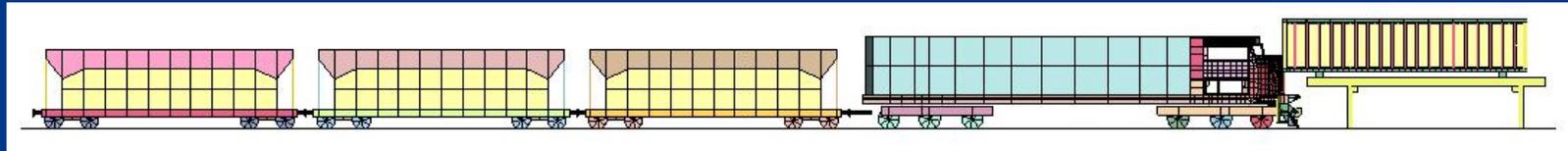


Locomotive Collision Test #6
**Elevated, Offset Collision of a Freight Locomotive with
a Loaded 40 ft Container**



Test #6: Set-Up



3 loaded Hopper cars



Test Locomotive
(SD-45, front end
converted to SD-70)

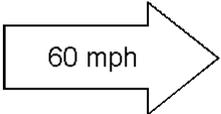
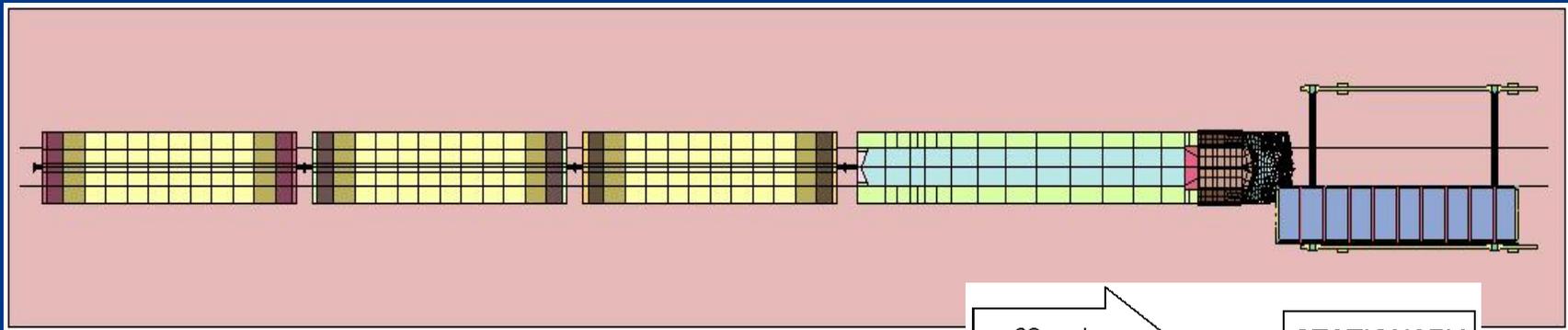


Supported offset
Container

Collision Speed - 60 mph

Bullet Consist

Target Container



STATIONARY

Test #6: Pre-Test Photos



Windshield corner post prior to collision test



Test #6: Post-Test Damage Photos



- Heavy damage to windshield corner post and frame, roof corner, and hood
- Separation of corner post and windshield structure

Test #6: Post-Test Cab Interior Damage



Windshield corner post and side window front portion with ~3 in. of intrusion

Roof above engineer's seat with ~2 in. of intrusion



Substantial debris and glass directed into cab interior

Test #6: Outcome

- Significant damage occurred to windshield corner post and roof, with separation of upper corner post
 - Results suggest that strengthening of windshield and corner post structure could be beneficial
- This collision could result in severe crew injuries
 - Debris ejected toward crewmembers (primary injuries)
 - Unrestrained crew member head and chest injuries striking interior (secondary injuries)
- Container structure destroyed and heavily distorted with loss of internal cargo material
 - “Wrapped around” windshield, hood and side window areas