Name of the Project	:	VISUAL INSPECTION OF FOB AT NANDYAL RAILWAY STATION
Location	:	NANDYAL RAILWAY STATION
Location Co-ordinates	:	**15°28'07.00"N 78°28'18.4"E**
Date of Inspection	:	10th NOVEMBER, 2019



Summary:

a) Corrosion is observed at Bottom chord member in span 3, 4, 6
b) Rusting observed at Stringer beam of Stair case 1 and stringer beam joints in Stair case-2
c) Corrosion is also observed at Base plate of mid landing & trestles in Stair case-1and 3
d) Slight corrosion of bottom chord joint is observed at Span-1 and 5
e) Vegetation is observed at Trestles-3, 4 & 5.
f) Hitting Damage is observed at landing trestle of Staircase 3

Tests to be conducted:

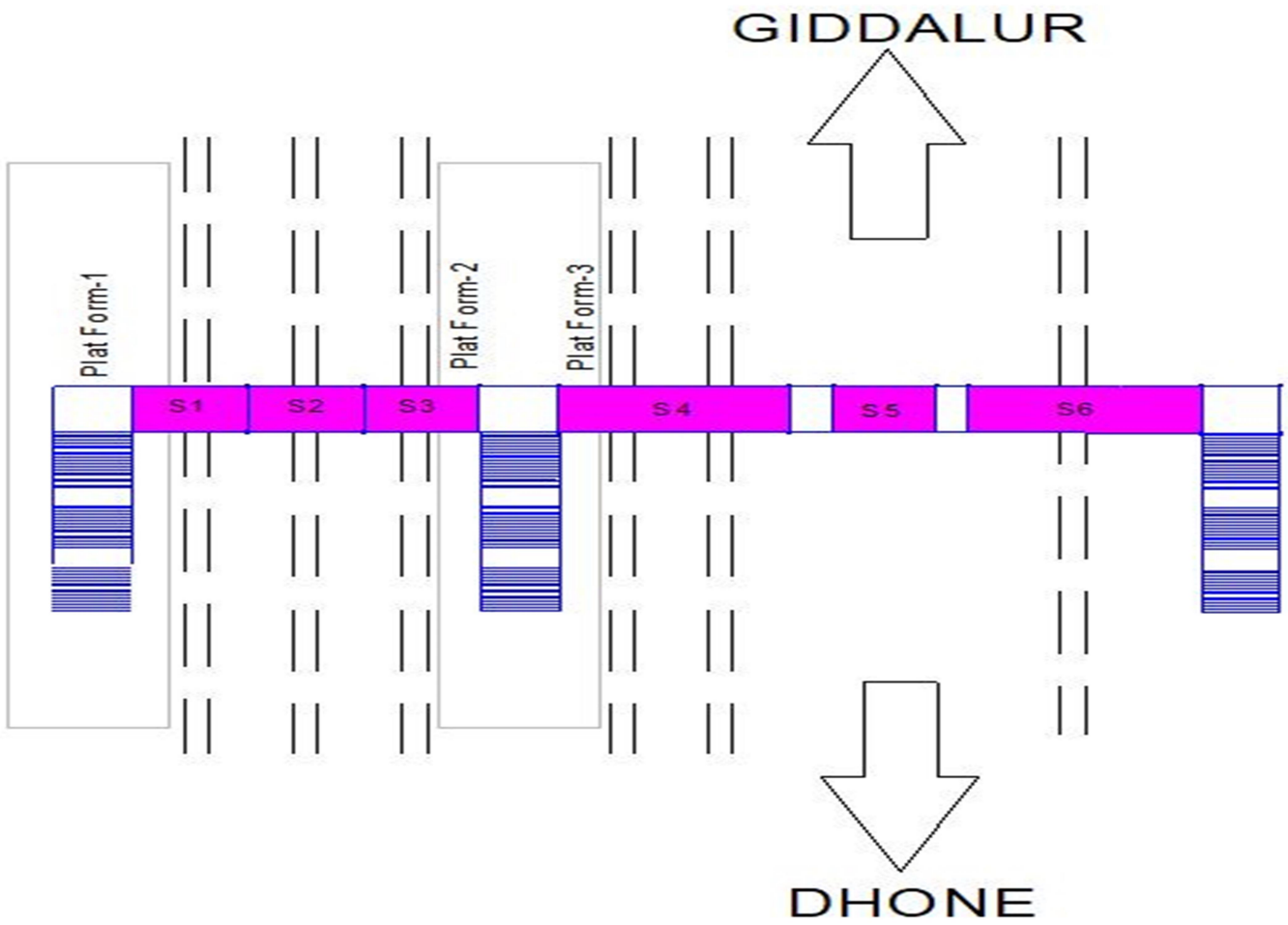
a) Ultrasonic Thickness gauge to measures local thickness of a solid element.
b) Elcometer (Coating thickness Gauge) to measures dry film thickness on steel surfaces.
c) Ultrasonic Flaw detector to detect hidden cracks, voids, porosity, and other internal discontinuities in metals.
d) Fillet weld gauge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

Name of the Project	Visual inspection of FOB at Nandyal railway station
Location	Nandyal Railway Station
Date of Inspection	10-11-2019

PART 1 GENERAL INFORMATION AND OBSERVATION		
1.1	Name of the Bridge	FOB/ PF-1 to Circulating area.
1.2	Location Location co-ordinates	Nandyal Railway Station 15°28'07.00"N, 78°28'18.4"E
1.3	Type of truss Structure	Pratt Truss (N Type)
1.4	Year of Construction	Not available
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 (Truss, frame), b) Rail (Stanchion) c) Cast In-situ RCC Slab (Floor slab)
1.7	Width of the Pathway (m)	2.04 m
1.8	Length of the Pathway (m)	88.6 m
1.9	No of Railway Lines Crossings	6 No. of tracks Span 1 = 1 Span 2 = 1 Span 3 = 1 Span 4 = 2 Span 5 = - Span 6 = 1
1.10	Span arrangement (no x Span in meters)	1 x 8.84 +1 x 5.43+ 1 x 8.05+ 1 x 21.10+ 1 x 11.073+ 1 x 21.457m = 54.493
1.11	Vertical Clearance (from rail top to girder bottom)	6.759 m
1.12	Head Room	2.51 m
1.13	Damages due to accidental hitting, Grazing Marks	Hitting damage observed at bracings of landing trestle of Staircase 3
1.14	History of Repair/ Maintenance	Not available
1.15	Original Structural Drawings	Not available

1.16 Key Plan



PART 2 IDENTIFICATION OF LOADS ON BRIDGE

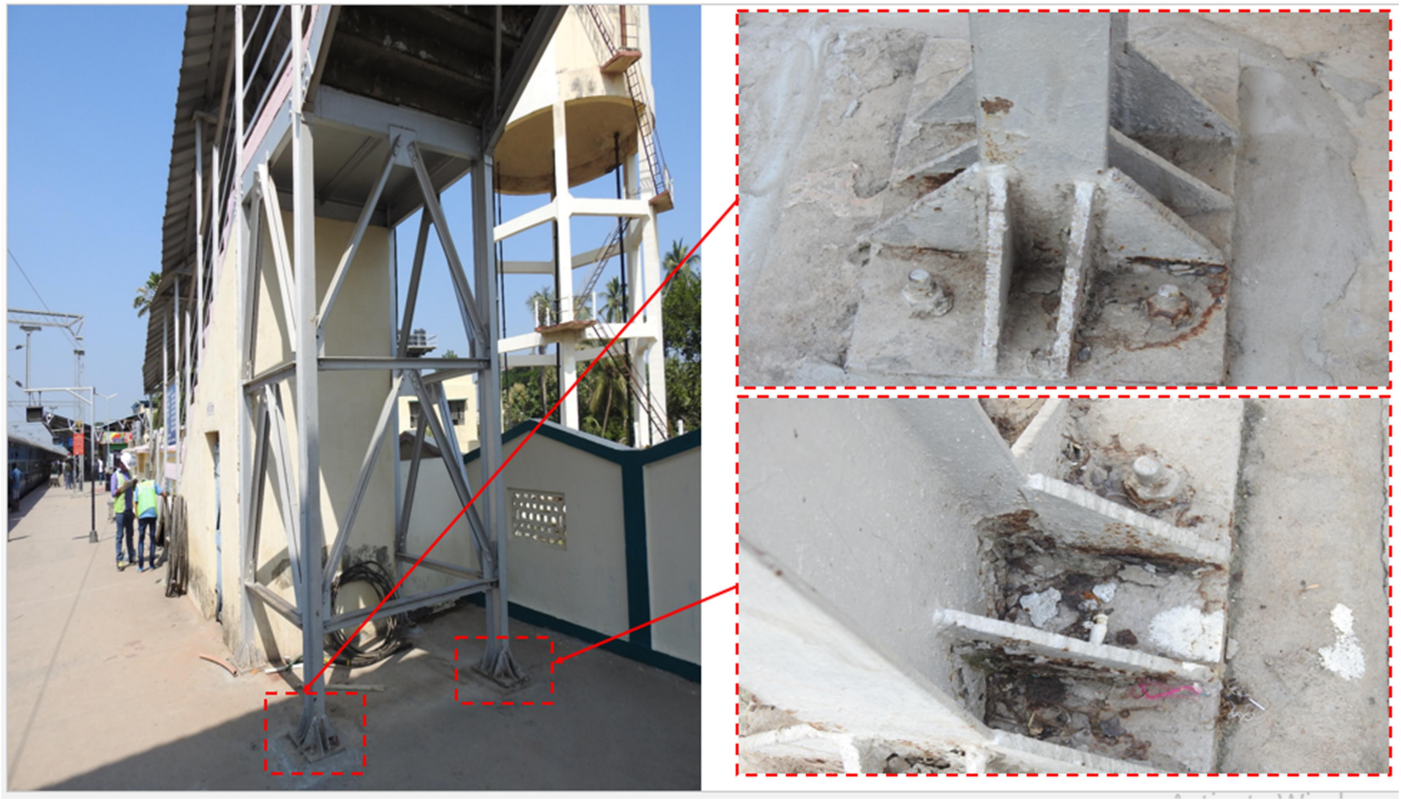
		Yes/No	Notes
	Dead Loads at Roof level		
2.1	a) Pipeline - Utilities		Not observed in site
	b) Cables	Yes	a) Cables are protected with 60mm dia HDPE pipes. 1-inch HDPE pipe, 1.5-inch HDPE pipes of 2 No's, 1-inch and1.5-inch PVC pipes of 2 No's. (Refer ***fig :3***) b) King post truss is provided as Roof Truss c) GI sheet is provided as Roof Sheet
	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	Yes	Chequered tiles are used for Span-4,5 &6(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 for passengers Protection.

	c) Type of Material used for mesh	GI wire mesh	(Refer ***fig :2***)

	PART 3 STRUCTURAL SYSTEM OF THE BRIDGE		
			Notes
3.1	**Foundation details**		Not visible at site
3.2	**Pedestals**		
	Trestles Connection Details	Bolted	24mm dia bolts are used at Trestles-2, 3,4,5 18mm dia bolts are used at Trestle-1
	No. of HD Bolts and size	6Nos- 24 & 18mmdia.	
	Thickness of Base Plate	20mm	
3.3	**Roof Truss**		
	Element of roof truss section	Double Angle section	King post truss of 65 x 65 x 6 mm Double angle sections are used for roof truss.
	Size of roof truss	2.34 x 0.63 m	
	Connection of Roof elements	Welded	
3.4	**Steel Truss**		
	Type /Shape of Truss Section	Double Angle section	a) Top and bottom Chord members are 110 x 110 x 10 double angle section (Refer ***fig : 1***) b) 75 x 75 x 10 mm Angle sections are used as vertical and diagonal bracing members. c) 110 x 110 x 10 mm angle sections are used as Floor beams with Knee bracings 65 x 65x 8 mm Angle section. d) Bottom Lateral Bracings 65 x 65 x 8 Angle section in Diagonal pattern are used.
	Height of Girder/Truss (H)	2.7 m	
	Truss Support Condition	Rigid connection	
	Type/Shape of Floor beam /Bracings	Double Angle section	
	No of Floor beams/bracings per Span	5, 3, 5, 13, 7, 13	
	Arrangement of Bracings	Diagonal bracing	
	Type of Beam-Column Joint (shape of gusset plate if any)	Cleat Angle	
3.5	**COLUMN**		
	Type/Shape of Column section	ISMB, Rail Section	a. FOB is supported on vertical column of ISMB 300, with bracings of 65 x 65 x 8 mm double angle section. b. Trestles 1, 2, 3 & 4 have 4 columns where as Stanchions -1&2 have only 2 columns. (Refer **fig : *4***) c. Stanchion column has 2 Rail sections of 65 x 140 x 135mm(Head x Height x Base) (Refer ***fig : 4***) d. Staircase landing is supported by a section of ISMB 200, with bracings of 65 x 65 x 8 mm angle section.
	No of Columns/ support	4, 2	
	Dimensions of Column	ISMB 300	
	BEAM-Column joint (bolted, welded, riveted)	Bolted	

3.6	**Floor of the Pathway**		
	Material of Slab	Cast in-situ	a. Cast In-situ Reinforced concrete slab is used for floor slab of 75 mm thick, RCC slab is resting on Bottom Chord and Floor beams. b. Chequered tile flooring is laid on the top of the Cast In-situ slab (Refer ***fig : 2***)
	Thickness of Slab	75 mm	
	Condition of Slab from Bottom	Not Visible	
	Condition of Slab from Top	Not Visible	
3.7	**Staircase Details**		
	Number of Staircase	3No's	Staircase is observed as Pre cast RCC Slab panels supported on ISMC 200 Stringer beam and 65 x 65 x 8mm angle tie beam on both sides of stair case. (Refer ***fig : 6***)
	Number of Steps from PF – 1	37No's	
	Number of Steps from PF – 2	37No's	
	Number of Steps at Trestle-5 Circulating Area	39 No's	
	Material used for steps	RCC Slab Panels	
3.8	**Staircase Railing**		
	Type of Parapet Railing	Hand Rail Steel	Staircase is provided with railing on both sides using 65 x 65 x 8 angle section and 50 x 10 mm M.S flats are used.(Refer ***fig : 6***)
	Height of Railing	1.2m	

4.1 ✓ Corrosion observed at Base plates, Bottom chord, Sacrificial plate



a) Base plates corroded at landing of Stair case-1



b) Corrosion observed at Bottom chord in span-3



c) Corrosion observed at Bottom Chord in Span-6



d) Sacrificial plate and Bottom chord corroded at span-4

4.2 Rusting observed at Stringer beam, Sacrificial plate & Trestles



a) Rusting observed at Stringer beam below flight-2 in Stair Case-1



b) Rusting of Stringer beam joint at landing of Stair case-2



c) Rusting observed at Base plate in Stair case-3 landing

PART 5 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		No cracks are observed in RCC components during visual inspection.
	Water seepage		No visual signs appear.
	Spalling		No spalling is observed
	Rust straining		Slight rusting is observed at all the joints of FOB at Stair cases, Floor beams & Sacrificial plate.(***Refer part 4.2***)
	Corrosion		Corrosion of Bottom chord member is observed.(***Refer part 4.1***)
	Corrosion at steel-Concrete joint		Corrosion is observed at steel concrete joint at Mid landing of Stair case-2 and at Base plates.(***Refer part 4.2 c***)



a) Front & Bottom view of FOB span 1



b) Front & Bottom view of FOB span 2



c) Front & Bottom view of FOB span 3



d) Front & Bottom view of FOB span 4



e) Front view of FOB span 5



Fig 1: f) Front & Bottom view of FOB span 6



Fig 2: Chequered tiles & RCC Slab flooring



Fig 3: Additional loads of HDPE, PVC pipes



Fig 4: Rails in stanchion column



Fig 5: Details of Stair Case



Fig 6: Vegetation growth observed at Trestles - 3, 4 & 5

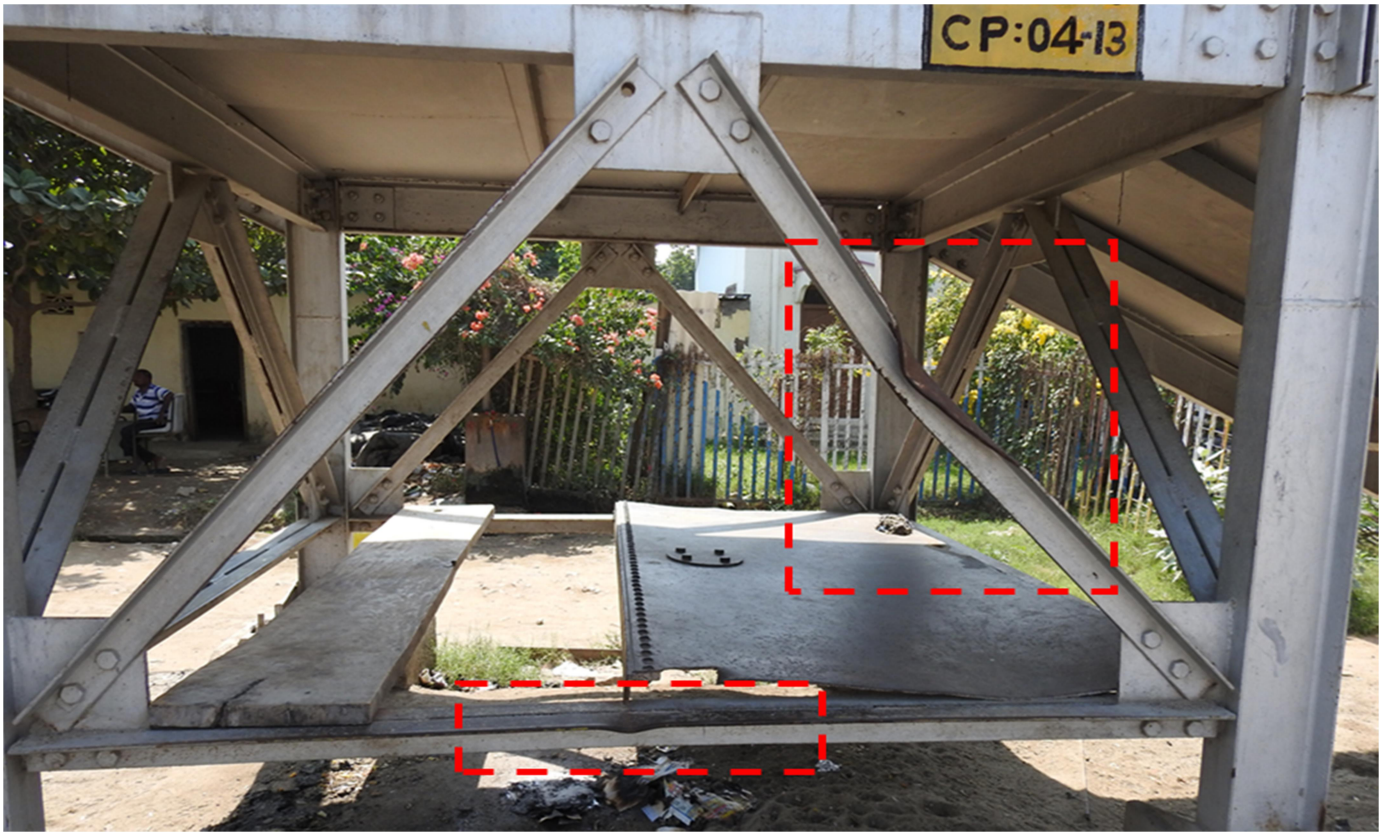


Fig 7: Hitting damage observed at Staircase 3



Fig 8: Inspection Team at Nandyal FOB