

Wearing Coat and Appurtenances

2700

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Appurtenances**

material, tools and plant required for completing the work as per these Specifications.

The contract unit rate for approach slab shall include the cost of all labour, material, tools and plant required for completing the work as per these Specifications. The rate for base shall include cost of all labour, material, tools and plant required, including preparation of surface and consolidation complete in all respects.

The contract unit rate for each drainage spout shall include the cost of all labour, material, tools and plant required for completing the work as per these Specifications. It shall also include the cost of providing flow drain pipes with all fixtures upto the point of ground drains wherever shown on the drawings.

The contract unit rate for weep hole shall include the cost of all labour, material, tools and plant required for completing the work as per these Specifications.

sealant shall be finished to cover at least 50 mm on the wearing coat surface all round the drainage assembly.

2706. WEEP HOLE

Weep holes shall be provided in solid plain concrete/reinforced concrete, brick/stone masonry, abutment, wing wall and return walls as shown on the drawing or directed by the Engineer to drive moisture from the back filling. Weep holes shall be provided with 100 mm dia AC pipe for structures in plain/reinforced concrete or brick masonry. In case of stone masonry, weep holes shall be 80 mm wide, 150 mm high or circular with 150mm diameter. Weep holes shall extend through the full width of concrete/masonry with slope of about 1 vertical:20 horizontal towards the draining face. The spacing of weep holes shall generally be 1m in either direction or as shown in the drawing with the lowest at about 150 mm above the low water level or ground level whichever is higher or as directed by the Engineer.

2707. TESTS AND STANDARDS OF ACCEPTANCE

The materials shall be tested in accordance with these Specifications and shall meet the prescribed criteria.

The work shall conform to these Specifications and shall meet the prescribed standards of acceptance.

2708. MEASUREMENTS FOR PAYMENT

The measurement for payment for wearing coat, railings and approach slab shall be made as given below :

- i) Cement concrete wearing coat shall be measured in cubic metres. Asphaltic concrete wearing coat shall be measured in square metres.
- ii) Railings shall be measured in running metres.
- iii) Approach slab and its base shall be measured separately in cubic metres.
- iv) Drainage spouts shall be measured in numbers.
- v) Weep holes in concrete/brick masonry structure shall be measured in numbers. For structures in stone masonry, weep holes shall be deemed to be included in the item of stone masonry work and shall not be measured separately.

2709. RATE

The contract unit rate for wearing coat shall include the cost of all labour, material, tools and plant and other cost necessary for completion of the work as per these Specifications.

The contract unit rate of railings shall include the cost of all labour,

roadway shall be provided as per details given on the drawings or as approved by the Engineer. Minimum length of approach slab shall be 3.5 m and minimum thickness 300 mm.

The cement concrete and reinforcement shall conform to Sections 1700 and 1600 respectively. The base for the approach slab shall be as shown on the drawings or as directed by the Engineer.

2705. DRAINAGE SPOUTS

2705.1. This work shall consist of furnishing and fixing in position of drainage spouts and drainage pipes for bridge decks.

Drainage along longitudinal direction shall be ensured by sufficient number of drainage fixtures embedded in the deck slab. The spouts shall be of not less than 100 mm in diameter and shall be of corrosive resistant material such as galvanised steel with suitable clean-out fixtures. The spacing of drainage spouts shall not exceed 10 m. The discharge from drainage spout shall be kept away from the deck structure. In case of viaducts in urban areas, the drainage spouts should be connected with suitably located pipelines to discharge the surface run-off to drains provided at ground level.

2705.2. Fabrication

The drainage assembly shall be fabricated to the dimensions shown on the drawings; all materials shall be corrosion resistant; steel components shall be of mild steel conforming to IS:226. The drainage assembly shall be seam welded for water tightness and then hot-dip galvanised.

2705.3. Placement

The galvanised assembly shall be given two coats of bituminous painting before placement. The whole assembly shall be placed in true position, lines and levels as shown in the drawing with necessary cut-out in the shuttering for deck slab and held in place firmly. Where the reinforcements of the deck are required to be cut, equivalent reinforcements shall be placed at the corners of the assembly.

2705.4. Finishing

After setting of the deck slab concrete, the shrinkage cracks around the assembly shall be totally sealed with polysulphide sealant or bituminous sealant as per IS:1834 and the excess sealant trimmed to receive the wearing coat. After the wearing coat is completed, similar

The railing shall be carefully adjusted prior to fixing in place to ensure proper matching at abutting joints and correct alignment and camber throughout their length. Holes for field connections shall be drilled with the railing in place in the structure at proper grade and alignment.

Unless otherwise specified on the drawings, metal railing shall be given one shop coat of paint and three coats of paint after erection if sections are not galvanised.

Railings shall not follow any irregularity in the alignment of the deck. When shown on the drawings, the rail elements shall be curved before erection.

2703.3. Cast-in-Situ Concrete Railings

The portion of the railing or parapet which is to be cast in place shall be constructed in accordance with the requirements for Structural Concrete in Section 1700. The reinforcement shall conform to Section 1600.

Forms shall either be of single width boards or shall be lined with suitable material duly approved by the Engineer. Form joints in plane surfaces will not be permitted.

All mouldings, panel work and bevel strips shall be constructed according to the details shown on the drawings. All corners in the finished work shall be true, sharp and clean-cut and shall be free from cracks, spalls or other defects. Casting of posts shall be done in single pour.

2703.4. Precast Concrete Railings

Precast members for railings shall be of reinforced cement concrete and shall conform to the specifications given in Sections 1600 and 1700. The maximum size of the aggregate shall be limited to 12 mm and the concrete grade shall be M 30. The precast members shall be removed from the moulds as soon as practicable and shall be kept damp for a period of at least 10 days. During this period they shall be protected from sun and wind. Any precast member that becomes chipped, marred or cracked before or during the process of placing shall be rejected. Special care shall be taken to watch the surface of the cast-in-situ portion of the deck.

2704. APPROACH SLAB

Reinforced concrete approach slab covering the entire width of the

The cross slope in the deck shall be kept as 2.5 per cent for decks, level in longitudinal profile.

2702.3. For providing cross camber no variation in thickness of wearing coat shall be permitted.

2703. RAILINGS

2703.1. General

- a) Bridge railing includes the portion of the structure erected on and above the kerb for the protection of pedestrians and traffic.
- b) Railings shall not be constructed until the centering falsework for the span has been released and the span is self-supporting. For concrete with steel reinforcement, specifications of the items of controlled concrete and reinforcement mentioned under relevant sections of this specifications shall be applicable.
- c) The type of railing shall be carefully erected true to line and grade. Posts shall be vertical with a tolerance not to exceed 6 mm in 3 metres. The pockets left for posts shall be filled up with non-shrinkable mortar.
- d) The type of railing to be constructed shall be as shown on the drawings.
- e) Care shall be exercised in assembling expansion joints in the railings to ensure that they function properly.
- f) The bridge railings shall be amenable to quick repairs.
- g) Railing materials, particularly metal railings, shall be handled and stored with care, so that the material and parts are kept clean and free from damage. Railing materials shall be stored above the ground on platforms, skids, or other supports and kept free from grease, dirt and other contaminants.

Any material which is lost, stolen or damaged after delivery shall be replaced or repaired by the Contractor. Methods of repair shall not damage the material or protective coating.

2703.2. Metal Railings

Materials, fabrication, transportation, erection and painting for bridge railings shall conform to the requirements of section 1900.

All complete steel rail elements, pipe terminal sections, posts, bolts, nuts, hardware and other steel fittings shall be galvanised or painted with an approved paint.

If galvanised, all elements of the railing shall be free from abrasions, rough or sharp edges, and shall not be kinked, twisted or bent. If straightening is necessary, it shall be done by methods approved by the Engineer.

Damaged galvanised surfaces, edges of holes and ends of steel railing cut after galvanising shall be cleaned and re-galvanised.

2701. DESCRIPTION

This work shall include wearing coat and bridge appurtenances such as railing, approach slab, drainage spouts, weep holes in conformity with details shown on the drawing and these specifications or as approved by the Engineer.

2702. WEARING COAT**2702.1. Bituminous Wearing Coat**

Specifications for bituminous concrete/bitumen mastic in wearing coat shall conform to Section 500 except for the special requirements as stated hereinafter.

2702.1.1. Principles of bituminous wearing coat shall comprise the following :

- i) A layer of mastic asphalt, 6 mm thick after applying a prime coat over the top of the deck before the wearing coat is laid. The prime coat and the layer of mastic asphalt shall be laid as per Clauses 503 and 515 respectively.
- ii) 50 mm thick asphaltic concrete wearing coat in two layers of 25 mm each as per Clause 512.

In case of high rainfall intensity areas, the thickness of mastic asphalt layer may be increased to 12 mm.

2702.1.2. For high traffic density, an alternative specification for wearing course comprising 40 mm bituminous concrete overlaid with 25 mm thick bitumen mastic layer can be adopted. The work shall be done in conformity with Section 500.

2702.2. Cement Concrete Wearing Coat

Cement concrete wearing coat may be provided in case of isolated bridge construction or bridges located in remote areas. It shall not be laid monolithic with the deck.

The thickness of wearing coat shall be 75 mm. The minimum grade of concrete shall be M 30 with water cement ratio as 0.4.

Curing of wearing coat earlier than what is generally required may be resorted to, so as to avoid formation of shrinkage cracks in hot weather.

All carriageway and footpath surfaces shall have non-skid characteristics.