

Name of the Project	:	VISUAL INSPECTION OF FOB AT KONDAPALLI RAILWAY STATION
Location	:	KONDAPALLI RAILWAY STATION
Location Co-ordinates	:	16°37'23.9"N, 80°32'48.9"E
Date of Inspection	:	10th NOVEMBER, 2019



Summary:

- a) Cracks and Spalling observed on RCC slab panels of Spans 1, 2, &3.
- b) Corrosion is observed in Floor beams & Bottom Chord of Spans.
- c) Corrosion is observed in Gusset Plates.
- d) Corrosion is observed at Base Plates of Columns & Joint connections.
- e) Spalling & Reinforcement exposure are observed in RCC steps of Staircases.

Tests to be conducted:

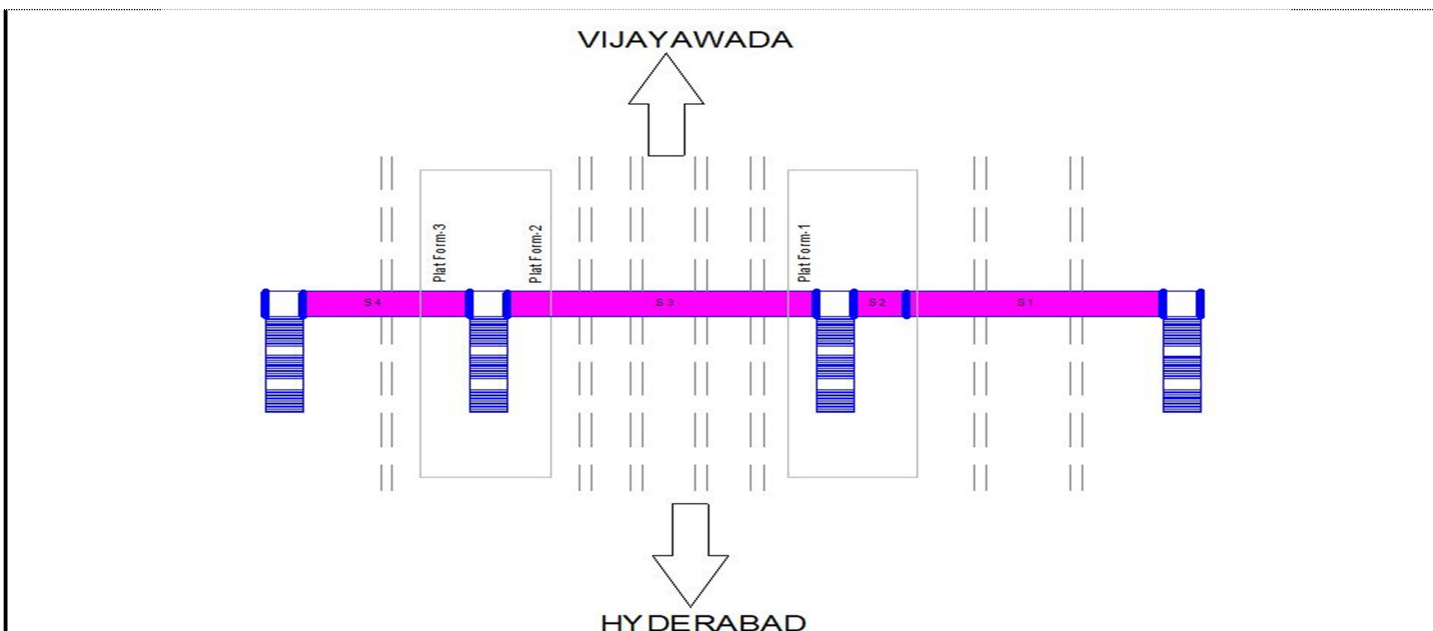
- a) Ultrasonic Thickness gauge to measures local thickness of a solid element.
- b) Elcometer (Coating thickness Gauge) to measures dry film thickness on steel surfaces.
- c) Ultrasonic Flaw detector to detect hidden cracks, voids, porosity, and other internal discontinuities in metals.
- d) Fillet 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 Kondapalli Railway Station
Location	Kondapalli Railway Station
Date of Inspection	10-11-2019

PART 1 GENERAL INFORMATION AND OBSERVATION

1.1	Name of the Bridge	FOB/ circulating area to circulating area	
1.2	Location Location co-ordinates	Kondapalli Railway Station 16°37'23.9"N, 80°32'48.9"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. Cast in-Situ RCC Slab (Floor slab) c. Pre-cast RCC Slab panels (Floors slab & Staircase)	
1.7	Width of the Pathway (m)	2.1 m	
1.8	Length of the Pathway (m)	78.45 m	
1.9	No of Railway Lines Crossings	7 tracks Span 1 = 2 Span 2 = 0	Span 3 = 4 Span 4 = 1
1.10	Span arrangement (no x Span in meters)	1 x 25 m + 1 x 3.8m + 1 x 25.45 m + 1 x 15 m = 64.15 m (Clear Span)	
1.11	Vertical Clearance (from rail top to girder bottom)	Span : 1,2&3 : 5.848 m	Span-4 : 6.759 m
1.12	Head Room	2.65 m	
1.13	Damages due to accidental hitting, Grazing Marks	No Visible signs appear	
1.14	History of Repair/ Maintenance	Patch work observed in the staircase Flights & Landing	
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	
	b) Cables	Yes	a. Cables are protected with 3 inch HDPE pipe of 2 Nos., 1-inch HDPE pipe of 2 Nos. supported on Roof Truss.
	c) Roof Truss	Yes	
	d) Roof Sheet	Yes	b. King post of 70 x 70 x 8 mm Angles are used as Roof truss
	e) load of advertising hoarding	No	c. Metal Sheet is used for Roof (Refer fig : 2, 2(a),2(c))
	f) load of train/coach display boards	No	No 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 used for Flooring (Refer fig : 2, 2(a),2(c))
	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.
	c) Type of Material used for mesh	GI wire mesh	(Refer fig : 2, 2(a),2(c))

PART 3 STRUCTURAL SYSTEM OF THE BRIDGE

			Notes
3.1	Foundation details		Pedestal of size 770 x 770 mm is provides for Span 4 and Pedestal of size 460 x 460 mm is provides for Span 1 & 2. (Refer fig : 3(b),3(c))
3.2	Pedestals		
	Baseplate	Bolted Connections	
	No. of HD Bolts and size	4/6 Nos. 25mm Dia.	

		Bolts	
	Thickness of Base Plate	30 mm	
3.3	Roof Truss		
	Element of roof truss section	King post truss	King post of 70 x 70 x 8 mm Angle sections are used for roof truss supported on Vertical members of 70 x 70 x 8 mm Double Angle section (Refer fig : 2, 2(a),2(c))
	Size of roof truss		
	Connection of Roof elements		
3.4	Steel Truss		
	Type /Shape of Truss Section	Pratt Truss with Double Angles	Span 1, 2 & 3 a) Top & Bottom Chord members are 100 x 100 x 14 mm Double Angle Sections (Refer fig : 7) b) 100 x 100 x 14 mm Double Angle sections are used as vertical and diagonal members. c) ISMC 150 Double Channel sections are used as Floor beams d) Bottom Lateral Bracings 100 x 100 x 10 mm Angle sections in cross pattern are used. Span 4 e) Top Chord members are 150 x 150 x 14 mm Double Angle sections and bottom Chord members are 100 x 100 x 12 mm Double Angle sections (Refer fig : 8) f) 100 x 100 x 12 mm double Angle sections are used as vertical and diagonal members. g) 150 x 150 x 14 mm double Angle sections are used as Floor beams. h) Bottom Lateral Bracings 80 x 80 x 10 mm Angle sections in Zigzag pattern are used to support Floor beams.
	Height of Girder/Truss (H)	2.3 m	
	Truss Support Condition	Rigid Connection	
	Type/Shape of Floor beam /Bracings	Double Channel & Double Angle Sections	
	No of Floor beams/bracings	Span 1 = 11 No's Span 2 = 1 No's Span 3 = 11 No's Span 4 = 8 No's	
	Arrangement of Bracings	Cross bracing	
	Type of Beam-Column Joint (shape of gusset plate if any)	Cleat Angle	
3.5	COLUMN		
	Type/Shape of Column section	ISMB-350	a. Spans 1&2 is supported on trestle & and Stanchion whereas Span-2&3 is supported on trestles. b. Trestles & Stanchion Columns are ISMB-350 with 2 additional Plates for span-1, 2&3. c. Trestles Columns are ISMB-350 for span-4. (Refer fig : 3(a),3(b),3(c))
	No of Columns/ support	4, 2	
	Dimensions of Column		
	BEAM-Column joint (bolted, welded, riveted)	Bolted	
3.6	Floor of the Pathway		
	Material of Slab	Cast In-situ RCC Slab, Precast RCC Panels	<ul style="list-style-type: none"> Cast In-situ concrete slab is used for floor slab of 100 mm thick in Span-4. RCC slab Panel is used for floor slab of 100 mm thick in Span-1, 2 & 3 RCC slab
	Thickness of Slab	100 mm	

	Condition of Slab from Bottom	Spalling Observed	is resting on bottom chord. <i>(Refer fig : 2, 2(a),2(c)) and (Refer fig : 4)</i>
	Condition of Slab from Top	Not Visible, Covered with Chequered Tiles and granite	
3.7	Staircase Details		
	Number of Staircase	4 No's	Staircases are observed as Pre cast RCC Slab panels supported on ISMC-250 sections as Stringer beam on both sides of stair cases. <i>(Refer fig : 5(a),5(b))</i>
	Number of Steps from Circulating Area-1	43 no's	
	Number of Steps from Platform – 1	43 no's	
	Number of Steps from Platform – 2/3	36 no's	
	Number of Steps from Circulating Area-2	50 no's	
	Material used for steps	Cast In-situ &Pre-cast RCC Slab Panels	
3.8	Staircase Railing		
	Type of Parapet Railing	Steel Railing	Staircase is provided with railing on both sides using 65 x 65 x 8mm Angle section and 32 mm dia. M.S Pipes are used for Staircase-1, 2 & 3.
	Height of Railing	1.25 m	
			Staircase is provided with railing on both sides using 32 mm dia. M.S Pipes and 45x8 mm M.S Flats are used for Staircase-4. <i>(Refer fig : 5(a),5(b))</i>

PART 4 SURVEY OF SIGNS OF DISTRESS, DEFORMATION IN BRIDGES

4.1	✓ Exposed reinforcement and leaching effect is observed in cast in situ slab and corrosion observed in bottom angle sections and gusset plate.



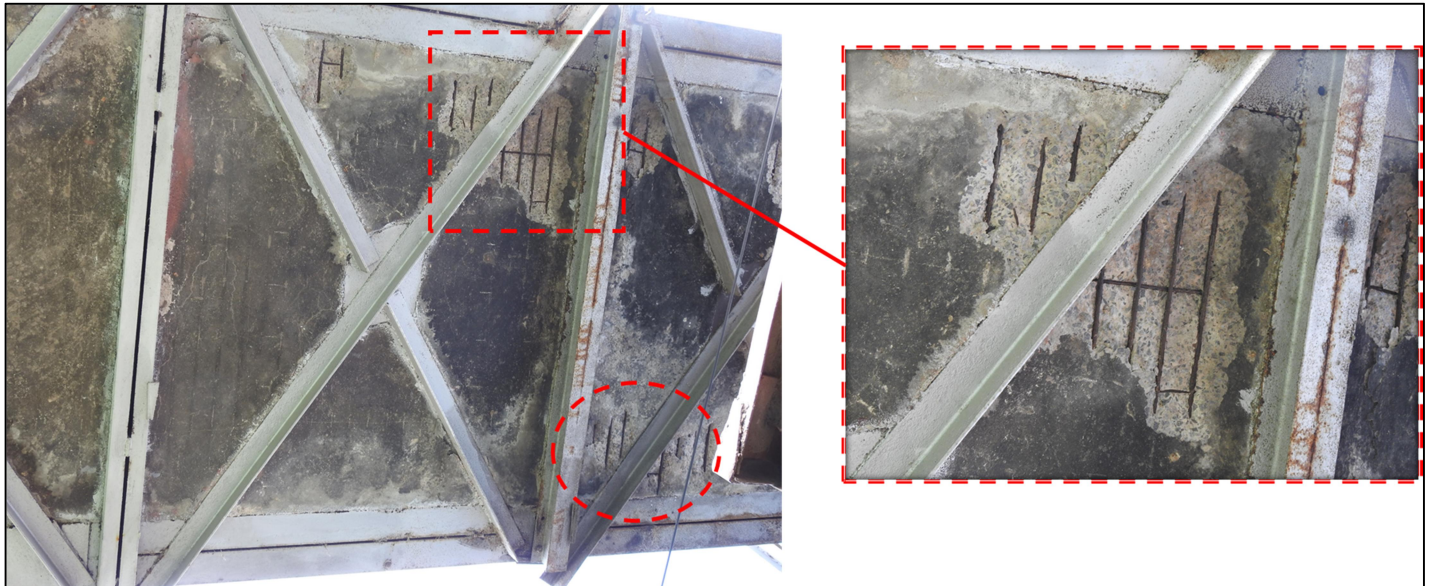
a) Reinforcement exposed slab and corrosion in 3rd span of FOB



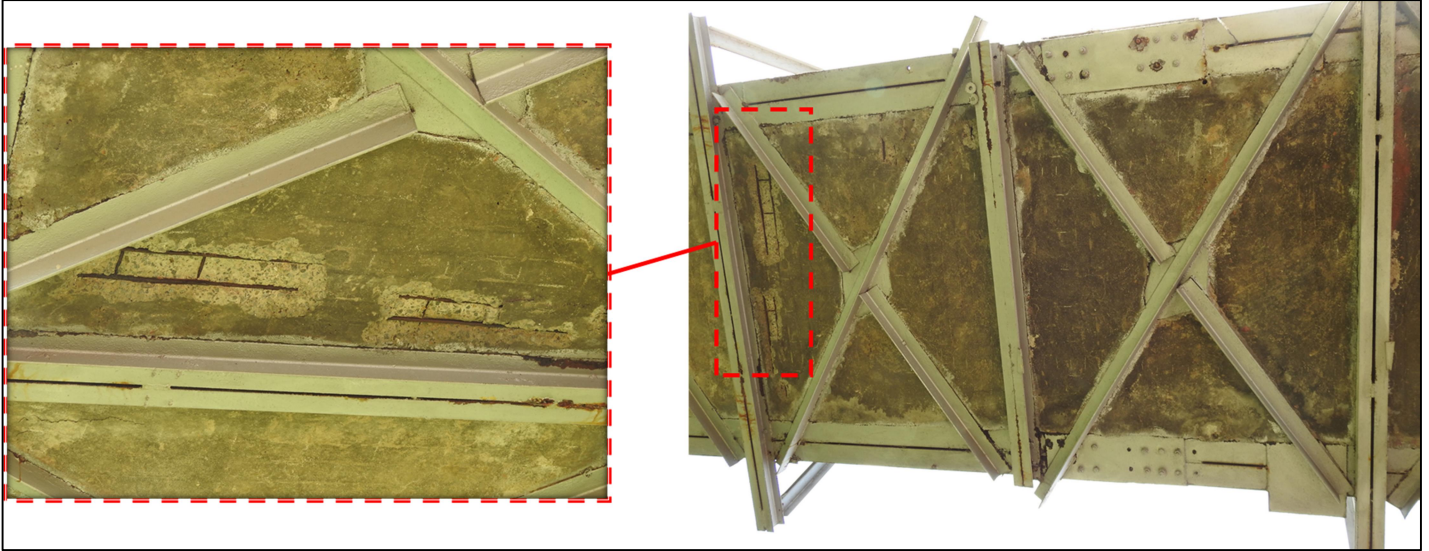
b) Reinforcement exposed slab and patch work 3rd span of FOB



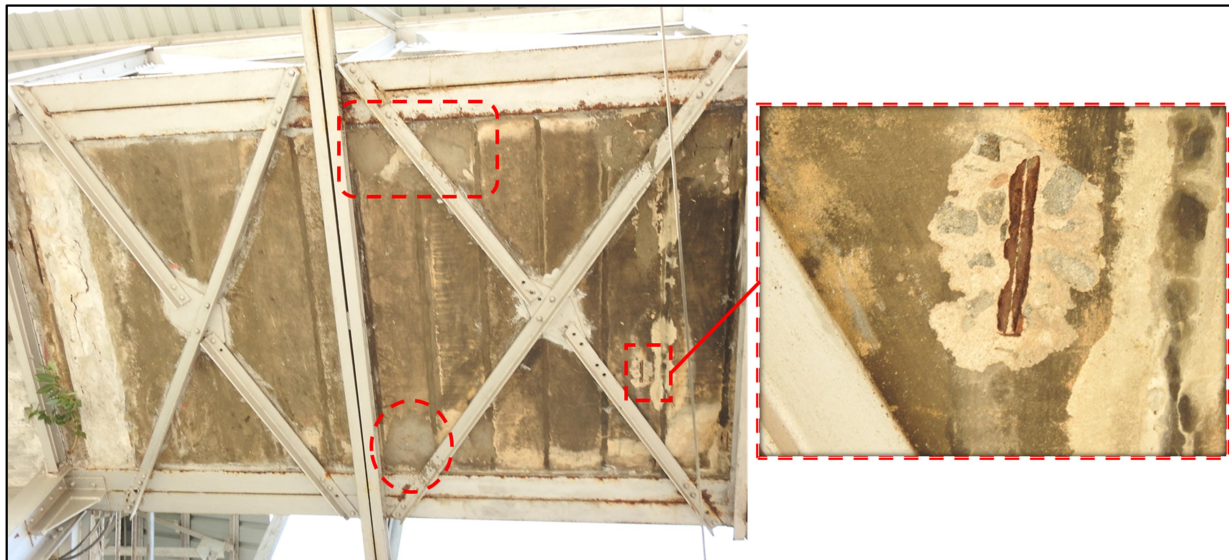
c) Reinforcement exposed slab and corrosion in 1st span of FOB



d) Reinforcement exposed slab in 1st span of FOB



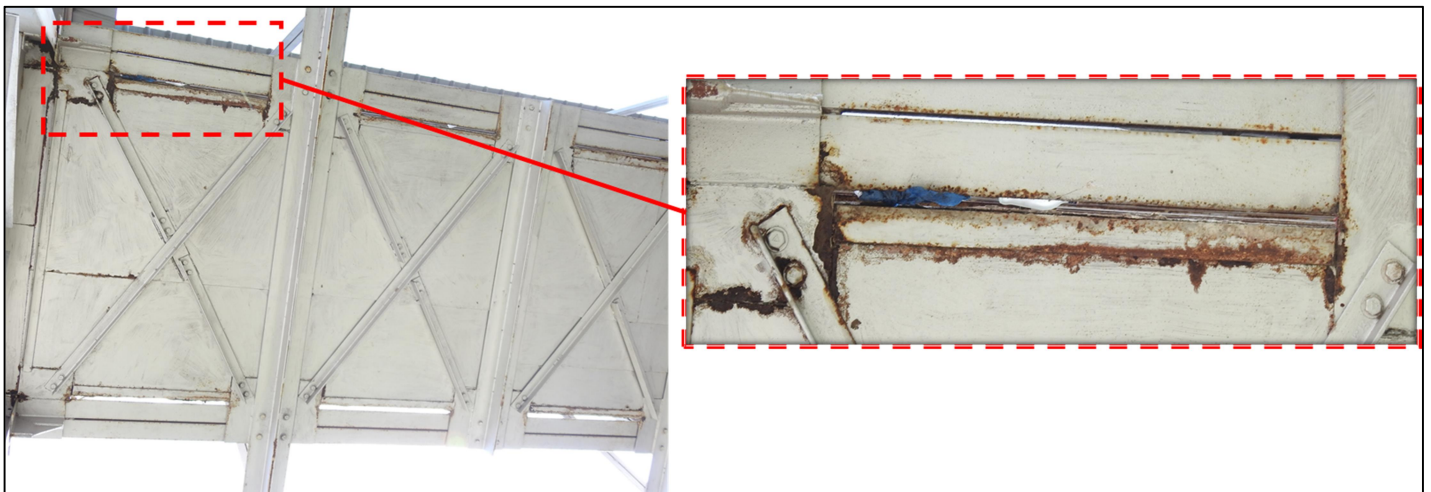
e) Reinforcement exposed slab in 1st span of FOB



f) Reinforcement exposed slab and patch work 3rd span of FOB



g) Reinforcement exposed slab in landing in 3rd span of FOB



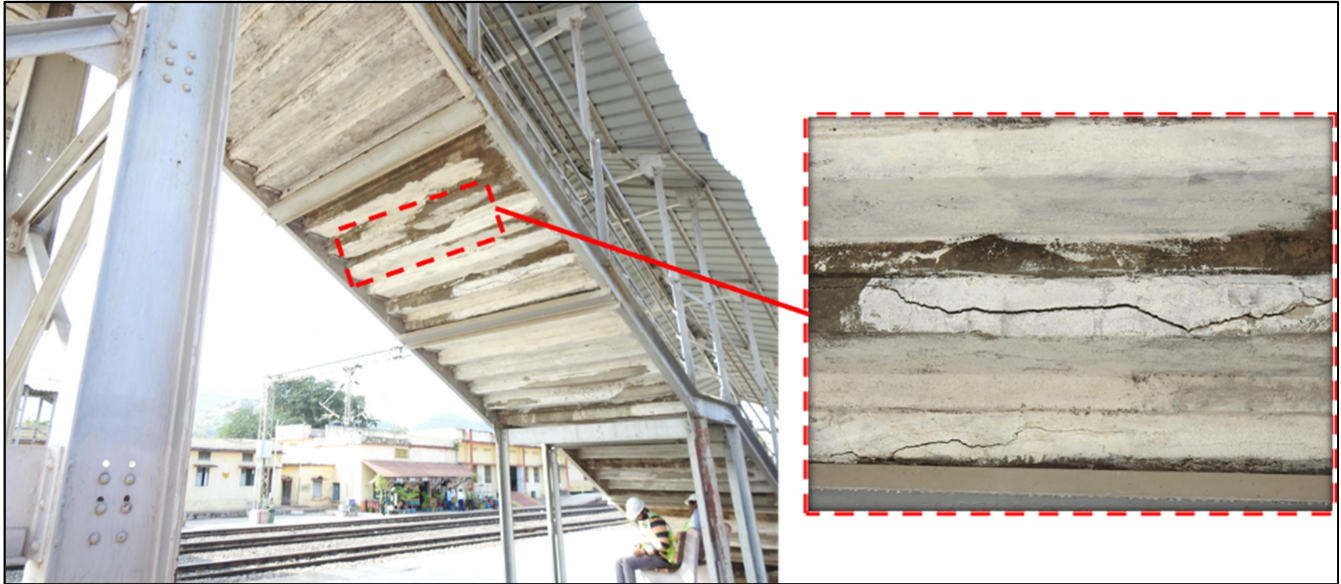
h) Corrosion of gusset plate connected bottom bracing angle in 4th span of FOB



i) Corrosion of gusset plate connected bottom bracing in 2nd span of FOB



j) Cracks and reinforcement exposed in staircase slab panels in staircase -2



k) Cracks observed in staircase slab panels in staircase-3



l) Cracks observed in staircase slab panels in staircase-3

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	staircase slab panels	Cracks are observed in Pre-cast RCC slab panels of Spans & stair cases (<i>Refer: Part 4.1, Fig- j, k, l</i>).
	Water seepage		No Seepage observed
	Spalling	Slab	Spalling is observed in cast in situ slab (<i>Refer: Part 4.1, Fig- a, b, c, d, e, f, g</i>)
	Rust straining	2 nd span- bottom bracing connecting bottom chord	Slight rusting is observed at the joint connecting bottom bracing and bottom chord. (<i>Refer: Part 4.1, Fig- i</i>)
	Corrosion in Gusset plate	Floor level	corrosion is observed in Gusset Plates (<i>Refer: Part 4.1, Fig- c, h</i>)
	Corrosion at steel-Concrete joint		No corrosion is observed at steel concrete joint
	Condition of Painting of steel structure		Painting is in good condition in general



Fig 1(a): View of 1st span of FOB



Fig 1(b): View of 2nd span of FOB



Fig 1(c): View of 3rd span of FOB



Fig 1(d): View of 4th span of FOB



Fig 2(a): FOB pathway, protective screen and roof truss on 1st span



Fig 2(b): FOB pathway, protective screen, Roof truss and cables on 2nd and 3rd span



Fig 2(c): FOB pathway, protective screen, Roof truss and cables on 4th span



Fig 3(a): Trestle details of 1st and 2nd span of FOB



Fig 3(b): Trestles and foundation details of 3rd span of FOB



Fig 3(c): Foundation details at 4th span of FOB



Fig 4: Bottom view of 1st, 2nd, 3rd span and sacrificial plate for 4th span of FOB



Fig 5(a): View of Staircase-1 and staircase-2



Fig 5(b): View of Staircase-3 and staircase-4



Fig 6: Cracks in slab and vegetation in staircase -2 of FOB



Fig 7: View of Top, bottom and floor beam in span 1st 2nd & 3rd of FOB



Fig 8: View of Top, bottom and floor beam in 4th span of FOB