17. Tires

18. All of the Train's tires are 48 x 68 x 120" O. D. 10 ply, tubeless tires. These tires offer excellent characteristics for obtaining maximum traction. Their low ground pressure and high flotation coupled with their favorable angle of approach permits traction over otherwise impassable surfaces.

19. Train Control

20. Operator control of the Train is effected by two primary electric control handles. One regulates power and speed, the other regulates regenerative braking effort. The control system coupled with the DC drive system allows infinite speed ranges from 0 to 20 mph maximum speed. Steering is accomplished by a fingertip electric toggle switch which actuates the AC steering motor on the control car.

21. Steering and Tracking

22. The steering and tracking linkage of the Train is designed so that the rear axle of each cargo car is steered by the front axle of the same car. The front axle of each car is steered by the preceding car, the front axle of the following car having no effect on the preceding car. This steering and tracking arrangement results in the Train having excellent tracking characteristics with a minimum of encroachment, all cars closely following the lead control car. The steering and tracking linkage is designed so that it may be reversed for reverse steering. This allows the rearmost car on the Train to become the control car, insofar as steering is concerned, to allow the Train to be removed from situations where it is unable to proceed in a forward direction. A hand winch on the tongue of each car provides mechanical assistance when reversing the steering linkage.

23. Turning Radius

24. The cargo and power generating cars may be turned in a radius of 65 feet to the outside of the wheels. The control car may be turned in a radius of 52 feet to the outside of the wheels. This, of course, makes the control car the most maneuverable car in the Train which is a desirable feature since it must work in dock areas and make-up the Train. The control car is normally limited to a turning radius of 65 feet. The 52 foot turning radius capability is for solo operations only and must be manually selected by the operator.

25. The small turning radius of the Train along with its excellent tracking characteristics makes it a highly mobile and maneuverable vehicle considering its extreme size and weight.

26. Side Slope Capability

27. The axles of the cars are suspended to allow $13^{\circ}$ of angulation between axles of the same car. This permits all, or any part, of the Train to negotiate side slopes up to 30%.

28. Suspension

29. Each wheel of the cargo and power generating cars are sprung to the car frame by means of air bags to improve the ride in both the loaded and unloaded condition. The front wheels of the control car are suspended in the same manner. The tandem rear wheels of this car are mounted on independently suspended walking beam bogies which in effect springs the wheels to the vehicle since only a portion of wheel deflection is transmitted to the car body. The springing and suspension system improves crew comfort and allows greater Train speeds over adverse terrain.

188. Steering

189. The control car is steered by means of an operator controlled A. C. electric motor. The motor is used to drive a gear box which in turn drives a gear segment which is rigidly fixed to the front axle steering member. The operator controls consist of a single switch which provides fingertip control. When the switch is moved to the right or left, the steering motor is energized and the axle will turn in the proper direction until the switch is released, or until the steering limit is reached at which point a limit switch is opened to stop movement. A momentary limit switch override is provided for solo control car operations. By manually depressing this override the operator introduces a second set of limit switches which permits shorter turning radius. The override is intended for use only during control car solo operations.

190. The steering motor and gear box is housed in the main frame in an area at the forward end of the living quarters. An access hatch will be provided to permit access from inside the compartment. A means will be provided whereby the steering mechanism may be disengaged manually and the car steered by emergency means should a motor failure occur.

191. The following is data on the component parts of the steering mechanism:

a. Motor

| | |
|---|---|
| Voltage | 440 volts AC, 3 Phase |
| Cycle | 60/second |
| Speed | 1200 rpm |
| Weight | 410 pounds |
| HP Rating - Continuous | 10 HP |
| Intermittent | 15 HP |