



**PENN CENTRAL**

**PENN CENTRAL'S**  
**Buckeye Yard**  
Columbus, Ohio

**PENN CENTRAL TRANSPORTATION COMPANY**

# CUSTOMER BENEFITS FROM BUCKEYE YARD

- ☆☆☆ Eliminates time-consuming, separate handling of freight cars and speeds shipments
- ☆☆☆ Streamlines switching and handling of traffic
- ☆☆☆ Permits more dependable scheduling
- ☆☆☆ Provides car handling that protects even the most fragile load
- ☆☆☆ Improves tracing by electronic record-keeping of car movements

## Customer Tailored

Each element of Buckeye Yard has been designed on the basis of careful study of traffic to be handled and is tailored to meet the customers' needs.

## "SPACE AGE" RAILROADING—

—That's a capsule description of Penn Central's new \$26 million Buckeye Yard, featuring pushbutton controls, computerized car classification, electrified switching, closed-circuit television, radar monitors, cathode ray-tube indicators and many other advanced tools of modern rail technology.

### LOCATION

—The new yard is located seven miles northwest of downtown Columbus, Ohio, near suburban Hilliard.

It is at the crossroads of seven Penn Central trunk lines, connecting with Pittsburgh, Charleston, Cleveland, Indianapolis, Cincinnati, Toledo and Chicago. It provides access to and from any location on Penn Central's 20,000 miles of right-of-way spread over 16 States, the District of Columbia and two Canadian Provinces.

Penn Central's newest pushbutton yard is at the center of America's industrial heartland, bounded by the Great Lakes and the Ohio Valley, the Mississippi Valley and the Eastern Seaboard.

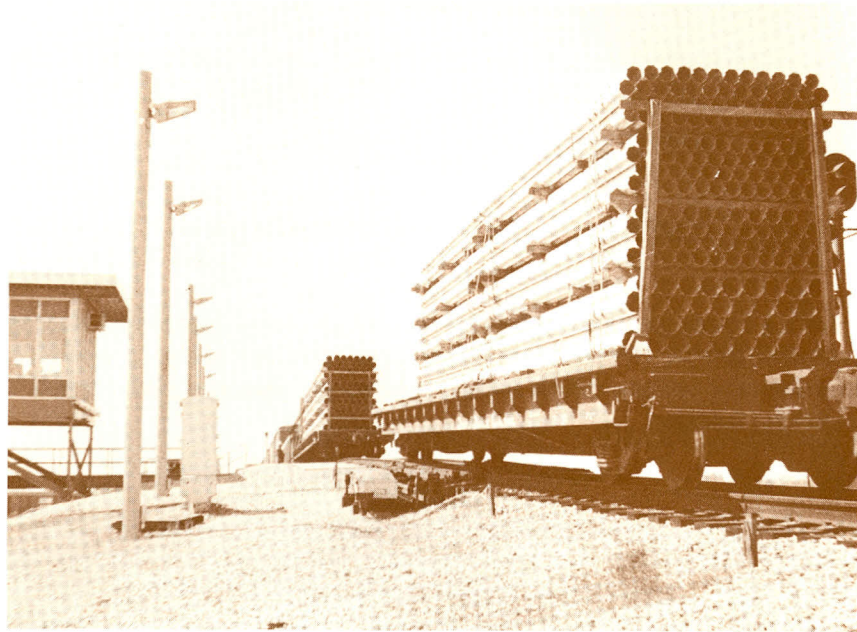
Through the yard pass raw materials and component parts consigned to manufacturing plants and the finished products of those plants en route to world markets.

Buckeye Yard is Penn Central System's second electronic freight classification yard in Ohio. The other is Gateway Yard at Youngstown, operated by the Pittsburgh and Lake Erie.

Buckeye is the sixth large automated yard to be built on the Penn Central. Others are Conway Yard near Pittsburgh, Alfred E. Perlman Yard at Selkirk, N. Y., Frontier Yard at Buffalo, Robert R. Young Yard at Elkhart and Big Four at Indianapolis.

Buckeye and Big Four are the principal classification yards in Penn Central's Southern Region, which serves portions of five States and stretches from Charleston, W. Va., to St. Louis and from Louisville to Jackson, Mich.

The new yard's sophisticated electronics have enabled it to take over the work load of several smaller yards in the Columbus area, resulting in improved operational efficiency.



## YARD DESIGN

—Buckeye Yard is designed for efficiency and ease of operation.

Trackage is geographically divided into three main areas—(1) a seven-track receiving area located on the yard's west side; (2) a 40-track classification section in the center; and (3) an eight-track departure area on the east. There is also a four-track yard for servicing local industry.

The yard is four and one-half miles long, approximately a half mile wide, has 80 miles of heavy duty, welded rail track and capacity for 4,550 freight cars. Construction time was approximately 14 months.

It is engineered for expansion to meet future growth of traffic.

In both the receiving and departure yards, alternate tracks have been placed on wide 20-foot centers, with an adjacent roadway providing motor vehicle access for car inspection and repair. All other tracks are on 15-foot centers.

## FREIGHT CLASSIFICATION

—Freight car classification, which is the yard's main job, is like reshuffling cards and dealing new hands or like pigeonholing letters of common destination in a post office. It is a regrouping of freight cars via common destination.

Hundreds of freight cars are delivered daily to Buckeye Yard for regrouping or classification. Key to the classification process is the hump, a man-made hill, 22 feet high. Cars are pushed up the hump, uncoupled and rolled down the opposite side where they are automatically switched onto any one of the 40 classification tracks. Each track contains cars of common destination which are made up as outbound trains.

Movement down the hump is carefully controlled by a lightning-fast digital computer so that the car glides smoothly to a shock-free coupling with other cars on its classification track. The computer is programmed to produce an ideal coupling speed of four miles per hour.

The computer, activated from a pushbutton panel by the hump conductor, automatically switches the car onto the proper classification track and brakes its downhill roll by means



of retarders. These are giant steel jaws built into the track. The retarders, when triggered by the computer, slow the car to the precise, required speed by squeezing its wheels.

The computer with split-second accuracy and efficiency assesses such variable factors as the car's weight and rollability, grade and curvature of its destination track, distance to coupling, wind velocity and climatic conditions to produce the proper braking pressure. This is all done within the few seconds it takes the car to roll from the hump crest to the master retarder near the end of the hump track. Additional braking is applied by computerized group retarders.

## ELECTRONIC BRAIN

—Buckeye Yard's digital computer is one of the most versatile computers in the world.

It is an electronic "brain" that maintains a continuous record of the yard's operation and performance, keeping employes fully advised of traffic and work progress and freeing them for important decision-making duties.

It also serves as a veritable storehouse of information and performs many of the yard's routine clerical functions.

When a train approaches the yard, the computer notifies the yardmaster by high-speed

printer the total number of cars in the consist, number of cars in each classification, total tonnage and estimated arrival time.

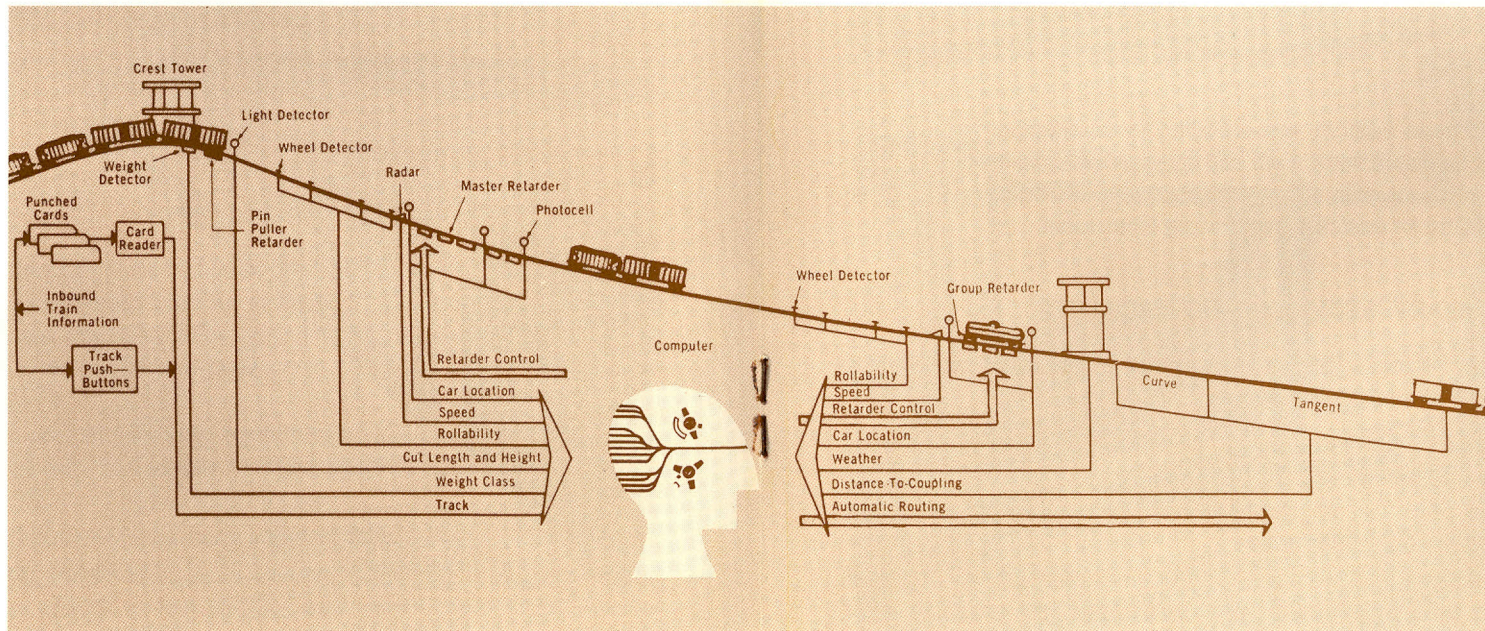
The computer then verifies that the train arrived on the correct receiving track and logs its arrival time.

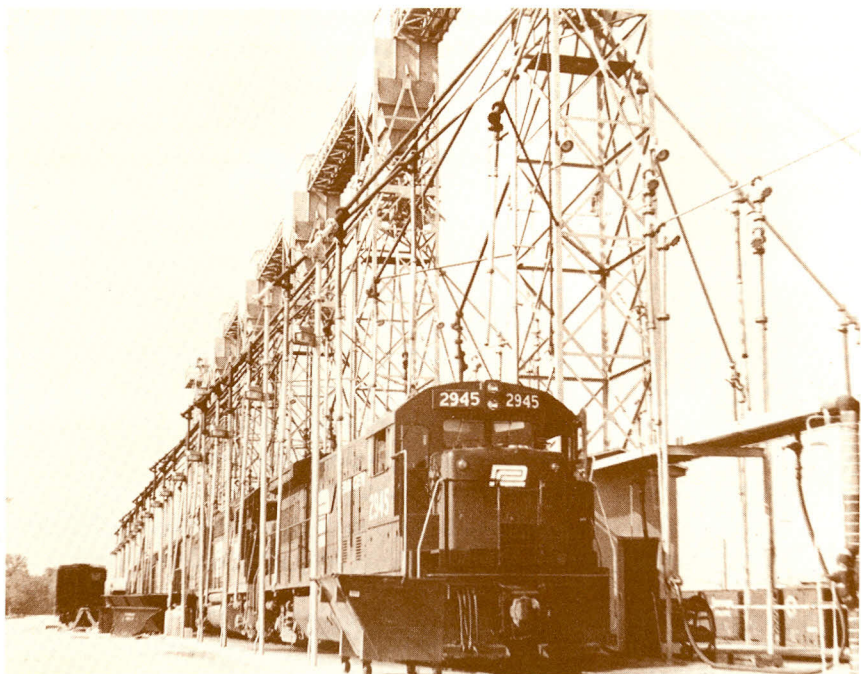
The car department inspects and bleeds the train and advises the computer by pushbutton when this is completed.

The hump conductor by computer pushbutton selects the sequence of car cuts to be humped, lines and locks the route to the hump and advises the hump engine crew of the recommended speed. The computer can be placed on "automatic," thus varying the requested speed of the hump engine to compensate for cut distribution, distance to coupling and standing time. The requested speed is displayed via cathode ray-tube inside the hump engine and in offices of the hump conductor and yardmaster.

The computer is connected with a Hi-Car detector which checks each car's height as it begins the hump descent. The hump conductor is automatically alerted to any cars that exceed height restrictions and switches them to a hold track.

A running inventory of the classification tracks is maintained by the computer and is instantly available to yard officials.





When the classification tracks build up, cars are pulled to the departure yard and connected with road engines for dispatchment. Each step in the car's progress through the yard is fed to the computer, which can print at any stage a status report, including a listing of cars which have been detained for inspection, repair or any other reason.

### AUXILIARY SERVICES AND FACILITIES

**Car Repair**—The car shop includes a three-track progressive or spot repair system where mechanical work is done on an assembly-line basis.

**Diesel Servicing and Repair**—A "locomotive service station" consists of two service tracks, five sand and fuel spots and inspection pits. There are nine "ready" tracks with capacity for 53 diesel engines. Fuel is piped from two one-million-gallon storage tanks and engines are sanded from overhead bunkers by a gravity system.

The diesel repair shop regularly inspects and maintains 190 locomotives. It is equipped for light-to-heavy repairs and has two service tracks, an overhead crane and single wheel drop pit.

**Car Cleaning**—This work is done on two 34-car tracks west of the car repair shop. A paved roadway between the tracks, overhead lights and water hydrants at 100-foot stations are provided.

**Caboose Servicing**—The caboose-servicing area is at the yard's northeast side and is adjacent to a paved road, supply building, fuel storage tank, water hydrants and battery-charging equipment.

### COMMUNICATIONS

—Buckeye Yard's high-speed digital computer is equipped to receive signals directly from the new Automatic Car Identification system, sponsored by the Association of American Railroads, and a pilot installation will be made at the yard when the system is put into operation.

This new system will automatically identify cars by scanning color-coded plastic strips attached to the side of each car. ACI information normally would be received by the yard office and then transmitted to the computer, but in the case of Buckeye Yard the transmission will flow directly and automatically from ACI to the computer.





Other communication features of Buckeye Yard are:

**Closed-Circuit Television**—Instant car identification is available via closed-circuit TV to yard clerks. Incoming trains are televised from three camera locations on the receiving yard approaches and monitored in the yard office.

**Radio**—Eight separate radio channels provide speedy communications between yard offices and personnel and for yard-to-locomotive assignments.

**Talk-back Speaker System**—The yard is equipped with five separate talk-back speaker systems, each color-coded for easy identification. These are used for two-way conversations between ground crewmen and control towers.

**Dial Telephones**—These are located throughout the yard in weather-proof boxes, providing communication with the Buckeye block operator and north end yardmaster.

**Facsimile System**—Transmitting and receiving units are located in the main yard office, north end locker building and car repair facility to transmit switch and car release lists.

**Pneumatic Tube System**—The main yard office and retarder tower are linked by pneumatic tube for handling of switch lists.

**Cathode Ray Tube**—This is part of the computer system similar to closed-circuit television. It automatically flashes information on yard status, traffic progress and car inventory on monitors in the hump office and north end yardmaster's tower. A CTR monitor also is located in the hump engine cabs to give operational instructions to crews.

STATISTICS—COLUMBUS ELECTRONIC  
CLASSIFICATION YARD  
COLUMBUS, OHIO

TRACKAGE	NO. OF TRACKS	CAR CAPACITY
1. Classification Yard .....	40.....	2,060
2. Receiving Yard .....	7.....	925
3. Departure Yard .....	8.....	1,234
4. Car Repair .....	3.....	65
5. Car Cleaning .....	2.....	68
6. Local Yard .....	4.....	168
7. Diesel Facility .....	16.....	—
8. Caboose .....	2.....	30
Total Car Capacity .....		4,550
Total Acreage .....		453
Total Track Mileage .....		88

Length of Yard .....	4.5 Miles
Width of Yard .....	2,200 feet
Height of Hump .....	22.5 feet