

Name of the Project	:	VISUAL INSPECTION OF FOB/ PF-1 - PF-2 AT MADHIRA RAILWAY STATION
Location	:	MADHIRA RAILWAY STATION
Location Co-ordinates	:	16°55'17.9"N 80°21'59.7"E
Date of Inspection	:	23rd SEPTEMBER, 2019



Summary:

- a) Cracks, Spalling and exposed reinforcement observed in and deck slabs and staircase slabs.
- b) Slight rusting is observed at all the joints of FOB at floor level.
- c) Major corrosion is observed at steel concrete joint along length of FOB.
- d) Corrosion is observed in Gusset plates.

Tests to be conducted:

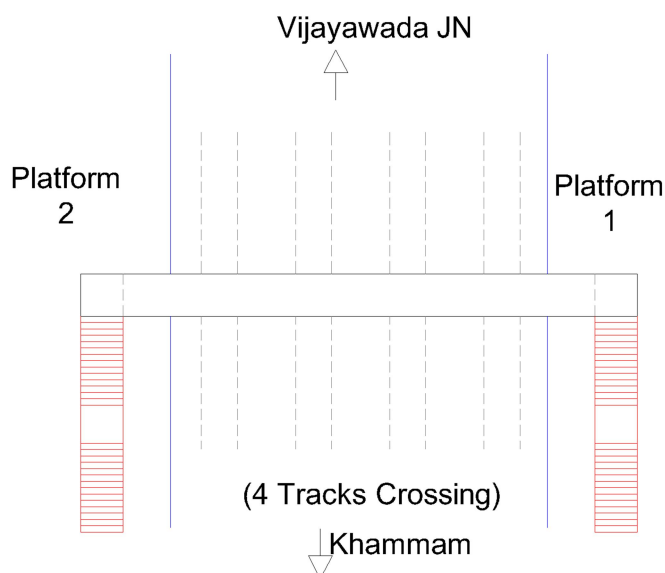
- a) Ultrasonic Thickness gauge to measures local thickness of a solid element.
- b) Elcometer (Coating thickness Gauge) to measures dry film thickness on steel surfaces.
- c) Ultrasonic Flaw detector to detect hidden cracks, voids, porosity, and other internal discontinuities in metals.
- d) Fillet 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)

FORMAT FOR VISUAL INSPECTION OF STEEL FOOT OVER BRIDGE

Name of the Project	Visual inspection of FOB/ PF-1 - PF-2 at Madhira Railway station
Location	Madhira Railway Station
Date of Inspection	23-09-2019

PART 1 GENERAL INFORMATION AND OBSERVATION		
1.1	Name of the Bridge	FOB/ PF-1 - PF-2
1.2	Location Location co-ordinates	Madhira Railway Station 16°55'17.9"N 80°21'59.7"E
1.3	Type of truss Structure	N – Type Pratt truss
1.4	Year of Construction	Approx. 40+ years
1.5	Description of the main use of the bridge	Pedestrians Crossing
1.6	Major Materials used in different parts of bridge	a. Structural Steel (Truss, frame), b. Pre-cast RCC slab panels (Floor Slab, Staircase)
1.7	Width of the Pathway (m)	2.4 m
1.8	Length of the Pathway (m)	30.37 m
1.9	No of Railway Lines Crossings	4 tracks crossing
1.10	Span arrangement (no x Span in meters)	Single span (1 x 25.46 m)
1.11	Vertical Clearance (from rail top to girder bottom)	5.6 m
1.12	Head Room	3.0 m (upto Roof truss bottom)
1.13	Damages due to accidental hitting, Grazing Marks	No Visible signs appear
1.14	History of Repair/ Maintenance	Yes Observed in site
1.15	Original Structural Drawings	Not available

1.16 Key Plan



PART 2 IDENTIFICATION OF LOADS ON BRIDGE

		Yes/No	Notes
	Dead Loads at Roof level		
2.1	a) Pipeline - Utilities	No	Not observed in site
	b) Cables	Yes	Set of Cables are running along the length of FOB, Approximate circumference of cables is 500 mm (Refer fig : 3)
	c) Roof Truss	Yes	2/65 x 65 x 8 mm Angles are used (Refer fig : 4)
	d) Roof Sheet	Yes	Corrugated Galvanized Sheet is used for Roof n(Refer fig : 4)
	e) load of advertising hoarding	No	No advertising boards are provided
	f) load of train/coach display boards	No	No train coach display boards are provided
	g) Electrical equipment (OHE), signal	No	No electrical equipment and signal are provided
2.2	Dead Loads at Floor level		
	a) Additional wearing coat on Floor	No	Chequered tiles used for Flooring (Refer fig : 4)
	b) Provision of protective screen for passengers	Yes	Fence made of Galvanized wire of 2 mm gauge and 2 mm Galvanized sheet is used above OHE Line on both side of Pathway is used for passengers Protection.
	c) Type of Material used for mesh	GI wire mesh	(Refer fig : 4)

PART 3 STRUCTURAL SYSTEM OF THE BRIDGE

			Notes
3.1	Foundation details		Not Visible
3.2	Pedestals details		
	Type of Material for Bottom Encasement	Concrete	Concrete encasement is used for protecting trestles from the corrosion on the platform

			(Refer fig :5)
	Dimensions (L x W x D)	a : 620 x 620 x 200 mm	** 'a' dimensions of Concrete encasement are observed in site
3.3	Roof Truss		
	Element of roof truss section	King post Angle	2/65 x 65 x 8 mm King post Angle sections are used for roof truss supported on 2/150 x 100 x 12mm Top Chord Members using welded joints. (Refer fig :4)
	Size of roof truss	2.8 m wide	
	Connection of Roof elements	Welded connection	
3.4	Steel Truss		
	Type /Shape of Truss Section	Pratt (N- type)	a) Main Chord members 2/150 x 100 x 12 mm Double Angle section. b) 100 x 100 x 12 mm angles are used vertical posts and inclined bracings. c) 10 mm thick, gusset plate used for welded joint. (Refer fig :1)
	Height of Truss (H)	2.20 m	
	Boundary Condition	Rigid connection	
	Shape of Floor beams /Bracings	Double Channels angle section	2/ISMC 150 Double Angle Sections are used as Floor beams, supported with 75 x 75 x 8 mm inclined support to top Chord member. 65 x 65 x 8 mm angle sections are used as bracings. Floor beams are connected to bottom chord Member using riveted connections and Bracing are connected using riveted and welding. (Refer fig :7)
	No of Floor beams/bracings for span	12 no's	
	Arrangement of Bracings	Diagonal	
	Type of Beam-Column Joint (shape of gusset plate if any)	Cleat angles	
3.5	COLUMN		
	Shape of Column section	I – Section	FOB is Supported on Vertical built-up Column of 4 - ISMB 350 and 2/200 x 10 mm plates welded to both flanges upto bottom of truss with 2/80 x 80 x 10 mm horizontal and 80 x 80x 10 mm inclined members connected using Gusset plates and rivets. (Refer fig :5)
	Height of column from (pedestal top to bottom of slab panel)	4.97 m	
	No of Columns/ support	4 no's	
	Dimensions of Column	370 x 200 mm	
	BEAM-Column joint (bolted, welded, riveted)	Riveted connection	
3.6	Floor of the Pathway		
	Material of Slab	Pre-cast slabs	a) Pre-cast Reinforced Concrete Slab panels are used for floor slab of 100 mm thick, Pre-cast RCC slab panels are resting on bottom chord members. Chequered tile (25 mm thick) flooring is laid on the top of the Pre-cast slab panels. (Refer fig : 7) b) Almost all the panels are having minor cracks and some of the slab panels are repaired. c) Slab panels near to the platform 2 are distressed, spalling observed at the bottom of the slabs and reinforcement is exposed and corroded. (Refer fig :7) d) Bricks are used to fill the gap above floor beam e) Landing of Platform 1 is repaired with
	Thickness of Slab	100 mm	
	Condition of Slab from Bottom	Spalling and Cracks observed	
	Condition of Slab from Top	Covered with Chequered tiles	

			cement motor Platform 2 staircase slab is having sacrificial plate. (Refer fig :9)
3.7	Staircase Details		
	Number of Staircase	2 No's	a) Staircase steps are observed as Pre-cast RCC slab panels of size 300 x 100. Steps are supported on ISMC 250 Channel using cleat Angles. Staircase Landing of 1.56 m wide is supported on Vertical Angle and Horizontal Channel Members. (Refer fig :8) b) Steps are repaired at bottom with cement motor. (Refer fig :8) c) Reinforcement is exposed and corroded. (Refer fig : 7) d) At platform 2, under the staircase, room is constructed, full of debris. (Refer fig :9)
	Number of Steps from PF – 1	33 no's (Staircase 1)	
	Number of Steps from PF – 2	33 no's (Staircase 2)	
	Material used for steps	Pre-cast Slab Panel	
3.8	Staircase Railing		
	Type of Parapet Railing	Steel Railing	Staircase is provided with Railing on both sides of one-meter height using 65 x 65 x 8 mm Angle and 50 x 12 mm Flat. (Refer fig : 2)
	Height of Railing	1 m	

PART 4 SURVEY OF SIGNS OF DISTRESS, DEFORMATION IN BRIDGES			
	Defects	Location	Notes
	Cracking in Steel Members		No cracks are observed in Steel during visual inspection
	Cracking in RCC components	Slab panels	Cracks are observed in Staircase and Pre-cast deck slab panels
	Water seepage		No water seepage observed
	Spalling		Spalling is observed in Slab panels
	Rust straining		Slight rusting is observed at all the joints of FOB at floor level
	Corrosion in Gusset plate	Floor level	Corrosion is observed in Gusset plates
	Corrosion at steel-Concrete joint		Major corrosion is observed at steel concrete joint along length of FOB
	Condition of Painting of steel structure		Painting is affected only at distressed places.



Fig 1: Front view of FOB towards Vijayawada Junction



Fig 2: Staircase Roof truss on platform 1



(a)



(b)

Fig 3: Bunch of Cables running along the length of FOB, Approximate circumference is 500 mm



Fig 4: Pathway of FOB



Fig 5: FOB is supported on four column Trestles on either side

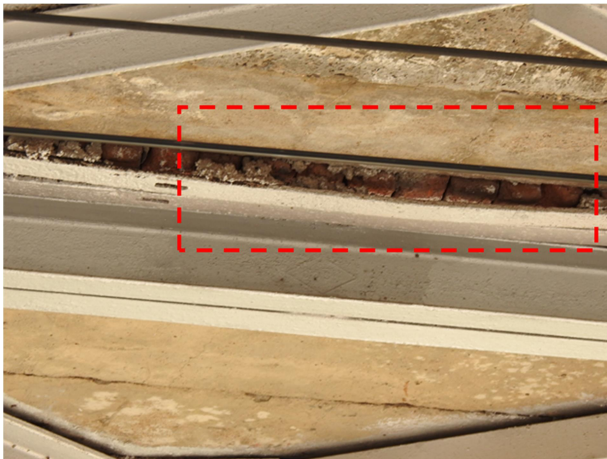


Fig 6: Gap above floor beam

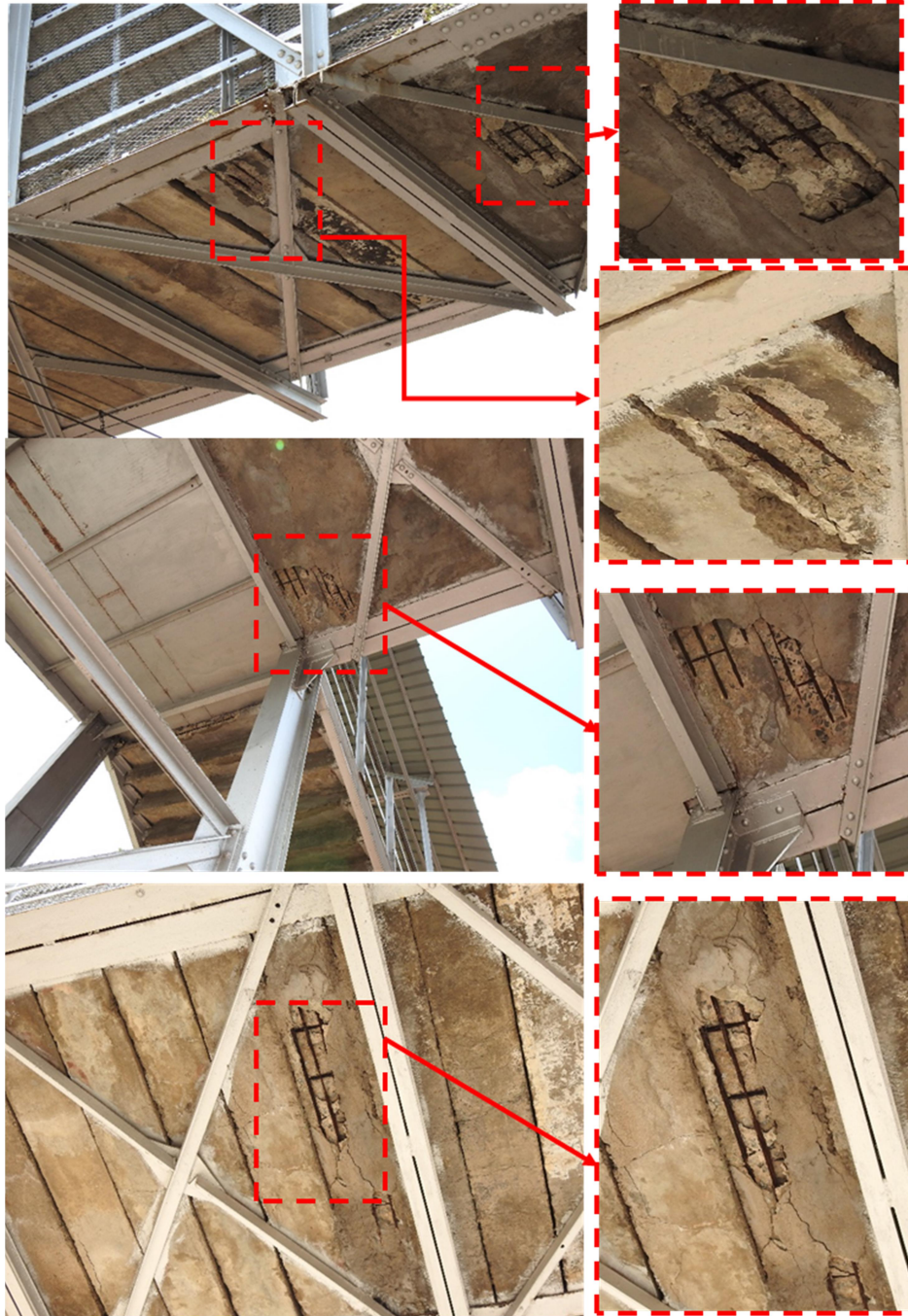


Fig 7: Spalling observed in deck slab



Fig 8: Cracks are observed in staircase steps



Fig 9: Landing on platform 2.