PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:
   1. Preassembled steel stairs with concrete-filled treads.
   2. Ornamental steel-framed stairs.
   3. Steel tube railings attached to metal stairs.
   4. Steel tube handrails attached to walls adjacent to metal stairs.

B. Related Sections include the following:
   1. Division 03 Section "Cast-in-Place Concrete" for concrete fill for stair treads and platforms.
   2. Division 05 Section "Metal Fabrications" for pipe and tube railings.
   3. Division 06 Section "Rough Carpentry" for wood blocking for anchoring railings.
   4. Division 09 Section "Gypsum Board" for metal backing for anchoring railings.
   5. Division 09 Section "Tiling" for ceramic-tile treads and landings

1.3 PERFORMANCE REQUIREMENTS

A. Structural Performance of Stairs: Provide metal stairs capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Uniform Load: 100 lb/ft².
   2. Concentrated Load: 300 lb applied on an area of 4 sq. in.
   3. Uniform and concentrated loads need not be assumed to act concurrently.
   4. Stair Framing: Capable of withstanding stresses resulting from railing loads in addition to loads specified above.
   5. Limit deflection of treads, platforms, and framing members to L/2000 or 1/8 inch, whichever is less.

B. Structural Performance of Railings: Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
   1. Handrails:
      a. Uniform load of 50 lb/ft applied in any direction.
      b. Concentrated load of 200 lb applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   2. Top Rails of Guards:
      a. Uniform load of 50 lb/ft applied in any direction 50 lb/ft applied horizontally and concurrently with 100 lb/ft applied vertically downward.
      b. Concentrated load of 200 lb applied in any direction.
      c. Uniform and concentrated loads need not be assumed to act concurrently.
   3. Infill of Pickets or Guards:
      a. Concentrated load of 200 lb applied horizontally on an area of 1 sq. ft.
      b. Infill load and other loads need not be assumed to act concurrently.
Width of stair is usually measured from inside face of balusters or newel to finished wall. However, governing codes should be consulted for points of measurement.

A nominal installation clearance of ¼” should be allowed between edge of stringer and wall.

3½” maximum projection into required egress width. If more than 3½”, egress width should be increased by the excess of projection over 3½”.

Minimum 1½” hand clearance between rails, and between handrail and wall, or other obstructions.

Minimum code requirements are usually measured from finished wall to finished wall. When establishing rough stair well dimensions, allowance should be made for thicknesses of any finish materials to be applied to the rough walls.

Platform width not less than width of stair usually measured from inside face of balusters or newel to finished wall. However, governing codes should be consulted for points of measurement.

All handrail dimensions to meet minimum requirements of governing codes.

A nominal installation clearance of ¼” should be allowed between edge of stringer and wall.

Length determined by tread run and number of treads required by code.

Varies; recommended minimum 1½”.

Varies; recommended minimum 1½”.

STAIRWELL WIDTH — DISTANCE BETWEEN WALLS
Refer to Page 47 for details of safety nosings.

Refer to National Association of Architectural Metal Manufacturers Metal Construction Manual and to manufacturer's current literature for more detailed information.

Read run. The tread width should always be greater than the tread run. Treads can be supported by direct bolting or welding to stringers or blocking or for service type stairs, including pedestrian type sub-rails and nose construction.

Sections shown on this page indicate the many different types of treads used.

**Construction Notes:**

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**Fig. 14**

Excluded aluminium tread

**Fig. 13**

Steel or aluminium floor with steel sub-sole and floor plate of aluminium

**Fig. 12**

Steel floor plate of aluminium near tread with steel sub-sole and floor plate of aluminium near tread.

**Fig. 11**

Steel sub-sole and floor plate of aluminium near tread with steel sub-sole and floor plate of aluminium near tread.

**Fig. 10**

Steel sub-sole and floor plate of aluminium near tread with steel sub-sole and floor plate of aluminium near tread.

**Fig. 9**

Concrete filled tread with floor plate of aluminium near tread

**Fig. 8**

Steel sub-sole and floor plate of aluminium near tread with steel sub-sole and floor plate of aluminium near tread.

**Fig. 7**

Steel sub-sole and floor plate of aluminium near tread with steel sub-sole and floor plate of aluminium near tread.

**Fig. 6**

Concrete filled tread with floor plate of aluminium near tread

**Fig. 5**

Steel sub-sole and floor plate of aluminium near tread with steel sub-sole and floor plate of aluminium near tread.

**Fig. 4**

Steel sub-sole and floor plate of aluminium near tread with steel sub-sole and floor plate of aluminium near tread.
See Pages 46 & 3 for key plans showing location of sections

19
Channel platform support connected to stringer and mounted on wall angle.

20
I-beam platform support mounted on wall angle.

21
Channel support connected to stringer and suspended by hanger.

22
I-beam platform support suspended by hanger.

23
Stringers bolted or welded to channel header.

24
Stringers connected to newel.

25
Channel platform supports connected to struts.

26

27
Channel passes through stringer cut-out to mount on bearing wall or be suspended by hanger rod. Riser down from platform.

28
Channel passes through stringer cut-out to mount on bearing wall or be suspended by hanger rod. Riser up from platform.

29
Edge of platform at open well. Face stringer attached to channel header. Channel stringer around platform.
REFER TO GOVERNING CODES TO ESTABLISH DIMENSIONS

Height of riser and tread run vary according to governing codes. A tread of 10" and a rise of 7" to 7 1/2" are considered average. Stair treads for more comfortable runs are often 10 1/2" to 11" with risers less than 7". Treads and risers should be so proportioned that the sum of two risers and one tread run is not less than 24" or more than 28".

In establishing stairwell dimensions, tread run is always face to face of riser.

Platform width not less than width of stair, usually measured from inside face of balusters or nearest to finished wall. However, governing codes should be consulted for points of measurement.

A nominal installation clearance of 3/8" should be allowed between edge of stringer and wall.

Length determined by tread run and number of treads required.

Riser line to rough beam, recommended minimum 1 1/4".

STAIRWELL LENGTH — DISTANCE BETWEEN BEAM AND WALL

Provide headroom to meet minimum requirements.

Minimum code requirements are usually measured from finished wall to finished wall. When establishing rough stairwell dimensions, allowance should be made for thickness of any finish materials to be applied to the rough walls.

Length determined by tread run and number of treads required.

In some localities, an intermediate platform is required by code when the height between landings exceeds the maximum permitted in a single uninterrupted run.

Riser line to rough beam, recommended minimum 1 1/4".

Length determined by tread run and number of treads required.

STAIRWELL LENGTH — DISTANCE BETWEEN BEAMS
CONSTRUCTION NOTES:
The tread and riser pan can be either welded or bolted to the supporting member. This is usually governed by the preference of the fabricator or the erector.

Treads made from grating or other pre-fabricated materials are usually furnished with end plates or angles standard with the manufacturer. These can be either welded or bolted to the stringers.

The concealed direct welding of the pan tread to the stringer as shown in Figure 18 results in a clean soffit appearance. This method is most efficiently used in "unit" or "pre-assembled" stairs where a complete stair flight is welded together in the fabricator's shop and delivered to the site in one piece.