

Name of the Project	:	VISUAL INSPECTION OF FOB/ PF-1 - PF-2 AT MAHABUBABAD RAILWAY STATION
Location	:	MAHABUBABAD RAILWAY STATION
Location Co-ordinates	:	17°35'50.5"N 80°00'01.8"E
Date of Inspection	:	24 th SEPTEMBER, 2019



Summary:

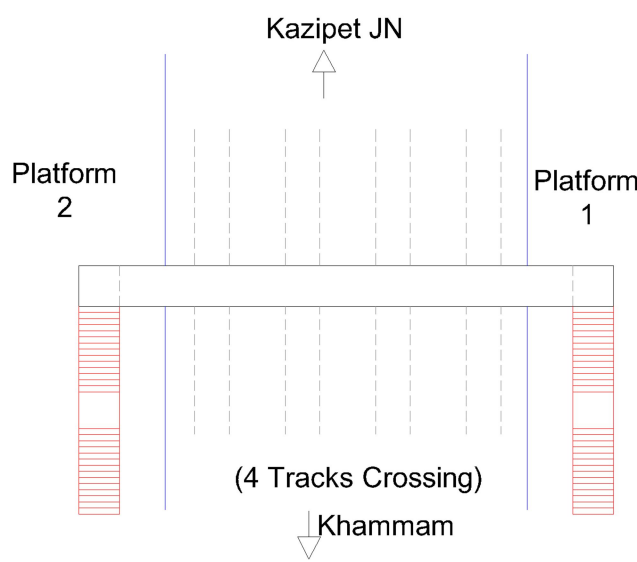
- a) Major spalling and cracks are observed in floor slab, staircase steps.
- b) Steel members are highly corroded at joints.
- c) Organic growth is observed at Stinger beam joints.

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.

FORMAT FOR VISUAL INSPECTION OF STEEL FOOT OVER BRIDGE

Name of the Project	Visual inspection of FOB/ PF-1 - PF-2 at Mahabubabad railway station
Location	Mahabubabad Railway Station
Date of Inspection	24-09-2019

PART 1 GENERAL INFORMATION AND OBSERVATION		
1.1	Name of the Bridge	FOB/ PF-1 - PF-2
1.2	Location Location co-ordinates	Mahabubabad Railway Station 17°35'50.5"N 80°00'01.8"E
1.3	Type of truss Structure	N- typed truss
1.4	Year of Construction	Approx. 25+ years
1.5	Description of the main use of the bridge	Pedestrians Crossing
1.6	Major Materials used in different parts of bridge	Structural Steel (Truss, frame), Pre-cast RCC panels (Floor Slab, Staircase)
1.7	Width of the Pathway (m)	2.40 m
1.8	Length of the Pathway (m)	30.27 m (clear span)
1.9	No of Railway Lines Crossings	4 tracks crossing
1.10	Span arrangement (no x Span in meters)	Single Span (1 x 25.60 m)
1.11	Vertical Clearance (from rail top to girder bottom)	5.145 m
1.12	Head Room	Open to sky
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	<p>Key Plan</p>  <p style="text-align: center;">(4 Tracks Crossing)</p>	

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	Cables are protected are supported to Main truss (Refer fig: 3)
	c) Roof Truss	No	No Roof truss is provided
	d) Roof Sheet	No	No Roof sheet is provided
	e) load of advertising hoarding	Yes	Advertising boards are supported on Vertical columns and Main Truss near staircase
	f) load of train/coach display boards	No	No train coach display boards are provided
	g) Electrical equipment (OHE), signal	No	No electrical equipment (OHE) 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 :3)
	b) Provision of protective screen for passengers	Yes	Chain link fence made of Galvanized wire of 2 mm gauge and 2 mm Galvanized sheet is used above OHE Line on both side of Gangway is used for passengers Protection. (Refer fig :3)
	c) Type of Material used for mesh	GI wire mesh	

PART 3 STRUCTURAL SYSTEM OF THE BRIDGE			
			Notes
3.1	Foundation details		Not Visible at site.
3.2	Pedestals		
	Type of Material for bottom encasement	Concrete	Concrete Encasement is used for protecting trestles from the corrosion on the platform ** 'a' dimensions of Concrete Encasements
	Dimensions (L x W x D)	a : 850 x 780 x 300/230mm (Trapezoidal Shape)	
3.3	Roof Truss		
	Element of roof truss section		✓ No Roof Truss is provided, ✓ Main trusses are connected with 3 angle sections at top.
	Size of roof truss		
	Connection of Roof elements		
3.4	Steel Truss		
	Type /Shape of Truss Section	N- type, Double Angle	a) Main Chord members 2/150 x 150 x 14 mm Double Angle section. b) 100 x 100 x 12 mm are used as Vertical and inclined bracing Members c) 10 mm thick, gusset plate used for welded joint. (Refer fig : 1)
	Height of Truss (H)	2.60 m	
	Boundary Condition	Ridged connection	
	Shape of Floor beam	Double Channels	
			2/ISMC 150 Double channel Sections are used

	/Bracings	Angle section	as Floor beams, supported with 2/75 x 75 x 8 mm inclined support to top Chord member. 65 x 65 x 8 mm Angle sections are used for cross bracings of pathway. Floor beams are connected to bottom chord Member using Rivets and Bracing are connected using welding. (Refer fig :1&6)
	No of Floor beams/bracings for span	11 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 of 200 x 10 mm plates are welded to both flanges upto bottom of Truss, 75 x 75 x 8 mm Angle Lacing members connected using Gusset plates and bolts. (Refer fig : 5)
	Height of column from (pedestal top to bottom of slab panel)	5.250 m	
	No of Columns/ support	4 no's	
	Dimensions of Column	370 x 200 mm	
	BEAM-Column joint (bolted, welded, riveted)	Bolted connection	
3.6	Floor of the Pathway		
	Material of Slab	Pre-cast slab panels	Pre-cast Reinforced Concrete Slab panels are used for floor slab of 100 mm thick, Pre-cast RCC slab panels are resting on Angle chord members supported on Floor beams and Bracings from bottom. Chequered tile (25 mm thick) flooring is laid on the top of the Pre-cast slab panels.
	Thickness of Slab	100 mm	
	Condition of Slab from Bottom	Cracks observed	
	Condition of Slab from Top	Covered with Chequered tiles	
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 100mm are used. Steps are supported on ISMC 250 Channel stringer beam using cleat Angles. Staircase Landing of 1.50 m wide is supported on 2/100 x 100 x 12 mm Vertical Angle and Horizontal Channels Members. b) Two staircase steps on Platform 1 are deflected by 40-50 mm and cracked at the center of Pre-cast slab panel. c) In Step number 11 and 12 on Platform 1 from bottom cracks and deflection are observed at site as shown in part 4.
	Number of Steps from PF – 1	36 no's (Staircase 1)	
	Number of Steps from PF – 2	36 no's (Staircase 2)	
	Material used for steps	Pre-cast Slab Panel	
3.8	Staircase Railing		
	Type of Parapet Railing	Steel Railing	a) Stair case is provided with Railing on both sides of one-meter height using one Angle section of 65 x 65 x 8 mm and three Flats 50 x 12 mm. b) On Platform 1 Staircase Railing connection with column member has been lost and bent outward of the column member.
	Height of Railing	1 m	

PART 4 SURVEY OF SIGNS OF DISTRESS, DEFORMATION IN BRIDGES

- ✓ Severe corrosion is observed at joints below slab (Gusset plate, Angle sections)



(a)



(b)



(c)



(d)



(e)



(f)



(g)



(h)

- ✓ On Platform 1 Staircase Railing connection is missing on 2nd Flight tilting is observed towards outside on both sides of staircase Railing as shown in figure.



- ✓ Some staircase steps on Platform 1 are deflected by 40-50 mm and cracked at the center as shown in the figure.



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 floor slab Pre-cast RCC slab panels
	Water seepage		Organic growth is observed at stringer beam joints near landing.
	Spalling		Spalling is observed in Slab panels and in staircase-pre-cast panels.
	Rust straining		Slight rusting is observed at all the joints of FOB
	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 at distressed places.



Fig 1: Front view of FOB towards Khammam



Fig 2: FOB under live load



Fig 3: Advertising boards



Fig 4: Measuring Vertical Clearance using laser meter (from rail top to girder bottom)



Fig 5: FOB view from platform 2 with staircase



Fig 6: Redoxide paint applied at corroded joints and member

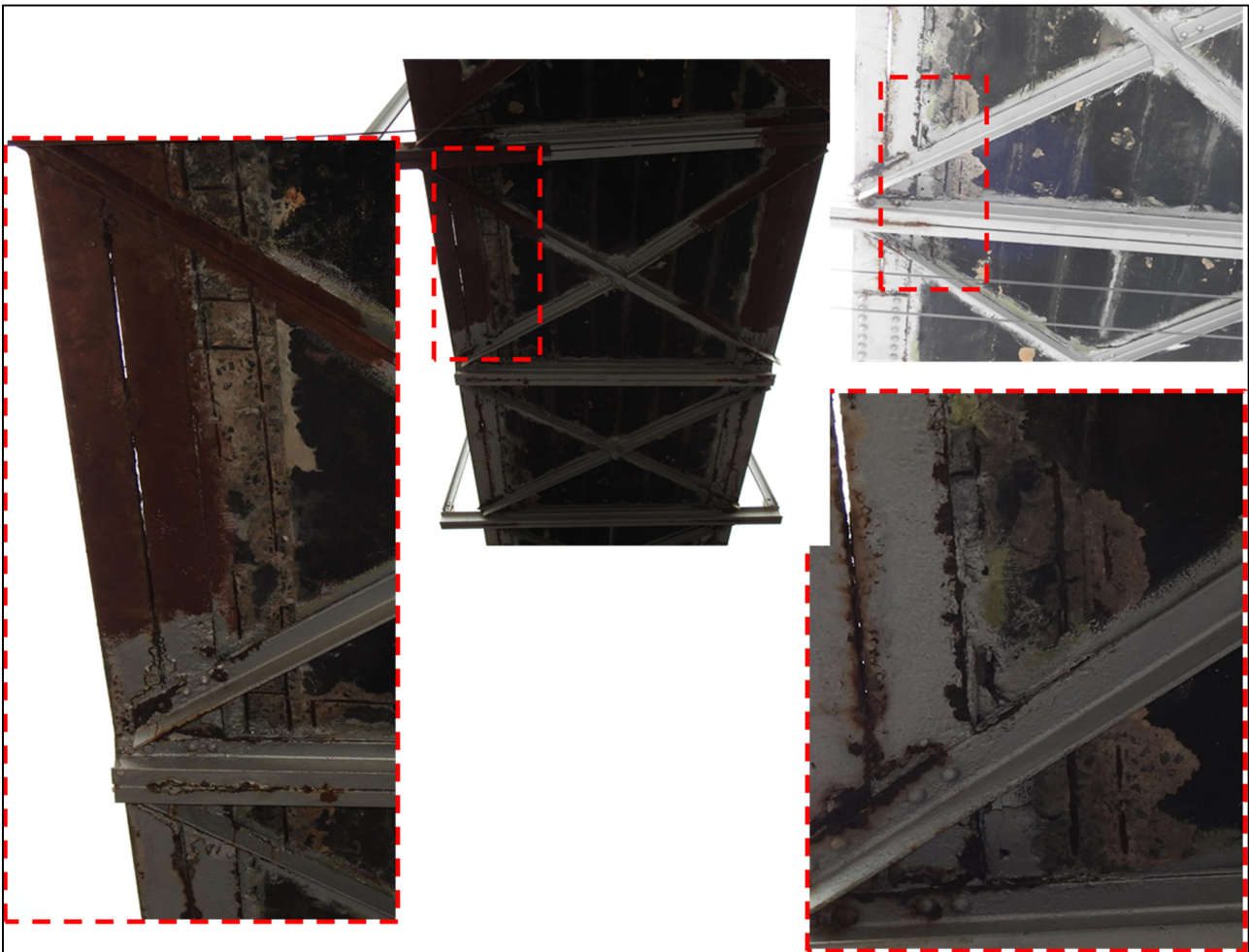


Fig 7: Spalling is observed in Floor slab from bottom



Fig 8: Spalling in staircase slabs

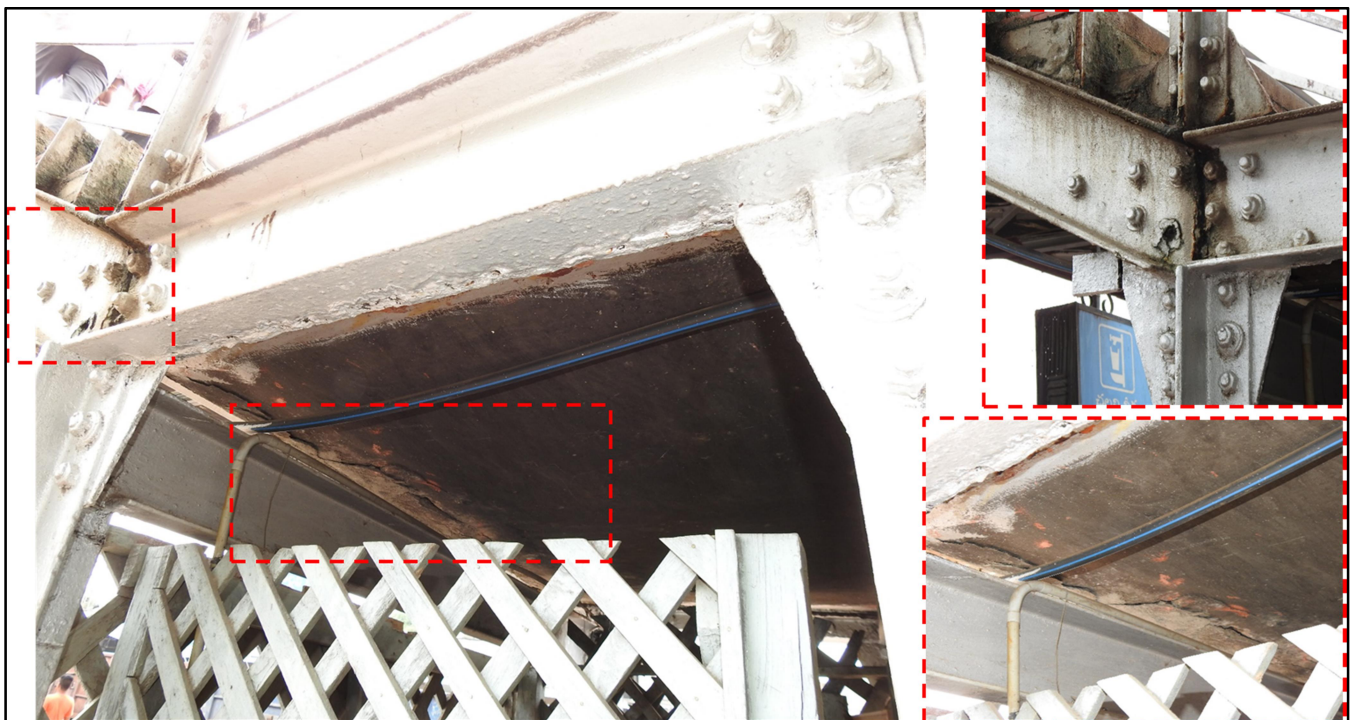


Fig 9: cracks are observed on landing floor slab from bottom



Fig 10: cracks are observed in staircase slabs