

Name of the Project	:	VISUAL INSPECTION OF FOB/ PF-1 - PF-2 AT KHAMMAM RAILWAY STATION
Location	:	KHAMMAM RAILWAY STATION
Location Co-ordinates	:	17°14'58.1"N 80°08'19.6"E
Date of Inspection	:	22th SEPTEMBER, 2019



Summary:

- Leaching effect and Cracks are observed on Pre-cast slab panels of FOB.
- Corrosion is observed at gusset plate joints, bottom main chord double angle section of FOB and vegetation is also observed.
- Corrosion of Floor beam is observed and slight rusting is observed at bottom chord angle section
- Corrosion is also observed at steel concrete joint.
- Base plate over concrete pedestal is heavily corroded near staircase 3

Tests to be conducted:

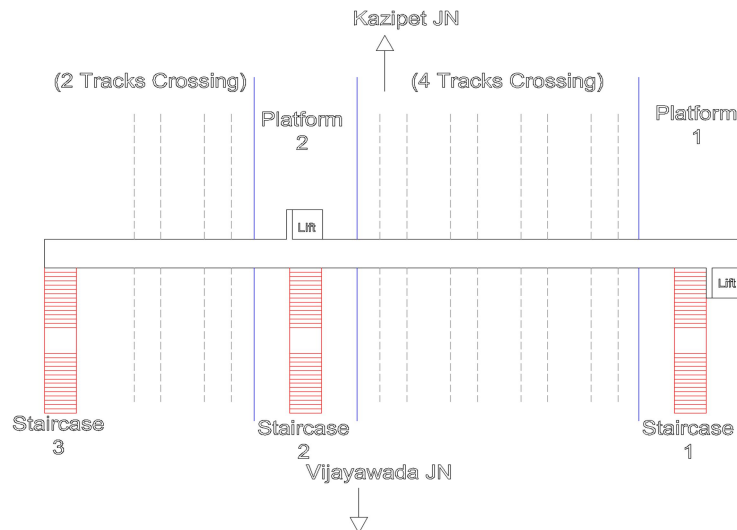
- Ultrasonic Thickness gauge to measures local thickness of a solid element.
- Elcometer (Coating thickness Gauge) to measures dry film thickness on steel surfaces.
- Ultrasonic Flaw detector to detect hidden cracks, voids, porosity, and other internal discontinuities in metals.
- Fillet weld gauge to measures the size of the weld.
- Profometer Test for concrete cover and diameter of rebar.
- 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 Khammam railway station
Location	Khammam Railway Station
Date of Inspection	22-09-2019

PART 1 GENERAL INFORMATION AND OBSERVATION		
1.1	Name of the Bridge	FOB/ PF-1 - PF-2
1.2	Location Location co-ordinates	Khammam Railway Station 17°14'58.1"N 80°08'19.6"E
1.3	Type of truss Structure	Pratt truss (N – Type) Span 1 & 2
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), RCC (Slab, Staircase)
1.7	Width of the Pathway (m)	2.0 m
1.8	Length of the Pathway (m)	52.75 m (overall length include 2 spans)
1.9	No of Railway Lines Crossings	Span 1 = 4 tracks crossing ; Span 2 = 2 tracks crossing
1.10	Span arrangement (no x Span in meters)	2 Spans (1 x 25.65 + 1 x 20.0 m)
1.11	Vertical Clearance (from rail top to girder bottom)	5.90 m
1.12	Head Room	2.70 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 running on the both sides along the length of FOB. (Refer fig :2)
	c) Roof Truss	Yes	65 x 65 x 8 mm Angles are used (Refer fig :2)
	d) Roof Sheet	Yes	Metal Sheet is used for Roof (Refer fig :2)
	e) load of advertising hoarding	Yes	Advertising boards are provided (Refer fig :7)
	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 :2)
	b) Provision of protective screen for passengers	Yes	Galvanized XPM mesh of 2 mm gauge and 2 mm galvanized sheet is used above OHE Line on both side of pathway is used for passengers Protection. (Refer fig :2)
	c) Type of Material used for mesh	GI wire mesh	

PART 3 STRUCTURAL SYSTEM OF THE BRIDGE

			Notes
3.1	Foundation details		Pedestal above ground level is visible at staircase 3, others are covered with stone cladding
3.2	Pedestal details		
	Type of Material	Concrete	Vertical columns are connected to Pedestal with Gusset plate, Cleat angle 150 x 100 mm, and

	Dimensions (L x W x D)	a : 940 x 850 x 900 mm	600 x 300 base plate (Refer fig :8) ** 'a' dimensions of Concrete pedestal are observed in site below staircase 3.
3.3	Roof Truss		
	Element of roof truss section	King post Angle	65 x 65 x 8 mm King post Angle sections are used for roof truss supported on 125 x 125 x 14 mm, Top Chord Members using welded joints. (Refer fig : 2)
	Size of roof truss	2.15m wide	
	Connection of Roof elements	Welded connection	
3.4	Steel Truss		
	Type /Shape of Truss Section	N- type, Double Angle	Span 1: a) Main Chord members 2/125 x 125 x 14 mm Double Angle section @ 200 mm spacing between angles. b) ISMB 175 are used as verticals and bracing members c) 10 mm thick, gusset plate used for welded joint. (Refer fig : 1(a)) Span 2: a) Main Chord members 100 x 100 x 12 mm Double Angle section b) 75 x 75 x 8 mm angles are used as verticals and bracing members c) 10 mm thick, gusset plate used for welded joint. (Refer fig : 1(b))
	Height of Truss (H)	2.60 m	
	Boundary Condition	Rigid connection	
	Shape of Floor beam /Bracings	Double Channels angle section	
	No of Floor beams/bracings	Span 1 = 11 nos Span 2 = 13 nos	2/90 x 90 x 8 mm Double Angle Sections are used as Floor beams. 65 x 65 x 8 mm angle sections are used for bottom bracings of pathway. Floor beams are connected to bottom chord Member using Bolts and Bracing are connected by welding. (Refer fig : 9)
	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 Columns of ISMB 400 with 75 x 75 x 8 mm Angle Lacing members connected using Gusset plates and bolts. (Refer fig : 8)
	Height of column from (pedestal top to bottom of slab panel)	5.250 m	
	No of Columns/ support	4 no's	
	Dimensions of Column	400 x 150 mm	
	BEAM-Column joint (bolted, welded, riveted)	Welded connection	
3.6	Floor of the Pathway		
	Material of Slab	Pre-cast slab pannels	Pre-cast Reinforced Concrete Slab panels are used for pathway. In span 1 Pre-cast RCC slab panels are resting on bottom chord members.
	Thickness of Slab	100 mm	
	Condition of Slab from Bottom	Cracks observed	

	Condition of Slab from Top	Covered with Chequered tiles	In span 2 Pre-cast RCC slab panels are resting on Floor beams. Chequered tile (25 mm thick) flooring is laid on the top of the Pre-cast slab panels.(Refer fig : 2)
3.7	Staircase Details		
	Number of Staircase	3 No's	Staircase steps are observed as Pre-cast RCC slab panels of size 300 x 100 are used. Steps are supported on ISMC 250 Channel Stringer beam using cleat Angles. Staircase Landing of 2 m wide is supported on Vertical and Horizontal Angle Members. (Refer fig : 3,8)
	Number of Steps from PF – 1	35 no's (Staircase 1)	
	Number of Steps from PF – 2	35 no's (Staircase 2)	
		35 no's (Staircase 3)	
	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 50 x 10 mm Flat plate sections(Refer fig :8)
	Height of Railing	1 m	

PART 4 SURVEY OF SIGNS OF DISTRESS, DEFORMATION IN BRIDGES

- ✓ Heavy corrosion is observed at bottom slab joint (Gusset plate, Angle sections)



(a)



(b)



(c)



(d)

- ✓ Heavy corrosion is observed at Column bracings



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 Pre-cast RCC slab panels
	Water seepage		Vegetation is observed along the length of FOB
	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 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 at distressed places.



Fig 1(a): Front view of FOB span 1 towards Madira



Fig 1(b): Front view of FOB span 2 towards Madira



Fig 2(a): FOB span 1 pathway



Fig 2(b): FOB span 2 pathway



Fig 3: FOB span 2 pathway



Fig 4: Cracks are observed in Pre-cast RCC slab panels (bottom view)



Fig 5: Vegetation is observed along the length of FOB



Fig 6: shed for lift is supported on Trestles



Fig 7: Advertisement boards on landing



Fig 8: Trestles supporting staircase



Fig 9: span 1 bottom view