through, a chance exists that the child's body can pass through also. Check local building codes for Ball Code requirements pertaining to your specific installation.



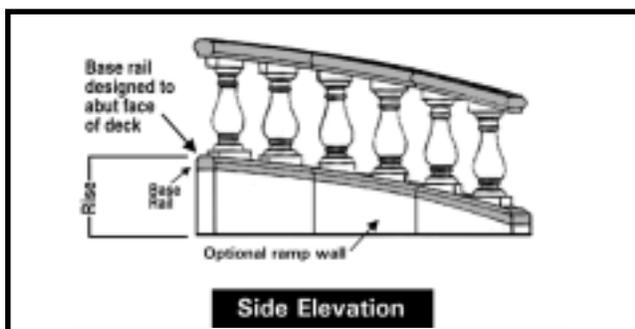
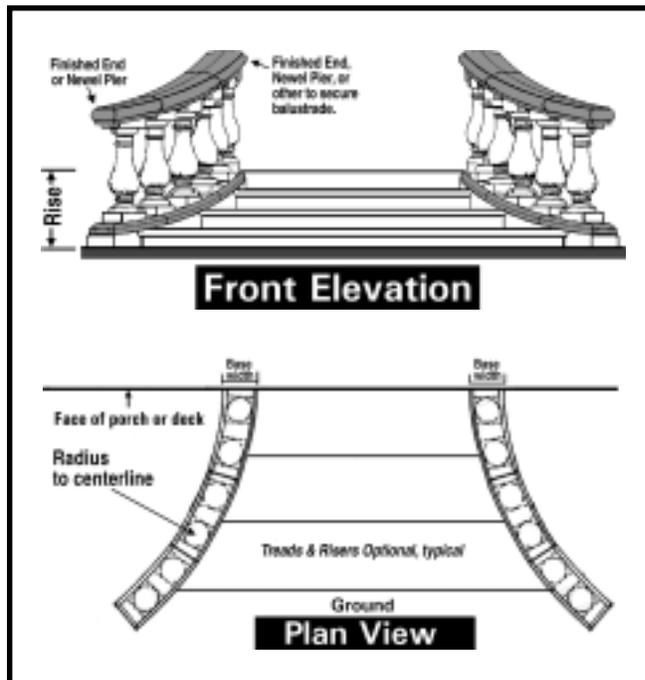
Balustrade Legend

Helical Staircases

The Helical Staircase provides an elegance not found in other types of entryways due to its symmetry and complexity. Its birth was influenced militarily by the need for a defensible position. This style of stairs was designed originally to accommodate either right- or left-handed swordsmen for the protection of one's castle.

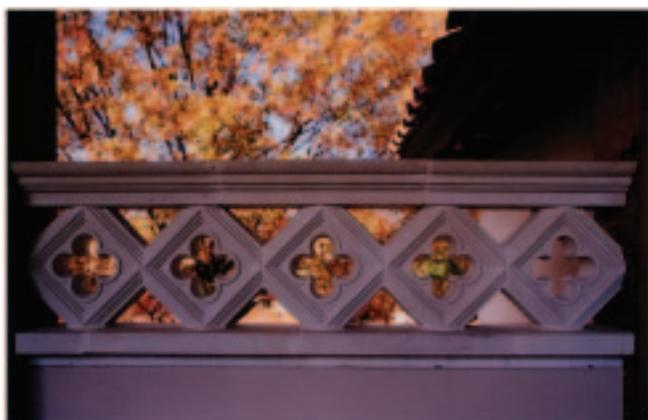
Illustrated at right is a Generic Helical Staircase Unit. Standard Helical Units are cataloged on the following pages. Custom units can be designed from any of our standard balustrade units. Or you can mix and match the profiles to suit your design.

Some of the helical stair units shown in this catalog come with finished ends at the base of the run (see the generic drawing for a finished end). Others come with newel piers at the base of the stairs. Newel piers can be added to a unit with finished ends for just the cost of the newel pier chosen. Making a helical unit that ends with newels into a finished end unit is more complicated. New tooling must be made for the finished end. Please discuss the requirements with one of our sales technicians.



Screening Unit Styles

Inspired primarily by Mediterranean designs, our Screen Units offer a unique look to any installation. Stone screening is used in the same ways as balustrade, except that stairs are not available. Screening is more difficult than standard balustrade to fabricate and to install, so it is not seen as often. The main feature, the repeating pattern, makes fitting the screen an exacting task. Screen Units are available in straight runs only and must use newel piers for corners and ends. Stone Legends has special technical sheets with exact dimensions and other necessary information for a design-to-fit system.



Screening gives an air of distinction to any terrace or patio. At left is the Talley1 screen with custom hand rail and base rail. Above, is the Waverley Almeria, UnitID 7, with matching pass-thru newel piers.

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Balustrade Legend

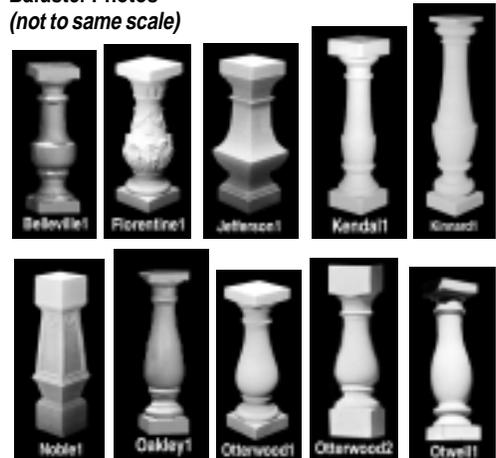
Balustrade Components Dimensional Table

Dimensions	Parts (listed by profile shape)																							
	Hand rails							Base rails						Balusters										
	Binelli1	Binelli2	Connelly1	Duran1	Extrados1	Extrados2	Ogle3	Chamfer1	Chamfer3	Cole1	Cove1	Cove2	Verona1	Verona2	Belleville1	Florentine1	Jefferson1	Kendal1	Kinnard1	Noble1	Oakley1	Otterwood1	Otterwood2	Otwell1
X "	9	7 1/4	4	4	4	3	4 1/2	4	5 1/8	5 1/2	4	4 7/8	5 3/4	4 5/8	7 1/8	7 1/2	8	5 1/2	7 1/2	6	6 1/16	7	7	6
Y Typical "	all 36							all 36						23 1/2	23	23	26 7/8	33 1/4	23	24 1/2	23	27 1/2	25 3/8	
Z "	11 3/4	8 1/2	10 1/2	9	9 1/2	6 3/4	8 7/8	9	7 1/2	10	7 1/2	6 1/2	11	8 1/4	7 1/8	7 1/2	8 1/8	5 1/2	7 1/2	6	6 1/16	7	7	6
ZZ "	7	5	7 1/2	7 1/2	7	5	7	7	6	7 1/8	9 1/2	5	7	5	6 3/4	7	7	6 1/2	7	5	6	7	7	6
Wt/piece #	170	98	96	87	93	48	88	96	95	147	102	28	140	80	52	58	62	48	73	47	43	50	80	48
Cost Factor/lf	1050	817	600	500	550	400	525	450	440	750	500	400	900	733	2295	4650	2550	3100	3100	2850	2280	2250	2450	2290
Baluster spacing on center to meet 4" Ball Code requirement (in inches)															7 1/2	7 1/2	N/A	7 1/2	7 3/4	7 1/4	7 1/4	7 1/2	7 1/2	7 1/4
Baluster spacing on center to meet 6" Ball Code requirement (in inches)															9 1/2	9 1/2	9 3/4	9 3/8	9 3/4	9 1/4	9 1/4	9 1/2	9 1/2	9 1/4

Stock Radii Available (to centerline) (\$500 setup for custom radii)

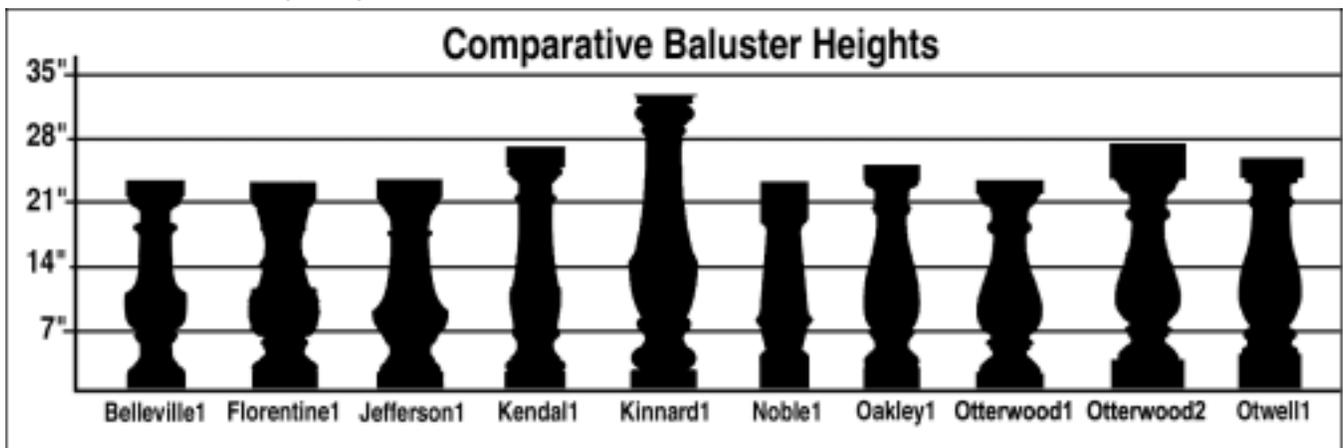
3' ft (36")			•	•																				
4' ft (48")			•	•																				
5' ft (60")																								
6' ft (72")																								
9' ft (108")																								
10' ft (120")			•	•																				
12' ft (144")																								
14' ft (168")																								
16' ft (192")																								
20' ft (240")			•	•																				

Baluster Photos (not to same scale)



Note: Balusters with lugs: add CF of 500 to the Cost Factors noted above. Optional half balusters may be purchased separately for the same cost as the standard baluster. Weights and sizes are divided by two. The X and Z dimensions are the maximum width across the main body of a baluster. The ZZ dimension is the maximum size top and bottom for matching up to hand and base rail ZZ dimensions when customizing.

Below is a proportional chart designed to help visualize the size relationships of the balusters. All balusters are square top and bottom.



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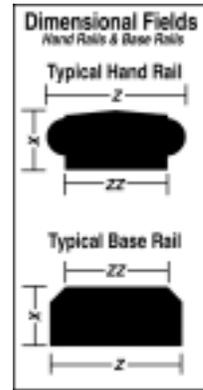
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Balustrade Legend

Balustrade Profiles Listed by Parts

The following pages illustrate dimensional information, including weight and cost factors for individual parts. You would need this information to order parts for customizing a standard unit for a particular situation, or to mix and match pieces to suit your design. Also noted in the table on the following page are the baluster spacing requirements to meet 4" and 6" ball codes.

Important Note: In using these lists, please pay special attention to the ZZ, or setting bed, dimension of the base and hand rails in relation to the ZZ dimension of the balusters. Use the drawing at right to determine the setting bed or ZZ of each hand and base rail. The baluster must be the same size or smaller than the rails at the setting bed for proper fit and construction. To determine the finished overall heights of mixed parts, add $1\frac{1}{8}$ " total for mortar joints between stones. For balusters with lugs, add 7 inches to charted dimension.



Hand Rails

Profiles and samples of straight rail

Binelli

Available in two sizes. See chart.



Binelli
Hand Rail

Connelly



Connelly
Hand Rail

Duran



Duran
Hand Rail

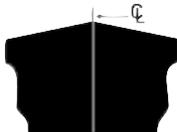
Extrados

Available in two sizes. See chart.



Extrados
Hand Rail

Ogle



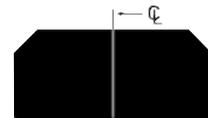
Ogle
Hand Rail

Base Rails

Profiles and samples of straight rail

Chamfer

Available in two sizes. See chart.



Chamfer
Base Rail

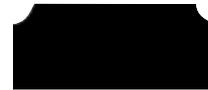
Cole



Cole
Base Rail

Cove

Available in two sizes. See chart.



Cove
Base Rail

Verona

Available in two sizes. See chart.



Verona
Base Rail

Stock radii are noted to centerline of hand rail and base rail (typical).

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Balustrade Legend

Newel Pier Parts

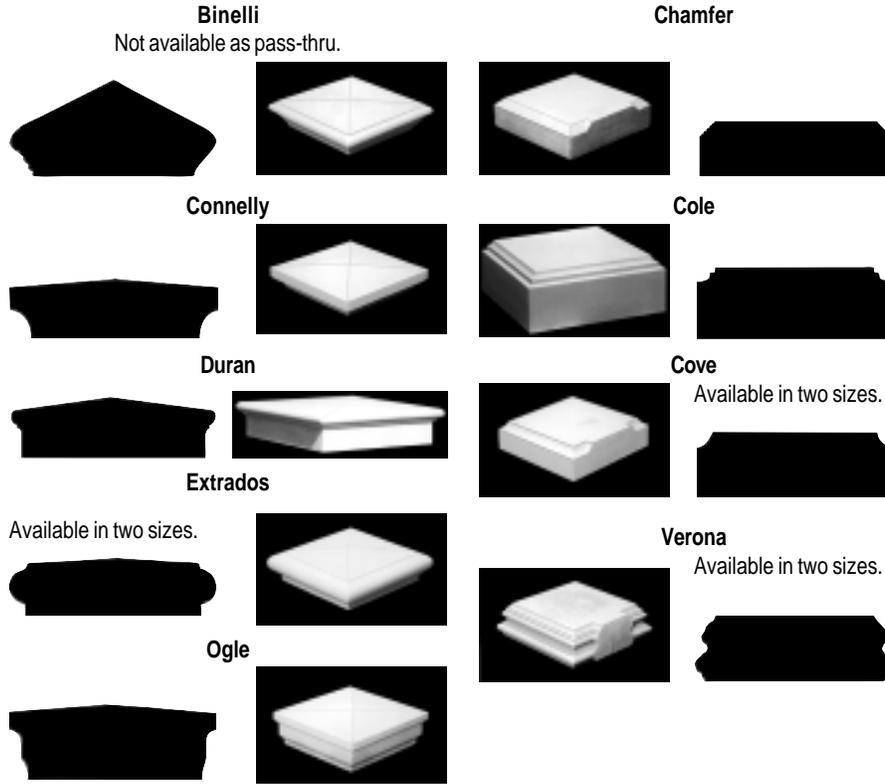
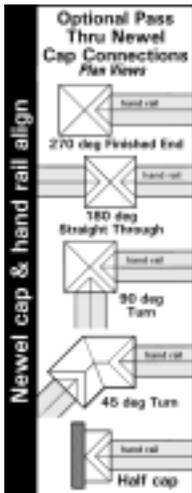
Standard Newel Piers project above the balustrade hand rail and are typically 12" square. Choose 360°, 270°, 180°, or 90° Newel Piers, as required by your design. Optional Pass Through Newel Piers are shorter than the standard piers (the same height as the baluster), but still 12" square. The hand rail aligns with the top of the newel cap. In Line Newel Piers are the same height as the balusters and the same ZZ width as the hand and base rails. The hand and base rails continue above and below the In Line Newel instead of using a separate cap and base.

Newel Cap Profiles

Cap photos show 360° parts

Newel Base Profiles

Base photos show 270° Finished Ends.



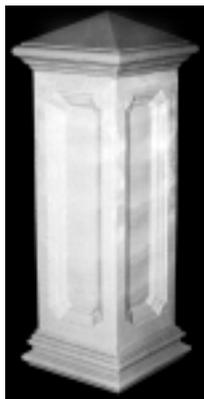
Component Dimensional Table

Dimensions	Standard												Optional					
	Caps						Bases						Pass Thru Caps					
	Binelli1	Connelly1	Duran1	Extrados1	Extrados2	Ogle1	Chamfer1	Chamfer3	Cole1	Cove1	Cove2	Verona1	Verona2	Connelly1	Duran1	Extrados1	Extrados2	Ogle1
Y & Z "	15 1/2	15	14	14 1/2	13 3/4	14	14	13 1/2	15	14	13 1/2	16	15 1/4	15	14	14 1/2	13 3/4	14
X "	7	4 1/2	4 1/4	4 1/2	3 1/2	5 1/2	4	5 1/8	5 1/2	4	4 7/8	5 3/4	4 5/8	4 1/2	4 1/4	4 1/2	3 1/2	5 1/2
ZZ "	12	12	11 1/2	12	12	12	12	12	11 1/2	12	12	12	12	12	11 1/2	12	12	12
Wt/piece # (360, 270, 180, 90)	85	60	50	60	46	74	65	69	93	65	68	95	80	60	50	60	46	74
Wt/piece # (45)	155	107	88	107	85	125	104	111	158	104	110	160	128	107	88	107	85	125
Wt/piece # (half)	45	30	25	30	23	37	33	35	47	33	34	48	40	30	25	30	23	37
CF/piece (Std. connections)	2750	1650	1500	1500	1500	1600	2500	2500	1600	2500	2500	3700	3400	3000	2700	2700	2700	1500
CF/piece (45 only)	4700	2650	2625	2350	2350	2650	4400	4400	2650	4400	4400	5700	5400	5250	4700	4700	4700	3000

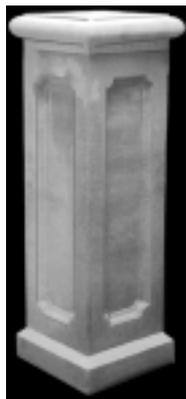
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Standard Newels

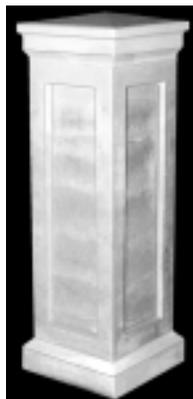
Below are our three standard newel pier profiles shown with different caps and bases. All standard newels are 12" x 12". Only the heights vary to complement the Balustrade style. Therefore, any cap or base may be used with any newel, making customizing easy. All parts are sold separately, as well as part of the units. Locations: We suggest locating Newel Piers at all corners, top and bottoms of stairs, end of railings such as openings or against the structure, and at 15-20 feet on center for long straight runs.



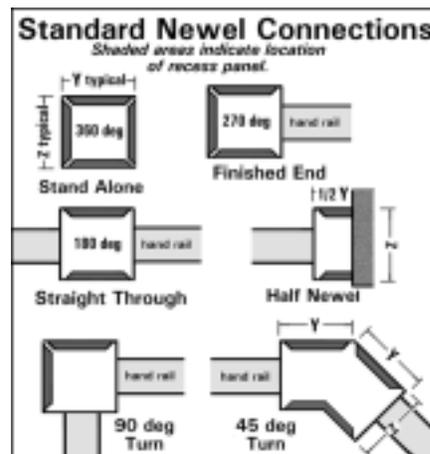
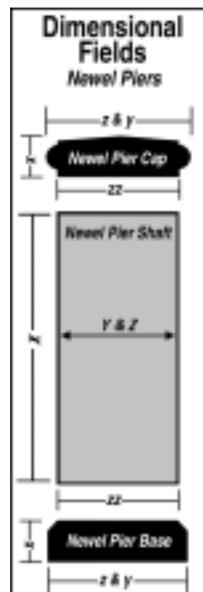
Caprice Newel with Binelli1 cap and Verona1 base.



Carriage Newel with Extrados1 cap and Chamfer1 base.



Coach Newel with Ogle1 cap and Cove1 base.



Use the drawing above left of dimensional fields to determine the component sizes when designing your newel pier configuration. The chart above shows panel locations on standard newel pier turns.

Optional Pass-Thru Newels

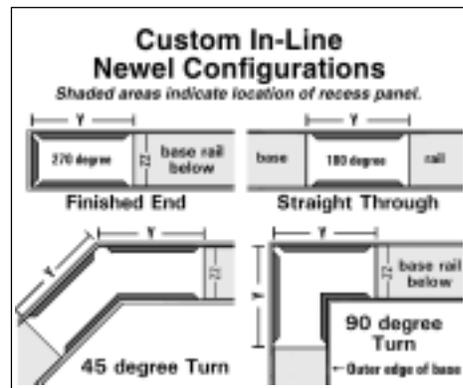
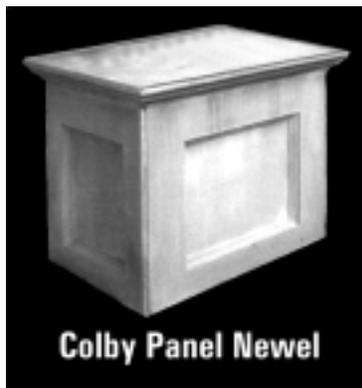


An Optional Pass-Thru Newel Pier is shown in the photo above. For a pass-thru system, the height of the newel must be equal to the height of the chosen baluster profile, but the newel is still 12" x 12". This option requires a special pass-thru newel cap. See the Balustrade unit pages for cost factors and weight. Pass-thru newel caps are not available in the Binelli style.

Custom Newel Options

Standard newel parts can be combined in many ways to achieve different looks. And, Stone Legends offers custom newels to meet your exacting specifications. Colby Panel Newels, below left, consist of panel veneers made to any size required. The panels are attached to your substructure to make the newel pier. The corners are mitered. Priced according to your specifications.

For In-Line Newels, below right, the newel height must be equal to the baluster height. The depth (or ZZ) must match the "ZZ" of the hand and base rails. In-Line Newels will be priced according to size.

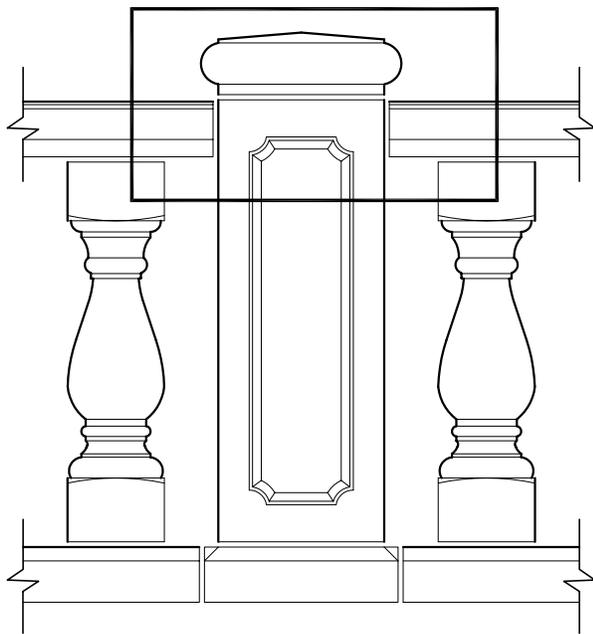
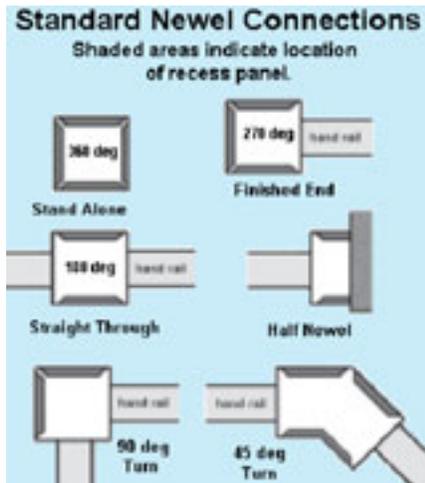


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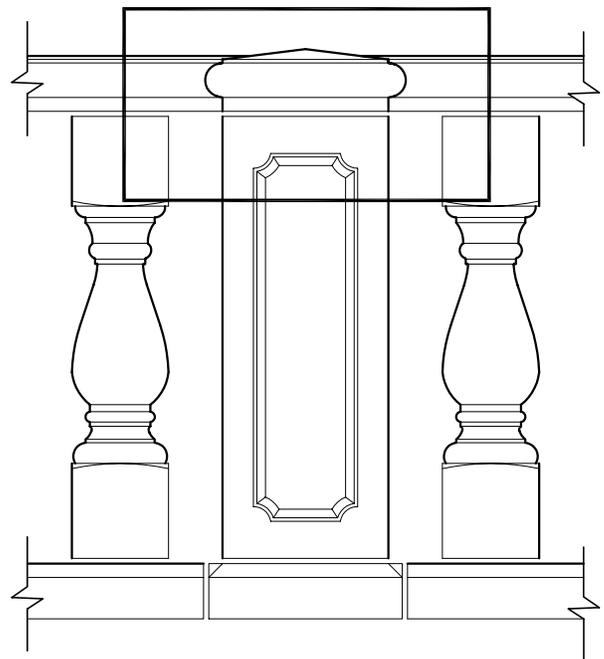
STONE LEGENDS

Design Options - Newel Pier

Add an impressive visual effect to your terrace.



Standard Newel Pier

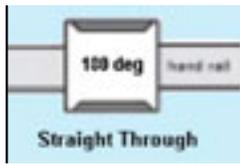


Pass Thru Newel Pier

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Connection Examples



This examples shows our 180 degree pass thru Newel Pier. The Pass Thru connects at the cap and base rather than the shaft and base.

Note: Ends against the cap of the newel pier.



Here is our 180 degree Newel Pier with recess panels on 2 sides. The difference between this one and the 90 degree is that the 180 has recess panels on opposite sides of the shaft.

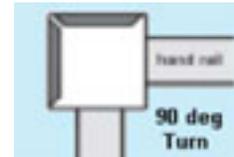
Note: Ends against the newel pier.



Here is an example of a 270 degree pass thru Newel Pier with recess panels on 3 sides.



This is an example of a 270 degree Newel Pier with recess panels on 3 sides.



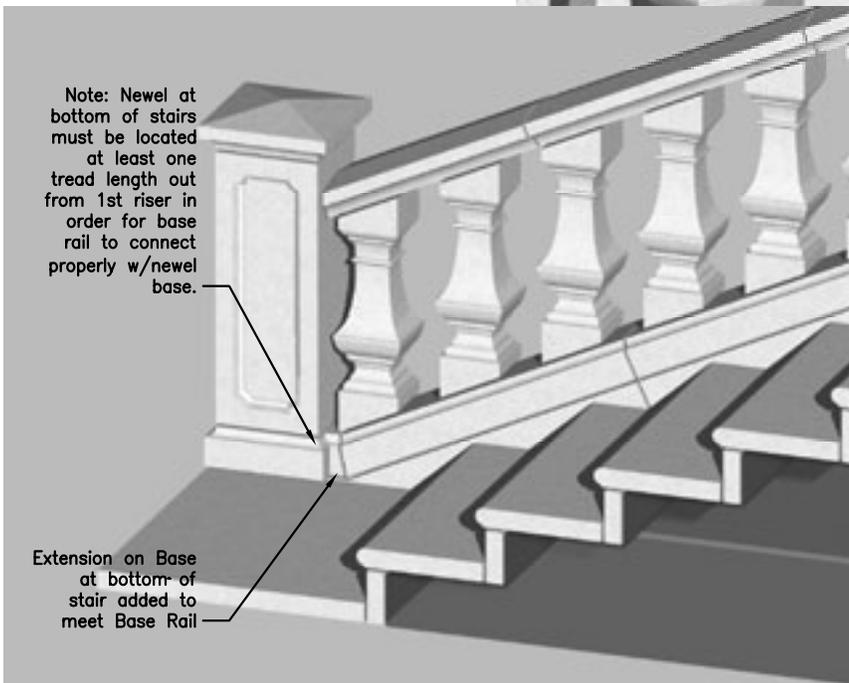
Here is an example of a 90 degree Newel Pier with recess panels on 2 sides.

Design Options Balustrade/Newelpier/Steps/Stairs

Extensions added on Newel Pier Base



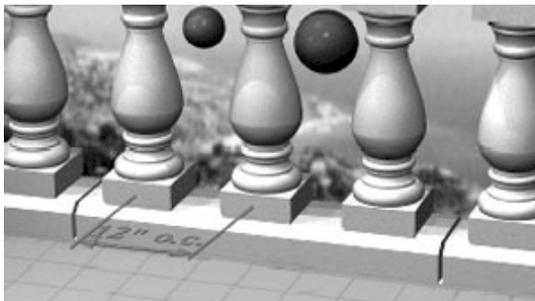
Extension on Base at Top of stair added to meet Base Rail



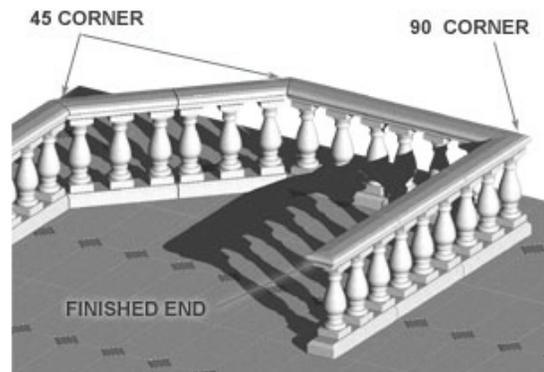
Extension on Base at bottom of stair added to meet Base Rail

Control Dimensions

Critical dimensions required, verifying that the profiles will fit together, or that the unit will fit where needed. In the case of Balustrade, a primary dimension for determining order quantity, is the linear foot for the entire balustrade system. Selecting a Baluster, Rail and Base, require matching dimensions for width (Z), and an understanding of code requirements when installing on upstairs or elevated areas. Design options that can affect dimensional requirements may include Standard or Pass through, Finished Ends, Radial, Helical or Grade options.



4" and 6" Diameter Balls pass easily through widest opening between balusters. Local building codes may require a 4" or 6" requirement for installations above ground elevation.



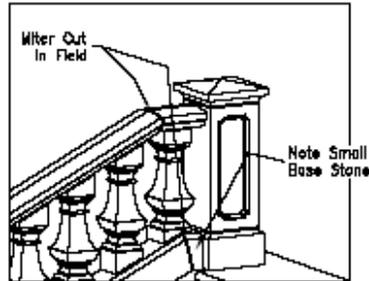
TOTAL RUNNING FEET



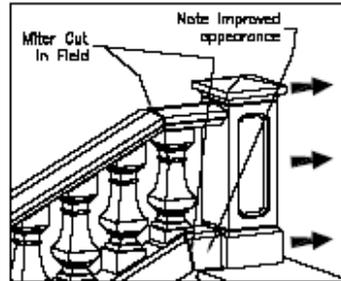
Additional Notations

Technical Information: Finished End Options

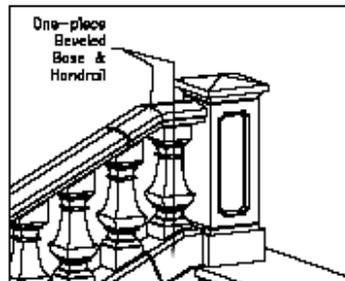
For: Balustrade, Stairs, Pools, Steps, and other Products using Balusters.



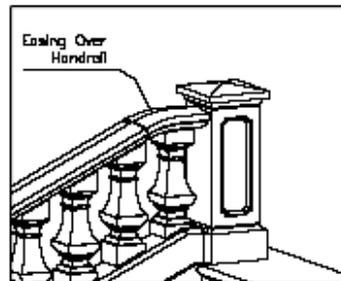
1 Mitered Handrail
Standard Miter Cut



2 Mitered Handrail (Newel Pier Moved)
Newel Pier Moved to improve appearance

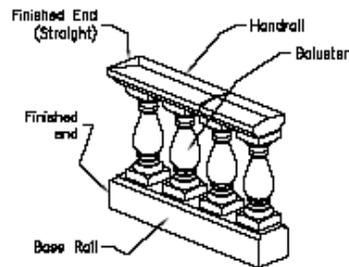


3 Beveled Handrail
Provides a cleaner looking transition

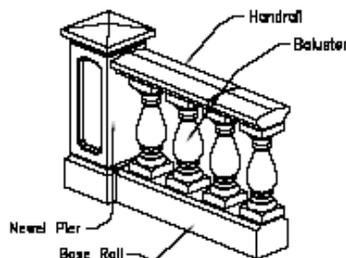


4 Easing Over Handrail
Provides an elegant transition

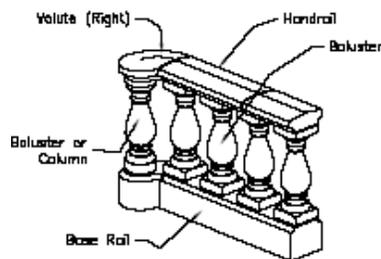
SCALE: NTS.



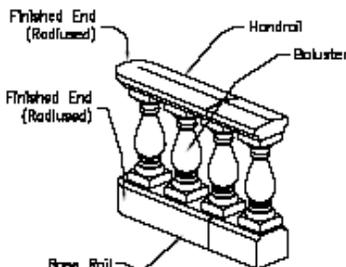
5 Finished End (Straight)



6 End In Newel Pier



7 Volute End



8 Finished End (Radiused)

Grabbable Handrails



Shown in the photo to the left the stairs we have what is called a grab rail installed inside the stairs made of metal.

Some building codes require a grabbable handrail for certain applications. A standard handrail can be used with a cast stone handrail or the Binelli handrail can be used if you want to avoid the additional rail.

Grabbable handrails are most often called out in interior applications. One such design is illustrated in the photo to the left, note the profile of the handrail.

