

## Chapter 24

### Fencing And Boundary Marks

#### 24.1 FENCING

##### 24.1.1 General

Fencing can be made of wire (plain strand; plain or barbed strands) fixed to Posts or of Posts with railing or with Pales. The posts may be of RCC, scrap rails or of angle iron. These shall be of standard size with the standard length of posts being 1.8m, rails 2.25 m, and pales 1.25 m. Tolerance in length of 12 mm in length and 3mm in other dimensions is permissible. Longer posts and more rows of wires may be used in special cases, if so specified.

**Posts, Rails And Pales :** In case of RCC posts and pales, they shall be precast in concrete mix M15 (or 1:2:4) with stone aggregate 12.5 mm nominal size. Posts shall be with slots as specified in Drawing or by the Engineer and reinforced with 10 mm dia M>S bars in case of posts and pales and 6mm in case of rails. For the whole of their length below the top of the rail the paling shall have a projecting dovetail shape at the back which shall fit into dovetail grooves in each of the rails. The part projecting above the top rail shall be left square to prevent their dropping through the rails. The posts, rails and pales shall be free from cracks, twists and such other defects.

##### RCC Posts And Struts :

All posts and struts shall be of standard size, the length of posts being 1.8 m or otherwise specified and that of struts being minimum length of 2.0m. They shall be of RCC precast with concrete mix M15 (1:2:4), finished smooth with cement mortar 1:2; reinforced with 6 mm or higher dia MS bars as per drawing or as directed. Posts and struts shall be free from cracks, twists and such other defects. GI staples on wooden plugs or 6 mm bar nibs will be provided in the posts while casting, as directed by Engineer or as shown in drawing.

##### 24.1.2 Barbed Wire Fencing With RCC Posts

**24.1.2.1 Materials :** RCC posts and struts shall be as described in 24.1.1 above. Barbed wire used shall be as per IS: 278.

**24.1.2.2 Spacing of Posts and Struts:** The posts shall be spaced at three metres centres, unless otherwise specified or as directed by the Engineer, to suit the dimensions of the area to be fenced. Every 15<sup>th</sup> post, corner

posts and last but one end post shall be strutted on both sides and end post shall be strutted on one side (inside) only.

**24.1.2.3 Fixing Of Posts And Struts : Pits** 450 x 450 mm and 750 mm deep or as directed by the Engineer shall be excavated true to line and level to receive the posts. In case of struts, pits 700 x 450 mm and 750 mm deep or as directed by Engineer shall be excavated to suit the inclination of the strut so that it is surrounded by concrete by not less than 150 mm at any point. The pits shall first be filled with a 150 mm layer of concrete to mix 1:3:6 (C.A. to be graded stone aggregate 40 mm nominal size. Posts and struts shall then be placed in the pits in correct position and with 1.2 m or the specified height above ground, true to line and position. If the ground is sloping or undulating the posts shall be placed so that the tops and the positions at which wires are to be fixed are in a predetermined uniform slope or geometric line vertically on selected stretches, in consultation with the Engineer. Cement concrete of 1:3:6 proportion mix shall then be filled in the pit around the posts and struts upto a level below ground level of 150 mm for posts and 250 mm for struts, so that the posts are embedded in a concrete block of 450 x 450 x 600 mm and the struts are embedded in block of size 700 x 450 x 500 mm. The concrete in foundations shall be watered and cured for at least 7 days. The remaining portion of the pit shall be filled with the excavated earth and well tamped and dressed on top. Surplus earth will be disposed off as directed by the Engineer.

**24.1.2.4 Fixing Of Barbed Wire :** The barbed wire shall be stretched and fixed in specified number of rows, and two diagonals in each panel. The bottom row shall be 140 mm above ground and the rest at 125 mm centre to centre, unless otherwise specified in drawing or by the engineer. The diagonals shall be stretched adjacent posts from top wire of one post to the bottom wire of the second post and vice versa. The diagonal wires shall be interwoven with horizontal wires by fixing the odd rows of wires, then the diagonal cross wire and lastly even row of wires. The barbed wire shall be held to the RCC posts by means of GI staples fixed to wooden plugs or GI binding wire tied to the 6 mm bar nibs fixed to the posts while casting

them. Turnbuckles and straining bolts shall be used on end posts or as specified. If the posts are provided with holes at positions of barbed wire, the barbed wire shall be fixed to posts with GI wire of approved gauge and passing through the hole.

**24.1.2.5 Measurements :** The finished fencing shall be measured in total length from centre to centre of posts, correct upto nearest cm.

**24.1.2.6 Rates :** The rate shall include the costs of all labour and materials, handling and transport, provision of tools and plant involved in all operations described above but excluding the cost of posts, struts, turnbuckle, straining bolts and excavation and concrete in foundations for which separate payments shall be made under respective items. Rate for supply and fixing of the posts and struts include the costs of all labour and materials including cast in fixtures curing, handling, transport and provision of tools and plant thereof.

### **24.1.3 Barbed Wire Fencing With Angle Iron Posts**

**24.1.3.1 Materials :** Alternatively angle iron posts and struts can be used for supports. They will be of mild steel in accordance with specifications in Chapter on Steel work. Barbed wire shall be as per IS: 278. The angle iron shall be 40 x 40 x 6 mm unless otherwise specified.

**24.1.3.2 Spacing of posts and struts.** The posts shall be spaced at three metres centres, unless otherwise specified or as directed by the Engineer, to suit the dimensions of the area to be fenced. Every 15<sup>th</sup> post, corner posts and last but one end post shall be strutted on both sides and end post shall be strutted on one side (inside) only.

**24.1.3.3 Fixing of posts and struts :** This shall be as per Para 24.1.2.3. In addition, angle iron post at bottom shall be split and banded at right angle in opposite direction for 100 mm length.

**24.1.3.4 Fixing barbed wire :** The barbed wire shall be stretched and fixed in specified number of rows and two diagonals. The bottom row shall be 140 mm above ground level and the remaining at 125 mm centre to centre. The diagonal shall be stretched between adjacent posts from top wire of one post to the bottom wire of the second post and vice versa in each panel. The diagonal wire will be interwoven with horizontal layers as specified in Para 24.1.2.4. The barbed wire shall be held drilling holes of 10 mm in the post and tied with GI wires. Turnbuckles

and straining bolts shall be used to tighten the wires at the end posts, if so specified.

**24.1.3.5 Fixing Posts And Struts On Top Of Boundary Walls :** Barbed wire fencing may be specified for some heights over boundary walls of workshops, depots etc. In such cases, the posts shall be made of angle iron which shall normally be bent at an angle (30° to 45°) to the plane of the wall. The bottom 300mm length of the posts struts shall be vertical, of which the bottom most 100 mm length will be split and banded at right angle in opposite direction. This vertical leg of the post and struts will be fixed on top of boundary wall, leaving 75 mm length above the coping and remaining portion embedded in concrete of mix 1:2:4 in preformed holes on top of wall, in such a way that there is a minimum concrete cover of 45mm allround.

**24.1.3.6 Measurements :** This shall be same as per Para 24.1.2.5.

**24.1.3.7 Rates :** This shall be same as per Para 24.1.2.6 except that angle iron posts shall be paid for in weight to nearest kilogram and worked out based on standard tables for gross length of angles used without any deduction for holes and cuts. The rate shall include cutting, splitting, bending etc as per these specifications at no extra cost.

### **24.1.4 Plain Wire Fencing**

**24.1.4.1 Plain Wire Fencing** will be provided in lieu of barbed wire fencing in some circumstances, if so specified or instructed by Engineer.

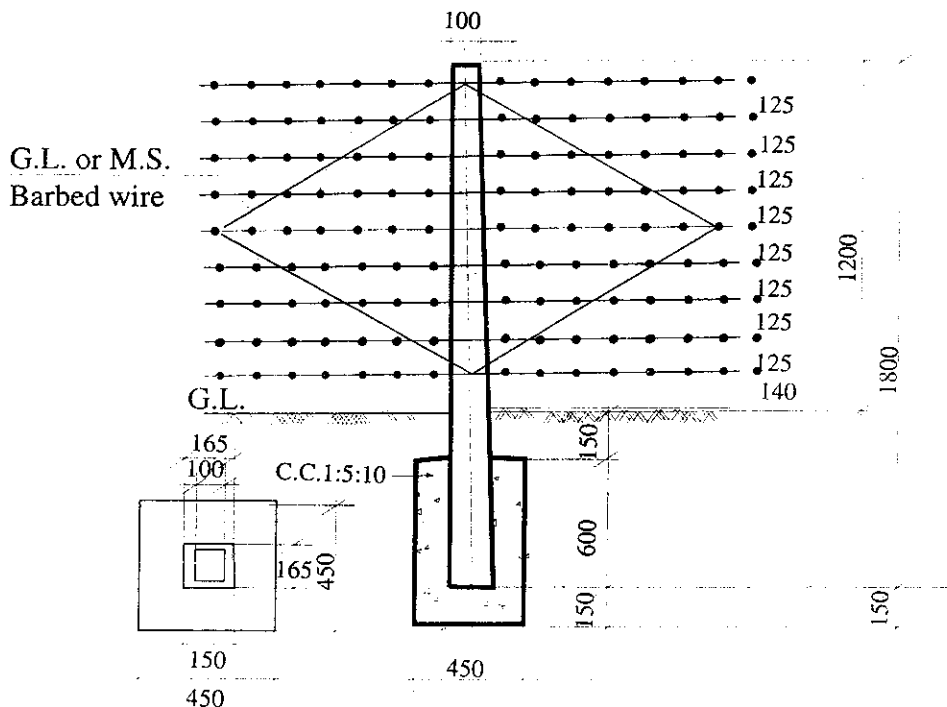
**24.1.4.2 Materials :** Posts and Struts may be of RCC or of angle iron and specifications for same will be as indicated in Paras 24.1.2.1 or 24.1.3.1 respectively. Wire used will be from 1 mm dia. strands to IS:2140.

**24.1.4.3 Fixing posts and struts** will be same as in Paras 24.1.2.3 or 24.1.3.3 respectively

**24.1.4.4 Fixing wire :** This will be as per Paras 24.1.2.4 or 24.1.3.4, except that the wires will be threaded through the holes preformed in the posts or drilled in angle iron posts. At every 15 posts, corner posts and, they will be secured to the posts by GI wires. At end posts, they will be secured with turnbuckles and straining bolts.

**24.1.4.5 Measurements :** This will be as per Para 24.1.2.5 and 24.1.3.6 respectively for RCC post fencing and angle iron post fencing.

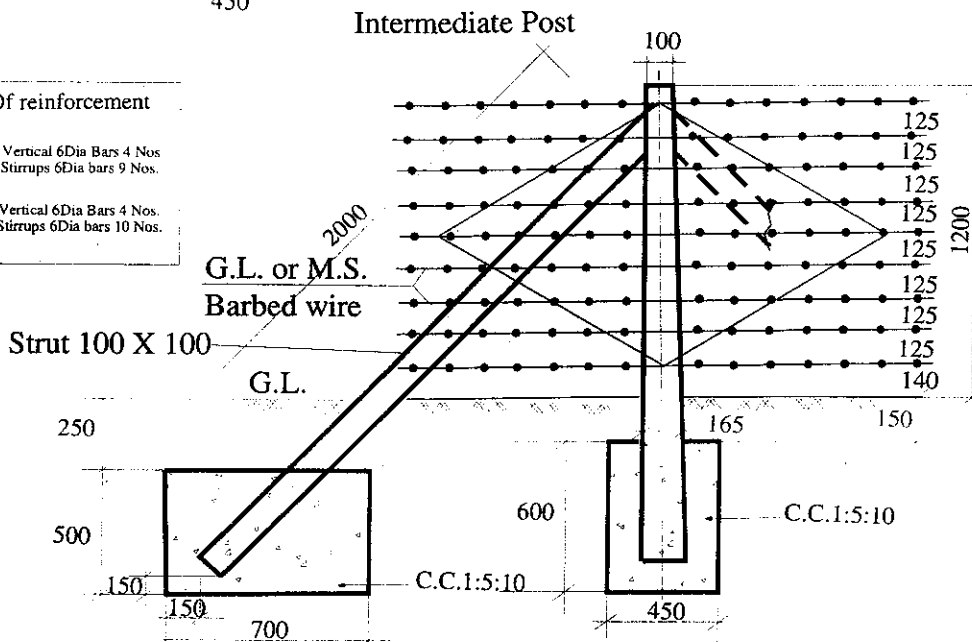
**24.1.4.6 Rates :** This will be as per Paras 24.1.2.6 and 24.1.3.7 respectively for RCC post fencing and angle iron fencing respectively.



**Detail Of reinforcement**

In post { Vertical 6Dia Bars 4 Nos.  
Stirrups 6Dia bars 9 Nos.

In Struts { Vertical 6Dia Bars 4 Nos.  
Stirrups 6Dia bars 10 Nos.



1. In case of end post one Strut shall be omitted. **End and Intermediate Post with struts**

Drawings are not to scale.  
All the dimensions are in MM

**Barbed Wire Fencing (With R.C.C. Post)**

*Handwritten marks and numbers: 33*