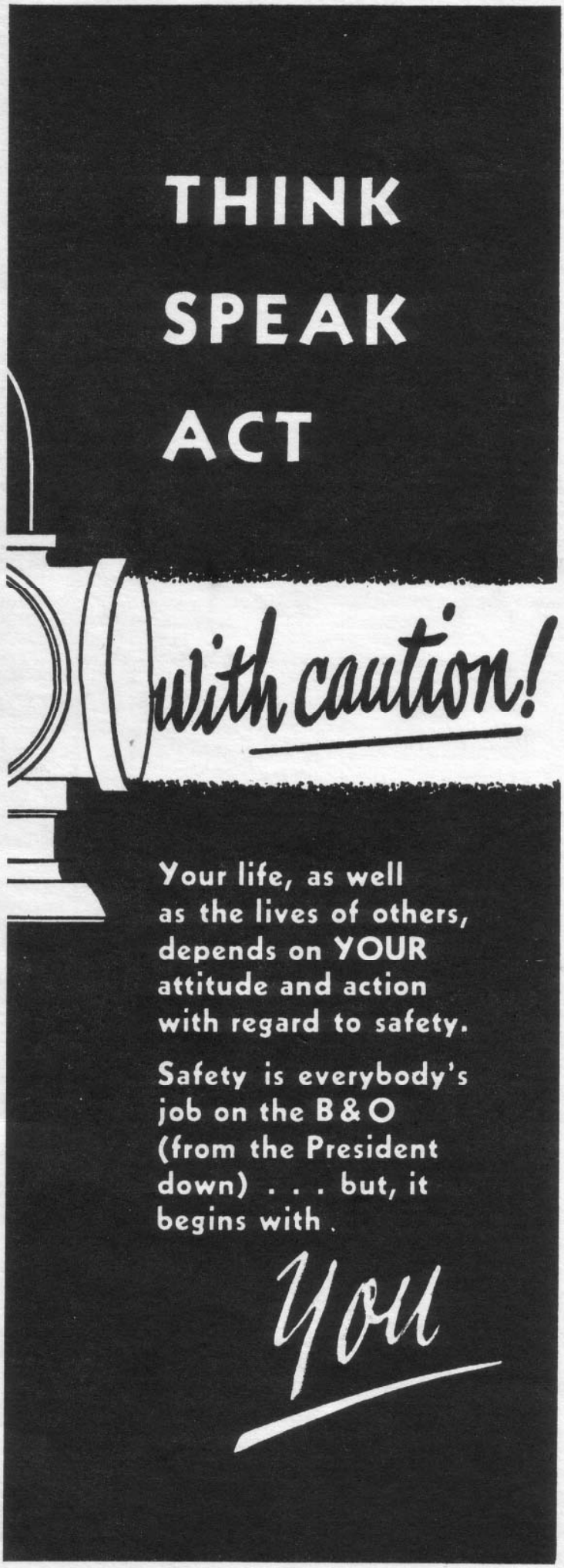


THE BALTIMORE & OHIO RAILROAD COMPANY

EASTERN REGION

SAFETY ABOVE EVERYTHING

DESCRIPTION

OF THE

NEW WESTWARD TRANSPORTATION YARD

AT

CUMBERLAND, MARYLAND

SEPTEMBER 6, 1960

FOREWARD

Cumberland, Maryland, normally known as the "Queen City of the Alleghanies," is located at the juncture of the two Baltimore and Ohio Railroad main routes to Chicago and St. Louis and the water level route of the Potomac River to Washington and points east and south.

Beginning with the opening of the new Westward Yard facility at Cumberland, all scheduled and unscheduled freight trains will be classified and consolidated to produce more solid maintrackers and additional classification blocks. The elimination of classification and switching at Brunswick will accelerate the movement of both loaded and empty equipment westward.

The Eastward Yard will be enlarged and modernized later, but in the meantime the new Westward Yard improvements will enable us to provide three long receiving tracks and two long dispatching tracks in the Eastward Yard to facilitate the handling of all scheduled and unscheduled business eastward.

DESCRIPTION OF WESTWARD YARD

The new westward transportation yard at Cumberland, Maryland is approximately three and one-half miles long, extending from Mexico Tower to Virginia Ave., South Cumberland. It is confined between the C&O Canal and the eastward transportation yard on the south, and state route 51 and South Cumberland on the north. The yard has a maximum width of 680 feet and a minimum width of 186 feet. The tracks occupy an area of about 95 acres.

This facility consists of:

A single receiving yard with eight tracks and a capacity of 1212 cars.

A single hump classification yard with 33 tracks and a capacity of 1714 cars, equipped with automatic retardation, automatic switching and motion weighing.

Two main tracks signalled in both directions paralleling the yard on the north.

An open track parallel to the receiving and classification yards on the south and extending the full length of the yard.

Car inspection and repair facilities.

Buildings and signalling, communications and lighting systems.

RECEIVING YARD

The receiving yard, located east of the hump, consists of eight tracks for receiving trains from the east and an inbound caboose track. The entrance to this yard at Mexico Tower is accomplished through power-operated switches controlled by the operator at Mexico Tower. Switches at the west end of the receiving yard are manually operated. The receiving tracks are numbered No. 1 through No. 8 from the main track and the capacities of the tracks, including four diesel units and caboose and based on 45 foot cars are as follows:

Track Number:	Capacity:
1	153
2	153
3	156
4	157
5	155
6	151
7	150
8 East of the crossover	60
8 West of the crossover	77
East end caboose track	15 Cabooses

There are two auxiliary tracks, the Underpass Track and the Hump By-pass Track, located at the west end of the receiving yard. The Underpass Track crosses from north to south beneath the hump from the west end of the receiving yard to the Open Track and is an "escape" route for engines to the roundhouse. The Hump By-pass Track by-passes the hump on the north and provides an access to the first group of eight tracks in the classification yard.

CLASSIFICATION YARD

The classification yard, located west of the hump, consists of 33 tracks. These tracks are divided into four groups—three groups of eight tracks each and one group of nine tracks. The switches at the east end of the classification yard are power operated, except that the switch between tracks 31-A and 31-B is hand operated. The switches at the west end of the yard are hand operated. Tracks Nos. 1 through 5 are dispatch-classification tracks and tracks Nos. 31-A, 31-B and 32 are car repair tracks. The tracks of this yard are numbered consecutively from the main tracks. The capacity of each track based on 45 foot cars is as follows:

Group No. 1— tracks 1 through 8:	Capacity:
1	130
2	123
3	118
4	120
5	121
6	33
7	33
8	40

continued on next page

CLASSIFICATION YARD (Continued)

Group No. 2 — tracks 9 through 16:	Capacity:
9	40
10	43
11	44
12	45
13	48
14	47
15	50
16	51

Group No. 3 — tracks 17 through 24:	Capacity:
17	55
18	53
19	45
20	43
21	43
22	40
23	40
24	40

Group No. 4 — tracks 25 through 32:	Capacity:
25	40
26	36
27	36
28	34
29	34
30	34
31-A	16
31-B	16
32	23

The capacities of tracks Nos. 1 through 5 as shown above include four diesel units and caboose and are based on 45 foot cars. There are two long trimmer leads from the west end of the classification yard so that two engines can work in this area at the same time.

An exit-entrance lead is provided between No. 2 main track and Nos. 1 and 2 classification tracks. The switch in No. 2 main track is remotely controlled by the operator at Mexico. The other associated switches are controlled by the car retarder operator.

CABOOSE TRACKS

Four caboose tracks are provided. The east end caboose track is located at the east end of the receiving yard at Mexico Tower and has a capacity of fifteen cabooses. It will be used to set over cabooses from inbound trains prior to humping those trains; the cabooses will then be transferred to the caboose tracks in the eastward transportation yard.

The other three caboose tracks for westward cabooses are located at the hump. These tracks are numbered consecutively from the hump and have caboose capacities as follows:

Track Number:	Capacity:
9	11
10	10
11	9

Certain supplies for cabooses are available at Nos. 9, 10 and 11 caboose tracks. A caboose run-around track is located between No. 9 caboose track and the hump lead. A caboose track lead, to switch cabooses without interference to humping operations, is located just east of the hump caboose tracks.

CAR REPAIR TRACKS

Tracks Nos. 31-A, 31-B and 32, located on the south side of the classification yard, are designated for cars requiring repairs.

Light repair cars will be switched to tracks Nos. 31-A and 31-B. Car Department forces will line and lock the hand operated switch between tracks Nos. 31-A and 31-B for the particular track not being worked. Light repair cars can then be switched to that track. After car repairmen have completed repairs to cars on the locked track, the blue flag will be removed and the switch thrown and locked for that particular track. The yardmaster will be notified and engines may then pull and classify cars that have been repaired without interference to the repair program.

Sufficient space is provided in the light repair track area to allow a mobile track unit to spot

cars for repairs. Heavy repair cars will be switched to track No. 32. Until the final construction of the car repair facilities has been made, heavy repair cars will be transferred to the present car repair shop in the eastward transportation yard area.

HUMPING OPERATION

Automatic switching is a system of relays and circuits designed to automatically position all switches in the route leading to a track by pushing a button for that particular track. Switches at the hump end of the classification yard are power-operated and controlled automatically. Routes are initiated at the hump office located on the north side at the crest of the hump. The control panel located there contains program switching controls for 32 classification tracks. A maximum of four routes may be selected at one time with actual control to switches for the four different routes being released progressively and in sequence as the individual groups of cars proceed beyond the hump. The indicator lights on the control panel show the route and sequence of the selection at all times.

Automatic retardation is a system of relays and appliances designed to measure the weight, speed and relative ease of movement for the rollability of each car being humped. The master retarder is equipped for automatic retardation and adjusted so that each car will leave it at a pre-determined speed. The four group retarders are non-automatic and must be manually controlled by the retarder operator.

HUMP SIGNALS

Movement of a hump engine is governed by signal indication displayed by the hump signal and repeated by the cab signal in that engine when located east of the hump. The hump signal is located at the crest of the hump and will display the following aspects:

Lever Position:	Aspect:	Indicates:
Back up	Flashing red	Back up
Stop	Red	Stop
Normal	Yellow	Hump speed
Fast	Green	Approach

The hump signal is controlled from the hump control panel. The retarder operator can place the signal at stop if there is cause.

The engine selector switch is used to select one of the engines equipped with cab signals. Approaching the hump crest on a green aspect, the hump engine will automatically receive a yellow aspect as soon as the lead car occupies the track circuit beginning 300 feet east of the hump crest. If the trimmer signal displays yellow, the hump signal will automatically display red when this track circuit becomes occupied.

TRIMMER SIGNALS

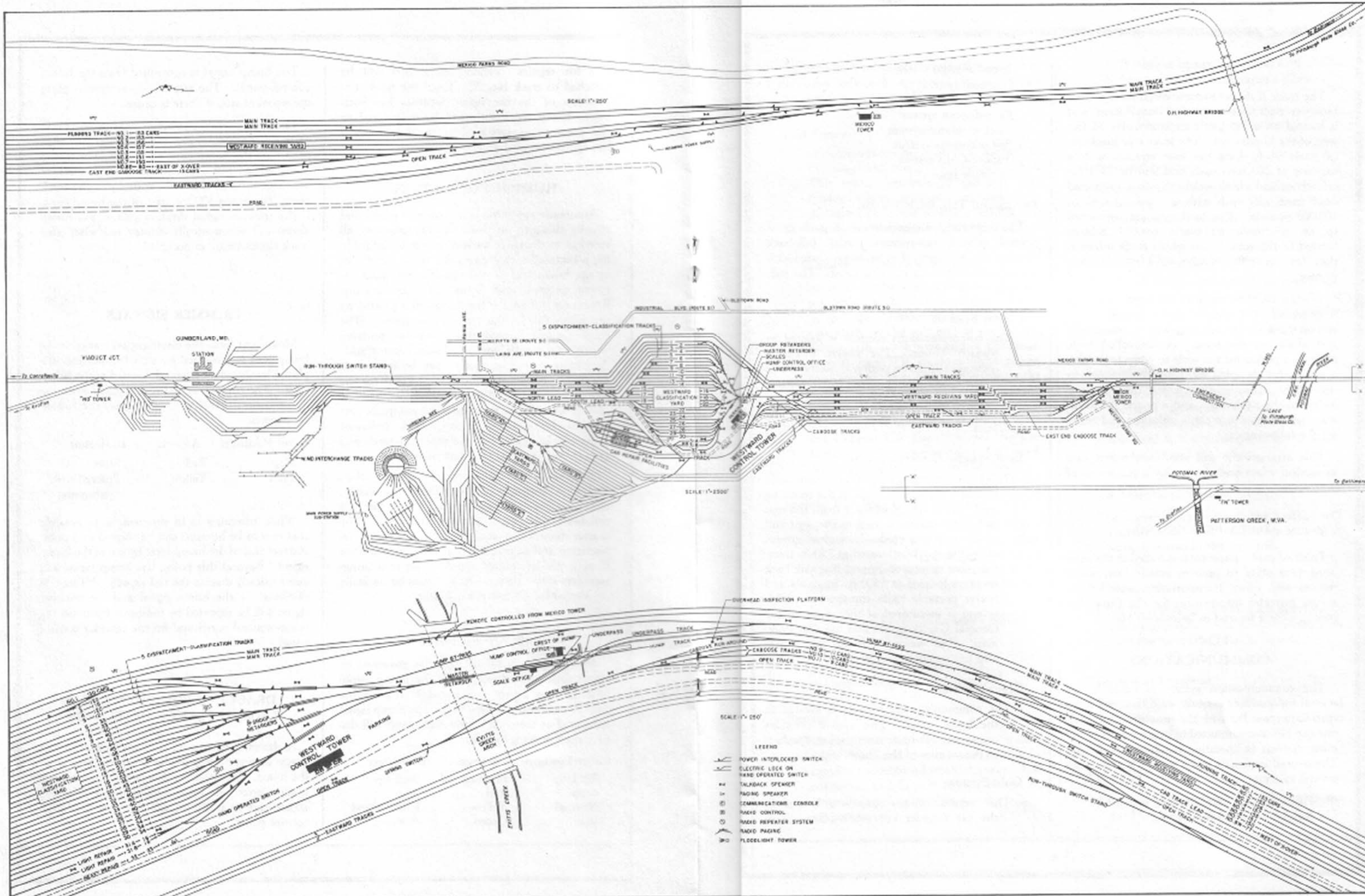
Movement from the classification tracks to the hump lead is governed by signal indication displayed by the trimmer signal, located at the hump crest. The trimmer signal is controlled from the hump control panel and will display the following aspects:

Lever Position:	Aspect:	Indicates:
Stop	Red	Stop
Trim	Yellow	Proceed with trimming

While trimming is in progress, it is possible that cars to be humped can be shoved to a point 300 feet east of the hump crest by use of the hump signal. Beyond this point, the hump signal will automatically display the red aspect. All aspects displayed by the hump signal and the trimmer signal will be repeated by indicator lights on the hump control panel and on the retarder control panel.

DRAGGING EQUIPMENT AND BROKEN FLANGE DETECTORS

A dragging equipment detector and a broken flange detector are provided in the approach to the hump. When either detector is actuated, the hump signal will automatically display the red aspect and an indicator will light on the hump control panel.



MEXICO FARMS ROAD
MAIN TRACK
MAIN TRACK
SCALE 1"=250'
WESTWARD RECEIVING YARD
OPEN TRACK
EAST END CABOOSE TRACK
EASTWARD TRACKS
MEXICO TOWER
O.H. HIGHWAY BRIDGE
To Baltimore
CUMBERLAND, MD.
VIADUCT JCT.
STATION
RUN-THROUGH SWITCH STAND
5 DISPATCHMENT-CLASSIFICATION TRACKS
MAIN TRACKS
NORTH LEAD
SOUTH LEAD
WESTWARD CLASSIFICATION YARD
GROUP RETARDERS
MASTER RETARDER
SCALES
HUMP CONTROL OFFICE
UNDERPASS
WESTWARD CONTROL TOWER
CAR REPAIR FACILITIES
CABOOSE TRACKS
W.M. INTERCHANGE TRACKS
POTOMAC RIVER
PATTERSON CREEK, W.VA.
SCALE 1"=2500'
OVERHEAD INSPECTION PLATFORM
REMOTE CONTROLLED FROM MEXICO TOWER
CREST OF HUMP
HUMP CONTROL OFFICE
SCALE OFFICE
UNDERPASS TRACK
CABOOSE RUN-AROUND
MASTER RETARDER
GROUP RETARDERS
EVITTS CREEK
LIGHT REPAIR
LIGHT REPAIR
HEAVY REPAIR
HAND OPERATED SWITCH
SPRING SWITCH
RUN-THROUGH SWITCH STAND
CAB TRACK LEAD
LEGEND
POWER INTERLOCKED SWITCH
ELECTRIC LOCK ON HAND OPERATED SWITCH
TALKBACK SPEAKER
PAGING SPEAKER
COMMUNICATIONS CONSOLE
RADIO CONTROL
RADIO REPEATER SYSTEM
RADIO PAGING
FLOODLIGHT TOWER

SCALE

The track scale for motion weighing is a combination electronic-mechanical installation and is located on a 3% grade approximately 26 feet west of the hump crest. The lever type mechanical scale 94 ft. long has four sections with a capacity of 200 tons each and will be used for emergency and check weighing. It is supported on 8 load cells each with a rated capacity of 100,000 pounds. The load cells are connected to an electronic automatic control cabinet located in the scale house which feeds information for recording weights to an automatic printer.

When a car to be weighed is humped, the scale is activated by a Weigh-Standby switch which sets up the scale for weighing that car when fully and alone on the scale. A controlled cycle includes a period for the scale to come to weight, a period for damping to reduce oscillations in the weight indicator after which the weight is locked in the equipment, and a period for printing after which the scale is unlocked and ready for the following car.

This arrangement will accurately weigh cars in motion when scale borne for a minimum of 3 seconds.

DATA PROCESSING

Punched card equipment is installed in the westward yard office to prepare switch lists, wheel reports and other transportation data. This system provides information for the Data Processing Center located in Baltimore, Md.

COMMUNICATIONS

The communication system is made up of several independent systems, each designed for a specific purpose but with the provision that each one can be inter-connected to one or more of the other systems as operating requirements dictate. The overall system is made up of the following general systems:

Paging speaker and talk-back system
Mobile two-way radio system
Repeater radio system
Intercom system
Outbound checking system
Round-robin system
Yard telephone system
Bell telephone system
Tape-to-Card system
Facsimile system

Paging and Talk-Back System:

The paging and talk-back system is made up of several related sub-systems. Any talk-back speaker can be identified as being associated with a particular system by its color band. The subsystems are as follows:

Yellow System:

The communications console is located in Mexico Tower. The twelve talk-back speakers and seven paging speakers of this system extend from 1100 feet east of Mexico Tower to 1700 feet west of Mexico Tower along the switching leads of the receiving yard.

Blue System: (Receiving Yard)

This is a radio-paging system for use primarily by Car Department forces in the receiving yard. This system extends from the east end of the receiving yard to the west end of the receiving yard. It employs groups of paging speakers located at 750 ft. intervals, five groups of ground line talk-back speakers located at 1500 ft. intervals and twelve portable radio transmitters. This system is monitored at the offices of the General Car Foreman and the Car Foreman. The westward hump yardmaster also has access to this system.

Green System:

The communications console is located in the hump office. This system provides access to talk-back and paging speakers in the vicinity of the hump.

Gold System:

The communications console is located in the car retarder operator's office. This

system consists of three paging and thirteen talk-back speakers located in the primary and secondary retarder areas.

Red System:

The communications console is located in the westward hump yardmaster's office. This system employs 70 talk-back and thirteen paging speakers extending from the east end of the receiving yard to the west end of the classification yard.

Blue System: (Classification Yard)

This is a talk-back paging system for use primarily by the Car Department forces in the classification yard. This system extends from the east end of the classification yard to the west end of the classification yard. It employs eight paging speakers located at 350 ft. intervals on the north and south sides and sixteen ground line speakers located at strategic points. This system is monitored at the offices of the General Car Foreman and the Car Foreman. The westward hump yardmaster also has access to this system.

Mobile Two-Way Radio System:

The base station for this system is located in the westward hump yardmaster's office. Accesses to this system are provided through use of remote control units located at and connecting the following points:

Westward hump yardmaster's office
Mexico Tower
Hump Office
Terminal Trainmaster's office
Diesel locomotive units equipped

Repeater Radio System:

This system employs eight two-way walkie-talkie units and the repeater station located in the eastward retarder tower. Also connected to and part of this system are remote control units located at the following points:

Westward hump yardmaster's office
Eastward hump yardmaster's office
Car Foreman's office
General Car Foreman's office
Terminal Trainmaster's office

Intercom System:

Communications consoles in offices having common interests are connected with direct intercom circuits.

Outbound Checking System:

Three telephone connections, located at the west end of the classification yard, are directly connected to a recorder, amplifier and telephone in the yard office.

Round-Robin System:

This circuit, consisting of continuous monitor speakers, provides instantaneous communication among car retarder operator, westward hump yardmaster, hump office, scale office and yard office.

Yard Telephone System:

The existing yard telephone system will remain in use with telephones located at various points in the terminal.

Bell System:

C. & P. telephone facilities are provided in the various offices and are connected with with the local B&O P.B.X. board.

Tape-to-Card System:

Tape-to-Card teletype facilities are located in the westward yard office to receive and transmit advance train consists.

Facsimile System:

Facsimile equipment is provided between the yard office and the hump office.

YARD BUILDINGS

Control Tower Building:

The Control Tower building is located about 700 feet west of the crest of the hump on the south side. It is a six-story building with a basement. The tower portion of this building provides areas for the yardmaster on the sixth floor, the car retarder operator on the fifth floor, communications equipment on the fourth floor and the future automatic retarder control devices on the third floor. Also provided are toilet, washroom and locker facilities.

The first and second floors house the yard clerical forces, Car Department forces and crews. They provide areas for signal and other power equipment as well as lunch and locker rooms, and toilet and washroom facilities. The yard office is in the east portion of the second floor.

An elevator and a dumb-waiter serve the building from the first floor to the sixth floor. A stairway serves the building from the basement to the sixth floor. The fifth and sixth floors are air-conditioned and are partly glass-enclosed to afford better visibility of the operations.

Hump Control Office:

The hump control office is located at the crest of the hump on the north side. It houses the controls for the automatic route switch machine and also contains separate rooms for relays and toilet facilities.

Scale Office:

The scale office is located just west of the crest of the hump on the south side. It houses the beam and other devices for the mechanical and electronic weighing of cars.

Air Compressor Buildings:

Two air compressor buildings are provided, one at the middle of the classification yard, the other at the west end of the classification yard, both on the south side.

Temporary Buildings:

Two office trailers are provided to serve as temporary offices. One is located at the west end of the receiving yard on the south side to house Car Department and other yard forces. The other is located at the middle of the classification yard on the south side to house car department forces.

Access Road:

An access road parallels the classification and receiving yard on the south side from the west end of the classification yard to Mexico Tower. The west approach to this road is made via Vine Street, South Cumberland. The east approach is made via Mexico Farms Road.

Yard Air:

Three 125 horsepower air compressors, each capable of producing 600 cubic feet of air per minute, provide yard air through approximately 3000 feet of pipe to 49 outlets located in the classification yard.

Electrical System:

Electrical power is delivered to the railroad substation by the Potomac Edison Co. and is distributed throughout the area over five miles of railroad constructed power lines. Approximately 86 power-operated track switches are equipped with electric switch heaters. The control tower building as well as the two buildings at the hump crest are electrically heated. Standby power is provided in case of electrical power failure. At that time, a gasoline-driven standby generator will provide emergency power to serve the facility.

Lighting:

The east end of the receiving yard has one 100 ft. tower equipped with eight 1000 watt floodlights. Mercury-vapor lights provide additional lighting. Fluorescent floodlights provide local lighting at the hump and scale offices.

The hump crest area, repair tracks area and the north and south leads of the classification yard are lighted with mercury-vapor lights equipped with hoods to limit the glare.

The group retarder area and the east end of the classification yard are lighted by twenty-four 1000 watt floodlights mounted on the control tower building and on two 100 ft. high steel towers.

Photo-electric eyes automatically turn the lights on and off.

Skates:

Skates are provided for use at the west end of each classification track and these skates are to be removed from the track only when necessary to pull or shove a track. Cars should not be directed into clear tracks unless it is known that skates have been replaced. When a skate is placed on a clear track, it should be located a sufficient distance from the west end of the track to stop movement of car or cars before fouling other tracks.

Inspection Platform:

A 22 ft. high cantilever type inspection platform is provided about 400 feet east of the hump crest to facilitate inspection.

THE BALTIMORE AND OHIO RAILROAD HISTORICAL SOCIETY

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