



# **WORKSHOP ACTIVITIES & FACILITIES: C&W**

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# MAJOR WORKSHOP ACTIVITIES

<b><i>MAJOR ACTIVITIES</i></b>	<b><i>OTHER ACTIVITIES</i></b>
<b>POH OF COACHES/ WAGONS</b>	<b>OVERHAULING &amp; REPAIR OF OL WHEELS/ COMPONENTS</b>
<b>IOH OF BOGIES</b>	<b>TESTING &amp; CALIBRATION OF CHAINS/ HOOKS ETC. FOR OL</b>
<b>ROLLING STOCK CONVERSION/ REFURBISHMENT/ RETROFITMENT/ REPAIR</b>	<b>MANUFACTURE/ REPAIR/ MAINTENANCE OF M&amp;P and T&amp;P FOR OTHER UNITS</b>

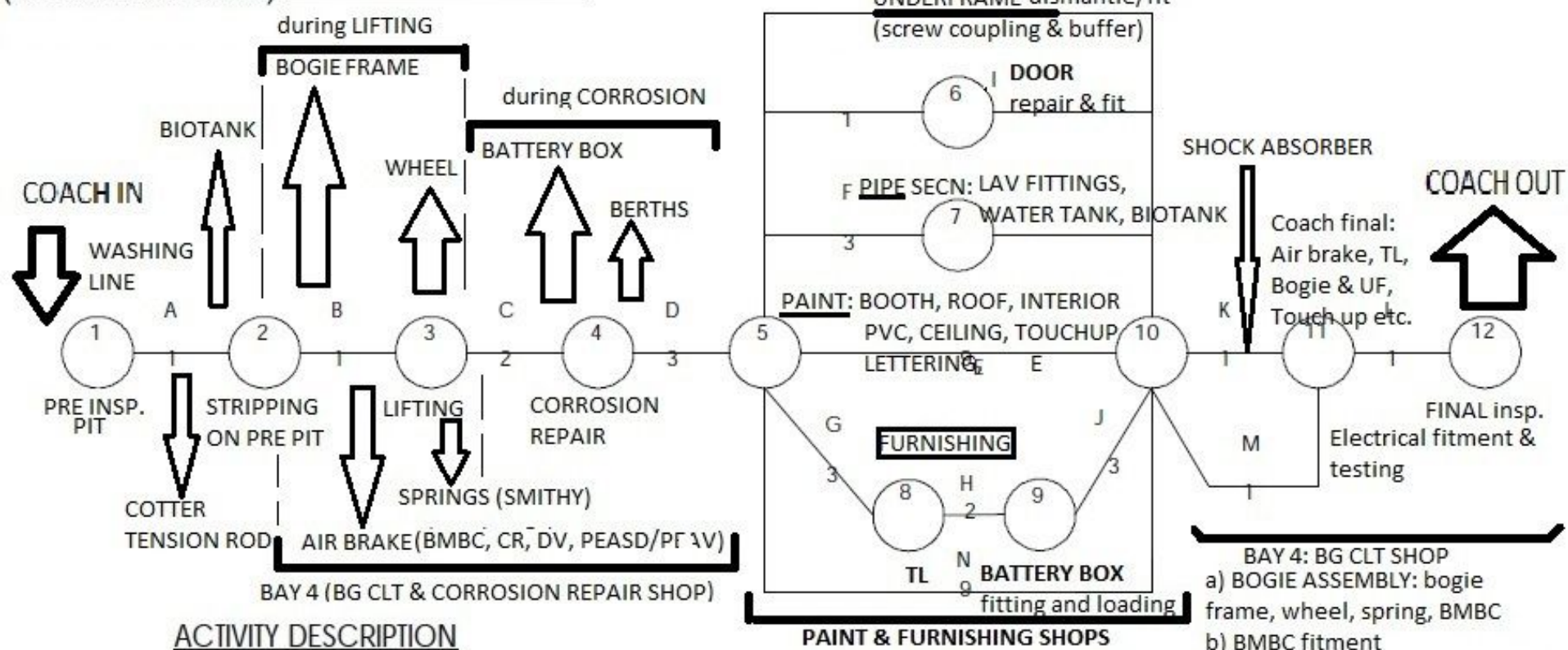
# ROLLING STOCK POH SCHEDULES

<b>ROLLING STOCK CATEGORY</b>	<b>SHOP MAINTENANCE SCHEDULE</b>		
ICF Coach (AC and non-AC)	IOH – 9 months (bogie repair) POH – 18 months (2 years for first POH)		
DEMU/MEMU	IOH – 9 months (bogie repair) POH – 18 months (2 years for first POH)		
OCVs/SPVs (IOH/POH) *RDSO recommended Feb 2021	Observation Car & ART/ARME		12 / 48 months
	Camp Coach, Tower Car, RE coach		24 / 48 months
LHB coach (AC and non-AC)	<b>SS-1</b>	<b>SS-2</b>	<b>SS-3</b>
	18 months	36 months	72 months
BG Wagon	POH – 4.5 years (6 years for first POH)		



# ***POH ACTIVITIES (Coaching Stock)***

**(NORMAL REPAIRS) TOTAL DURATION = 18 DAYS**



A. VERIFICATION OF DEFICIENCIES.PB. PRE-INSPECTION & LIFTINGPC. STRIPPINGPD. BODY REPAIR, MODIFICATIONS AND ALTERATIONSPE. PAINTINGPF. FITTING OF WATER TANK, PLUMBING & LEAKAGE TESTINGPG. REPAIRS TO INTERIOR PANELSPH. FITMENT OF SHUTTERSPI. FITMENT OF DOORSPJ. FITMENT OF BERTHS & SEATSPK. VACUUM / AIR BRAKE TESTING & FINAL WORKSPL. FINAL INSPECTION & DESPATCHPM. FITMENT OF AXLE PULLEY, TENSION ROD & TESTING OF COACH WIRINGPN. TESTING OF BRANCH WIRING & FITMENT OF ELECTRICAL EQUIPMENT

- a) BOGIE ASSEMBLY: bogie frame, wheel, spring, BMBC
- b) BMBC fitment
- c) COACH LOWER & ADJUST
- d) AIR BRAKE testing
- e) Touchup & lettering
- f) Furnishing fittings - lav, berth
- g) Cleaning



# MAJOR ACTIVITIES DURING POH

1. Pre-Inspection
2. Stripping
3. Lifting
4. Corrosion Repair
5. Bogie Repair
6. Wheel OH / Pressing
7. Lowering
8. Furnishing & Electrical
9. Painting
10. Air Brake
11. Coupling/Shock Absorber
12. Final Adjustment



# PRE-INSPECTION & LIFTING

- Electrical fittings, undergear safety straps, air brake equipment and buffer & draw gear to be removed, and the coach inspected for preliminary examination sheet
- Buffer height
- Coach body lifted by EOT cranes of 2x25T or 4x15T
- Separation of bogie frame, wheels, springs, etc.
- <https://www.youtube.com/watch?v=Zd6GR7HiqbQ>



# BOGIE REPAIR

- Shot blasting and check for cracks (DPT etc)
- BSS bracket, hanger, anchor links, safety strap
- Changing of must-change items in brake gear
- Springs – Cleaning, Testing, Colour-Coding, Fitment
- Shock Absorbers – Testing measurement





# AIR BRAKE COMPONENTS & TEST

- **Distributor Valve (DV)** – Dismantling, cleaning, overhauling with POH kits of rubber items (unit exchange), Testing
- **Dirt Collector (DC)** – Cleaning, overhauling, testing
- **Angle Cock & Isolating Cock** – Change of O-ring & seat, testing
- **Auxiliary Reservoir (AR)** – Visual damage, rust preventive
- Hose Coupling
- **Bogie Mounted Brake Cylinder (BMBC)** – dismantle, cleaning in fluid, leakage & operation test
- **PEASD & PEAV**



# ROLLER BEARING & WHEEL SHOP

- Cleaning, inspection and UST
- Dismounting of roller bearings for POH
- Roller Bearing dismantling, inspection and overhaul
- Wheel turning (for serviceable), or Press-Out
- New Disc and New Axle for Press-In
- Bearing Press
- Wheel set assembly



# CORROSION REPAIR ATTENTION

- Sole Bar
- Trough Floor
- Stiffeners & Cross-Beam
- Turnunder & Tubular Frame (Lav)
- Headstock
- Roof, Doors & Window grill



# COACH PAINTING & TOUCH-UP

- Scraping to remove old coat
- Application of **primer** as a base
- Application of **filler** to remove surface irregularities
- Several coats of PU paint in the requisite colour scheme
- Interior painting – Touch-up



# INTERIOR FURNISHING REPAIR

- Roof panelling
- Side wall panelling
- FRP
- Lavatory Fitting
- PVC Flooring
- Seats & Berths
- Doors & Vestibule



# SCREW COUPLING & DRAFT GEAR

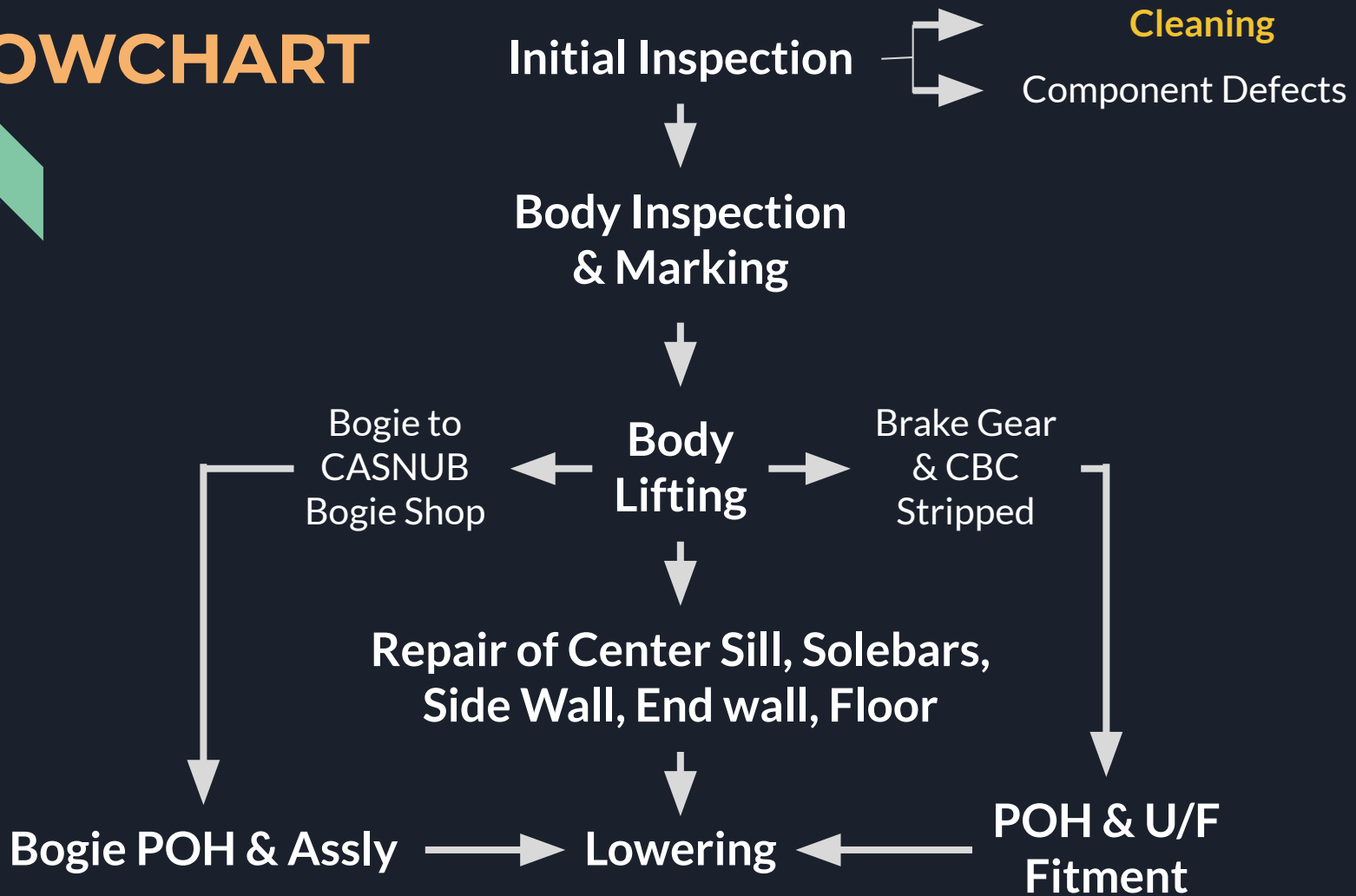
- Heat treatment
- Proof Load Testing
- Pre-Inspection
- Dismantling
- Assembly
- Mounting on Coach



# ***POH ACTIVITIES (Wagon)***

BOXN/HS, BOXNLW, BOXNR, BOXNCR, BOST/HS, BOXNHL, BCN/A, BCNHL,  
BVZC, BVCM, BRN, BRN22.9, BOBR, BOBRN/HS, BOBYN, BFNS, BOBSN, BOM

# FLOWCHART





# WAGON POH ATTENTION

- Wagon Received in Pocket Yard
- Joint Inspection of Wagon: Noting Deficiency
- Stripping Bay: Cleaning, Rust removed, Dismantled
- Lifting by EOT Crane & Bogie Runout
- Body Repair with Oxy-Acetylene Cutting & Arc Weld
- Bogie Frame Repair & Wheel Repair
- Air Brake Overhaul
- CBC Drop & Overhaul
- Fitment: CBC, Bogie Wheels & Air Brake, Body, Final

# PERIODIC OVERHAUL ATTENTION

Work to be Done during POH:

- Body Repair
- Underframe Repair
- Brake Gear Repair
- Bogie Repair
- Air Brake System
- CBC Mechanism Attention
- Wheel Axle & Bearing Attention

# PERIODIC OVERHAUL ATTENTION

## ➤ Technical Guidance

- G-97 Air Brake System
- G-95 CASNUB Bogie Maintenance
- G-76 CBC Checking
- G-70 Repair of BOXN Wagon
- G-72 Welding Repair
- G-90 Repair of BTPN
- G-79 Repair of BTAL

# BODY REPAIR

- Sole Bar
  - Scrapping at Door Way
  - Painting with Primer and Top Coat
- Doors
  - Repair and Lubrication of Hinge
  - Fitting Door Fasteners
- Pillars : Check at Bottom and Repair
- Body Roof Floor
  - Patching
  - Straightening if Bulged
- Covered Wagon : To be made Watertight and Mark
- Centre Pivot Top : Check for Crack and Wear



# FLOOR, BODY, DOOR



# BOGIE REPAIR & AIR BRAKE OVERHAUL

- Bolster
- Side Frame
- Wedge
- Centre Pivot Bottom
- Adapter
- Spring Seat & Springs
- Brake Gear Bushes
- Distributor Valve (DV)
- Brake Cylinder (BC)
- Angle Cock
- Dirt Collector (DC)
- APMD
- BMBC
- Reservoir

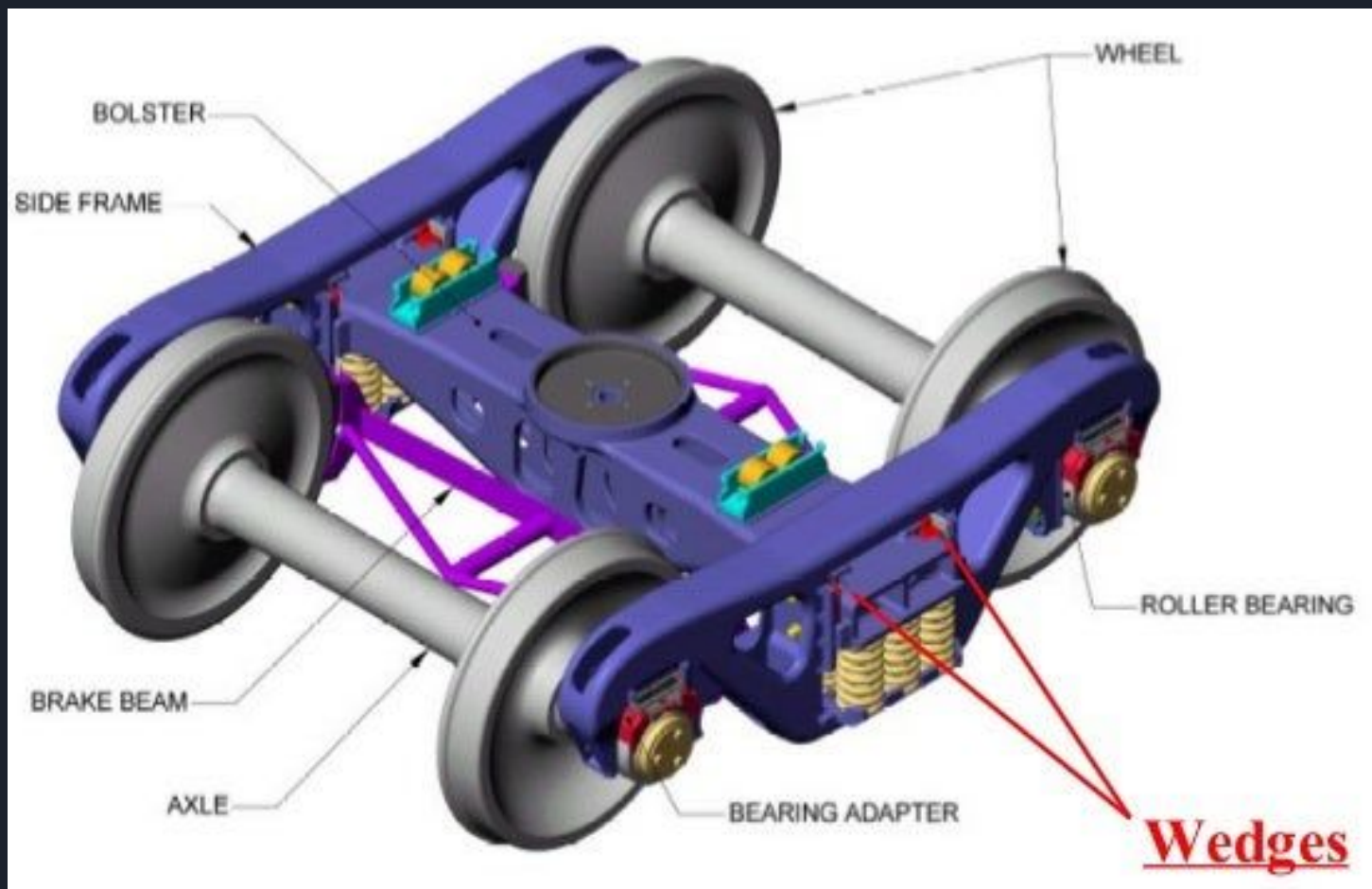
# BOGIE POH REPAIR

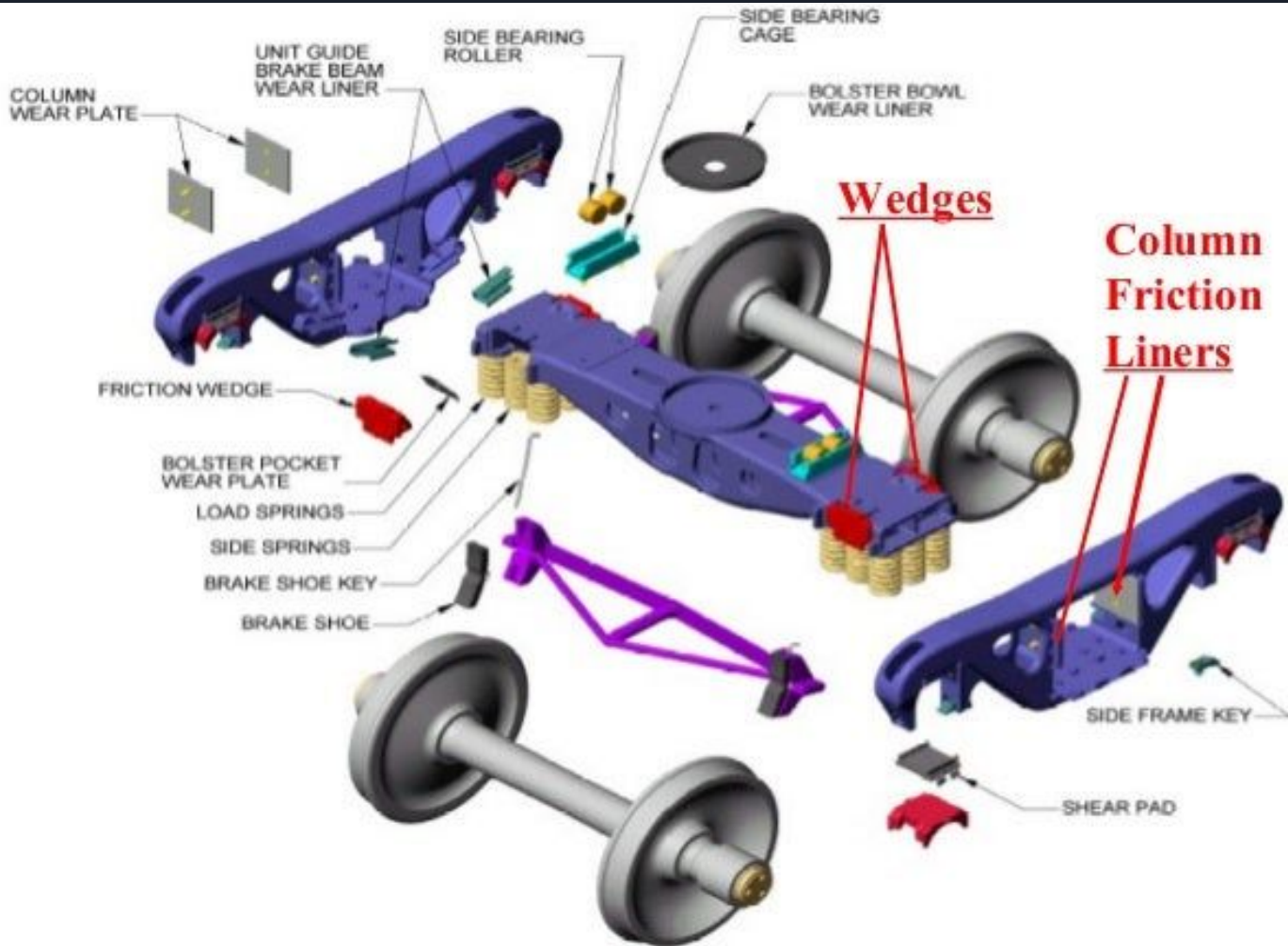


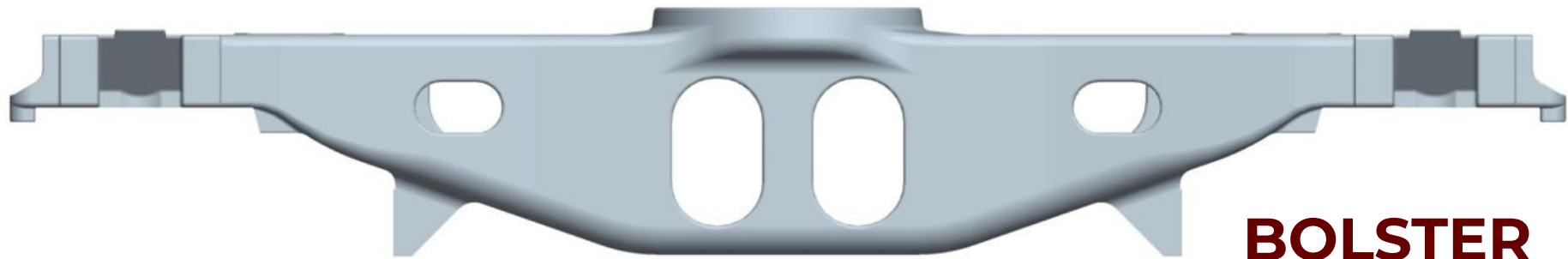
# CASNUB BOGIE POH REPAIR





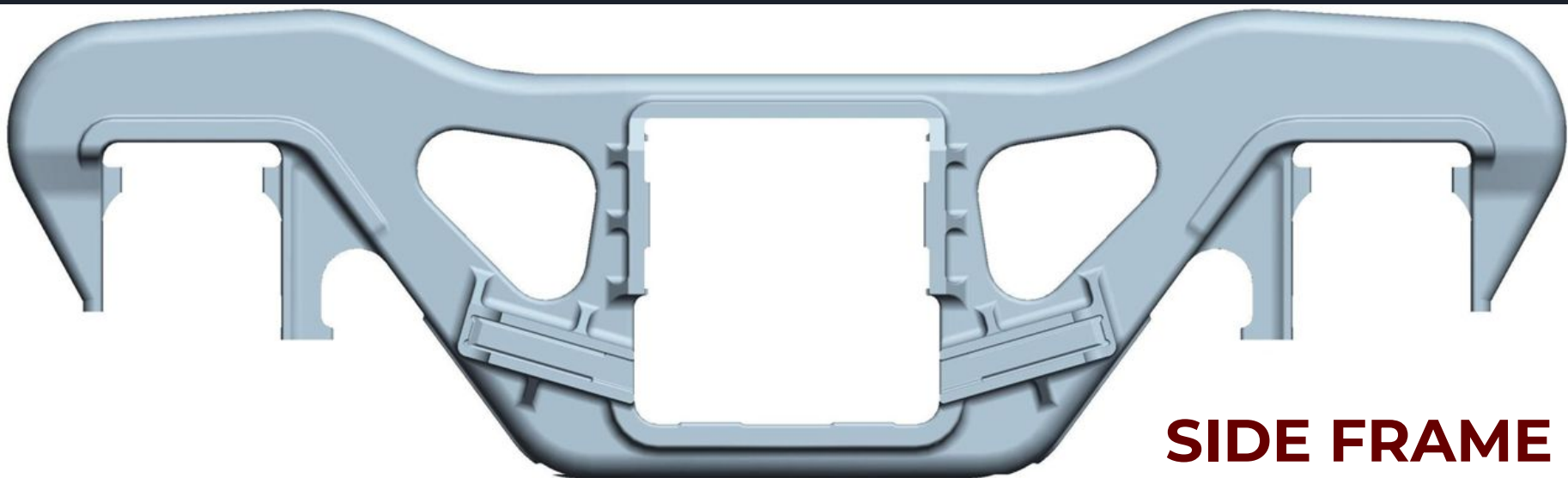




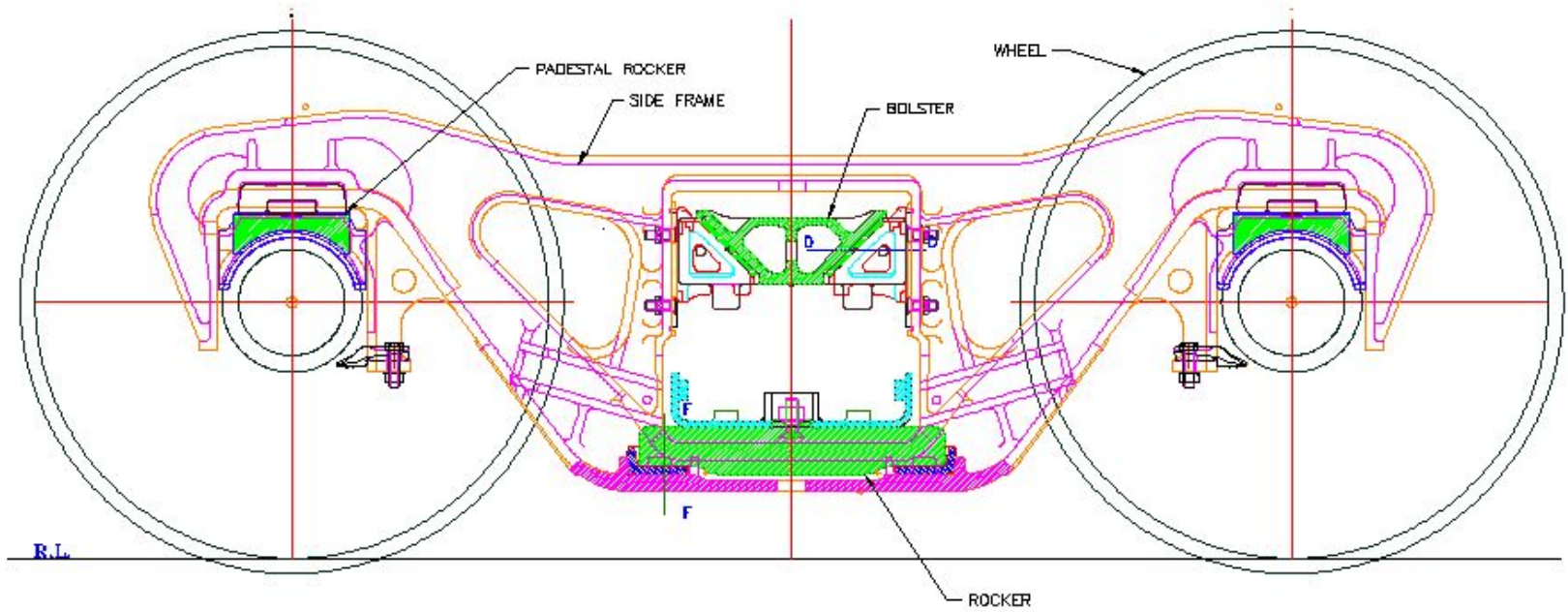


**BOLSTER**

**BOGIE COMPONENTS**



**SIDE FRAME**



# ARRANGEMENT OF BOGIE COMPONENTS

# CBC DISMOUNTING & OVERHAUL

- Coupler Body : Visual (Crack) Check ; Contour Check Gauge
- Renewal of CBC Wear Plate
- Renewal of Knuckle
- Dropping of Draft Gear: Check and Overhaul
- Yoke Pin
- Liners
- Bearing Piece
- CBC Lock
- Striker casting



# CBC & DRAFT GEAR



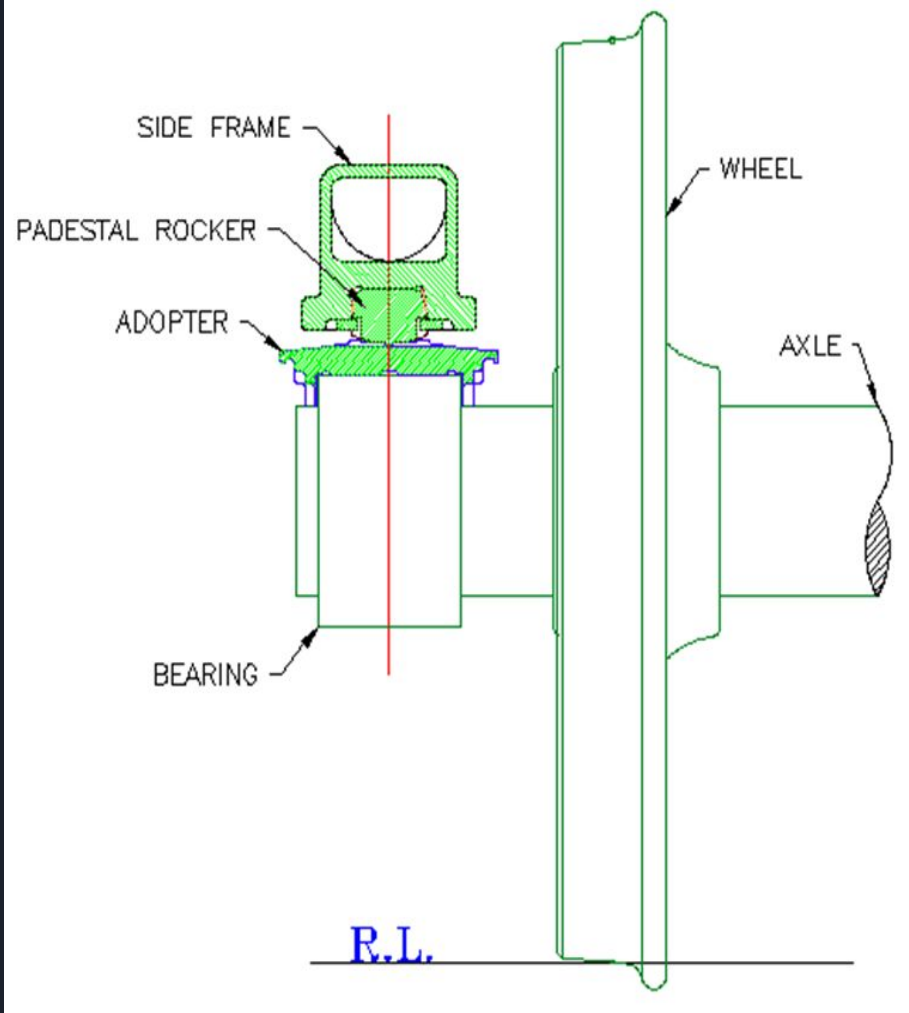
# CTRB OVERHAULING

- Dismounting of CTRB – to CTRB Overhauling Section
- Overhaul of CTRB
  - Dismantle of CTRB
  - Cleaning in Solvent
  - Check of Components
  - Greasing
  - Assembly
- Mounting of Overhauled/New Bearing

# WHEEL & AXLE ATTENTION

- Wheel : Check Dia & Profile ⇒ TT or Condemn
- Axle:
  - Check of Dia of Journal Seat
  - Any Notch Formation > 5 mm
  - Ultrasonic Testing (UST) of Axle
- End Cap
  - Removal of End Capscrew
  - Opening of End Cap
  - Renewal of Locking Plate
  - Fixing of End Cap
  - Tightening of End Capscrew by Torque Wrench





# SHOP RESOURCES: INFRASTRUCTURE

- Workplace berthing capacity
- Material & Storage : Depot Shed, Racks, Digital Accountal
- Staff Amenities : Canteen, Water Cooler, Lockers, Toilet, Health
- Manpower : 1016 man-hours per wagon
- Fund : Imprest, Revenue Heads, CAPEX, WMS
- Machinery and Plants : EOT Cranes, Welding Plants, etc.
- Tools & Gauges : Must be regularly calibrated

# WORKSHOP INFRASTRUCTURE FACILITY

- EOT cranes 15t/5t 2 Nos.
- Welding Machines 4 Nos.
- Welding Lines Full Length
- Portable Riveter 2 Nos.
- Trestles 12 sets
- Winches As per layout
- Lock Bolting Machine 02 Nos.
- MIG Welding Sets 02 Nos.
- Plasma /Gas Cutting 04 Nos.
- MIG/MAG Welding Set 400A 3 Nos.
- DC Arc Welding Rectifier 3 Nos.
- Portable Air Plasma 3 Nos.
- Cutting Machine 3 Nos.

**THANK YOU !**

**ANY QUESTIONS PLEASE?**