

Name of the Project	:	VISUAL INSPECTION OF FOB/ PF-1 - PF-2 AT WIRUR RAILWAY STATION
Location	:	WIRUR RAILWAY STATION
Location Co-ordinates	:	19°38'30.6"N 79°25'52.5"E
Date of Inspection	:	23 rd September 2019



Summary:

- a) Major corrosion observed in stringer beam, gusset plate and in Trestles at PF-2.
- b) Corrosion is observed in staircase landing which is supported on channel section at PF-1.
- c) Corrosion is observed in bottom chord member (Double angular section) near steel concrete joint.
- d) Corrosion observed in floor beams and sacrificial plates below 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) Vibration analysis.
- g) Rebound Hammer test for surface strength of concrete (For Pre-cast slab panels and staircase).

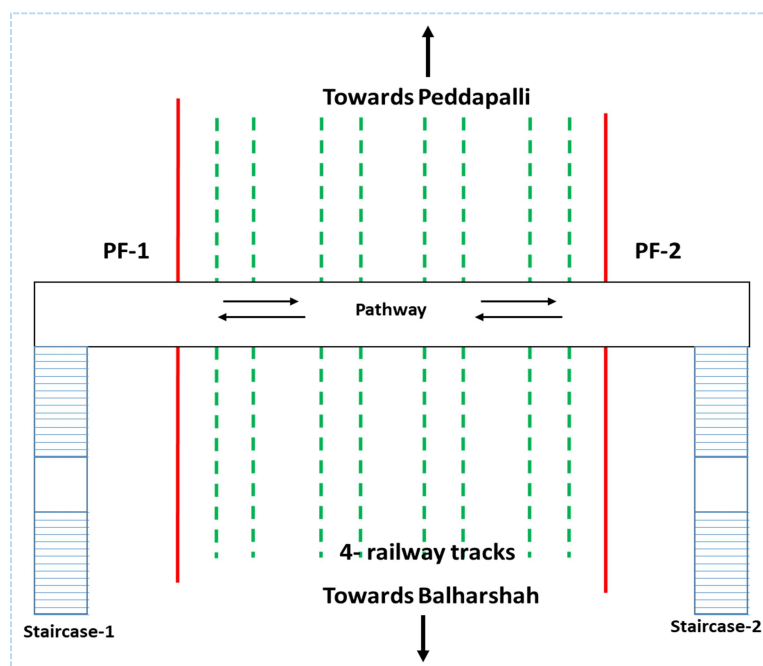
FORMAT FOR VISUAL INSPECTION OF STEEL FOOT OVER BRIDGE

Name of the Project	Visual inspection of FOB/ PF-1 - PF-2 at Wirur railway station
Location	Wirur Railway Station
Date of Inspection	23 rd September 2019

PART 1 GENERAL INFORMATION AND OBSERVATION

1.1	Name of the Bridge	FOB/ PF-1 - PF-2
1.2	Location Location co-ordinates	Wirur Railway Station 19°38'30.6"N 79°25'52.5"E
1.3	Type of truss Structure	Camel Back Truss.
1.4	Year of Construction, Maintenance History	Not available
1.5	Description of the main use of the bridge	Pedestrians Crossing
1.6	Type of Materials used in different parts of bridge	Structural Steel, RCC Slab
1.7	Width of the Pathway (m)	1.5 m
1.8	Length of the Pathway (m)	29.1 m
1.9	No of Railway Lines Crossings	4 no's tracks
1.10	Span arrangement (no x Span in meters)	1x25.35 m = 25.35 m (Clear span)
1.11	Vertical Clearance (from rail top to girder bottom)	6.533 m
1.12	Head Room	2.95 m at mid span, 2.08 m at ends
1.13	Damages due to accidental hitting, Grazing Marks	No Visible signs appear
1.14	History of Repair (if any...)	No Patch work are observed)
1.15	Original Structural Drawings	Not available

1.16 Key Plan



PART 2 IDENTIFICATION OF LOADS ON BRIDGE			
		Yes/No	Remarks
	Dead Loads at Roof level		
2.1	a) Pipeline - Utilities	Yes	Not observed in site
	b) Cables	Yes	Cables are protected with 1-inch HDPE pipe. (Refer <i>fig :1</i>)
	c) Roof Truss	Yes	King post truss with 65 x 65 x 6 mm angles are used (Refer <i>fig: 1</i>).
	d) Roof Sheet	Yes	Metal sheet is used for roof (Refer <i>fig: 1</i>).
	e) load of advertising hoarding	No	No advertising boards are provided.
	f) load of train/coach display boards	No	No train display boards are provided
	g) Additional load of overhead electrical equipment (OHE), Signal	No	No Additional load of overhead electrical equipment (OHE and Signal
2.2	Dead Loads at Floor level		
	a) Additional wearing coat on Floor	No	Chequered tiles are used for flooring.
	b) Provision of protective screen for passengers	Yes	Chain link fence made of galvanized wire of 2 mm gauge and 2mm galvanized sheet is used above OHE line on both side of pathway is used for protection. (Refer <i>fig :1</i>)
	c) Type of Material used for mesh	Galvanized wire mesh	

PART 3 STRUCTURAL SYSTEM OF THE BRIDGE			
			Photo ID
3.1	Foundation details		Not visible at site
3.2	Pedestals		
	Trestles Connection Details		Concrete encasement on platforms is observed (Refer <i>fig :2</i>)
	No of Bolts and size	Not visible	
	a) Thickness of Base Plate	Not visible, filled with concrete	
	b)		
	Roof Truss		
3.3	Element of roof truss section	Angular sections	Roof truss is made with 65 x 65 x 6 mm angles and supported on 75 x 75 x 10 mm angles main top chord members. (Refer <i>fig :1</i>)
	Size of roof truss	1.5 X 0.6 m	
	Connection of Roof elements	Bolted	
	Steel Truss		
3.4	Type/Shape of Girder Section	N type camel back	a. Top and bottom chord members 75 x75 x10 mm double angular section. b. 65 x 65 x 6 mm double angles are used as bracing members c. 10 mm thick gusset plate is used for welded
	Height of Girder/ Truss (H)	2.95 m at mid span, 2.08 m at supports	
	Truss Support Condition	Rigid Connection	
	Type/Shape of Floor Beams	Double Channel	

	/Bracings	sections and angular section	joint. d. ISMC 150 Double Channel are used as Floor Beams supported with 65 x 65 x 8 mm angular section to transfer load from slab to roof truss.(Refer fig :3)
	No of Secondary Girders/bracings for span	9 no's	
	Arrangement of Bracings	Diagonal	
	Type of Beam-Column Joint (shape of gusset plate if any)	Cleat angles	
	COLUMN		
3.5	Type/Shape of Column section	I – Section	FOB is supported on vertical column of Four - ISMB 300. (Refer fig :2)
	No of Columns per support	4	
	Dimensions of Column	300x150 mm	
	BEAM-Column joint (bolted, welded, riveted)	Bolted	
	Floor of the Gangway		
3.6	Material of Slab	RCC	a. Cast in site slab is used for floor slab of 100mm thick, cast in situ slab is supported with sacrificial plate which is resting on floor beams and bracings from bottom b. Chequered tile flooring is laid on the top of the slab (Refer fig :4)
	Thickness of Slab	125 mm	
	Condition of Slab from Bottom	Covered with sacrificial plate	
	Condition of Slab from Top	RCC slab is not visible, Covered with Chequered tiles	
	Condition of sheeting- MS. Sheet at bottom	Rusting is observed at the joints connecting MS sheet plate	
	Staircase Details		
3.7	Number of staircases	2 No's	Staircase steps is also cast in site slab of size 300 x 100 mm used. Steps are supported on ISMC 250 channel using sacrificial plate. Staircase landing of 1.6 m wide is supported on vertical and horizontal channels members. Roof of staircase is supported with 65 x 65x 6 mm double angular section. (Refer fig :5)
	Number of steps from PF – 1	34 no's	
	Number of steps from PF – 2	34 no's	
	Material used for steps	RCC slab	
	Staircase Railing		
3.8	Type of Parapet Railing	Steel railing	Staircase is provided with railing on both sides of one-meter height using 65 x 65 x 6 mm angles and 50 x 6 mm M.S flats are used. (Refer fig :5)
	Height of Railing	1 m	

PART 4 SURVEY OF SIGNS OF DISTRESS, DEFORMATION IN BRIDGES

4.1

✓ Major corrosion observed in stanchions, gusset plate and in Trestles at PF-2.



Major corrosion observed

4.2

✓ Corrosion is observed in staircase landing which is supported on channel section at PF-1



Major Corrosion observed in channel section staircase landing at PF-1

4.3

✓ Corrosion is observed in bottom chord member (Double angular section) near steel concrete joint



Corrosion is observed at steel concrete joint

4.4

✓ Rusting of sacrificial plates is observed at slab bottom and corrosion observed in floor beams.



Rusting and corrosion is observed

PART 4 SURVEY OF SIGNS OF DISTRESS, DEFORMATION IN BRIDGES			
	Defects	Location	
	Cracking in steel members		No cracks are observed in Steel during visual inspection
	Cracking in RCC components		No cracks are observed, covered with sacrificial plate
	Water seepage		No water seepage is observed
	Spalling		No Spalling is observed.
	Rust straining	Sacrificial plate	Rusting is observed below slab and bottom of staircase of FOB. (Refer Part 4 - 4.4)
	Extent Of Corrosion	Floor beam, stringer beam and channel section	a. Spacers in between floor beam channels are distressed. (Refer Part 4 - 4.4) b. Major corrosion is observed at Double channel support of landing slab (Loss of effective thickness). c. Corrosion is observed in staircase landing which is supported on channel section at PF-1. (Refer Part 4 - 4.1 and 4.2)
	Corrosion in Gusset plate	Trestles bracings	Rusting is observed in Gusset plates. (Refer Part 4 - 4.1)
	Corrosion at steel-Concrete joint	Bottom main chord member	Corrosion is observed at steel concrete joint. (Refer Part 4 - 4.3)
	Condition of Painting of steel structure		Painting is affected at distressed places.

***Rust:** Rust is a part of corrosion and is a chemical process which results in the formation of red or orange coating on the surface of metals.

***Corrosion:** it is the process of deterioration of materials as a result of chemical, electrochemical or other reactions.



Fig 1: Cables, Roof truss, Flooring and Protective screen



Fig 2: Trestles details



Fig 3: Top and bottom chord members, bracings and Floor beams



Fig 4: Bottom view of FOB



Fig 5: Staircase details and bottom view