

Name of the Project	:	VISUAL INSPECTION OF FOB/ PF-1 - PF-2 AT TANDUR RAILWAY STATION
Location	:	TANDUR RAILWAY STATION
Location Co-ordinates	:	17°15'02.5"N 77°35'07.4"E
Date of Inspection	:	20th SEPTEMBER, 2019



Summary:

- a) Cracks are observed in Pre-cast RCC Slab panels, staircase panels (landing & step).
- b) Major corrosion is observed at steel concrete joint along length of FOB.
- c) Slight rusting is observed at all the joints of FOB at floor level.
- d) Spalling is observed on the Slab panels and at staircase landing.

Tests to be conducted:

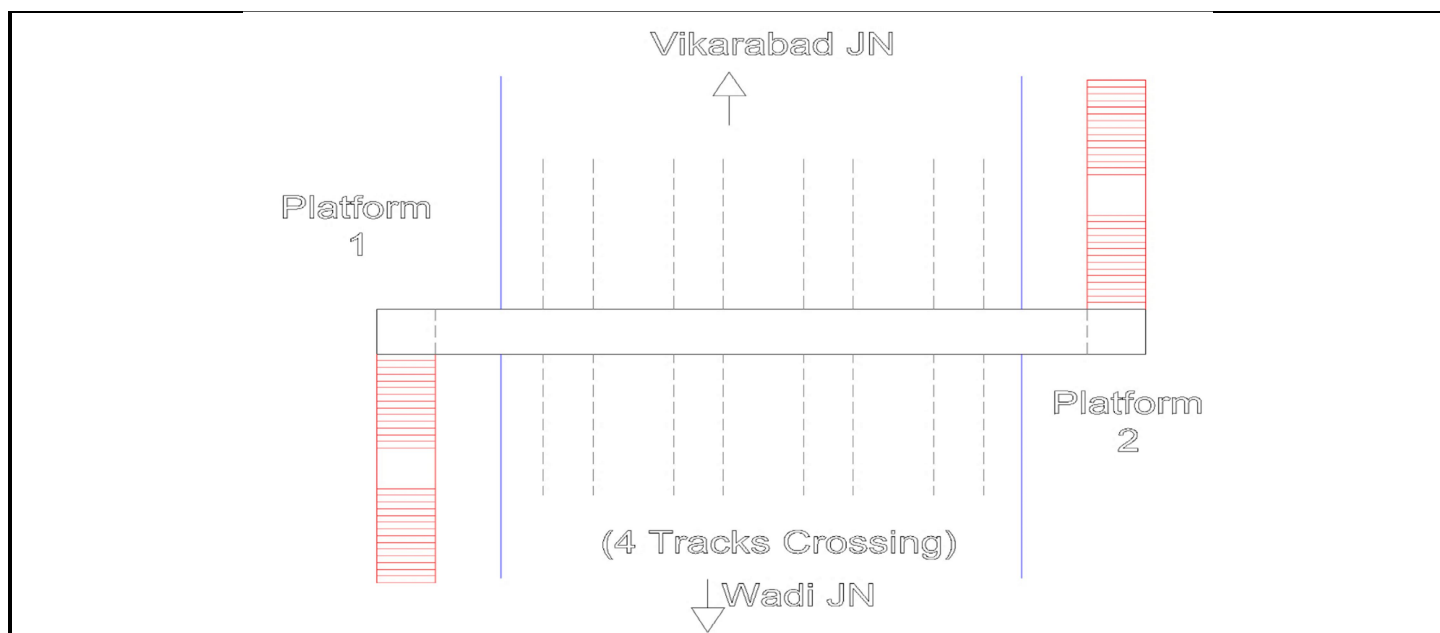
- a) Ultrasonic Thickness gauge to measures local thickness of a solid element.
- b) Elcometer (Coating thickness Gauge) to measures dry film thickness on steel surfaces.
- c) Ultrasonic Flaw detector to detect hidden cracks, voids, porosity, and other internal discontinuities in metals.
- d) Fillet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

FORMAT FOR VISUAL INSPECTION OF STEEL FOOT OVER BRIDGE

Name of the Project	Visual inspection of FOB/ PF-1 - PF-2 at Tandur railway station
Location	Tandur Railway Station
Date of Inspection	20-09-2019

PART 1 GENERAL INFORMATION AND OBSERVATION

1.1	Name of the Bridge	FOB/ PF-1 - PF-2
1.2	Location	Tandur Railway Station
	Location co-ordinates	17°15'02.5"N 77°35'07.4"E
1.3	Type of truss Structure	Camel back with N-type truss
1.4	Year of Construction	Approx. 30+ 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 (Frame, truss) b. Pre-cast RCC Slab panels (Floor slab, staircase steps)
1.7	Width of the Pathway (m)	2.0 m
1.8	Length of the Pathway (m)	25.75 m (Clear span)
1.9	No of Railway Lines Crossings	4 tracks
1.10	Span arrangement (no x Span in meters)	1x 25.75 m
1.11	Vertical Clearance (from rail top to girder bottom)	6.902 m
1.12	Head Room	2.70 m
1.13	Damages due to accidental hitting, Grazing Marks	No Visible signs appear
1.14	History of Repair/ Maintenance	Not observed in site
1.15	Existing 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 (water pipe lines).
	b) Cables	Yes	Cables are protected (Refer fig : 2)
	c) Roof Truss	Yes	65 x 65 x 4 mm Angles are used (Refer fig :3)
	d) Roof Sheet	Yes	Metal Sheet is used for Roof (Refer fig : 3)
	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	Galvanized wire of 2 mm gauge rectangle mesh and 2 mm Galvanized sheet is provided near OHE Line on both side of pathway for passenger Protection. (Refer fig :4)
	c) Type of Material used for mesh	GI wire mesh	

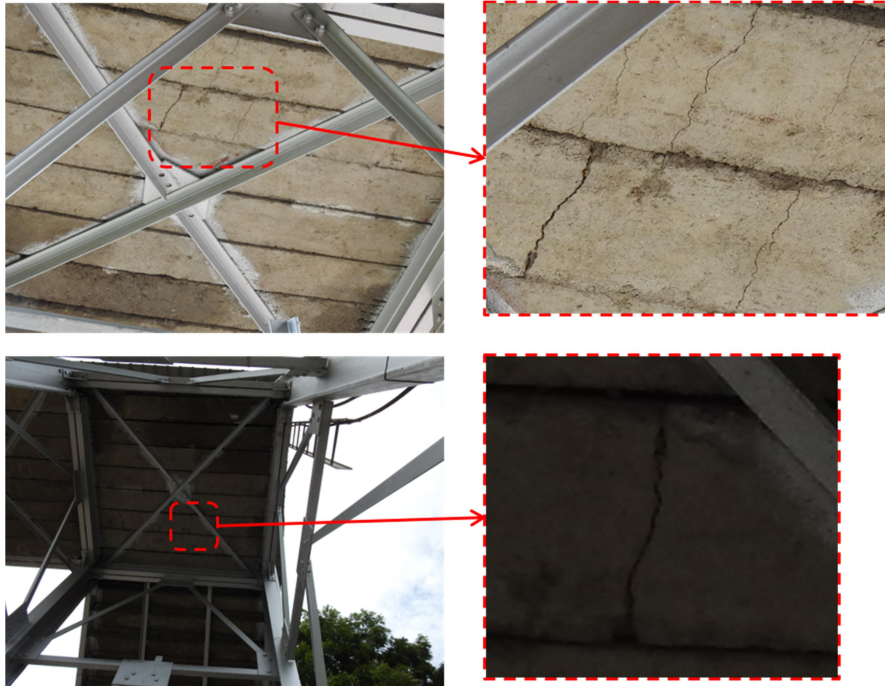
PART 3 STRUCTURAL SYSTEM OF THE BRIDGE			
			Notes
3.1	Foundation details		Not visible at site
3.2	Pedestal details		
	Type of Material		*To protect the column from corrosion, it is protected with concrete encasement on PF level (Refer fig :5)
	Dimensions (L x W)	a : 640 x 640 mm	

			** 'a' dimensions of Concrete encasement are observed in site
3.3	Roof Truss		
	Element of roof truss section	King post truss	65 x 65 x 6 mm King post Angle section are used for roof truss supported on 90 x 90 x 10mm Top Chord Members using welded joints. (Refer fig : 3)
	Size of roof truss	2.15m wide	
	Connection of Roof elements	Welded connection	
3.4	Steel Truss		
	Type /Shape of Truss Section	N- type, Camel back	a) Main Chord members 90 x 90 x 10 mm Double Angle section b) 80 x 80 x 10 mm Double angle are used as bracing Members c) 10 mm thick, gusset plate used for welded joint. (Refer fig : 8)
	Height of Truss (H)	2.60 m	
	Boundary Condition	Rigid connection	
	Shape of Floor beam /Bracings	Double Channels angle section	150 x 75 x 6 mm Double Channel Sections are used as Floor beams, supported with 75 x 75 x 10 mm bottom bracings and 65 x 65 x 8 mm angle sections to main trusses. Floor beams ISMC 150 are connected to bottom chord Member using Bolts and Bracings are connected by welding. (Refer fig : 8)
	No of Floor beams/bracings for span	9 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 Column of 4 - ISMB 300 with 65 x 65 x 8 mm Angle Lacing members connected using Gusset plates and bolts. (Refer fig : 5)
	Height of column from (PF level to bottom of slab panel)	5.250 m	
	No of Columns/ support	4 no's	
	Dimensions of Column	300 x 150 mm	
	BEAM-Column joint (bolted, welded, riveted)	Welded connection	
3.6	Floor of the Pathway		
	Material of Slab	Pre-cast slabs	Pre-cast Reinforced Concrete Slab panels are used for floor slab of 100 mm thick, Pre-cast RCC slab panels are resting on Angle tie 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. (Refer fig : 4)
	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	Staircase steps Pre-cast RCC slab panels of size 300 x 100 are used. Steps are supported on ISMC 300 Stringer using cleat Angles. Staircase Landing of 2 m wide is supported on Vertical and Horizontal Angle Members. (Refer fig : 7)
	Number of Steps from PF – 1	42 no's	
	Number of Steps from PF – 2	42 no's	
	Material used for steps	Pre-cast Slab Panel	

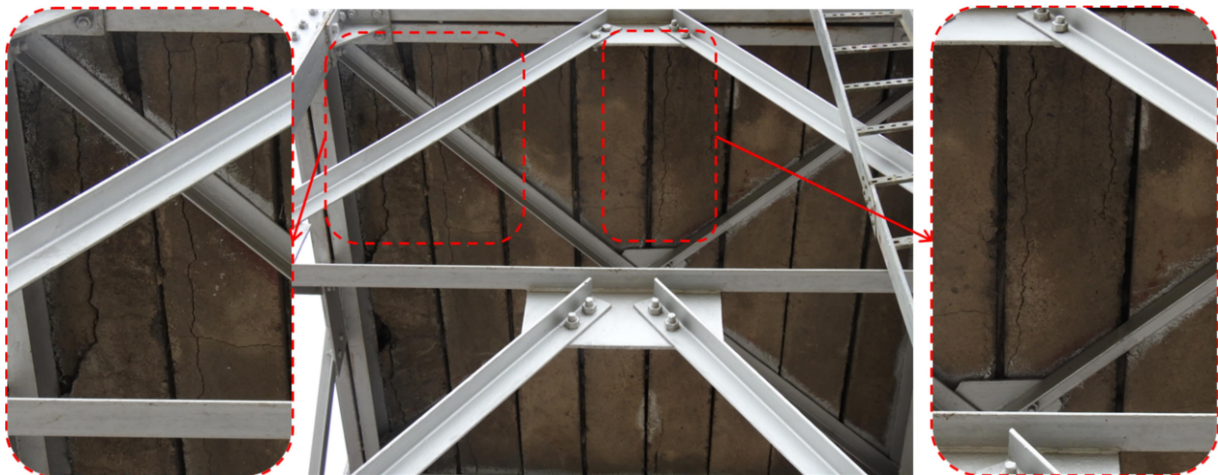
3.8	Staircase Railing		
	Type of Parapet Railing	Steel Railing	Stair case is provided with Railing on both sides of one-meter height using Angle 65 x 65 x 8 mm and Hollow Circular sections (Refer fig :7)
	Height of Railing	1 m	

PART 4 SURVEY OF SIGNS OF DISTRESS, DEFORMATION IN BRIDGES

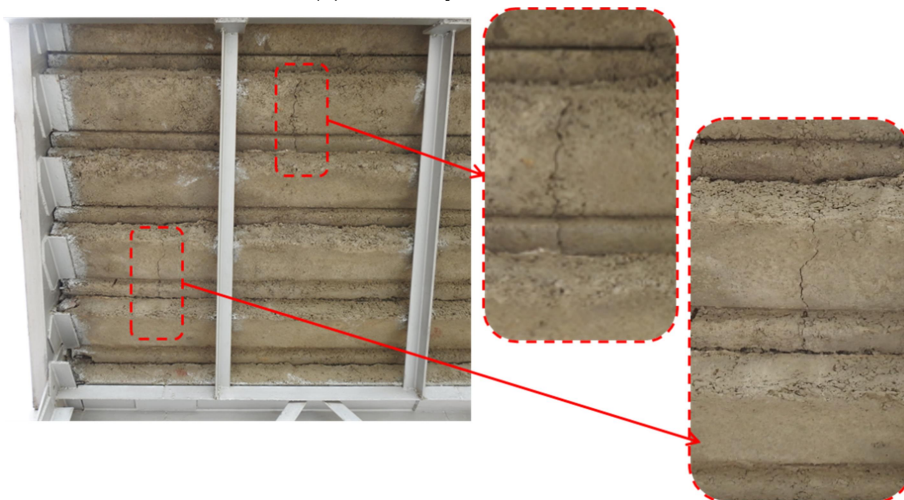
- ✓ Cracks are observed in Pre-cast RCC Slab panels, staircase panels (landing & steps).



(a) Pathway from bottom



(b) Pathway from the bottom



(c) Staircase from the bottom

- ✓ Major corrosion is observed along the length of steel concrete on both sides



(a)



(b)



(c)



(d)



(e)

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 more than 50% of Pre-casted RCC slab panels
	Water seepage		No water seepage is observed
	Spalling		Spalling is observed in Slab panels near chord members and at staircase landing.
	Rust straining		Slight rusting is observed at all the joints of FOB at floor level
	Corrosion in Gusset plate	near base slab	Rusting 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 Vikarabad Junction



Fig 2: Electrical Cables observed on FOB



Fig 3: King post roof truss with metal sheet roofing



Fig 4: GI 2 mm thick wire rectangle mesh and sheet is provided for passenger protection



Fig 5: Concrete encasement is provide for ISMB columns

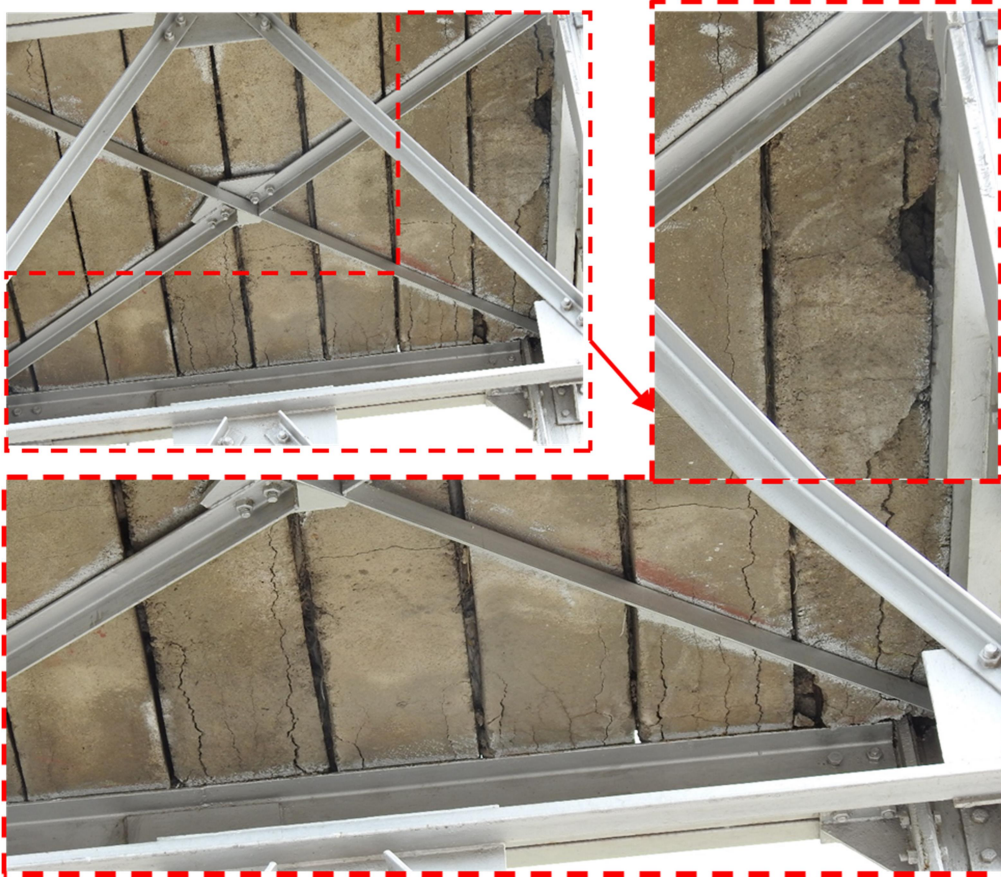


Fig 6: Cracks observed in slab panels above column Support



(a)



(b)



(c)



(d)

Fig 7: Snap shots of Staircase from different views



Fig 8: View of Steel Truss