

Name of the Project	:	VISUAL INSPECTION OF FOB/ HYD CIRCULATING AREA TO PUBLIC GARDEN CIRCULATING AREA
Location	:	HYD CIRCULATING AREA TO CIRCULATING AREA
Location Co-ordinates	:	17°23'46.7"N 78°28'03.8"E
Date of Inspection	:	16th September 2019



Summary:

- a) Reinforcement exposed in slab, formation of algae, leaching of slab is observed.
- b) Corrosion observed in floor beams and bottom chord members at span of FOB.
- c) Corrosion and vegetation is observed along the span of FOB.

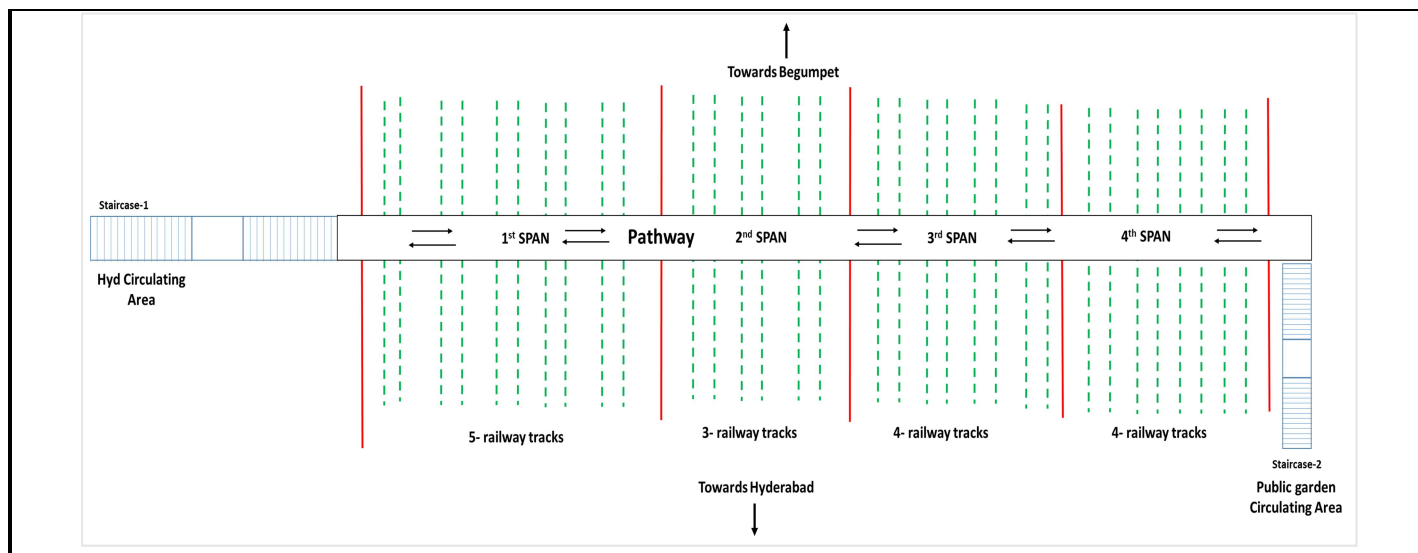
Tests to be conducted:

- a) Ultrasonic Thickness gauge to measures local thickness of a solid element.
- b) Elcometer (Coating thickness Gauge) to measures dry film thickness on steel surfaces.
- c) Ultrasonic Flaw detector to detect hidden cracks, voids, porosity, and other internal discontinuities in metals.
- d) Fillet weld gauge to measures the size of the weld.
- e) Profometer Test for concrete cover and diameter of rebar.
- f) Rebound Hammer test surface strength of concrete (For Pre-cast slab panels and staircase)
- g) Vibration test.

Name of the Project	Visual inspection of FOB/ Hyd circulating area to public garden circulating area
Location	Hyderabad station
Date of Inspection	16 th September 2019

PART 1 GENERAL INFORMATION AND OBSERVATION

1.1	Name of the Bridge	FOB/Hyd circulating area	
1.2	Location Location co-ordinates	Hyd circulating area to public garden circulating area 17°23'46.7"N 78°28'03.8"E	
1.3	Type of truss Structure	Pratt truss (Camel back truss for 1 st span) (plain N – type truss for 2 nd to 4 th span)	
1.4	Year of Construction, Maintenance History	Not available	
1.5	Description of the main use of the bridge	Pedestrians Crossing	
1.6	Type of Materials used in different parts of bridge	a. Structural Steel (Frame, truss) b. Pre-cast RCC Slab panels (Floor slab, staircase steps)	
1.7	Width of the Pathway (m)	For 1 st span : 2.3 m, For 2 nd to 4 th span :2.12 m	
1.8	Length of the Pathway (m)	99.2 m	
1.9	No of Railway Lines Crossings	16 tracks Span 1 = 5 tracks Span 2 = 3 tracks	Span 3 = 4 tracks Span 4 = 4 tracks
1.10	Span arrangement (no x Span in meters)	1x35.70 m + 1x14.75 m+ 1 x24.60 m + 1x19.45 m	
1.11	Vertical Clearance (from rail top to girder bottom)	6.118 m	
1.12	Head Room	No roof provided	
1.13	Damages due to accidental hitting, Grazing Marks	No damages are observed	
1.14	History of Repair (if any...)	Patch work are observed	
1.15	Original Structural Drawings	Not available	
1.16 Key Plan			



FORMAT FOR VISUAL INSPECTION OF STEEL FOOT OVER BRIDGE

PART 2 IDENTIFICATION OF LOADS ON BRIDGE			
		Yes/No	Photo ID
2.1	Dead Loads at Roof level		
	a) Pipeline - Utilities	No	No pipe lines are observed
	b) Cables	Yes	
	c) Roof Truss	No	
	d) Roof Sheet	No	
	e) load of advertising hoarding	No	
	f) load of train/coach display boards	No	No train display boards are provided
	g) Additional load of overhead electrical equipment (OHE), Signal	No	
2.2	Dead Loads at Floor level		
	a) Additional wearing coat on Floor	Yes	Plain concrete flooring (Refer fig :1)
	b) Provision of protective screen for passengers	Yes	
	c) Type of Material used for mesh	Galvanized wire mesh	

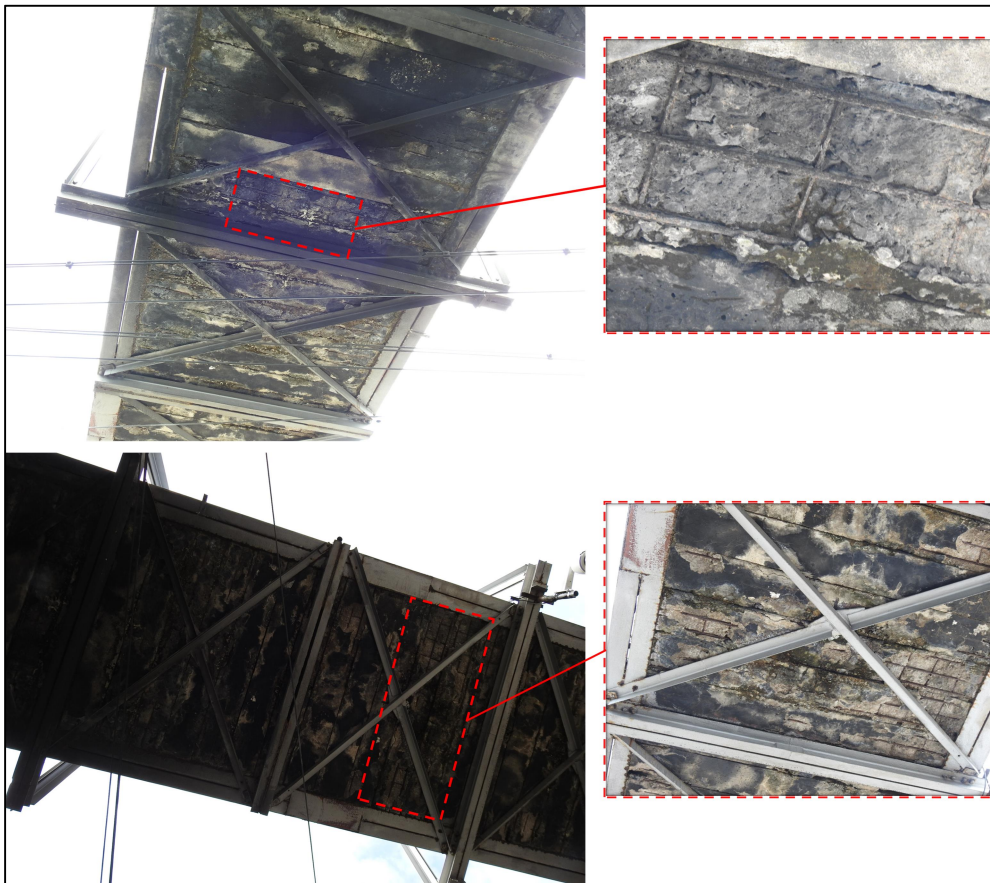
PART 3 STRUCTURAL SYSTEM OF THE BRIDGE			
			Photo ID
3.1	Foundation details		Not visible at site
3.2	Pedestals		
	Column – Trestles Connection Details		Concrete encasement is observed at platform level for vertical supports. (Refer fig :2)
	No of Bolts and size	Not visible, filled with concrete	
	Thickness of Base Plate	Not visible, filled with	

		concrete	
3.3	Roof Truss		
	Element of roof truss section	No roof truss	ISA 65 x 65 x 6 mm angle section as top bracings in span 1. (Refer fig :1)
	Size of roof truss		
	Connection of Roof elements		
3.4	Steel Truss		
	Type/Shape of Girder Section	Double angle sections	a. For 1 st span top and bottom Chord members are ISA 150 x 150 x 10mm double angle section and ISA 75 x 75x 10 mm double angle is used for verticals and bracings. b. For 2 nd to 4 th span top and bottom Chord members are ISA 100 x 100 x 10 mm double angle section are used and ISA 100 x 100 x 10 mm angle section are used for vertical members and ISA 80 x 80 x 8 mm used for diagonal bracing members. c. ISMC 150 double channel section used as Floor beams supported with ISA 80 x 80 x 8 mm bracing connected through gusset plate. (Refer fig :3)
	Height of Girder/ Truss (H)	1.63m	
	Truss Support Condition	Ridged connection	
	Type/Shape of Floor beams /Bracings	Double Channel sections	
	No of Floor beams/bracings for span	1 st span :11 no's 2 nd span: 7 no's 3 rd span :11 no's 4 th span: 9 no's	
	Arrangement of Bracings	Diagonal	
	Type of Beam-Column Joint (shape of gusset plate if any)	Cleat angles	
3.5	COLUMN		
	Type/Shape of Column section	Built up section (ISMB 300 and MS plate 300)	FOB is supported on vertical column of Four - Built up section (ISMB 300 and MS plate 300) with bracings of ISA 65 x 65 x 6 mm double angle section.(Refer fig :2)
	No of Columns per support	4	
	Dimensions of Column	300x150 mm	
	BEAM-Column joint (bolted, welded, riveted)	Bolted	
3.6	Floor of the Gangway		
	Material of Slab	RCC slab	RCC slab, 125 mm thick is resting on bottom chord. (Refer fig :4 and fig:1)
	Thickness of Slab	125 mm	
	Condition of Slab from Bottom	Leaching effect, spalling and exposed reinforcement in observed	
	Condition of Slab from Top	Additional wearing coat	
3.7	Staircase Details		
	Number of staircases	2 No's	Staircase steps are observed as Pre-cast slab panels. Steps size of 300 x 100 mm are supported on ISMC 250 channel Stringer beam. Bracings ISA 65 x 65 x 6 mm angle section connected to ISMC 200. Staircase landing of 2.12 m wide is supported on ISMC 250. (Refer fig :5)
	Number of steps from at Hyd circulating area	34 no's	
	Number of steps from at public garden circulating area	35 no's	
	Material used for steps	Pre-cast slab panels	

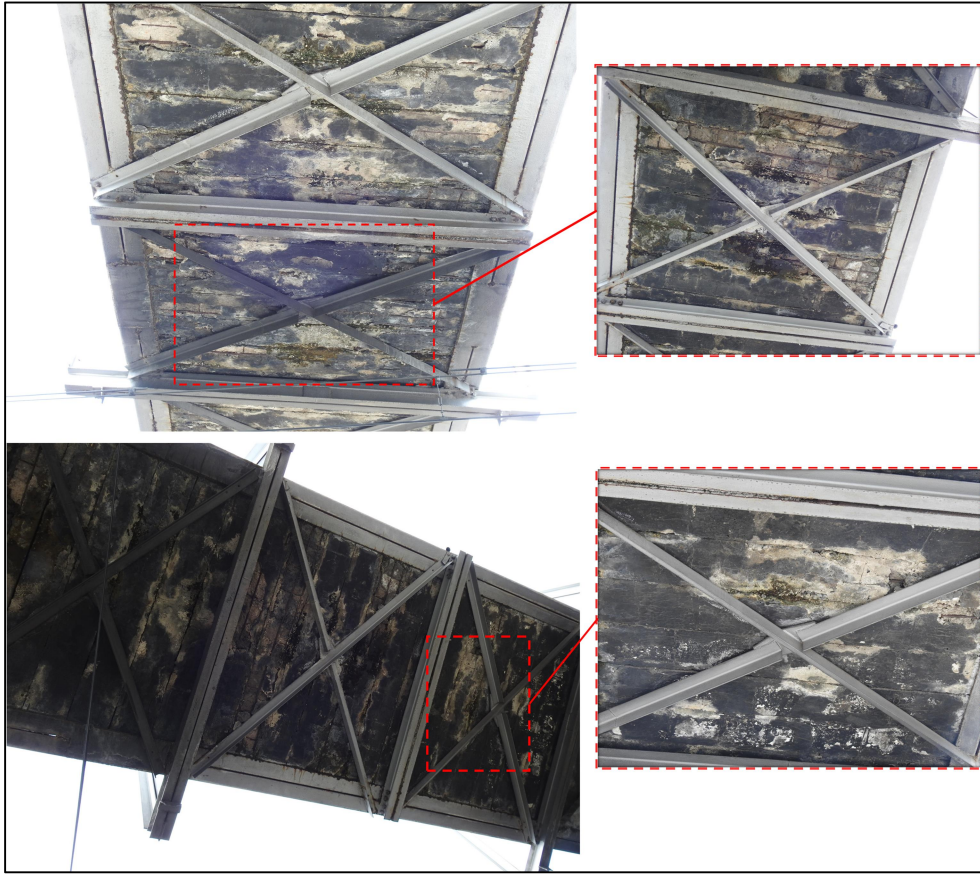
3.8	Staircase Railing		
	Type of Parapet Railing	Steel railing	Staircase is provided with railing on both sides of one-meter height using ISA 65 x 65 x 8 mm angle section and 50 x 6 mm M.S flats are used.(Refer <i>fig :5</i>)
	Height of Railing	1 m	

PART 4 SURVEY OF SIGNS OF DISTRESS, DEFORMATION IN BRIDGES

4.1 | ✓ Reinforcement exposed in slab, formation of algae, leaching of slab is observed.



Spalling and Reinforcement exposed



Leaching effect and algae

4.2	✓ Corrosion and vegetation observed in floor beams and bottom Chord members at span of FOB
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Corrosion and deformation of floor beam

PART 4 SURVEY OF SIGNS OF DISTRESS, DEFORMATION IN BRIDGES			
	Defects	Location	
	Cracking in steel members		No cracks are observed in Steel during visual inspection
	Cracking in RCC components		Cracks are observed in RCC slab.
	Water seepage		No water seepage is observed
	Spalling	Slab and staircase precast panels	Spalling and reinforcement exposed is observed (Refer Part 4 - 4.1) and (Refer fig :5)
	Rust straining	Bottom Chord members and floor beams joints	Rusting and corrosion is observed at joints of floor beam gusset plate connecting bottom Chord is observed. (Refer Part 4 - 4.2)
	Extent Of Corrosion		
	Rusting in Gusset plate		Rusting is observed in Gusset plates (Refer Part 4 - 4.2)
	Corrosion at steel-Concrete joint		Corrosion is observed at steel concrete joint.
	Condition of Painting of steel structure		Painting is affected only at distressed places.

***Rust:** Rust is a part of corrosion and is a chemical process which results in the formation of red or orange coating on the surface of metals.

***Corrosion:** it is the process of deterioration of materials as a result of chemical, electrochemical or other reactions.



Fig 1: Cables, Flooring, vegetation and protective screen



(a) Hyd circulating area

(b) stanchion -1



(c) Stanchion -2

(d) stanchion -3



(e) Public gardens circulating area

Fig 2: Trestles details



Fig 3: Chord members, Floor beams, vertical and diagonal bracings



Fig 4: Bottom view Slab and Repair work



Fig 5: Staircase details, Spalling & exposure of reinforcement