

Instructions for field-measuring *Lightrail* installations

In order to properly manufacture *Lightrail* illuminated handrail to match field conditions, dimensions taken from the finished surfaces must be obtained to allow company engineers to accurately depict the cross-section profile of the location. The critical data are the *pitch*, overall *nose-to-nose* dimension, and the *bottom riser height*. The dimensions are most easily obtained with two people working.

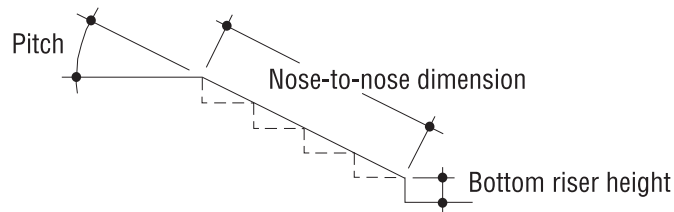
Submittal drawings from Cole typically are drawn to the dimensions provided on architectural details, but the actual dimensions are left open for field verification, as indicated by a lettered circle in the dimension lines. It is extremely important to furnish the required dimensions measured **exactly** as indicated, e.g., horizontally, vertically, or at the angle, as indicated. Dimensions should be taken exactly as the final rail is to run, i.e., directly below the centerline.

If only the concrete subsurface is in place, but brick or stone pavers are to be added later, *do not attempt to make measurements*. The results will not be accurate; consult factory for advice.

Where the rails are to continue across landings, the pitch of the landings must be determined.

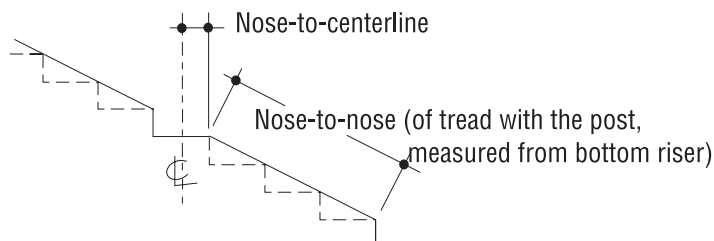
The following instructions are generally described for post-mounted applications. Special considerations for wall-mounted applications are given at the end.

In a drawing the cross-section profile appears thus:

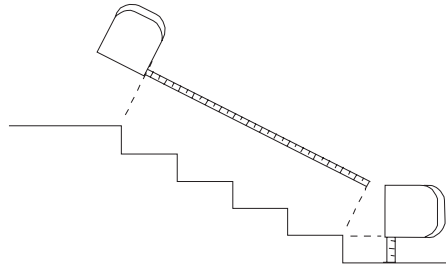


Note that the individual tread and riser dimensions are **not** requested. Using them usually introduces significant error.

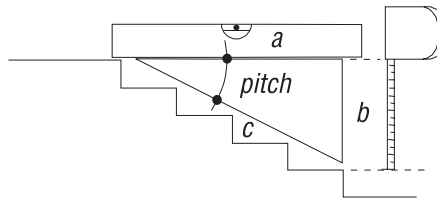
If one or more intermediate posts are required, additional nose-to-nose and nose-to-centerline data are necessary.



The overall nose-to-nose dimension and bottom riser height are easily measured with a conventional measuring tape.



Pitch is the difficult value to determine. Using simple trigonometric functions (our calculators do this work), the angle can be determined from the lengths of two sides of a right triangle. Individual tread and riser heights, uniform on a drawing, are **not** uniform in real life. *Do not determine pitch from “typical” tread and riser measurements.*

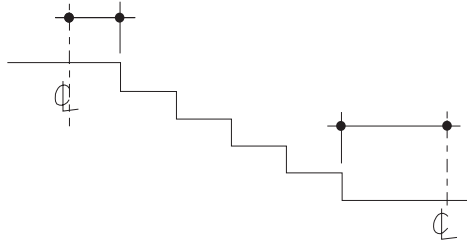


Since **c** has already been established when obtaining the overall nose-to-nose dimension, only **a** or **b** need to be determined to complete the calculation. Vertical dimension **b** is the easiest to measure and more reliably provides an accurate dimension.

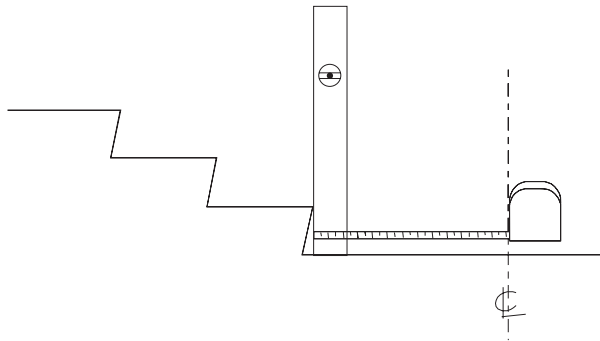
To measure side **b**, use a carpenter’s level, as long as obtainable. Place one end on the nose of the top tread and hold it level out over the descending stairs. Measure straight down from the bottom of the level to the nose of the lowest tread over which the level spans. A visual determination of the vertical orientation of the measuring tape is sufficient.

In some situations the length of the stairs will be too long for the carpenter’s level to span. In these situations, sufficient accuracy is obtained from the greatest length convenient to measure. Use the method given above for dimension **b**. For dimension **c**, measure the nose-to-nose dimension for the two treads used with the carpenter’s level. These two lengths will compute the pitch. Note that three or four treads can represent the pitch of the overall stairs. If measuring a ramp, the same principle applies. Use the full length of the carpenter’s level from any arbitrary mark on the ramp to a mark directly below the opposite end. The vertical dimension **b** is measured as above, and the length of the level becomes dimension **a**.

In most cases, the locations of the top and bottom posts are determined by the code requirements for the rail itself, and the appropriate dimensions will be provided by Cole. However, some jobs will require that the posts be in specific locations to coordinate with architectural features, so those locations must be provided to Cole. These dimensions are measured from the nearest risers to the post centerlines. If there are intermediate posts, additional nose-to-nose measurements must be made for each tread on which a post is to be mounted. The nose-to-centerline length is then measured for each affected tread.



There is a potential pitfall at the bottom riser. Many risers have an undercut, or lip, in their design. For our purposes, we must know the horizontal dimension from the top (nose) of the riser to the centerline. The carpenter's level is helpful here.



Be sure to indicate which post location is the electrical feed location. The contractor must allow sufficient wire to make his connections in the ballast compartment in the *Lightrail*.

For wall-mounted applications, there is usually some end treatment which requires knowledge of the pitch just as with post-mounted handrails, so the same dimensions are required. Determination of the feed location is critical. It is measured relative to either the top riser or the bottom riser. Ideally, it is at the top over the level approach, i.e., before the top riser. At this location, its height is determined from the architect's specified height to the top of the rail and the offset down given in the catalog literature for the specified *Lightrail* model. The Cole submittal drawing should indicate the feed location to ensure its proper placement at a bracket location.

Note that the model LR5W *Lightrail* usually requires remote ballasts and requires more than one feed for longer runs. These feed points must be closely coordinated with the factory and precisely placed on the job.

Lightrail installations can be tricky and the final product is very inflexible. Following these instructions should provide accurate information on the first try for most field situations. Always review the submittal drawings and be sure to carefully provide every dimension requested, as indicated by the lettered circles and dimension grid. Read the notes on the drawing which may request additional information. Special conditions such as corners, pavers, landings, sloped bottom levels, etc., require special considerations. In these situations, always contact the factory for specific instructions.



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