



## Complex Curved "S"-Beam Monorail Crane Built by North American Industries

### Features and Benefits

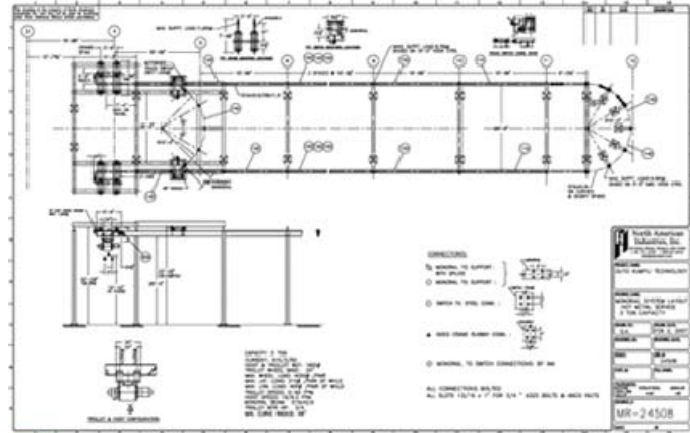
Custom-Engineered

2 Switches & 2 Index Bridges to  
Maneuver Ladles

Trolleys and Their Hoists Go Either  
Straight or on Curve

Special Swiveling Trolleys

**Industry Group:** Crane Manufacturers  
Association of America (CMAA)



*The monorail system is a custom curved "S"-beam design with index bridges that side shift and switches that allow the trolleys and their hoists to go either straight or on the curve.*

A custom monorail crane system was recently engineered and built by North American Industries (NAI) for a hot metal iron ore sintering plant in India. This made-to-order custom system was designed with 3 hoists and 3 trolleys running on a curved "S"-beam monorail. The hoists on this system carry ladles and the monorail is designed to enable the ladles to receive hot metal from furnaces in order to deliver the hot metal to automatic pouring lines.

There are 2 switches and 2 index bridges as part of the monorail system to maneuver the ladles into the right position. The index bridges side shift 30 inches and the switches allow the trolleys and their hoists to go either straight or on the curve, depending on the operational requirements. Special swiveling trolleys with drives below the rail enable the trolleys to go through the standard switch. An NAI engineer describes how the track switch operates, "the track switch's function is similar to a railroad switch, however, I believe that a railroad switch inner track pivots to re-direct the train, whereas our switch has two inner tracks, one straight and one curved and by sliding, it aligns either one with the incoming track and directs the trolley accordingly.

The sliding is actually rolling and is motorized." NAI also designed the crane with protection for the

environment as high air temperatures can cause components to fail much more quickly if not built for it. For localized heat sources such as a furnace or ladle of metal below the hoist, a heat shield can deflect the heat away from sensitive parts of the crane. Hot metal cranes require higher safety factors.

NAI can advise on safety factors, hoist type, and the most appropriate design as you may want control box fans and heavier, thicker wire insulation on the bridge electrification. NAI also uses class F insulation on end truck and trolley motors.



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