

Name of the Project	:	VISUAL INSPECTION OF FOB/ PF-1 - PF-2 AT AMMANBROLU RAILWAY STATION
Location	:	AMMANABROLU RAILWAY STATION
Location Co-ordinates	:	15°35'49.1"N 80°08'56.9"E
Date of Inspection	:	04thNOVEMBER, 2019



Summary:

- a) Exposed reinforcement and cracks are observed on Pre-cast RCC slab panels of Pathway.
- b) Corrosion is observed at Floor beams of Span 1 & 2.
- c) Reinforcement exposure & Spalling is observed at Staircase.
- d) Corrosion is also observed at floor beams of Staircase Mid landings and Cleat angles at beam-column joint of FOB.
- e) Rusting is observed at Top and bottom Chord members of FOB
- f) Patch work is observed at staircase slab.

Tests to be conducted:

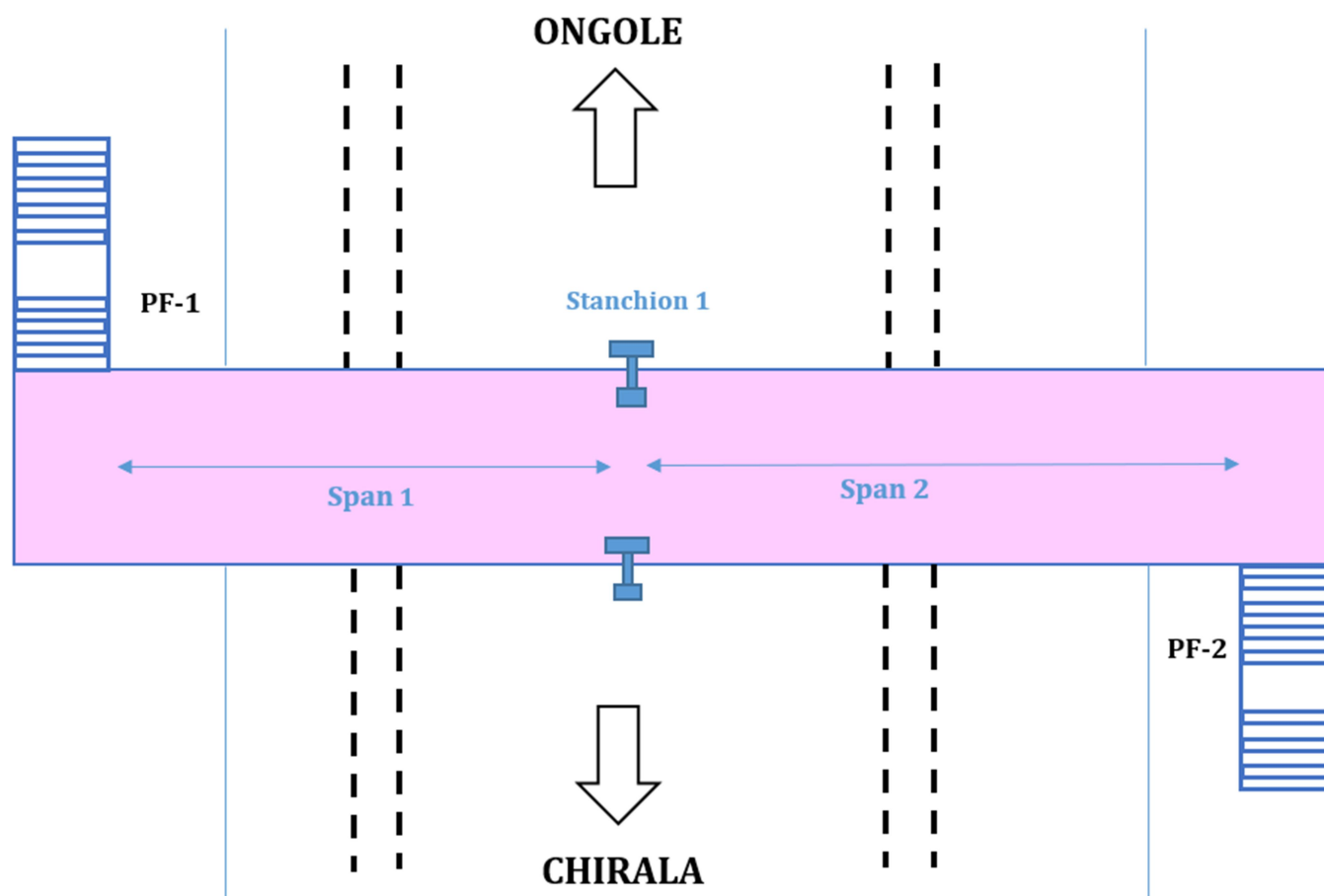
- a) Ultrasonic Thickness gauge to measures local thickness of a solid element.
- b) Elcometer (Coating thickness Gauge) to measures dry film thickness on steel surfaces.
- c) Ultrasonic Flaw detector to detect hidden cracks, voids, porosity, and other internal discontinuities in metals.
- d) Fillet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

VISUAL INSPECTION OF FOOT OVER BRIDGE

Name of the Project	Visual inspection of FOB/ PF-1 - PF-2 at Ammanabrolu railway station
Location	Ammanabrolu Railway Station
Date of Inspection	04-11-2019

PART-1 GENERAL INFORMATION AND OBSERVATION		
1.1	Name of the Bridge	FOB/ PF-1 - PF-2
1.2	Location Location co-ordinates	Ammanabrolu Railway Station 15°35'49.1"N 80°08'56.9"E
1.3	Type of truss Structure	Warren Truss (Fabricated with NG Rail)
1.4	Year of Construction	1956
1.5	Description of the main use of the bridge	Pedestrians Crossing
1.6	Major Materials used in different parts of bridge	a. Rail (Truss, frame) b. Pre-cast RCC Slab panels(Floor slab), RCC Cast In-situ Slab (Staircase)
1.7	Width of the Pathway (m)	1.66 m
1.8	Length of the Pathway (m)	20.23 m
1.9	No of Railway Lines Crossings	2 tracks Span 1 = 1 Span 2 = 1
1.10	Span arrangement (no x Span in meters)	2 x 7.88
1.11	Vertical Clearance (from rail top to girder bottom)	6.058 m
1.12	Head Room	2.67 m
1.13	Damages due to accidental hitting, Grazing Marks	No Visible signs appear
1.14	History of Repair/ Maintenance	Patch work observed
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
	b) Cables	Yes	a. 1-inch GI pipe and 1-inch PVC pipe is supported on Roof Truss. (Refer fig :3) b. Common Rafter Truss of 75 x 75 x 6 mm Angles are used as Roof truss(Refer fig :2) c. Asbestos Sheet is used for Roof (Refer fig : 2)
	c) Roof Truss	Yes	
	d) Roof Sheet	Yes	
	e) load of advertising hoarding	No	
	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	No additional wearing coat is observed on flooring (Refer fig :2)
	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. (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		Not visible at site
3.2	Trestles		Not visible at site
	Trestles Connection Details		
	No. of Bolts and size		
	Thickness of Base Plate	Not visible at site	
3.3	Roof Truss		
	Element of roof truss section	Angle section	Common Rafter Truss of 75 x 75 x 6 mm Angles are used as Roof truss supported on Vertical members of 75 x 75 x 6 mm Angle section (Refer fig :2)
	Size of roof truss	1.85 x 0.76 m	
	Connection of Roof elements	Welded	
3.4	Steel Truss		
	Type /Shape of Truss Section	Rail section	a) Top and bottom Chord members are 50 x 100 x 90 (Head x Height x Base) Rail section (Refer fig :1) b) 50 x 100 x 90 mm Rail sections are used as diagonal bracing members. c) 50 x 100 x 90 mm Rail sections are used as Floor beams supported with Knee bracings 50 x 100 x 90 mm rail section to transfer load from slab to Top chord member. d) Bottom Lateral Bracings 50 x 100 x 90 rail section in Zig-zag pattern are used to support Floor beams.
	Height of Girder/Truss (H)	1.68 m	
	Truss Support Condition	Rigid connection	
	Type/Shape of Floor beam /Bracings	Rail section	
	No of Floor beams/bracings	Span 1 = 9 No's Span 2 = 9 No's	
	Arrangement of Bracings	Zig-Zag bracing	
	Type of Beam-Column Joint (shape of gusset plate if any)	Cleat angle	
3.5	COLUMN		
	Type/Shape of Column section	Built up Rail Section	a. FOB is supported on vertical column of 2 Rail section 65 x 130 x 65mm with bracings of 65 x 65 x 10mm angle section b. Trestles 1 and 3 have 4 columns whereas Trestle 2 (Stanchion) have only 2 columns. (Refer Fig 4) c. Stanchion column has built up section of 4 rail sections 65 x 130 x 65mm up to a height of 2.4 m and continued with 2 rails, Supported by bracings of 65 x 65 x 10 mm angle section (Refer fig : 4) d. Staircase landing is supported by 2 Rail section of 65 x 130 x 65mm, with bracings of 65 x 65 x 10 mm angle section (Refer fig :6)
	No of Columns/ support	4, 2	
	Dimensions of Column	140x135 mm	
	Beam-Column joint (bolted, welded, riveted)	Bolted	

3.6	Floor of the Pathway		
	Material of Slab	Pre-cast RCC Slab Panel	Pre cast Reinforced concrete slab is used for floor slab of 85 mm thick, RCC slab panels are resting on Floor beams which are supported by Bottom chord member and Bottom Lateral Bracings.
	Thickness of Slab	85 mm	
	Condition of Slab from Bottom	Spalling and Cracks observed	
	Condition of Slab from Top	Cracks observed	
3.7	Staircase Details		
	Number of Staircase	2 Nos	Staircase is observed as Cast In-situ RCC Slab supported on 50 x 100 x 90mm Rail tie beam and 50 x 100 x 90mm Rail Stringer beam on both sides of stair case.(Refer fig :5)
	Number of Steps from PF – 1	38Nos	
	Number of Steps from PF – 2	38Nos	
	Material used for steps	Cast in-situ RCC Slab	
3.8	Staircase Railing		
	Type of Parapet Railing	Steel Railing	Staircase is provided with railing on both sides using 50 x 100 x 90 Rail section and 50 x 6 mm M.S flats are used. (Refer fig :6)
	Height of Railing	1.37	

PART 4 SURVEY OF SIGNS OF DISTRESS, DEFORMATION IN BRIDGES

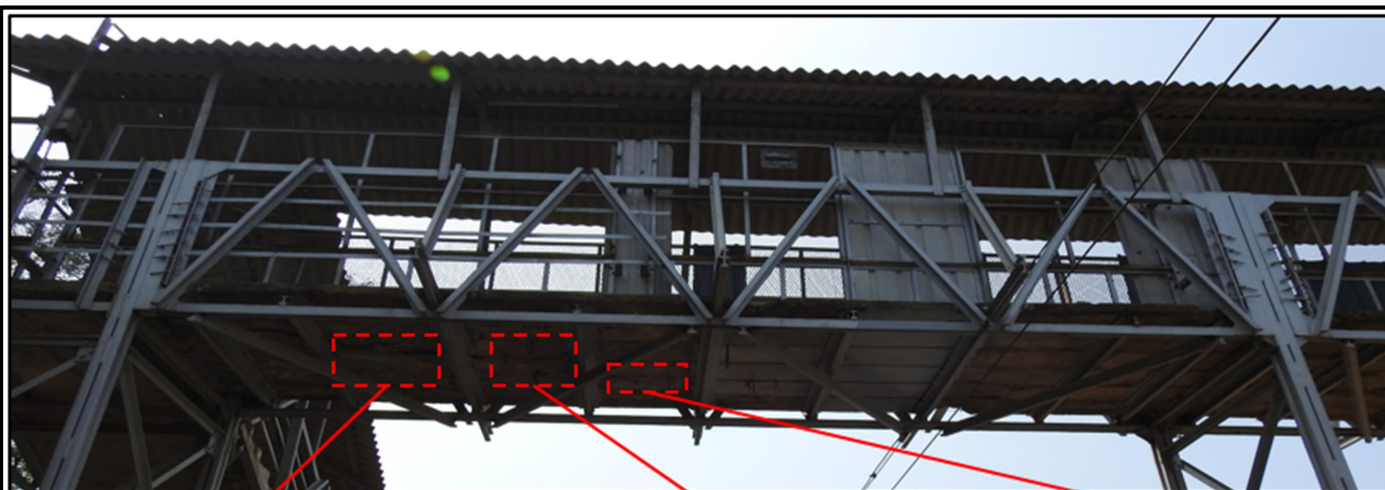
- ✓ 4.1) Exposed reinforcement, cracks is observed at Span 1 & 2, Staircase 1 & 2.



a) Reinforcement exposed observed at Staircase 1 Slab



b) Cracks and reinforcement exposed observed at Staircase 2 Slab



c) Reinforcement exposed and cracks observed on Span 1 slab bottom

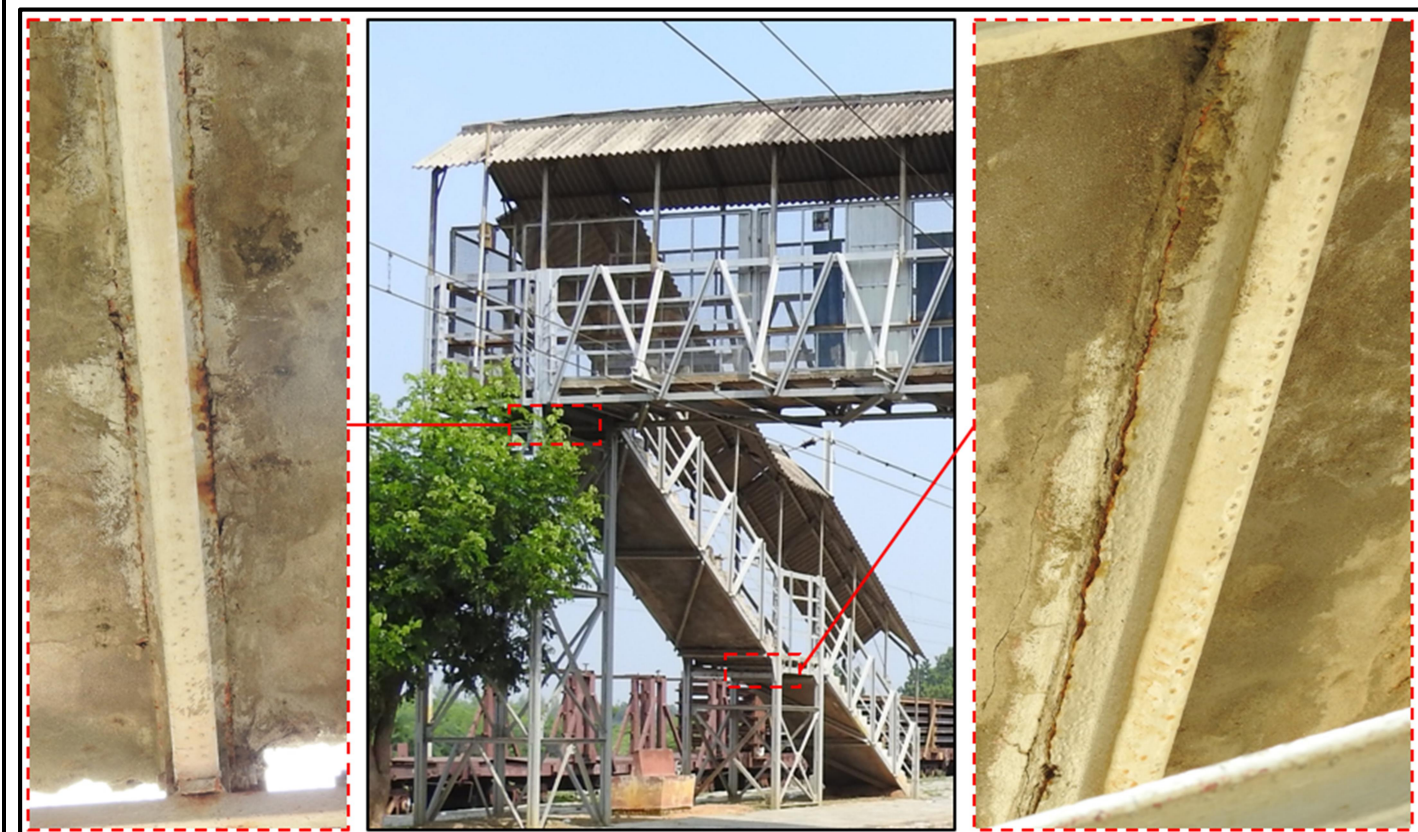


d) Reinforcement exposed , cracks and leaching observed on Span 2 slab bottom

✓ 4.2) Corrosion of floor beams is observed at Staircase 1 & 2 and span.



a) Corrosion observed at floor beams on staircase-1 Main landing and mid landing slab bottom



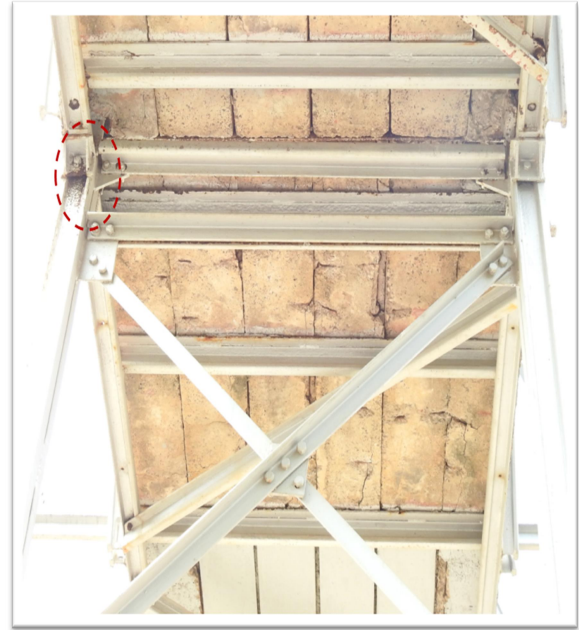
b) Corrosion observed at floor beams on staircase-2 Main landing and mid landing slab bottom



c) Corrosion observed at floor beams on Span 1



d) Rusting & Corrosion observed at Top & Bottom chord members of FOB



e) Corrosion of Cleat angles at Beam column joint of Trestle-2 and Stanchion

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 of Pathway and also in Stair case slab. (Refer Part 4.1)
	Water seepage		No visual signs appear.
	Spalling		Spalling is observed in Pathway pre-cast panels and Stair case slab. (Refer Part 4.1)
	Rust straining		Rusting is observed at Top and Bottom Chord members and all the joints(Refer Part 4.2 d)
	Corrosion	Floor level	Corrosion is observed at Floor Beams of FOB. (Refer Part 4.2)
	Corrosion at steel-Concrete joint		corrosion is observed at steel concrete joint along length of FOB (Refer Part 4.2)
	Condition of Painting of steel structure		Painting is affected only at distressed places.



Fig 1: Front view of FOB



Fig 2: Pathway, protective screen of FOB



Fig 3: Additional loads of GI, HDPE, PVC pipes



Fig 4: Stanchion column Rail sections details



Fig 5: Staircase bottom view



Fig 6: Bottom view of FOB



Fig 7: Staircase side view of FOB



Fig 8:Slab panelsReplaced at Span 1 and 2



Fig 9:Cracks on top of Pathway Slab panels



Fig 10: Corrosion of Floor beams joints at Midlandings of Staircase 1 and 2



Fig 11: Inspection Team at Ammanabrolu FOB