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NEW YORK CENTRAL

AND

HUDSON RIVER

RAILROAD COMPANY.

RULES

OF THE

ENGINEERING DEPARTMENT.

(MAINTENANCE OF WAY AND STRUCTURES.)

APRIL 1st, 1900.

WYNKOOP HALLENBECK CRAWFORD CO. NEW YORK.

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GENERAL NOTICE.

These Rules have been prepared for the guidance of the employees of the ENGINEERING DEPARTMENT, engaged in the Maintenance of Way and Structures, with the object of securing uniformity of practice and satisfactory results.

All employees are expected to give their hearty and loyal support to the observance of these rules.

W. J. WILGUS,
Chief Engineer.

GENERAL RULES.

Scope.

1. The rules herein set forth apply to and govern the employees of the Engineering Department on all lines operated and leased by the New York Central & Hudson River Railroad Company.

Date Effective.

2. They shall take effect April 1st, 1900, and supersede all prior rules and instructions in whatever form issued which are inconsistent therewith.

Safety.

3. Safety is the first rule to be observed, and in cases requiring urgent attention, take quick measures to avoid accident. In case of doubt, **take the safe course.**

Rules to be Obeyed.

4. The fact that any person enters, or remains in, the service of the Company will be considered as an assurance of willingness to obey its rules. No one will be excused for the violation of any of them, even though not included in those applicable to his department.

Heads of Sub-Departments.

5. The head of each Sub-Department, and each Foreman, must be conversant with the rules, supply copies of them, when necessary, to his subordinates, see that they are understood, enforce obedience to them, and report to the

proper officer all violations and the action taken thereon. He will see that economy is exercised in the use of labor, tools and material. He will employ such workmen as may be necessary, subject to the approval of his superior officer, and see that all employees are provided with the necessary tools, that they have under them assistants and laborers who are punctual and faithful in the discharge of their duties, and that their force is organized so as to give the most effective service. He must see that the actual time worked and the rates of the men are correctly stated on the pay rolls, and that neither tools nor material are sold or loaned unless authorized in writing by the Chief Engineer. He will see that all materials are correct as represented on bills and suitable for the purposes required. He must see that every employee who is relieved properly accounts for or returns all passes, keys, blanks, tools or material which have been in his care. Bills of staple materials for the ensuing season, including track ties, switch ties, bridge ties, bridge timber, shims, crossing plank, drain box plank, cast iron pipe, fence posts, fence wire, tie plates and new rail, shall be personally investigated and prepared by the various heads of departments and rendered to the Chief Engineer not later than July 1st.

Ignorance no Excuse.

6. If in doubt as to the meaning of any rule or special instructions, application must be made at once to the proper authority for explanation. Ignorance is no excuse for neglect of duty.

Promotion.

7. All employees will be regarded as in the line of promotion, advancement depending upon the faithful discharge of duty and capacity for increased responsibility.

Absence from Duty.

8. No employee will be allowed to absent himself from duty without special permission from the head of the department in which he is employed; and he will devote himself exclusively to the company's service, residing at such place as may be appointed, attending at such hours as may be required, and paying prompt obedience to the persons in authority over him. His pay while absent from duty will be stopped. No employee shall be authorized to engage a substitute. Arriving at work late in the morning and leaving for home early in the evening will not be allowed.

Illness or Injury

9. If an employee should be disabled by sickness or other causes, his right to claim compensation will not be recognized. An allowance, if made, will be a gratuity, justified by the circumstances of the case and the employee's previous good conduct.

Debts.

10. No employee is allowed to contract any bill or other obligation on account of the com-

pany, or use the company's credit, unless authorized by the proper officer.

Presents.

11. No employee shall solicit, contribute or accept money, or other consideration, for presentation directly or indirectly to a superior officer, or for personal use. Any violation of this rule, or asking or receiving money or any valuable consideration for or on account of employment or place given, will call for dishonorable dismissal.

Personal Injury.

12. Employees are required to exercise great care to avoid injury to themselves and others. They are required to know that all tools and appliances used in the line of their duty are secure and in a safe condition before using same.

Intoxication.

13. The use of **intoxicating drink** on the road or about the premises of the corporation is **strictly forbidden.** No one will be employed, nor continued in employment, who is known to be in the habit of drinking intoxicating liquor.

Neatness.

14. Employees of all departments are required to keep the premises in their charge in neat and orderly condition.

Discharged Men.

15. When a person is discharged from the company's service, he will not be re-employed

without the consent of the head of the department who dismissed him.

Outside Occupati n.

16. No employee shall engage in any outside occupation without the consent of the Chief Engineer.

Trains at all Times.

17. All employees must bear in mind that trains may be expected at any moment, and thus the necessity for the strictest watchfulness on the part of all.

Reporting Obstructions.

18. Any employee observing any obstruction or damage to the road, or bridges or trestles, or any circumstances that would indicate trouble in any way, will telegraph from the nearest station and will report the same, taking such further steps as will insure safety.

Perform Duties of Other Men if Necessary

19. All employees will remember that while attending to their particular duties they must not fail to do everything to make their track or structures safe, **even if they have to perform the duties of another man.**

Testing.

20. No patent or other appliances shall be tested without the consent of the Chief Engineer.

Danger Signal.

21. Any danger signal hereinafter described, when in use, shall always be accompanied by a man.

Time-Tables and Rules of Operating Department.

22. All employees whose duties are in any way affected by the time-tables, must always keep the Standard Time and have a copy of

the current time-table with them when on duty, and will be governed by the instructions given therein. They will also be conversant with and observe the following rules of the Operating Department:

23. All employees whose duties may require them to give signals must provide themselves with the proper appliances and keep them in good order and always ready for immediate use.

24. Flags of the proper color must be used by day, and lamps of the proper color by night, or whenever from fog or other cause the day signals cannot be clearly seen.

25. Red signifies **danger**, and is a signal to stop.

26. Green signifies **caution**, and is a signal to go slowly.

27. White signifies **safety**, and is a signal to go on.

28. Green and white is a signal to be used to stop trains at flag stations for passengers or freight.

29. **Blue** is a signal to be used by Car Inspectors. (See Rule No. 38.)

30. An explosive cap or torpedo, placed on the top of the rail, is a signal to be used **in addition** to the regular signals. The explosion of **one** torpedo is a signal to **stop**

immediately; the explosion of **two** torpedoes is a signal to **reduce speed** immediately and look out for a danger signal.

31. A fusee is an **extra** danger signal to be lighted and placed on the track at night in cases of accident or emergency. A train finding a fusee burning upon the track will come to a stop, and not proceed until it is burned out.

32. A flag or lamp swung across the track, a hat or any object waved violently by any person on the track, signifies danger, and is a signal to stop.

Train Signals.

33. Each train, while running, will display two green flags by day and two green lights by night, one on each side of the rear of the train, as Markers to indicate the rear of the train. Yard engines will not display Markers.

34. Each train running after sunset, or when obscured by a fog or other cause, will display the headlight in front and two or more red lights in the rear. Yard engines will display two green lights instead of red, except when provided with a headlight on both front and rear. Trains or engines running on passenger tracks one (1) and two (2) between Albany and Buffalo, also on Middle track between Sing Sing and Spuyten Duyvil, will display a green light at night, in addition to the red, on rear of train or engine.

36. Two green flags by day and night, and in addition two green lights by night, displayed in the places provided for that purpose on the front of an engine, denote that the train is followed by another train, running on the same schedule, and is entitled to the same time-table rights as the train carrying the signals.

37. Two white flags by day and night, and in addition, two white lights by night, displayed in the places provided for that purpose on the front of an engine, denote that the train is an extra. These signals will be displayed by all extra trains, but not by yard engines.

38. A blue flag by day and a blue light by night, placed on the end of a car, engine or train, denote that workmen are at work under or about the car, engine or train. The car, engine or train thus protected must not be coupled to, moved, or other cars placed in front of it until the blue signal is removed by the person who placed it

Steam Whistle Signals.

39. One **long** blast of the whistle is the signal for approaching stations, railroad crossings and junctions (thus, ——).

40. One **short** blast of the whistle is the signal to apply the brakes—stop (thus, —).

41. Two **long** blasts of the whistle is the signal to throw off the brakes (thus, —— ——).

42. Two **short** blasts of the whistle is an answer to any signal except "train parted" (thus, — —).

43. Three **long** blasts of the whistle (to be repeated until answered, as provided in Rule 62) is a signal that the train has parted (thus, —— —— ——).

44. Three **short** blasts of the whistle, when the train is **standing** (to be repeated until answered, as provided in Rule 61), is a signal that train will back (thus, — — —.)

45. Four **long** blasts of the whistle is the signal to call in the flagman from the west or north (thus, —— —— —— ——). (This will not apply on main line between New York and Buffalo.)

45a. Four **long** followed by one short blast of the whistle is the signal to call in the flagman from the east or south (thus —— —— —— —— —). (This will not apply on the main line between New York and Buffalo.)

46. Four **short** blasts of the whistle is the engineman's call for signals from the switch-tenders, watchmen, trainmen and others (thus, — — — —).

47. Five **short** blasts of the whistle is a signal to the flagman to go back and protect the rear of the train (thus, — — — — —).

48. One **long** followed by two **short** blasts of the whistle is the signal to be given by trains when displaying signals for a following train, to call the attention to the trains of the same or inferior class to the signals displayed (thus, —— -- —).

49. Two **long** followed by two **short** blasts of the whistle is the signal for approaching road crossings at grade (thus, —— —— — —).

50. A succession of **short** blasts of the whistle is an alarm for persons or cattle on the track, and calls attention of trainmen to danger ahead. (See Rule 115 B. of R. Opr. Dept.)

Air Whistle or Bell Cord Signals.

51. One blast of the air whistle when the train is **standing** is a signal to start.

52. Two blasts of the air whistle when the train is **running** is a signal to stop at once.

53. Two blasts of the air whistle when the train is **standing** is the signal to call in flagman.

54. Three blasts of the air whistle when the train is **running** is the signal to stop at the next station, to be answered as per Rule 42.

55. Three blasts of the air whistle when the train is **standing** is the signal to back the train.

56. Four blasts of the air whistle when the train is **running** is the signal to reduce speed.

56a. Five blasts of the air whistle when the train is **running** is the conductor's call for increased steam pressure for heating train.

57. When one blast of the air whistle is heard while the train is **running,** the engineman must immediately ascertain the cause, and if the train is parted, be governed by Rule No. 43.

58. Signals of the same number of sounds shall have the same significance when given by other appliances than the air whistle or signal-bells.

Lamp Signals.

59. A lamp swung across the track is a signal to stop.

60. A lamp lowered and raised vertically is the signal to move ahead.

61. A lamp swung vertically in a circle across the track when the train is **standing** is a signal to move back.

62. A lamp swung vertically in a circle at arm's length across the track, when the train is **running,** is the signal that the train has parted.

63. A flag, or the hand, moved in any of the directions given above, will indicate the same signal as given by a lamp.

Fixed Signals.

64. Fixed signals are placed at junctions, railroad crossings, stations and other points that require special protection. Special instructions will be issued indicating their position and use.

Protecting Trains.

65. Where tracks are impasssable, or before a rail is taken out of the track, or where it is necessary to repair any portion of the roadway that will render the road impassable for a train, ~~or where the track is out of order and must be run over slowly~~, a flagman must be sent out in the direction of approaching trains with a red flag and torpedoes by day and a red light and torpedoes by night to flag approaching trains. At a point three-quarters of a mile from the point to be protected he must place one torpedo on the rail on the engineman's side. He must then continue to go back to a point at least one mile from the point to be protected, and place two torpedoes on the rail on the engineman's side, ten yards apart (one rail length). He must then return to the point three-quarters of a mile from the place to be protected and remain until the approaching train has been stopped, or until he is called in by his foreman. When he comes in he must remove the torpedo nearest the point to be protected, and the two torpedoes must be left on the track as a caution signal. Should the flagman be recalled before reaching the required distance, he will place two torpedoes on the rail on the engineman's side, ten yards apart (one rail length), and will immediately return unless the approaching train is in sight or hearing. If the point to be protected occurs upon single track and it becomes necessary to protect both ways, a flagman shall be sent in each direction and proceed in the manner above specified.

Slow Orders.

66. When culverts or bridges are being repaired, or any work is being done upon the track, making it necessary for trains to run slowly over such culvert, bridge or portion of track for an extended length of time, the Division Engineer must first be notified, and orders will be issued through the Division Superintendent for trains to run slowly until otherwise directed. In such cases, a green flag by day and a green light by night, as a marker, securely fastened, must be placed by the side of the track on the engineman's side at a distance of 25 telegraph poles in each direction from the point to be protected. In addition, a white flag by day and a white light by night shall be placed on the engineman's side of the track thirty feet (one rail length) in each direction beyond the place to be protected.

Aid Trains.

67. All employees must, at all times, hold themselves in readiness to aid the passage of

trains, and in case of accident or delay, will render all assistance in their power.

Use Telegraph.

68. Care shall be taken to avoid the unnecessary use of the telegraph lines, especially for materials. Telegraph shall be used only in case of emergency, or when delay would involve loss to the company.

Unload Cars Promptly.

69. All employees shipping or receiving company material will see that cars are **promptly unloaded.** They will see that only material belonging to the Railroad Company is shipped as company freight.

Reports to Chief Engineer.

70. Any accidents involving injuries to persons, or delays to trains, or damage to the company property, shall be reported promptly by wire to the Chief Engineer.

II.

DIVISION ENGINEER.

Division Engineers.

71. The maintenance of way and structures on each division is in charge of a Division Engineer, reporting to the Chief Engineer. Each Division Engineer is assisted by Supervisors of Bridges and Buildings, Supervisors of Track and an Assistant Engineer. Division Engineers are responsible to the Chief Engineer for the safe, efficient and economical maintenance of all tracks and structures on their respective divisions.

III.

SUPERVISOR OF BRIDGES.

General Duties.

72. The Supervisor of Bridges reports to the Division Engineer, and is responsible for the safe condition and proper maintenance of tunnels, bridges, trestles, culverts, retaining-walls, and turn-tables on his division. He will be assisted by the necessary foremen, bridgemen, piledriver crews, masons, carpenters, painters, helpers, laborers and such additional forces as may be assigned to him for special work. He will see that equipment under his charge is always ready for service. The preparation of Time Books, issuing of Discharge Checks, etc., will be handled in the manner specified in paragraphs Nos. 257 and 258.

Annual Inspection.

73. During the last three months of each year, he shall make a personal examination of every structure under his charge, and shall make reports on the proper blanks to be transmitted through the Division Engineer to the Chief Engineer, not later than December 31st of each year.

Quarterly Inspection.

74. On the last day of each of the remaining three-quarters of the year, reports based upon an examination of each structure by the Supervisor of Bridges, or his Inspector, shall be rendered to the Division Engineer, and thence

to the Chief Engineer, noting any modification of the aforesaid annual report.

Details of Inspections.

75. He will see that the following items are given particular attention during the inspection of all structures under his charge by himself or by his Inspector.

Urgent Repairs

76. In cases requiring urgent attention, send the facts to the Division Engineer, by either letter or telegram, as may be advisable, and take immediate precautions to prevent accident.

Masonry Foundation.

77. Examine each retaining-wall, culvert, pier and abutment or other masonry structures to discover undermining, scouring, bulging, settlement or other indication of failure.

Bridge Seats.

78. See that bridge-seats are level, firmly bedded and free from cracks or evidence of crushing. See that bridge-seats are kept clean and free from rubbish and cinders, especially around the iron bed-plates.

Bed Plates.

79. Bed-plates should be level, and in proper position.

Rollers.

80. Rollers should move freely, with their axes at right angles to the line of the bridge.

Sole Plates and Pedestals.

81. Sole-plates and pedestals should be free from flaws and cracks, and should be firmly attached to the main members.

Posts.

82 Posts of viaducts, and those supporting girders or trusses should be free from bends or bulges, and all joints should bear firmly and closely against each other.

Main Trusses.

83. Main trusses should have the tension-members (eye-bars, rods and bottom chords), free from slackness and in perfect adjustment, so that they will be equally strained per square inch in any one panel. Compression members (top-chords and posts) should be straight, free from bulges or bends, with joints bearing firmly and closely against each other. Counter-rods should never be loose nor very tight, but should be adjusted while there is no load on the bridge, so that they will be taut, and no more.

Girders.

84. Girders should be stiff, free from undue deflection or lateral motion.

Lateral System

85. Lateral system (sway-bracing and lateral-bracing) of trusses, girders and viaducts should be tight and not overstrained.

Trough and Rail Floors.

86. Solid trough and rail floors should be examined with a view to the discovery of corrosion.

Shelf Angles.

87. Shelf-angles, supporting ties on through plate girders should be closely examined for loose, missing or defective rivets, and especial attention should be given to the condition of the ends of the wooden ties bearing on the angles.

Floor Beam and Stringer Connections.

88. Floor-beams and stringers should be closely and frequently examined for the presence of loose, defective or missing rivets or for shearing and crushing of webs and flanges at all points of connection with each other, and where the floor-beams connect with hangers or posts.

Floor Beams and Stringers, etc.

89. Floor-beams and stringers, and the top-chords of trusses that support directly the tie-floor should be free from undue deflection or lateral motion.

Pins.

90. Pins should be carefully inspected for evidence of bending, wear or **loose nuts.**

Rivets.

91. All rivets should be tapped with a hammer at least once a year to detect loose rivets, and any that cannot be tightened at once should be spotted with white paint, and their numbers and location reported. Any missing rivets should be reported at once.

Hangers.

92. Hangers supporting floor-beams require the closest attention. Where they consist of round or square iron their bearing around the pins should always be equal and uniform over half the circumference of the latter, and they should be critically inspected at the semi-circle for flaws or fractures. The nuts on the ends of hangers should never be loose, and should have jamb-nuts to prevent their movement under the jar of trains. Plate hangers should be closely

examined for loose rivets, and for any indication of cracking or shearing.

Castings.

93. Castings should be frequently examined with great care for the discovery of cracks, breaks or flaws, and any such discovered should be at once reported. Particular attention should be given to cast connections at junction of posts with top and bottom chords of trusses, and to the cast angle-blocks in Wooden Howe Trusses.

Drainage.

94. Drain holes should he drilled in any member that permits the collection of water, and all existing drain-holes should be frequently cleaned.

Painting.

95. All iron bridges should be thoroughly covered with paint so as to prevent corrosion. No paint shall be applied on outside surfaces in wet or freezing weather, nor shall any surfaces be painted until they are cleaned and dried, or until the previous coating is thoroughly dry. Surfaces covered with rust, grease, dirt or other foreign substances shall be thoroughly cleaned by scraping or other suitable method. On old iron work, if the original paint is in fair condition, one coat of Formula F will suffice, after first touching up spots; but when the paint is in poor condition, thoroughly clean the structure and apply a priming coat of Formula E (Pure Red Lead and Linseed Oil) and two coats of Formula F (N. Y. C. Asphaltum Var-

nish). The dates of erection and painting of bridges shall be plainly indicated on all structures.

Wooden Members.

96. Wooden members should be inspected every six months by sounding and boring holes in suspicious looking places, especially at all points where they bear against each other or against angle-blocks, and at the ends of stringers and braces. Examine with great care all parts of the lower chords of trusses, especially the splices, for evidence of pulling apart or defective clamps. The braces and counter-braces should bear evenly and squarely upon angle-blocks, and any sliding away from the true position is sure evidence that the bridge requires adjustment.

Bents.

97. All bents of trestles should stand perfectly plumb, and should be free from settlement or lateral motion under traffic. The foundations under trestles should be frequently examined for evidence of undermining or scouring.

Barrels, Water.

98. Provide barrels, with floating lids and buckets, constantly filled with water, at each end of all wooden bridges and short trestles, and at suitable intervals on long trestles.

Fire Protection.

99. Remove from the neighborhood of all wooden bridges and trestles all vegetation,

greasy waste, or other material that is liable to catch fire and endanger the structure.

Ties and Guard Timber.

100. Ties and guard-timbers on all bridges should be maintained in sound condition, and any missing guard-timber or hook-bolts should be immediately replaced.

Spiking.

101. The rails of the main track on bridges should be spiked at every other tie. Spikes must not be driven in angle bar slots on bridges.

Guard Rail.

102. On all bridges exceeding 20 feet in clear span there should be a rail guard, as shown on standard plans.

General Action.

103. The Supervisor of Bridges, or the Inspector, during the inspection of bridges and trestles, will pay particular attention to the action of the structures, or a part thereof, under passing trains. Excessive deflection, swaying, twisting, or rattling of parts, are sure evidence that attention is needed, and the facts should be reported at once. Unusual deflections should be instrumentally measured.

Corrosion.

104. All overhead bridges subject to the destructive influence of locomotive gasses should be frequently examined, and measures reported for the necessary strengthening of parts affected.

Missing Members.

105. Look carefully for any members of any portion of any structure that may be obvi-

ously missing. Also look carefully for any other items affecting the safety of the structures not herein specified.

Use of Labor.

106. The Supervisor of Bridges will use ordinary labor wherever possible for handling material, excavating for foundations, scraping bridges, concreting, etc.

Masonry.

107. He will see that mason foremen thoroughly understand the special rules and instructions governing masonry work.

Foundations New Work.

108. He will personally see that no structure is started until the foundations have been carefully examined and approved. The bottom of all footing-courses shall extend below frost line, and shall be of sufficient depth to insure an unyielding and solid foundation, thoroughly protected from all danger of scour and undermining, and where necessary piling shall be used.

Instructions Div Eng.

109. Where the foundations are doubtful, special instructions will be given by Division Engineer.

Excavations.

110. Excavations shall be made as carefully as possible with the use of any necessary shoring or sheet-piling, so as to least affect the neighboring structures or track, and so as not to cause any danger of slides.

Assistance Track Forces.

111. Where the assistance of the track forces are required, application shall be made to the Division Engineer or Supervisor of Track.

Bridge Warnings.

112. The Supervisor of Bridges will call the attention of the Division Engineer to any neglect of Section Foremen in keeping in proper repair all bridge warnings.

IV.

SUPERVISOR OF BUILDINGS.

General Duties.

113. The Supervisor of Buildings reports to the Division Engineer, and is responsible for the safe condition and the proper maintenance of buildings, platforms, track-scales, water supply, etc., on his division. He will be assisted by the necessary foremen, masons, carpenters, plumbers, tinsmiths, roofers, painters, helpers and laborers, and such additional forces as may be assigned to him for special work The preparation of Time Books, issuing of Discharge Checks, etc., will be handled in the manner specified in paragraphs Nos. 257 and 258.

Hidden Defects

114. He will carefully watch all portions of structures hidden from view and not convenient for ready inspection, such as under-supports of platforms and buildings, truss-rods and other members subject to corrosive action of locomotive gasses, engine house smoke-jacks, roof cornices, water-tank hoops, etc.

Painting Buildings.

115. All buildings, including water-tanks, shall be neatly painted and properly maintained.

Time to Paint.

116. No paint shall be applied to outside surfaces in wet, freezing weather, nor shall any surfaces be painted until they are cleaned and dry, or until the previous coating has thoroughly dried.

Filling Pores.

117. Should wood work be old and very dry and porous, first apply a coat of pure linseed-oil to fill the pores and prevent chalking.

Kind of Depot Paint.

118. For buildings, Formula C will be used for body color and Formula D for the trimming color. One coat will usually be sufficient for repainting buildings, but where necessary two coats or more shall be used. Three coats shall be used for all new work.

Minor Repairs.

119. Before buildings are repainted all minor repairs shall be made.

Dates, Painting.

120. The dates of erection and painting of all buildings, including the designation of the paint used, shall be plainly indicated on the structures.

Signs.

121. See that all signs are neatly painted as directed by the Division Engineer.

Scales.

122. Monthly examinations and tests shall be made of all track-scales.

Water Station Examinations

123. Frequent examinations shall be made of all water stations, and prompt repairs shall be made where necessary to reservoirs, pumps, tanks, pipe lines, boilers, water troughs, water columns, etc. Particular attention shall be given to the inspection of dams at gravity stations and at other reservoirs, to avoid failure from any causes which might result in serious washouts or interruption of water service.

Preparation for Winter.

124. During the months of September and October each year all water-supply equipment shall be examined in detail, and all necessary repairs made to carry the plants through the winter free from all danger of leaks or other failures. Tanks, water-columns and pipe-lines shall be thoroughly frost-proofed with shavings or manure.

Ample Supply.

125. During droughts each water-plant disclosing a deficiency shall be studied to improve the supply and prevent a recurrence of the shortage.

Location Platforms and Buildings.

126. The following rules shall be observed in the location and construction of buildings and platforms:

Except in special instances, the tops of all platforms, adjacent to main track, shall not be higher than the top of rail. Tops of all freight platforms on side-tracks for general use should be four feet above the top of the rail on the side-track (conforming to the grade of the track), and the edge of the platform three feet ~~six~~ two inches from the gauge side of the nearest rail.

No building shall be located nearer than seven feet six inches in the clear from the center of the main track, nor nearer than seven feet in the clear from the center of any side-track.

V.

SUPERVISOR OF TRACK.

General Duties.

127. The Supervisor of Track reports to the Division Engineer, and is responsible for the safe condition and the proper maintenance of the road-bed, main and side-tracks on his division, and is also responsible for the safety of all bridges, trestles, culverts, retaining-walls, sea-walls and any other structures affecting the tracks. He will be assisted by the necessary section foremen, extra foremen, section laborers, extra gangs, rock men, wrecking gangs, watchmen and crossing flagmen, and such additional forces as may be assigned to him for special work. He shall see that all track repairs are performed systematically, starting on one end of each section and working continuously towards the other so that each day's work will show definite progress.

Inspection.

128. During each quarter he shall make a personal examination of every bridge, culvert, trestle, retaining-wall and sea-wall upon his division, and on the last day thereof shall render

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a report to the Division Engineer, calling attention to any structure or wall that he considers to be unsafe or in urgent need of attention.

Slides.

129. He will personally examine at least once a month all earth and rock cuts, side-hill fills, tunnels, and adjacent bluffs and take immediate action to obviate any danger of slides or "falls." A tunnel inspection car shall be run through all tunnels once a month for the purpose of making careful sledge and bar tests to detect loose and fragmentary portions of roof and sides. He will see that neighboring owners do not commit acts endangering the safety of the Railroad.

Rules.

130. He will personally see that all section foremen and other foremen are thoroughly acquainted with all special circulars and instructions, and with the rules herein contained applicable to their duties.

Signs and Targets

131. He will see that all signs and switch-targets are maintained in proper condition, and are freshly painted twice each year, viz., April 1st and October 1st.

Policing.

132. Particular attention will be paid to the policing and cleanliness of the right-of-way and property of the company.

Watchmen.

133. He will see that track, bridge and tunnel watchmen pay strict attention to their duties.

Roadbed Plans.

134. Especial attention will be given to the standardizing and thorough drainage of the road-bed, and of the observance of all standard plans.

Wrecks.

135. In cases of accidents or wrecks or other detentions of trains, he will go promptly to the spot, taking all necessary tools and a force of laborers sufficient for the emergency, and do all in his power to clear the track and facilitate the movement of trains.

Maintenance of Way Equipment and Time of Wrecking.

136. Maintenance of way equipment, including steam shovels, Rodgers ballast cars, wrecking equipment, rotary snow plows and other snow equipment is in charge of the Supervisor of Track, and shall be maintained in proper condition, ready at all times for emergencies. The heavy running equipment should be frequently tested on the road to see that the journals are in good shape, so they will not run hot. Equipment, such as steam derricks, steam cranes, rotary snow plows, etc., should at all times be equipped with the necessary fuel and appliances for service on short notice. All such equipment should be located on tracks that will not be blocked by cars or other equipment, and not to exceed forty minutes shall elapse from the time when the Supervisor or his representative is informed of a wreck or accident until the train leaves the station.

Snow Storms.

137. The Supervisor of Track shall be fully prepared for handling snow storms, and will observe the following instructions:

a. See that all equipment is in first-class condition, and after each storm see that each appliance is carefully examined to discover necessity for repairs, and in case of long continued disuse make frequent examinations to see that parts are not lost nor stolen. Running-gears shall be carefully examined periodically by the men in the Maintenance of Way Department in charge and by the Car Inspectors.

b. The territory along each subdivision should be carefully canvassed to locate available men for quick service in cases of emergency, and each Supervisor of Track should have a list of the names and addresses of such men, so that he can promptly lay his hands on a large force of men. When such means fail, he should communicate promptly with the Division Engineer, who may be able to supply men from other subdivisions, or on request to the Chief Engineer men can be sent from other divisions.

c. Every man in the employ of the Maintenance of Way Department should have a duty assigned to him in connection with fighting snow, and he shall know what will be expected in severe storms. Not only will the track force be called upon, but the Supervisors of Bridges and Buildings will be called upon in the order named. When additional superintendence is

required the Division Engineer will assign members of the Assistant Engineer Corps to assist in handling large forces.

d. Arrangements will be made through the Division Engineer with the Division Superintendent for prompt engine service for flangers and plows, and it is expected that the heaviest class of locomotives will be provided for this purpose to aid in breaking down snow drifts.

e. He shall keep in touch with the Division Engineer and Train Dispatchers to learn the conditions at various points on his subdivision, so that at the first sign of trouble forces will be organized.

f. Prepare to fight snow upon the first signs of trouble.

g. Detail sufficient men during the night and day to pay particular attention to switches during snow storms, as this is the place where trouble is first experienced.

h. During long continued storms men will be worked in relays, so that one gang can be resting while the other is working.

i. Ample arrangements shall be made for feeding the men with coffee and sandwiches during bad storms, so that they can work to their full efficiency.

j. He may increase his force for fighting snow on telegraphic advice from the Division Engineer, except in cases of emergency, when he can use his own judgment without waiting for advice. Such course, however, is to be promptly reported by wire.

k. The regular rates of wages will always be paid for this class of service, unless, in the opinion of the Supervisor of Track, additional rates are advisable to obtain men, in which case the facts should be telegraphed to the Division Engineer.

l. In cases of doubt as to which part of the road should first be cleared consult with the Division Engineer, Division Superintendent and Dispatchers.

Water Supply.

138. He will watch all water-stations on his division, and report to the Division Engineer any neglect in the care of the stations or probable failure in the supply of water.

Line and Surface.

139. He will earnestly endeavor to improve the line and surface of all tracks, especially main tracks, and will see that every measure is taken to insure their smooth riding qualities and safety.

Ties Good for One Year

140. He will personally see that no ties are removed from the track that are good for one year's additional service.

Tie Renewals. **141.** He will personally examine ties in track prior to July 1st each year, and prepare the annual statement of quantities required for ensuing season.

Bridge Seats. **142.** He will see that all bridge-seats are maintained free from all dirt and debris, and that the approaches to all bridges are in proper condition.

Side Obstructions. **143.** He will see that no obstructions are maintained on either side of the main track within seven feet six inches from the center thereof, and that ties, lumber and other material are not piled within eight feet of the nearest rail.

Contractors. **144.** He must keep watch over all work done by contractors or others on his division, and see that they do not obstruct the track to the danger of passing trains.

Station Grounds. **145.** He will see that snow is promptly removed from the tracks and from around station-grounds and other buildings used by the public.

Highways. **146.** He will see that particular attention is paid to the clearing of obstructions in the neighborhood of highway crossings that would obscure from the public a clear view of approaching trains.

Assist Supervisors, Bridges and Buildings. **147.** He will render prompt assistance to the Supervisors of Bridges and Buildings when

it may be necessary to expedite the distribution of material and of the work of repair on bridges, trestles or buildings of the company.

Bridge Warnings. **148.** He will see that the section foremen keep bridge-warnings in a proper state of repair.

Material. **149.** He will use proper judgment in ordering only such materials as are best suited for the purpose for which they are to be used, and in the proper quantities for prompt consumption.

Inspection. **150.** He will walk over a portion of his subdivision each day, and pass over all of it by hand-car, velocipede or motor-car or on foot at least once a month. He will spend most of the time on the road, and see that the section foremen and their men fully understand and perform their duties.

Alignment and Elevation. **151.** He must personally observe the alignment and elevation of curves, and instruct section foreman about the proper elevation for every curve on his subdivision.

Track Levels and Gauges. **152.** He will frequently examine track-gauges and levels and see that they are in accordance with the standard furnished by the Division Engineer.

Fencing. **153.** He will see that section forces utilize their spare time during the fall months to set fence posts, and will see that fence wire is

strung during the winter months, when their other duties do not interfere.

Gravel Pits.

154. Surfaces of all gravel-pits shall be stripped clear of all dirt, clay and other material that will injure the ballast.

Steam Shovel Work.

155. He will see that steam shovel crews understand their duties; that a maximum amount of material is loaded each day, and that cars are loaded to their full capacity. He will see that the construction trains receive proper movement over the road, and will promptly report to the Division Engineer any unnecessary delays.

Worn Tires and Flat Wheels.

156. He will closely watch all rolling-stock on his division and promptly report any locomotives or cars whose tires are worn over one-fourth inch in depth, or that have flat wheels.

Emergency Material.

157. Long stringers and other emergency material shall always be kept easily available at subdivision headquarters for prompt use in case of washouts or other accidents.

Branding Tools.

158. He will see that the company's tools are stamped or branded with the initials "N. Y. C. & H. R. R.R."

Advertisements.

159. No advertisements shall be permitted on the right of way of the Railroad Company

without authority in writing from the Chief Engineer.

Releases.

160. Care shall be taken to obtain promptly signed releases for all Railroad Company material laid in tracks beyond the right of way line.

Ice Houses.

161. All ice houses shall be put in proper condition during the month of December each year to receive the season's supply of ice.

VI.

SECTION, WORK TRAIN AND EXTRA GANG FOREMEN.

General Duties.

162. Section, work train and extra gang foremen will report to and receive their orders from the Supervisor of Track, and under his direction will have charge of the labor necessary for the maintenance of the roadbed and track. They will be assisted by the necessary section laborers, watchmen and such additional forces as may be assigned to them for special work. They shall engage personally in their work, except where large gangs are employed, when their entire time may be required for supervision.

Drainage.

163. Good drainage is most essential, and the farther water is removed from the track and

the sooner it can be diverted from the roadbed the more stable will become the track.

Ditches.

164. All ditches should, at all times, be in good condition, and they must be in accordance with standard diagram. They should be generally parallel with the track, except at inlets and outlets, where they should diverge from the roadbed so as not to injure the embankments. They must be of the necessary size to pass all water freely during the heaviest rains.

Surface Ditches.

165. Where necessary surface ditches should be made on the tops of cuts to prevent surface water from washing the sides thereof; these ditches should not be closer than three feet to the edges of the cuts.

Dirt on Sides of Cuts.

166. All earth from ditches or elsewhere must be deposited over the sides of adjacent embankments and immediately leveled off, and **under no circumstances shall it be thrown on the sides of cuts.**

Ditches Deep Enough.

167. Ditches in cuts should always be below the bottom of the old ballast.

Inspection Ditches.

168. Ditches, drain-boxes, culverts, channels and streams must be frequently inspected, especially after heavy rains, and kept free from brush or other obstructions, so that they will at all times have a free water-way and not endanger the safety of the roadbed. Wherever

water from any ditch or culvert or stream approaches too near to the roadbed and washes the soil, special efforts must be made by the use of dams of brush and old ties, and all other necessary means, to stop the wash and to fill up the gullies so that the roadbed will be of the full width, with slopes of not less than one and one-half feet horizontal to one foot vertical.

Storms and Track Walking.

169. During heavy wind and rain storms, abrupt changes in temperature, when there is an excessive number of broken rails, or where some special operating service is to be performed, day or night, great precaution must be taken to prevent accident. Section Foremen must be out with a sufficient force of men, all supplied with proper signals, tools and instructions, to insure the safety of trains.

169a. During thaws ice should be cut from around abutments, piers and piles where movement might cause damage.

Preparation for Ballast.

170. Before distributing ballast the sub-grade must be properly prepared and the banks widened so that the ballast will not roll down the banks or be washed away. Cuts will also have the edges carefully shaped to the proper section, and always below the bottom of the old ballast, so as to give proper drainage.

Sub-Grade.

171. Sub-grade and top surfaces of the ballast material will be trimmed in accordance with the standard plan.

Forks.

172. Broken stone ballast will always be handled with forks and not with shovels.

Grade Stakes.

173. When possible, grade-stakes for the elevation of the top of the rail and for alignment will be given by the Engineer.

Track Under Bridges and Tunnels.

174. Trackmen must under no circumstances raise the surface of the track in tunnels or under overhead structures unless under special orders from the Supervisor.

Number of Ties.

175. Ties shall be located as shown in the diagram of standard track. Eighteen ties per 30-foot rail and 20 ties per 33-foot rail will be used in passenger tracks Nos. 1 and 2, New York to Buffalo; 16 ties per 30-foot rail and 18 ties per 33-foot rail will be used on other main tracks. Running side-tracks will be laid with 16 ties per 30-foot rail, and storage tracks with 14 ties per 30-foot rail.

Joint Ties.

176. The largest and best ties will be selected for the joints. All ties will be laid at right angles to the tracks, and none shall be placed obliquely to suit irregular joints.

Ends of Ties.

177. The ends of all cross-ties will be laid to a line on the south and west sides of the track. On double tracks the ties will be lined on the outside of both tracks, regardless of curves

Length Ties

178. All new ties furnished should not vary more than one inch from eight feet in length, any furnished less than seven feet eleven inches

long should be rejected, and any exceeding eight feet one inch long should be sawed off to the proper length. In such cases the Supervisor of Track should be given a list of the ties that do not conform with the specifications.

Handling and Laying Ties.

179. Cross-ties shall not be damaged by sticking picks in them, or by using hammers in spacing, and should never be notched, but, if necessary, may be adzed to obtain a true and uniform bearing for the base of rail. Heart side of ties should always be turned down.

Tie Plugs.

180. Tie-plugs should always be kept on hand and taken out each day with the gang. The invariable rule must be to plug every hole wherever a spike is drawn.

Shims.

181. When track heaves the ties shall not be adzed, but shims shall be used to bring the track to proper surface. For shims more than one inch in thickness holes must be bored in them, and spikes of extra length used.

Removal of Shims.

182. Remove shims from track as early as possible in the spring, and always before surfacing or ballasting.

Piling Ties.

183. All ties removed from the track must be gathered up at the close of each day and placed in a safe, and convenient place for burning or loading on cars. New ties must not be scattered along the road, but, if not ready for

immediate use, must be stacked in piles of fifty each.

Unloading Rails.

184. Special devices will be used for unloading rails gently to prevent their coming roughly in contact with each other.

Laying Rails.

185. All rails must be laid in accordance with the standard diagram; the joints must be "broken," care being taken to have them within two inches of the center of the opposite rail; all joints and fastenings must have the full number of bolts; nuts must be screwed up tight with the nut on the inside, except on rails of seventy-five pounds per yard or less, when they shall be placed on the outside.

Loosening Bolts.

186. In order to prevent undue stresses in rails due to contraction in winter and expansion in summer all nuts shall be loosened, and then re-tightened during a warm day in the spring and during a cold day in the fall. This action permits the rail to adjust itself to the seasons' temperature. At all other times the bolts must be kept tight.

Hot Weather.

187. During hot weather tracks shall be carefully watched to detect any tendency of the rails to expand and throw the track out of line.

Spikes.

188. Rails shall be spiked on the inside and outside of each tie, care being taken that

the spikes are driven perpendicularly, and that they do not lean inward nor outward. Spikes must be driven not less than two inches from the edge of the tie, and the outside spikes must be opposite each other, and the inside spikes must be opposite each other.

Spikes on Bridges.

189. Spikes must not be driven in angle-bar slots on bridges.

Drilling.

190. When it is necessary to make bolt-holes in the rails a drill must be used.

Length Short Rails.

191. Rails less than fourteen feet in length will not be allowed in the main track, and when it is necessary to use short lengths they will be placed on tangents only or on the inside of curves.

Rail Renewals.

192. Important rail renewals will be done under the direct supervision of the Supervisor of Track.

Special Lengths Rails.

193. Special lengths of rails will be furnished for adjusting lengths of curves so as to prevent joints from running ahead of their proper positions.

Curving Rails.

194. Rails on curves of three degrees and over shall be curved in accordance with the following table:

MIDDLE ORDINATES FOR CURVING RAILS.

Degrees of Curves	LENGTH OF RAILS (FEET)											
	100	50	30	28	26	24	22	20	18	16	14	12	10
1°	2½	⅝	¼	3/16	3/16	⅛	⅛	⅛	1/16	1/16	1/16	1/16	1/16
2	5¼	1¼	½	7/16	⅜	5/16	¼	¼	3/16	⅛	⅛	1/16	1/16
3	8	2	11/16	⅝	9/16	7/16	⅜	5/16	¼	¼	3/16	⅛	1/16
4	10½	2⅝	15/16	⅞	¾	9/16	½	⅜	5/16	5/16	¼	3/16	⅛
5	13	3¼	1 3/16	1 1/16	⅞	¾	⅝	7/16	⅜	⅜	5/16	¼	3/16
6	15¾	4	1 7/16	1¼	1 1/16	15/16	¾	9/16	7/16	7/16	⅜	5/16	¼
7	18¼	4⅝	1 11/16	1½	1¼	1 1/16	⅞	⅝	½	½	7/16	⅜	5/16
8	21	5¼	1 15/16	1 11/16	1 7/16	1⅛	1	¾	9/16	9/16	½	7/16	⅜
9	23½	5⅞	2⅛	1⅞	1⅝	1⅜	1 1/16	⅞	5/8	5/8	9/16	½	7/16
10	26¼	6½	2⅜	2 1/16	1 13/16	1½	1⅛	15/16	¾	¾	5/8	9/16	½
11	29	7¼	2⅝	2¼	2	1 11/16	1 1/16	1 3/16	¾	¾	11/16	5/8	9/16
12	31½	7⅞	2⅞	2½	2 3/16	1 13/16	1⅛	1¼	1 1/16	⅞	¾	11/16	5/8
13	34	8½	3 1/16	2 1/16	2 5/16	2	1 3/16	1⅜	1⅛	1 5/16	⅞	¾	11/16
14	36¾	9¼	3 5/16	2⅞	2½	2⅛	1 5/16	1½	1 3/16	1	⅞	¾	¾
15	39¼	9⅞	3 9/16	3⅛	2 11/16	2¼	1⅜	1 9/16	1 5/16	1 1/16	15/16	⅞	¾
16	42	10½	3¾	3 5/16	2⅞	2 7/16	1½	1 11/16	1⅜	1⅛	⅞	¾	¾
17	44½	11⅛	4	3½	3 1/16	2 9/16	2 1/16	1¾	1 7/16	1 3/16	1	⅞	¾
18	47¼	11⅞	4 1/16	3 11/16	3⅜	2 11/16	2⅛	1⅞	1 9/16	1¼	1 1/16	15/16	⅞
19	49¾	12½	4⅜	3⅞	3⅝	2⅞	2 7/16	2	1⅝	1 5/16	1	1	¾
20	52½	13⅛	4⅝	4⅛	3 13/16	3	2 9/16	2⅛	1 11/16	1⅜	1 1/16	1	¾
21			4 15/16	4 5/16	3¾	3 3/16	2 11/16	2 3/16	1 13/16	1 7/16	1⅛	1 1/16	¾
22			5 3/16	4½	3 15/16	3 5/16	2 13/16	2 5/16	1⅞	1½	1 3/16	1 1/16	¾
23			5 7/16	4 11/16	4 1/16	3 7/16	2 15/16	2⅜	1 15/16	1 9/16	1 1/16	1 1/16	¾
24			5⅝	4 15/16	4¼	3⅝	3 1/16	2½	2 1/16	1 11/16	1¼	1 1/16	¾
25			5⅞	5⅛	4 7/16	3¾	3 3/16	2⅝	2⅛	1¾	1 5/16	1	¾
26			6 1/16	5 5/16	4⅝	3⅞	3 5/16	2 11/16	2 3/16	1 13/16	1⅜	1	¾
27			6 5/16	5½	4¾	4 1/16	3 7/16	2 13/16	2 5/16	1⅞	1 7/16	1 1/16	¾
28			6 9/16	5 11/16	4 15/16	4 3/16	3 9/16	2 15/16	2⅜	1 15/16	1 7/16	1⅛	¾
29			6 13/16	5⅞	5⅛	4⅜	3⅝	3	2 7/16	2	1½	1⅛	¾

(Ordinates at the quarters are ¾ of Middle-Ordinates.)

Expansion at Joints.

195. Iron shims for separating joints must always be used for laying track; wooden shims will not answer, and must not be used. The proper thickness of shims for thirty and thirty-three feet rails are as follows:

At 100 degrees Fahr. temperature, 1/16 inch.

" 80 " " " 1/8 "

" 60 " " " 3/16 "

" 40 " " " 1/4 "

" 20 " " " 5/16 "

Zero " " " 3/8 "

When the temperature falls below zero Fahr. no rails shall be laid without instructions from the Division Engineer. Each foreman laying new rail shall provide himself with a thermometer.

Step Chairs or Compromise Splices.

196. Rails adjoining others of a different height must have a step-chair to bring the tops of the rails to the same level, and they shall be connected with compromise splices.

Old Rails.

197. Old rails and fastenings removed from the track must be neatly piled at safe and convenient places, and not be allowed to lie in the ditches.

Shipping and Laying Old Rails.

198. When old rails are to be transferred to another part of the main track for relaying special instructions will be given about taking up the rails in a regular manner to guarantee the same relative position of the rails in their new location, and thus prevent rough track.

Braces on Curves.

199. Curves of three degrees or over must be braced on both inside and outside rails, unless tie-plates are used. Braces must be placed

opposite to each other on the same tie. Curves of from three to six degrees must have four braces to each 30-foot rail. Curves of six degrees and over shall have six braces to each 30-foot rail.

Tie Plates.

200. Tie-plates on new ties shall be driven home with the aid of a special steel plate and sledge before the ties are placed in the track, care being taken to locate the tie-plates so that the track will be spiked to correct gauge.

Broken Rails.

201. Broken rail in track will be reported at once to the Supervisor of Track on the proper blanks.

Lining and Laying New Rails.

202. When new rail is being laid and surfaced it must be perfectly lined according to stakes set by the Engineer, as no imperfection in alignment will be permitted. Joint and intermediate ties shall be respaced to conform with standard plan.

Gauge.

203. On tangents and curves of six degrees and under the track should be laid and maintained to exact standard gauge, 4 feet 8½ inches. On curves over 6 degrees widen gauge by use of iron shims according to the following table:

6 degrees to 10 degrees, ¼ inch.
10 degrees to 14 degrees, ½ inch.
14 degrees to 18 degrees, ¾ inch.
18 degrees and over, 1 inch.

Inspection Gauges.

204. During October and November of each year track gauges shall be sent to the Division Engineers for comparison with the division standard gauge, and all gauges so tested will be painted a certain color each year to indicate that they have been inspected.

Gauging at Joints.

205. Use particular care to gauge correctly at joints, especially where the angle-bar projection is liable to catch the lug of the gauge.

Winter Gauging.

206. During the winter months try the gauge of all tracks, and respike the rails where necessary to obtain correct gauge.

Level Board.

207. On all tangents the track must be perfectly level transversely, except as provided in Rule 211, and great care must be exercised by foremen in the use and adjustment of level. During the month of December each year track levels shall be sent to the Supervisor for adjustment and painting of same color as tested track gauges.

Elevation on Curves.

208. Foremen should consult the Supervisor of Track regarding each curve on their sections, and obtain from him the proper elevation, according to the speed of trains.

Method of Ascertaining Degree of Curves

209. To determine the degree of a curve stretch a sixty-two foot line with a small knot at

the center (which will be 31 feet from either end) on the running side of a well-lined portion of a curve. Measure the distance from the knot to the running side of the rail, and every inch of this distance indicates one degree of curvature.

Re-lining Curves

210. To reline curves in the absence of center-stakes stretch the string straight on the running side of the rail with one end at the beginning of the curve, and measure the distance from the knot to the running side of rail. Repeat this operation for the entire length of the curve, and divide the sum of these measurements by the total number taken. The result will be the average measurement which should be used in relining the curve.

Elevating Curves

211. "Simple" curves should have full elevation at the point of curve, and the same elevation should be used uniformly for the entire length of the curve. For elevations of 3 inches and under the rate of the run-off on the tangents should be $\frac{1}{4}$ inch per rail length of 30 feet. For elevations over 3 inches the run-off should not exceed twelve rail lengths or 360 feet.

Compound curves should have the elevation increased or decreased on each section of the

curve corresponding to the change in degree. The change in elevation should be distributed one-half on each section.

The run-off on transition or easement curves should be made on the easement.

As a practical rule, the following rates of elevation will meet usual conditions:

a. Main Passenger Tracks: Curves under 1 degree the elevation should be twice the middle ordinate of a 62 foot string. Curves 1 degree and over add $1\frac{1}{2}$ inches to the middle ordinate of a 62 ~~inch~~ foot string.

b. Main Freight Tracks: Three-fourths the middle ordinate of a 62 foot string.

c. Combination Tracks: Middle ordinate of a 62 foot string.

d. Side Tracks: No elevation.

Maximum elevation $6\frac{1}{2}$ inches.

This rule should be modified to meet special conditions.

Elevation for Special Cases.

212. The following table will be a guide to the study of special conditions, and gives the amounts of elevation for each degree of curvature for various speeds:

attention being given to switches, frogs, fences, sidings, culverts, cattle-guards, bridges, trestles rock cuts, tunnels and sea-walls. The track-walker must report at once any defects he cannot repair.

Bridge Warnings.

220. Section foremen are responsible for the proper maintenance of bridge warnings, and will promptly replace any portion of the "ticklers" that may be missing or misplaced. They will see that the proper height is maintained from the top of rail to the bottom of ticklers.

Policing.

221. Policing is most essential in order to give the roadbed and surroundings a neat and clean appearance. Station surroundings must be kept clean and in good order. Telegraph lines, owned by the company, mile-posts, whistle-boards, bridge-boards, and other standard signs, must be kept in good order, and trees near telegraph poles owned by the company should be kept trimmed to prevent the branches from touching the lines during storms or high winds.

Old Material.

222. All old material, such as old ties, rails, splices, material dropped from cars, etc., etc., must be picked up and carefully piled at proper points; no litter or refuse of any kind will be permitted on the right of way of the company.

Right of Way.

223. Foremen must acquaint themselves with the boundary lines of the company's right

of way, and under no circumstances will any encroachment be allowed thereon by outside parties, except by permission of proper officers.

Grass, Brush and Weeds.

224. Briers, trees and underbrush, grass, etc., must be kept close to the ground, especially near highway crossings, and away from bridges and trestles, mile and sign-posts, so that the dry grass will not allow fire to communicate to them.

Time to Cut.

225. Clear right of way from grass, weeds and brush between 15th and 25th days of June and between the 15th and 25th days of August each year.

Falling Trees etc.

226. Trees, rocks, etc., if in danger of falling on the track, must be removed; if not on the company's property, the owner of land should be consulted, and if he objects to their removal the Supervisor of Track should be informed of the facts. Make frequent examination of top of tunnel shafts and neighboring lands to discover any loose rock, dams, or other conditions threatening the safety of the track.

Train Signals

227. Foremen must carefully observe the signals carried by trains, and be sure that any train running on the same schedule or as sections, has passed before obstructing the track.

Signals

228. Watchmen must be provided with proper lamps, flags and torpedoes for stopping

trains, and must be instructed how to use them.

Watchmen.

229. Foremen will see that watchmen are properly detailed to watch bridges, to patrol unsafe or imperfect track, or to perform other duties guarding the safety of the track and structures, and will frequently visit these men at such intervals, day or night, to determine whether their duties are being faithfully performed. Crossing watchmen shall keep the flangeway clear of dirt, snow and ice. Any watchman unfaithful to his duty shall be immediately discharged by the foreman.

Red Shirts.

230. Section men must not wear red shirts as outer garments, as they may be mistaken for danger signals.

Time to Make Repairs.

231. Track may be used for making repairs until within twenty (20) minutes of the time of passenger trains, and within ten (10) minutes of the time of freight trains, **but always under the protection of the proper signals.**

Observing Signals.

232. Section foremen will promptly report in writing to the Supervisor of Track any failure of trainmen to respect their signal, giving the number of train and engine.

Accidents.

233. In case of accident to a train, the nearest section foreman will take his entire

force to the assistance of the train, even if it is on another section. If notified of a broken rail on another section he will at once make the necessary repairs.

Directions during Accidents.

234. When assisting a train delayed by accident, section foremen will act under the directions of the conductor until the arrival of the Supervisor of Track.

Watchmen at Wrecks.

235. In cases of wreck, the foreman must at once appoint a watchman to look after the company's property, who will remain on duty until the goods are removed.

Reports.

236. In case of accident to trains or road-bed, or injury of any kind, **no matter how trivial,** to anyone in their employ, foremen must immediately make a report by wire to the Supervisor of Track, and shall follow up this report as soon as possible with a written report.

Telegraph Reports.

237. If, from any cause, there is an accident, or the track becomes obstructed, and the section foreman cannot promptly repair the damage, the Supervisor of Track and Superintendent or Trainmaster must be advised by wire immediately.

Highways and Farm Crossings.

238. All highway and farm crossings must be kept in the best possible repair, free from all obstructions to vision or travel. Hand or push-cars must not be left unnecessarily on crossings.

Farm-crossing gates must be promptly repaired when out of order, and must be kept closed when not in actual use.

Crossing Diagram.

239. All crossings must be kept in accordance with standard diagram.

Sidings.

240. All company sidings must be maintained in as good order as practicable, **especially adjacent to main tracks.** The owners of private sidings must be required to keep their sidings in a safe condition for use at all times.

Side Obstructions.

241. Section foremen must be careful that wood, cross-ties, lumber or other material is not piled closer than eight feet from the rail of the main track, and five feet from the rail of sidings. Signal or telegraph poles must not be placed nearer to the rail than eight feet, and telegraph poles, where possible, will be placed near the right of way line. Section foremen will also notice that cars on sidings give the proper clearance.

Water Stations.

242. During extremely cold weather, when water-stations are likely to freeze, foremen, if called upon by the Supervisor of Buildings, will send a man to the station, who will keep it in such condition that engines can take water at all times.

Jacks.

243. Jacks must never be placed on the inside of the rail. When raised they should

immediately be placed in tripping position. They must always be in the hands of experienced men.

Hand and Push Cars.

244. Hand and push-cars must not be allowed to stand on the track, and care must be taken to have them clear of passing trains.

Protection of Cars.

245. When the car is not in sight of the foreman it must be kept locked. Loaded push or hand-cars must not be run on the main track, except under the protection of a red flag as specified in paragraph 65.

Use of Cars.

246. Hand or push-cars must never be attached to moving trains. Rails must not be carried on hand-cars, except in cases of emergency. Great care must be exercised in using hand-cars during foggy weather or after dark. Cars must not be run at night or on Sunday, except in cases of actual necessity, and never for personal use.

Foremen Accompany Cars.

247. Foremen must always accompany velocipedes or hand or push-cars.

Permits

248. Only employees of the Railroad Company in the discharge of their duties will be permitted on the tracks of the company, on velocipedes, motor-cars, hand-cars or push-cars, unless special permits in writing are given by the Division Engineer or the Division Superintendent.

TRESPASS—249. Bicyclists and other trespassers shall not be permitted on the right-of-way of the Company.

Unsafe Cars.

250. Cars in unsafe condition must not be used, but the Supervisor of Track should be immediately notified of the fact.

Use of Material.

251. Proper judgment and caution must be exercised by Supervisor of Track and foremen against extravagant use of material, as they will be held strictly responsible for the same.

Account for Material.

252. Section foremen will be held strictly responsible for all materials, tools, etc., in their possession, and, when called upon to do so, they must be able to account for everything in their charge.

Protection of Material.

253. All material and tools must be kept locked in section-houses wherever possible.

Old Spikes

254. When spikes are drawn from the tracks they must be carefully removed with a view to using them again. Old ties must never be thrown away with spikes left in them.

Repairs to Tools.

255. Tools, hand-cars, etc., requiring repairs that cannot be made by the foreman, must be properly tagged and sent to the company's repair shop. Each article so shipped must be plainly marked with the name and address of the foreman to whom it is to be returned.

Employing Men.

256. Each foreman may employ his own men, and may suspend or discharge them for incompetency or insubordination.

Time Books.

257. The time book must be written up every night for the day just closed, the time of the foreman and men being kept for each kind of work performed under the proper heading. Time books, together with the material reports of all tools and materials received during the month, must be forwarded by the foreman to the Supervisor of Track on the days directed.

Discharged Men.

258. When an employee is discharged, the foreman will make out and forward to the Supervisor of Track an application for a time check, stating thereon the name of the station at which payment is desired, and shall also endorse on the time book, opposite the name of the employee, "Time given." Upon receipt of the application the Supervisor of Track will prepare the time check, certify to its correctness, endorse thereon the name of the station at which payment is desired, and forward immediately to the Division Engineer, who will approve the same and forward to the agent of the station named on the check.

Blanks.

259. He will properly fill out all blanks as directed by the Supervisor of Track.

Foot Guards.

260. All frogs, switches and guard-rails shall be properly equipped with foot-guards.

VII.

WORK-TRAIN CONDUCTORS.

General Duties.

261. Conductors of work-trains will be under the immediate direction of the Supervisor of Track on whose division they are working; they must obey the orders of the Division Superintendent regarding the movement of their trains, and shall faithfully observe all train rules. They shall familiarize themselves with all kinds of work pertaining to the maintenance of track.

Act as Foremen.

262. Conductors will act as foremen of work-train gangs, and when required to leave their men to accompany the train the gang shall be left in charge of the assistant foreman.

Reports.

263. Conductors will make all reports directed, and at the close of each day send to the Supervisor of Track a written report of all delays to their trains during the day, owing to not having received orders promptly, or from any other cause, and will also report the work accomplished during the day.

Delays.

264. When a work-train is delayed the conductor or assistant foreman shall take immediate steps to employ the time of the men. In such cases the force can be employed to good advantage in cleaning station grounds, ditching, ballasting, etc.

Accidents.

265. In case of train accident, work-trains will give such assistance as may be called for by the Division Superintendent, and everything shall be done to facilitate the quick and safe movement of trains.

Daily Program.

266. The duties of the work-train shall be arranged in advance, so as to require the least amount of lost time passing over the road.

Distribution of Material.

267. Work-trains shall not be used for distributing material that can be handled by regular way freight or through freight service.

8a. Unless otherwise ordered the schedule of hours for employees will be as follows:—

April 1st to October 15th

7:00 A. M. to 12:00 M.
12:50 P. M. to 6:00 P. M.

except Saturdays, when the hour of terminating work will be 5:00 P. M. instead of 6:00 P. M.

October 15th to April 1st

7:00 A. M. to 12:00 M.
1:00 P. M. to 5:00 P. M.
including Saturdays.

5a. All candidates for Foremen's positions, before appointment, should be carefully examined as to their thorough knowledge of the rules of this Department.

10a. All employees should be courteous to the people along the line.

Method of Performing Season's Work

127*a.* For the purpose of securing uniformity in the season's work the following rules are adopted, but in special instances, when authorized by the Division Engineer, variations may be made to suit local circumstances:

(1.) During early Spring each Section Foreman shall **thoroughly clean his section,** including station grounds and yards, of all rubbish which may have accumulated during the winter and will carefully open all culverts and ditches so that water from melting ice and snow may run off freely.

(2.) As the ground thaws larger shims should be removed where possible without materially disturbing the roadbed and, as soon as the ground becomes sufficiently dry, all shims over ¼ inch in thickness, and where possible the smaller ones shall be removed and the ties tamped to solid bearing. All rough places due to poor ties, poor surface, or poor line shall receive special attention in order to put the section in good riding condition before commencing the work of regular track repairs.

(3.) Any spare time during the early Spring should be devoted to renewing ties in freight tracks and sidings.

(4.) As soon as the season will permit (usually about the first of May) the work of renewing ties and removing any remaining shims

should commence. Foremen on adjacent sections shall start together at the ends of their respective territory and work continuously towards the opposite ends until the renewals are completed. The renewals shall progress on each track separately except in special locations. All tracks shall be accurately gauged as tie renewals proceed, and at the close of each week the portion re-tied during the week shall be thoroughly surfaced and lined.

(5.) The forces should then return to the ends of the sections and devote as much time as possible until Fall in the improvement of line, surface, neatness and drainage. The following Spring this work shall be carried on from the opposite ends of the sections.

(6.) During the Fall special attention should be given to side-tracks, ditching, making standard roadbed, improving the right-of-way and setting fence posts.

Occupation.

5*b*. The pay rolls must show the correct time and occupation of each employee. The use of false entries will call for dishonorable dismissal.

Assignment of Pay.

10*a*. The assignment of pay by employes is prohibited.

65*a*. Where the track is out of order and must be run over slowly, a green flag should be displayed ~~with the use of torpedoes~~ in the same manner as described in Rule 65.

Relaying Rails.

198*a*. In taking up rails which are to be relaid in main tracks, the following instructions should be strictly observed so that the rails may be relaid in the same order in which they were removed.

(1.) The cars on which the rails are loaded should be marked A, B, C, etc., until the alphabet is exhausted, then AA, AB, AC, etc., then BA, BC, BD, etc.

(2.) The rails as loaded should be marked with paint on the **West** end of each rail as follows: the South rail even numbers, 2, 4, 6, 8, 10, 12, 14, etc. The North rail odd numbers, 1, 3, 5, 7, 9, 11, 13, etc. The numbers may be repeated for each car.

(3.) Each car should have a card securely fastened thereon, giving its alphabetical designation, and the number of rails contained For instance, N. Y. C. 15732, A-40 rails odd,
A-40 " even.

(4.) Care should be taken to forward the cars in their correct order so as to reduce the switching at the point of destination.

(5.) A notice should be sent to consignee each day giving car numbers, designations (A, B, etc.) and the number of rails—odd or even—on each car.

(6.) The consignee will sort the cars, unload and lay the rail in exactly the same order as taken up.

12a. Foremen should caution their men to avoid standing between main tracks, or upon adjacent tracks, while trains are passing. Foremen should also be watchful at all times to protect their men against injury, especially during fogs and storms.

12b. Dynamite, powder and other explosives shall be stored in fire-proof magazines, remote from roads and buildings to avoid injuries from accidental explosions. Supplies for immediate needs only shall be kept in the magazines, to be removed in small quantities daily as needed, and to be handled by careful and experienced men only.

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