



Case Study — Cracking Platform on Large Feeder

Situation

A maintenance platform bolted/welded to the side of a large apron feeder was repeatedly cracking at welds and supports. The platform provides access for inspection, greasing, and minor repairs. Over the past year, cracks reappeared within weeks of weld repairs, posing a safety risk due to potential failure.

Field Observations

- Cracks concentrated at fillet welds and heat-affected zones.
- Welds undersized with poor toe blending.
- Feeder vibration and ore impact transmit into the platform.
- Platform acts as a cantilever; guardrails add leverage.

Root-Cause Analysis

1. Structural resonance amplifying feeder vibrations.
2. Poor load transfer — welds alone carried vertical and dynamic loads.
3. Improper detailing with undersized fillet welds.
4. Repaired welds added brittle HAZ and failed quickly.

Corrective Actions & Solutions

- **Immediate Safety:** Restrict access and install temporary shoring.
- **Redesign:** Ground-supported platform columns tied into foundation, gusseted brackets, and bolted clip plates with vibration isolation.
- **Guardrails:** Shorter posts with mid-height bracing, avoid direct weld leverage.
- **Fabrication:** Remove cracks fully, use E7018/FCAW-G welds with preheat, perform NDT after repairs.

Expected Results

- Eliminate safety hazard and downtime from recurring cracks.
- Extend platform service life 10–15+ years.
- Reduce repair costs and improve reliability.

Implementation Plan (NWS Turnkey)

1. Laser scan feeder-platform interface.

2. Run structural analysis to confirm vibration modes.
3. Design drawings for supports, gussets, and clip connections.
4. Fabricate new columns, gussets, and guardrail bracing.
5. Shutdown install with baseplate anchoring and bolted connections.
6. Inspect welds with MPI/UT; baseline vibration readings.
7. 30-day review to confirm performance.

Platform Retrofit Concept Sketch

Platform Retrofit Concept — Old vs New

