THE PENNSYLVANIA RAILROAD

STANDARDS and REQUISITES

SIGNAL and INTERLOCKING SYSTEMS

C.E. 233-(b)
STANDARDS and REQUISITES

All Systems

GENERAL

136.5. Design of control circuits on closed circuit principle. All control circuits the functioning of which affects safety of train operation shall be designed on the closed circuit principle, except circuits for roadway equipment of intermittent automatic train stop system.

NOTE: The apparatus shall, so far as possible, be installed and circuits so arranged that failure of any part of the system affecting the safety of train operation will cause all signals affected to display the most restrictive indications which conditions require.

136.9. Selection of circuits through indicating or annunciating instruments. Signal control and electric locking circuits shall not be selected through the contacts of instruments designed primarily for indicating or annunciating purposes in which an indicating element attached to the armature is arranged so that it can in itself cause improper operation of the armature.

136.10. Electric locks, forced-drop type, where required. Electric locks on new installations and new electric locks applied to existing installations shall be of the forced-drop type.

136.12. Spring switch signal protection, where required. Signal protection shall be provided for facing and trailing movements through spring switch within interlocking limits, and through spring switch hereafter installed in automatic block-signal, train-stop, train-control or cab-signal territory where train movements over the switch are made at a speed exceeding 20 miles per hour, except that signal protection shall be required only with the current of traffic on track signaled for movement in only one direction.

136.13. Spring switch, selection of signal control circuits through circuit controller. The control circuits of signals governing facing movements over a main-track spring switch shall be selected through the contacts of a switch circuit controller, or through the contacts of relay repeating the position of such circuit controller, which, when normally closed switch point is open one-fourth inch or more, will cause such signals to display their most restrictive aspects, except that where a separate aspect is displayed for facing movements over the switch in the reverse position the signal shall display its most restrictive aspect when the switch points are open one-fourth inch or more from either the normal or reverse position.

(1)

(a) The indication of signal governing movements from siding to main track with the current of traffic on track signaled for movements in only one direction through a spring switch in automatic block-signal territory shall be not less restrictive than “proceed at restricted speed” when the block, into which movements are governed by the signal, is occupied, and shall be “stop” when the main track is occupied by a train approaching the switch within at least 1,500 feet in approach of the distant signal located stopping distance from the main-track signal governing trailing movements over switch, except that the indication may be caused to be less restrictive if approach or time locking is used.

(b) The indication of signal governing movements against the current of traffic from the reverse main of main tracks to a single track, or signal governing movements from a siding to a main track signaled for movements in either direction, through a spring switch, in automatic block-signal territory, shall be not less restrictive than “proceed at restricted speed” when the block, into which movements are governed by the signal, is occupied by a preceding train, and shall be “stop” when the block on the single track into which the signal governs is occupied by an opposing train.

(c) The indication of signal governing movements against the current of traffic from the reverse main of main tracks to a single track or the single track signaled for movements in both directions is occupied by a train approaching the switch within at least 1,500 feet in approach of the distant signal located stopping distance from the main-track signal governing trailing movements over switch, except that indication may be caused to be less restrictive if approach or time locking is used.

SIGNS, WAYSIDE and CAB

136.21. Location of wayside signals. Each wayside signal hereafter installed shall be located over or to the right of the track it governs.

136.23. Aspects and indications.

(a) Aspects shall be shown by the position of semaphore blades, color of lights, position of lights, flashing of lights, or any combination thereof. They may be qualified by marker plate, number plate, letter plate, marker light, shape and color of semaphore blades or any combination thereof, subject to the following conditions:
1. Night aspects of wayside signals, except qualifying appurtenances, shall be shown by lights; day aspects by lights or semaphore arms. A single white light shall not be used.

2. Reflector lenses or buttons or other devices which depend for visibility upon reflected light from an external source shall not be used in night aspects, except qualifying appurtenances.

(b) The aspects of cab signals shall be shown by lights or by illuminated letters.

(c) Each aspect displayed by a signal shall be identified by a name and shall indicate action to be taken. Only one name and indication shall apply to those aspects indicating the same action to be taken; the same aspect shall not be used with any other name and indication.

(d) The fundamental indications of signal aspects shall conform to the following:

1. A red light, a series of horizontal lights, or a semaphore blade in a horizontal position shall be used to indicate stop.

2. A yellow light, a lunar light, or a series of lights or a semaphore blade in the upper or lower quadrant at an angle of approximately 45° to the vertical, shall be used to indicate that speed is to be restricted and stop may be required.

3. A green light, a series of vertical lights, or a semaphore blade in a vertical position in the upper quadrant or 60° or 90° in the lower quadrant shall be used to indicate proceed at authorized speed.

136.24. Spacing of wayside signals. Each wayside signal shall be located with respect to the next signal or signals in advance which govern train movements in the same direction so that the indication of a signal displaying a restrictive aspect can be complied with by means of a brake application, other than an emergency application, initiated at such signal, either by stopping at the signal where a stop is required, or by a reduction in speed to the rate prescribed by the next signal in advance where reduced speed is required.

136.25. False restrictive position of semaphore signal arm or failure of lamp in light signal. If an arm of a semaphore signal assumes a false restrictive position or if a lamp in a light signal fails the signal shall not display a less restrictive aspect than intended.

TRACK CIRCUITS

136.51. Track circuit requirements. Track relay shall be in deenergized position whenever any of the following conditions exist, and the track circuit of an automatic train-stop, train-control, or cab-signal system shall be deenergized in the rear of the point where any of the following conditions exist:

(3)
(a) When a rail is broken or a rail or switch frog is removed except when a rail is broken or removed in the shunt fouling circuit of a turnout or crossover, provided, however, that shunt fouling circuit may not be used in a turnout through which permissible speed is greater than 45 miles per hour. It shall not be a violation of this requirement if a track circuit is energized when a break occurs within the limits of the joint bars or rail-joint bond, or as a result of leakage current or foreign current in the rear of a point where a break occurs or a rail is removed.

(b) When a train, engine, or car occupies any part of a track circuit, including fouling section of turnout, except turnouts of a hand-operated main-track crossover. It shall not be a violation of this requirement where the presence of sand, rust, dirt, grease, or other foreign matter on the rail prevents effective shunting.

(c) Where switch shunting circuit is used:

1. Switch point is not closed in normal position.
2. A switch is not locked where facing-point lock with circuit controller is used.
3. An independently operated fouling-point derail equipped with switch circuit controller is not in derailing position.

136.52. Relayed cut-section. Where relayed cut-section is used in territory where noncoded direct-current track circuits are in use, the energy circuit to the adjoining track circuit shall be open and the track circuit shunted when the track relay at such cut-section is in deenergized position.

136.53. Track circuit feed at grade crossing. At grade crossing with an electric railroad where foreign current is present, the electric energy for noncoded direct-current track circuit shall feed away from the crossing.

136.54. Minimum length of track circuit. The length of any track circuit, except trap circuit or special circuit not used for control of signaling facilities, shall be greater than maximum inner wheel base of any engine or car.

136.55. Dead section, maximum length. Where dead section exceeds 35 feet, special circuit shall be installed. Where shortest outer wheel base of an engine operating over such dead section is less than 35 feet, the maximum length of the dead section shall not exceed the length of the outer wheel base of such engine unless special circuit is used.

136.58. Turnout, fouling section. Fouling section of turnout shall extend to clearance point.
WIRES and CABLES

136.71. Signal wires on pole lines. Signal wires carried on pole lines shall be securely tied in on insulators.

136.72. Clearance of overhead signal wires and cables. Where men are permitted to be on top of cars the clear space between the lowest overhead signal line conductor and the top of track rails shall be not less than 27 feet at 60° F., no wind. The distance may be reduced to 25 feet for guys and for cables carried on messengers.

136.75. Insulated wires and cables, supports. Insulated wires and cables used aerially shall be supported on insulators or by messengers.

MANUAL BLOCK SIGNAL SYSTEMS

190. The limits of each block shall be properly designated and marked either by block signal or block-limit signal.

191. Distant signals shall be provided on main tracks governing approach to block signals except where the block signal is the first signal encountered when leaving yard or station, and when authorized speed approaching the block signal is not higher than 20 M.P.H. Where authorized speed passing the block signal is 20 M.P.H. or less, an inoperative distant signal may be used.

192. Operative distant signals shall be controlled automatically by track circuits.

193. Distant and home signals shall be spaced at least stopping distance apart.

194. Where a block-limit signal is in use, an approach block-limit signal shall be installed at least stopping distance from the block-limit signal.

195. Electrically locked hand-operated switch shall be provided with time or approach and time locking. The locks shall not be released until after the signals protecting the switch display the most restrictive indications the condition requires.

196. Where signal governs movement over a hand-operated switch in the normal and reverse positions, the switch shall be mechanically locked in both positions, and the lever operating the mechanical switch locking electrically locked.

AUTOMATIC BLOCK-SIGNAL SYSTEMS

136.201. Track-circuit control of signals. Signals shall be controlled automatically by track circuits extending through the entire block.
136.202. Signal governing movements over hand-operated switch. Signal governing movements over hand-operated switch in the facing direction shall display its most restrictive aspect when the normally closed point is open one-fourth inch or more and, in the trailing direction, three-eighths inch or more, except that where a separate aspect is displayed for facing movements over the switch in the normal and in the reverse position, the signal shall display its most restrictive aspect when the switch points are open one-fourth inch or more from either the normal or reverse position.

136.203. Hand-operated crossover between main tracks, protection. At hand-operated crossover between main tracks protection shall be provided by one of the following: (1) An arrangement of one or more track circuits and switch circuit controllers, (2) facing point locks on both switches of the crossover, with both locks operated by a single lever, or (3) electric locking of the switches of the crossover. Signals governing movements over either switch shall display their most restrictive aspect when any of the following conditions exist:

(a) where protection is provided by one or more track circuits and switch circuit controllers, and either switch is open or the crossover is occupied by a train, engine, or car in such a manner as to foul the main track; it shall not be a violation of this requirement where the presence of sand, rust, dirt, grease or other foreign matter on the rail prevents effective shunting;

(b) where facing-point locks with a single lever are provided, and either switch is unlocked; and

(c) where the switches are electrically locked, before the electric locking releases.

136.204. Track signaled for movements in both directions, requirements. On track signaled for movements in both directions, a train shall cause one or more opposing signals immediately ahead of it to display an aspect requiring a stop. On such track signals shall be so arranged and controlled that if opposing trains can simultaneously pass signals displaying proceed aspects, and the next signal in advance of each such signal then displays an aspect requiring a stop, the distance between opposing signals requiring a stop shall be not less than the aggregate of the stopping instances for movements in each direction. Where such opposing signals are spaced stopping distance apart for movements in one direction only, signals arranged to display restrictive aspects shall be provided in approach to at least one of the signals. Where such opposing signals are spaced less than stopping distance apart for movements in one direction, signals arranged to display restrictive aspects shall be provided in approach to both such signals.
136.205. **Signal control circuits, requirements.** The circuits shall be so installed that each signal governing train movements into a block will display its most restrictive aspect when any of the following conditions obtains within the block: (1) Occupancy by a train, engine, or car, (2) when points of a switch are not closed in proper position, (3) when an independently operated fouling point derail equipped with switch circuit controller is not in derailing position, and (4) when a track relay is in deenergized position; or when signal control circuit is deenergized.

136.206. **Battery or power supply with respect to relay, location.** The battery or power supply for each signal control relay circuit, where an open-wire circuit or a common return circuit is used, shall be located at the end of the circuit farthest from the relay.

136.207. **Electric lock on hand-operated switch, control.** Electric lock on hand-operated switch shall be controlled so that it cannot be unlocked until control circuits of signals protecting such switch have been opened. Approach or time locking shall be provided.

**INTERLOCKING**

136.301. **Where signals shall be provided.** Signals shall be provided to govern the train movements into and through interlocking limits.

136.302. **Track circuits and route locking.** Track circuits and route locking shall be provided throughout interlocking limits.

136.303. **Control circuits for signals, selection through circuit controller operated by switch points or by switch locking mechanism.** The control circuit for power-operated or slotted mechanical signal governing movements at higher than restricted speed in the facing direction over switches, movable-point frogs, and derails shall be selected through circuit controller operated directly by switch points or by switch locking mechanism, or through relay controlled by such circuit controller, for each facing-point switch, movable-point frog, and derail in the routes governed by such signal. Circuits shall be arranged so that such signal can display an aspect to proceed only when each such switch, movable-point frog and derail in the route is in proper position. Such power-operated signals hereafter installed shall be controlled in this manner through circuit controllers or switch repeating relays for all switches, movable-point frogs, and derails in the routes governed by such signals.

136.304. **Mechanical locking or same protection effected by circuits.** Mechanical locking, or the same protection effected by means of circuits, shall be provided.

(7)
136.306. Facing-point lock or switch-and-lock movement. Facing-point lock or switch-and-lock movement shall be provided for mechanically operated switch, movable-point frog, or split-point derail.

136.307. Indication locking. Indicating locking shall be provided for operative distant signals of the semaphore type, power-operated home signals, power-operated switches, movable-point frogs, and derails, and for all distant signals hereafter installed, except light signals all aspects of which are controlled by coded track circuits or by double-wire line circuits.

136.308. Mechanical or electric locking or electric circuits, requisites. Mechanical or electric locking or electric circuits shall be installed to prevent signals from displaying aspects which permit conflicting movements except that opposing signals may display an aspect indicating proceed at restricted speed at the same time on a track used for switching movements, only, by one train at a time. Manual interlocking in service as of October 1, 1950 at which opposing signals on the same track are permitted simultaneously to display aspects authorizing conflicting movements when interlocking is unattended, may be continued, provided that simultaneous train movements in opposite directions on the same track between stations on either side of the interlocking are not permitted.

136.309. Loss of shunt at automatic interlocking. At automatic interlocking, a loss of shunt of 5 seconds or less shall not permit an established route to be changed.

136.310. Signal governing approach to home signal. A signal shall be provided on main track to govern the approach with the current of traffic to any home signal except where the home signal is the first signal encountered when leaving yards or stations and authorized speed approaching such signal is not higher than slow speed. When authorized speed between home signals on route governed is 20 miles per hour or less, an inoperative signal displaying an aspect indicating "approach next signal prepared to stop" may be used to govern the approach to the home signal.

136.311. Signal control circuits, selection through track relays and through signal mechanism contacts and time releases at automatic interlocking. The control circuits for aspects with indications more favorable than "proceed at restricted speed" shall be selected through track relays for all track circuits in the route governed or through repeating relays for such track relays. At automatic interlocking, signal control circuit shall be selected (1) through track relays for all track circuits in the route governed and in all conflicting routes within interlocking limits or through repeating relays for such track relays; (2) through signal mechanism contacts or relay contacts closed when signals for such conflicting
routes display stop aspects; and (3) through normal contacts of time releases for such conflicting routes or contacts of relays repeating the normal position of contacts of such time releases.

136.312. Movable bridge, interlocking of signal appliances with bridge devices. When movable bridge is protected by interlocking the signal appliances shall be so interlocked with bridge devices that before a signal governing movements over the bridge can display an aspect to proceed the bridge and track must be aligned and locked, with the bridge locking members within 1 inch of their proper positions and with the track rail on the movable span within three-eighths inch of correct surface and alinement with the rail on the bridge abutment or fixed span.

136.313. Pipe for operating connections, requirements. Steel or wrought-iron pipe 1 inch or larger, or members of equal strength shall be used for operating connections for switches, derail, movable-point frogs, facing-point locks, rail-locking devices of movable bridge protected by interlocking, and mechanically operated signals, except up-and-down rod which may be three-fourths inch pipe or solid rod. Pipes shall be fully screwed into coupling and both ends of each pipe shall be riveted to pipe plug with two rivets. Pipe line shall not be out of alinement sufficiently to interfere with the proper operation of the interlocking, shall be properly compensated for temperature changes, and supported on carriers spaced not more than 8 feet apart on tangent and curve of less than 2° and not more than 7 feet apart on curve of 2° or more. With lever in any position, couplings in pipe lines shall not foul carriers.

136.314. Electric lock for hand-operated switch or derail. Electric lock shall be provided for each hand-operated switch or derail within interlocking limits, except where train movements are made at not exceeding 20 miles per hour. At manually operated interlocking it shall be controlled by operator of the machine and shall be unlocked only after signals governing movements over such switch or derail display aspects indicating stop. Approach or time locking shall be provided.

390. Except at automatic interlocking, signals which form a part of an automatic block-signal system shall be controlled semiautomatically.

391. At automatic interlocking, the controlling apparatus, except manually operated time release, shall be located at a distance from the tracks for the purpose of avoiding damage. Manually operated time release shall be located adjacent to the tracks at a point where employee who has occasion to operate it will, so far as possible, have an unobstructed view of each route.
392. At automatic interlocking, continuous graphic record of operation shall be provided.

393. Where signal governs movement over a hand-operated switch in the normal and reverse positions, the switch shall be mechanically locked in both positions. The lever operating the mechanical switch locking shall be electrically locked in accordance with Requisite 136.314.

394. Approach or time locking shall be provided in connection with signals governing to all routes.

**TRAFFIC-CONTROL SYSTEMS**


136.402. Signal control, track circuit and control operator. Signals governing movement at higher than restricted speed shall be controlled by continuous track circuits. Also, in addition, at controlled point they shall be controlled by control operator, and, at manually operated interlocking, manually in cooperation with control operator.

136.403. Signals at controlled point. Signals at a controlled point shall be so interconnected that aspects to proceed cannot be displayed simultaneously for conflicting movements.

136.404. Signals at adjacent controlled points. Signals at adjacent controlled points shall be so interconnected that aspects to proceed cannot be displayed simultaneously for conflicting movements.

136.405. Track signaled for movement in both directions, change of direction of traffic. On track signaled for movements in both directions, occupancy of the track between opposing signals at adjacent controlled points shall prevent changing the direction of traffic from that which obtained at the time the track became occupied.

136.406. Indication of track circuit occupancy at controlled points. Occupancy of track circuits at controlled points shall be automatically indicated at the control station.

136.407. Approach or time locking, where required. Approach or time locking shall be provided for all controlled signals and for all electric locks on hand-operated switches.

136.409. Control machine, indication of switch operation. It shall be indicated on the control machine when power-operated switch has completed its movement and is locked.
136.410. **Hand-operated switch electrically locked.** Each hand-operated switch hereafter installed in main track where train movements are made at speeds exceeding 20 miles per hour shall be electrically locked in normal position. Electric lock may be unlocked either automatically or by the control operator, but only after control circuits of signals governing movements over the switch in each direction have been opened.

412. Route locking shall be provided where switches are interlocked.

413. Means shall be provided to insure that after a signal has been displayed, it cannot be restored manually to “Stop” by the operation of any lever other than its controlling lever.

414. Where the switches and signals are interlocked and controlled at the junction of main track with siding or secondary track that is auxiliary to the main and used for the meeting or passing of trains, the following shall be provided on the siding or secondary track:

(a) Continuous track circuits.

(b) Indication lights on track model of control machine to indicate occupancy.

(c) Signals arranged so they cannot be displayed simultaneously for conflicting movements.

(d) Advance signal located stopping distance from the entering home signal, where sufficient distance on the siding or secondary track is available, where movements from main track will be made at medium speed.

(e) Intermediate signals may be provided where siding or secondary track is of sufficient length.

(f) Where train movements are made at speeds in excess of 20 M.P.H., each hand-operated switch shall be electrically locked in normal position, unlocked either automatically or by control operator only after control circuits of signals governing movements over the switch in each direction have been opened.

415. When signal governs movement over a hand-operated switch in the normal and reverse positions, the switch shall be mechanically locked in both positions. The lever operating the mechanical switch locking shall be electrically locked in accordance with Requisite 136.314.
AUTOMATIC TRAIN-STOP, TRAIN-CONTROL, AND CAB-SIGNAL SYSTEMS

136.501. Forestalling device and speed control.
   (a) An automatic train-stop system may include a device by means of which the automatic application of the brakes can be forestalled.

   (b) Automatic train-control system shall include one or more of the following features:

   1. Low-speed restriction, requiring the train to proceed under slow speed after it has either been stopped by an automatic application of the brakes, or under control of the engineman, its speed has been reduced to slow speed, until the apparatus is automatically restored to normal because the condition which caused the restriction no longer affects the movement of the train.

   2. Medium-speed restriction, requiring the train to proceed under medium speed after passing a signal displaying an approach aspect or when approaching a signal requiring a stop, or a stop-indication point, in order to prevent an automatic application of the brakes.

   3. Maximum-speed restriction, effecting an automatic brake application whenever the predetermined maximum speed limit is exceeded.

136.502. Automatic brake application, initiation by restrictive block conditions stopping distance in advance. An automatic train-stop or train-control system shall operate to initiate an automatic brake application at least stopping distance from the entrance to a block, wherein any condition described in 136.205 obtains, and at each signal requiring a reduction in speed.

136.503. Automatic brake application, initiation when predetermined rate of speed exceeded. An automatic train-control system shall operate to initiate an automatic brake application when the speed of the train exceeds the predetermined rate as required by the setting of the speed control mechanism.

136.504. Operation interconnected with automatic block-signal system. An automatic train-stop or train-control system shall operate in connection with an automatic block-signal system and shall be so interconnected with the signal system as to perform its intended function in event of failure of the engineman to obey a signal requiring a reduction in speed.

136.505. Proper operative relation between parts along wayside and parts on engine. Proper operative relation between the parts along the wayside and the parts on the engine shall obtain under all conditions of speed, weather, wear, oscillation, and shock.

(12)
136.506. **Release of brakes after automatic application.** The automatic train-stop or train-control apparatus shall prevent release of the brakes after automatic application until a reset device has been operated, or the speed of the train has been reduced to a predetermined rate, or the condition that caused the brake application no longer affects the movement of the train. If reset device is used it shall be arranged so that the brakes cannot be released until the train has been stopped, or it shall be located so that it cannot be operated by engineman without leaving his accustomed position in the cab.

136.508. **Interference with application of brakes by means of brake valve.** The automatic train-stop, train-control or cab-signal apparatus shall be arranged so as not to interfere with the application of the brakes by means of the brake valves and not to impair the efficiency of the air-brake system.

136.509. **Two or more engines coupled.** The automatic train-stop, train control or cab-signal apparatus shall be arranged so that when two or more engines are coupled, or a pushing or helping engine is used, it can be made operative only on the engine from which the brakes are controlled.

136.510. **Conformance with established clearances.** The automatic train-stop, train-control and cab-signal apparatus shall be arranged so as to conform to established clearances for equipment and structures.

136.511. **Cab signals controlled in accordance with block conditions stopping distance in advance.** The automatic cab-signal system shall be arranged so that cab signals will be continuously controlled in accordance with conditions described in 136.205 that obtain at least stopping distance in advance.

136.512. **Cab-signal indication when engine enters block where restrictive conditions obtain.** The automatic cab signal system shall be arranged so that when an engine enters or is within a block, wherein any condition described in 136.205 obtains, the cab signals shall indicate "proceed at restricted speed."

136.513. **Audible indicator.** The automatic cab-signal system shall be arranged so that when the cab signal changes to display a more restrictive aspect, an audible indicator will sound continuously until silenced by manual operation of an acknowledging device.

136.514. **Interconnection of cab-signal system with wayside signal system.** The automatic cab-signal system shall be interconnected with the wayside-signal system so that the cab-signal indication will not authorize operation of the train at a speed higher than that authorized by the indication of the wayside signal that governed the movement of a train into a block except when conditions affecting movement of trains in the block change after the train passes the signal.
136.515 Visibility of cab signals. The cab signals shall be plainly visible to members of the engine crew from their stations in the cab.

136.516 Cab indicator, requirements. The cab indicator shall have a distinctive sound which will be clearly audible throughout the cab under all operating conditions.

136.534 Entrance to equipped territory, requirements. Where trains are not required to stop at the entrance to equipped territory, except when leaving yards and stations and speed until entering equipped territory does not exceed restricted speed, the automatic train-stop, train-control, or cab-signal device shall be operative at least stopping distance from the entrance to such territory except where the approach thereto is governed by automatic distant signal.

591. An automatic train-stop, train-control, or speed-control device shall be operative at stopping distance from the stop or stop-and-proceed signal location if signals are not overlapped, or at the stop or stop-and-proceed signal location if an adequate overlap is provided.

592. The automatic train-stop or train-control device shall meet the conditions set forth in sections 136.502, 136.503, and 591, applicable to each installation.

593. The train apparatus shall, when operated, cause an application of the brakes sufficient to stop the train or control its speed.

594. The apparatus shall be so constructed as to make indications of the fixed signal depend, so far as possible, upon the operation of the wayside element of the train-control device.

595. The apparatus shall be so constructed that it may be applied so as to be operative when the engine is running forward or backward.

596. The apparatus shall be so constructed that it will operate under all weather conditions which permit train movements.

597. The apparatus shall be so constructed and installed that it will not constitute a source of danger to trainmen, other employees, or passengers.

598. The apparatus shall be so constructed and installed as to be safe and suitable for service. The quality of materials and workmanship shall conform to this requirement.

599. Wayside element with characteristics differing from standard type shall not be used on track where speed higher than restricted speed is permitted.
DRAGGING EQUIPMENT AND SLIDE DETECTORS AND OTHER SIMILAR PROTECTIVE DEVICES

136.601. Signals controlled by devices, location. Signals controlled by devices used to provide protection against unusual contingencies, such as landslides, dragging equipment, burned bridges or trestles and washouts shall be located so that stopping distance will be provided between the signal and the point where it is necessary to stop the train.

136.602. Operation in conjunction with automatic block signal system. Where these devices are in use in automatic block signal territory, they shall be arranged to operate in conjunction with the automatic block signal system.

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