

**FINAL_Rule for Opening_till Amendment
dated 18.09.2024**

MINISTRY OF RAILWAYS
(Railway Board)
NOTIFICATION
New Delhi

The Railways (Opening for Public Carriage of Passengers) Rules, 2000

(Last amended by 18th Sep, 2024)

G.S.R. 625(E) - In exercise of the powers conferred by sections 198 of the Railways Act, 1989 (24 of 1989), the Central Government hereby makes the following rules, namely:-

CHAPTER I

PRELIMINARY

- 1. Short title, commencement and application-** (1) These rules may be called the Railways (Opening for Public Carriage of Passengers) Second Amendment Rules, 2024.
(2) They shall come into force on the date of their publication in the Official Gazette.
(3) They shall apply to Government railways and also to non-government railways.
- 2. Definitions –** In these rules, unless the context otherwise requires, -
 - (a)** “Act” means the Railways Act, 1989 (24 of 1989);
 - (b)** “Bridge Engineer” means the Chief Engineer, the Deputy Chief Engineer (bridges) or any other engineer responsible for the construction and design of bridges ;
 - (c)** “Commissioner” means the Chief Commissioner of Railway Safety or a Commissioner of Railway Safety appointed under section 5;
 - (d)** “Carriage” means the carriage of passengers or goods by a railway administration;
 - (e)** “Form” means a form appended to these rules;
 - (f)** “General Manager” means,-
 - (i)** In case of a Government railway, the General Manager of a Zonal Railway appointed under section 4 and includes the Chief Administrative Officer, the Chief Project Manager or any other officer, not below the rank of Under Secretary to the Government of India, who is the Head of the Department and to whom the powers of the General Manager have been delegated by general or special order under section 28; and
 - (ii)** In the case of a non-Government railway, the person who is the Chief Executive of that railway, by whatever name called and such other officer of that railway to whom the powers of the Chief Executive have been delegated;
 - (g)** “General Rules” means the Indian Railways (Open Lines) General Rules, 1976, as amended by the Indian Railways (Open Lines) General Amendment Rules, 1991;
 - (h)** “Government railway” means a railway owned by the Central Government;
 - (i)** “Inspection Report” means the inspection report of the Commissioner given under rule 18;
 - (ia)** “Important bridges” means those bridges having a linear waterway of 300 metres or a total waterway of 1000 sqm or more and those classified as important by the

- Chief Engineer or Chief Bridge Engineer, depending on considerations such as depth of waterway, extent of river training works and maintenance problems;’;
- (j) ‘level crossing’ means an inter-section of a road with lines of rails at the same level;
 - (ja) “Major bridges” means those bridges having a total linear waterway of 18 metres or more or having a clear opening of 12 linear metres or more in any one span;
 - (jb) “Minor bridges” means those bridges which are neither “Important bridges” nor “Major bridges”;
 - (k) “non-Government railway” means a railway other than a Government railway;
 - (l) “passenger” means a person travelling with a valid pass or ticket;
 - (m) “railway” means a railway, or any portion of a railway, for the public carriage of passengers or goods, and includes –
 - (1) All lands within the fences or other boundary marks indicating the limits of the land appurtenant to a railway;
 - (2) All lines of rails, sidings, yards, branches used for the purposes of, or in connection with, a railway and includes bridges over which lines of rails passes;
 - (3) All electric traction equipment, power supply and distribution installations used for the purposes of or in connection with, a railway;
 - (4) All rolling stock, stations, offices, warehouses, wharves, workshops, manufactories, fixed plant and machinery, roads and streets, running rooms, rest houses, institutes, hospitals, waterworks and water supply installations, staff dwellings and any other works constructed for the purpose of, or in connection with, railway;
 - (5) All vehicles which are used on any road for the purposes of traffic of a railway and owned, hired or worked by a railway; and
 - (6) All ferries, ships, boats and rafts which are used on any canal, river, lake or other navigable inland waters for the purposes of the traffic of railway and owned, hired or worked by a railway administration, but does not include –
 - (A) A tramway wholly within a municipal area; and
 - (B) Lines of rails built in any exhibition ground, fair park, or any other place solely for the purpose of recreation;

Explanation- For the purpose of these rules, “railway” shall include newly built railway lines, either as extension of an existing railway, or as double or multiple lines alongside an existing one, conversion of railway from one gauge to another, restoration of abandoned lines, the use of electric motive power or change of traction from Direct Current(DC) to Alternate Current(AC) on an existing line;

- (n) “railway administration”, in relation to-
 - (a) A Government railway, means the General Manager of the Zonal Railway; and
 - (b) A non-Government railway, means the person who is the owner or lessee of the railway or the person working the railway under an agreement and includes the Chief Executive of that railway by whatever name called;
- (o) “railway servant” means any person employed by the Central Government or by any railway administration in connection with the service of any railway;
- (p) “rolling stock” includes locomotives, tender, carriages, wagons, rail-cars, containers, trucks, trolleys and vehicles of all kinds moving on rails;

- (q)** “section”, means a section of the Act;
- (r)** “Schedule” means a Schedule annexed to these rules;
- (s)** “traffic” includes rolling stock of every description as well as passengers and goods;
- (t)** “Zonal Railway” means a Zonal railway constituted under section 3 and in the case of a non-Government railway such division or section of that railway as the Central Government may, in consultation with that railway, notify;
- (u)** All other words and expressions used in these rules, but not defined shall have the same meanings, respectively assigned to them in the Act and in the Indian Railways (Open Lines) General Rules, 1976.

CHAPTER II

PREPARATION FOR OPENING OF RAILWAYS

3. **Reference to the Commissioner** - (1) Every Railway Administration shall ensure that the railway line or a portion thereof to be opened for public carriage of passengers is complete in all respects as per the Indian Railway Standard Codes and Manuals of practice or as per the Codes and Manuals of Practice as specifically approved by Central Government for that Railway and for such opening all the administrative formalities are complete and that the working of the railway is regulated by the Indian Railways (Open Lines) General Rules, 1976 or any other General Rule as approved by the Central Government and notified in the Gazette of Indian.

(2) Omitted.

(3) Where the General manager of a Zonal Railway, or Chief Executive of a non-Government railway is of the opinion that any railway or part thereof is required to be opened for public carriage of passengers, he shall refer the matter to the Commissioner for inspection and report on the safety of that railway.

Proviso: Provided that, the following matters are not required to be referred to the Commissioner, as specified in Form XVI A or Form XVI B, namely:-

- (a) Construction, rebuilding, modification and strengthening of foot-over-bridges and road-over-bridges;
 - (b) Construction, rebuilding, regirdering and strengthening of minor bridges;
 - (c) Regirdering and strengthening of all existing bridges, other than minor bridges;
 - (d) Elimination of manned level crossing;
 - (e) Upgradation of Level crossing, including interlocking outside station limits;
 - (f) Introduction of Electric Traction;
 - (g) Work related to Dedicated Freight Corridor.
 - (h) introduction of Double Distant Signalling alongwith corresponding changes at adjacent stations without yard remodelling;
 - (i) introduction of new Intermediate Block Signaling, except in section with Slip Siding and Catch Siding, alongwith corresponding changes at adjacent stations without yard remodelling; and
 - (j) introduction of new Automatic Block Signaling, except in section with Slip Siding and Catch Siding, alongwith corresponding changes at adjacent stations without yard remodeling”.
4. **Supply of certain documents to Commissioner-** (1) The General Manager of a Zonal Railway or the Chief Executive of the non-Government railway while making reference to the Commissioner for inspection under sub rule(3) of rule 3, shall furnish all relevant documents to the Commissioner one month before the date on which a railway line or a section of a railway line is proposed for opening by the railway from the following list of documents, namely:-
- (a) Tabulated details;
 - (b) Index Plan and Section of railway;
 - (c) Drawings of works;
 - (d) List of questions and answers;

- (e) Certificates;
- (f) List of infringements of Maximum and Minimum Dimensions;
- (g) Working orders to be enforced at each station; and
- (h) Administrative note giving the salient features of the project.

(2) The documents referred to in sub-rule (1) shall indicate the distances from the same “*fixed point*”, in kilometers and decimals up to two digits and the *fixed point* shall be clearly defined in a *Note and* on the Plan and Section sheets of the work documents.

(3) The datum adopted shall be “Mean Sea Level” as fixed by the Survey of Indian and all heights shall be mentioned with reference to the datum in meters and decimals up to two digits.

4A. Supply of documents to Principal Chief Engineer or Principal Chief Electrical Engineer or Principal Chief Signal and Telecommunication Engineer - For matters relating to items (a) to (g) specified in proviso to sub-rule (3) of rule 3, documents mentioned in rule 4 as relevant to specific matter, shall be submitted to the Principal Chief Engineer or Principal Chief Electrical Engineer or Principal Chief Signal and Telecommunication Engineer of Zonal Railway by concerned Senior Administrative Grade officer, as the case may be.

4B. Supply of documents to General Manager - For matters relating to items (h) to (j) specified in proviso to sub-rule (3) of rule 3 and documents mentioned in rule 4 as relevant to specific matter, shall be submitted to the General Manager by concerned Higher Administrative Grade Officer of Zonal Railway, who shall provide the certificate as specified in Form XVI B to the General Manager.

5. Contents of documents to be supplied to Commissioner – The documents referred to in rule 4 shall contain the details as specified below:-

(1) Tabulated details which shall consist of important characteristics of the railway or a portion of railway to be opened for public carriage of passengers and in particular include –

- (a) Curve abstract as specified in Form I;
- (b) Gradient abstract as specified in Form II;
- (c) Bridge abstract as specified in Form III;
- (d) Important bridges – particulars of waterway and construction as specified in Form IV;
- (e) Ballast and Permanent Way as specified in Form V;
- (f) Stations and station sites as specified in Form VI;
- (g) Station accommodation as specified in Form VII;
- (h) Station machinery as specified in Form VIII;
- (i) Level crossing abstract as specified in Form IX;
- (j) Deleted;
- (k) Deleted;
- (l) Deleted;
- (m) Deleted;
- (n) Electrical crossing over railway track abstract as specified in For XIV.

- (2) Index Plan and Section sheet shall be prepared as laid down in paragraphs 443 to 451 of the Indian Railways Code for the Engineering Department as reproduced in Schedule.
 - (a) Completion drawings of bridges, with drawings showing each type of girders used and giving the loading standard for which each is designed, and (if called for by the Commissioner), details of the calculations of their strength;
 - (b) Completion drawings of tunnels if any;
 - (c) Diagrammatic plans of station yards showing the gradients, the layout of tracks and particulars of turn out, block working and of any signals and interlocking installed;
- (3) List of Questions and Answers shall be prepared in terms of questions enlisted in Form XV.
- (4) Certificates of works shall comprise –
 - (a) Certificate in Form XVI containing the comments on the following matters, namely :-
 - (i) Maximum and minimum dimensions;
 - (ii) Strength of bridges;
 - (iii) Number of engines on one span;
 - (iv) Brake and communications;
 - (v) Accommodation in coaches to cater for different categories of passengers;
 - (vi) System of working;
 - (vii) Deleted
 - (viii) Types of rolling stock proposed along with list of restrictions.
- (5) List of infringements of maximum and minimum dimensions shall be prepared in Form XVII and shall show the gauge of the railway and items infringed and shall contain full explanation for the infringement and the reference to the authority under which the infringement is permitted or allowed.
- (6) Working orders to be enforced at each station on the railway to be opened shall be prepared in accordance with the rules provided in Chapter V of the General Rules and shall specify any special conditions that are required to be met with.

5A. Contents of documents to be supplied to the General Manager or Principal Chief Engineer or Principal Chief Electrical Engineer or Principal Chief Signal and Telecommunication Engineer of Zonal Railways - The documents referred to in rule 4A shall contain the details as specified below-

- (1) tabulated details which shall consist of important characteristics of the railway or a portion of railway to be opened for public carriage of passengers and in particular include, –
 - (a) gradient abstract as specified in Form II;
 - (b) bridge abstract as specified in Form III;
 - (c) ballast and permanent way as specified in Form V;
 - (d) level crossing abstract as specified in Form IX;
 - (e) brief particulars of traction installations as specified in Form X;

- (f) power supply installation abstract as specified in Form XI;
 - (g) traction maintenance depot abstract as specified in Form XII;
 - (h) restricted over head equipment clearances abstract as specified in Form XIII; and
 - (i) electrical crossing over railway track abstract as specified in For XIV.
- (2) The Index Plan and Section sheet shall be prepared as laid down in paragraphs 443 to 451 of the Indian Railways Code for the Engineering Department as mentioned below-
- (a) completion drawings of bridges, with drawings showing each type of girders used and giving the loading standard for which each is designed, and (if called for by the Principal Chief Engineer, Zonal Railway), details of the calculations of their strength; and
 - (b) implantation of diagrams of over head equipment masts, if applicable.
- (3) The list of Questions and Answers shall be prepared in terms of questions enlisted in Form XV.
- (4) The certificates of works as per contents mentioned in Form 'XVI A' by Chief Engineer containing the comments on the following items applicable to specific matter mentioned in proviso to sub-rule (3) of rule 3, namely: -
- (i) maximum and minimum dimensions;
 - (ii) strength of bridges;
 - (iii) number of engines on one span;
 - (iv) brake and communications;
 - (v) accommodation in coaches to cater for different categories of passengers;
 - (vi) system of working;
 - (vii) electric traction equipment (only if applicable); and
 - (viii) types of rolling stock proposed along with list of restrictions.
- (5) The list of infringements of maximum and minimum dimensions shall be prepared in Form XVII and shall show the gauge of the railway and items infringed and shall contain full explanation for the infringement and the reference to the authority under which the infringement is permitted or allowed.
- (6) The working orders to be enforced at each station on the railway to be opened shall be prepared in accordance with the rules provided in Chapter V of the General Rules and shall specify any special conditions that are required to be met with.
- (7) Where it involves introduction of electric traction on the railway line the working orders shall include traction working rules.

CHAPTER III

DUTIES OF THE GENERAL MANAGER

- 6. Deviation from or infringement of Standard Codes and Manuals of Practice to be notified** – (1) The General Manager shall ensure that the railway proposed to be opened is operationally fit in every respect before inspection by Commissioner.

(2) The General Manager shall, while making the reference under rule 3, bring to the notice of the Commissioner any deviation in design, material and construction of the works, rolling stocks or appliances of the railway, instances in which Maximum and Minimum Dimensions have not been observed, or the bridges, tunnels are not capable of carrying the prescribed or standard load without exceeding the stress specified in the Indian Railways Standard Codes and Manuals of Practice.
- 7. General Manager to make special arrangements** –(1) The General Manager shall make such arrangements as are necessary to facilitate the inspection by the Commissioner, of the railway, which is to be opened.

(2) The General Manager shall be responsible to make such special arrangements as the Commissioner may require for inspection and testing of Important or Major bridges and tunnels on the railway, which is to be opened.
- 8. Supply of information to Commissioner** – The General Manager shall supply all the information and give all the assistance in his power to the Commissioner and supply or provide all instruments and apparatus required for making measurements, testing of Important or Major bridges and other installations.
- 9. Dismantling of any work on request by Commissioner** – (1) The General Manager shall, on receipt of a request made by the Commissioner, make arrangements to dismantle any structure on the railway to be opened, with a view to make complete examination of the details or workmanship of the structure, as quickly and completely as possible.

(2) The Commissioner, while requesting the dismantling of the structure, shall be responsible to see that such dismantling does not affect the utility or strength of the structure, unless total dismantling is necessary for its proper inspection.
- 10. General Manager to accompany Commissioner at inspection** – (1) The General Manager may accompany the Commissioner throughout the inspection.

(2) If, for any unavoidable reason, it is not possible for the General Manager to accompany the commissioner, then the Chief Administrative Officer or the Chief Engineer (co-ordination) Construction, along with other concerned officers shall accompany the Commissioner during the period of inspection.

(2A) The Divisional Railway Manager along with the concerned branch officers shall also accompany the Commissioner during the entire period of inspection.

(3) During the inspection of each portion or division of the railway, the engineer or officer who is or was in immediate charge of that portion or division of the railway during its construction may also be present.

(4) An officer not below the rank of Assistant Engineer shall be made responsible for making arrangements for testing Important or Major bridges on the railway line.

CHAPTER IV

DUTIES OF THE COMMISSIONER

- 11. Commissioner to make full and complete examination** – (1) On receiving a reference under rule 3 from the General Manager of any railway for inspection of a railway to be opened for public carriage of passengers, the Commissioner shall, with a view to determine whether it is fit to be so opened, enquire into all matters which appears to him relevant for the safety of public carriage of passengers and goods, on that railway.
(2) The Commissioner shall satisfy himself that –
 - (a) the Indian Railway (Open Lines) General Rules, 1976 have been applied to the railway or portion of a railway proposed to be opened;
 - (b) the maximum and minimum dimensions have been observed;
 - (c) the works, structures, rolling stocks and appliances belonging to, or working on, the railway are designed properly or constructed in such manner so as to guard the system against accident and failure.
- 12. Provisions for handling traffic at stations** – The Commissioner shall satisfy himself that at every station on a railway proposed to be opened –
 - (a) Adequate provisions have been made for handling of traffic of passengers and goods; and
 - (b) Arrangements have been made for easy access by road.
- 13. Accommodation works** – Where the accommodation works made under section 16 are to be inspected, the Commissioner shall ensure that such works are sufficient and suitable for the purpose for which they are provided or constructed.
- 14. Inspection of light railways** – The Commissioner shall, while inspecting any light railway to be opened for public carriage of passengers, take into consideration –
 - (a) Speed limits which are specified with reference to narrow gauge of the line and the kind of traffic proposed to be handled;
 - (b) Standard of convenience of the passengers keeping in view the conditions in which the light railway shall be operated, and shall lay down the speed limits to be observed and the kind of traffic the light railway may be allowed to handle.
- 15. List of questions and answers** – (1) The Commissioner shall take into consideration the answers provided by the General Manager to the questions listed in the list of questions and answers submitted in relation to them under sub-rule (4) of rule 5 and satisfy himself that the points enumerated therein have been duly observed by the concerned railway administration.
(2) The Commissioner may, if he considers it necessary, modify the requirements specified in answers in accordance with the circumstances of each case.
- 16. Inspection of railway Important or Major bridges** – (1) The Commissioner shall satisfy himself that the railway's important or major bridges and other elevated structures of the railway proposed to be opened for public carriage of passengers are designed and constructed as to the loads specification specified in the Indian Railways Standard Bridges Rules, 1964 with upto date Addendum and

Corrigendum slips or latest version and other relevant code, and that the loads specification and stress limits are not exceeded.

(2) The Commissioner shall be responsible to see that under no circumstances the stresses specified in the Standard Codes of Practice for bridges are exceeded, unless the Central Government, by general or special order, specify different stresses or loads specification, for the reasons recorded therein, in a specific case.

(3) Where the Commissioner is satisfied that first class standards are not required in the cases such as temporary bridges, railway worked at low speed or with small axle loads, he may recommend departure from the Indian Railways Standard Bridges Rules, 1964 with upto date Addendum and Corrigendum slips or latest version and the Standard Codes of Practice on such conditions as he may deem fit, provided that the Commissioner shall forward with his report the calculations showing that the opening of such bridges, railways or axle loads will not be dangerous to the public carriage of passengers and the railway servants.

(4) Where any particular bridge is not up to the standards mentioned in sub-rules (1) to (3), the Commissioner shall submit the design of the bridge along with the standard of loading to the Central Government along with his recommendations as to whether the bridge may be brought in use and if so, under what conditions.

17. Procedure for inspection of Important or Major bridges – (1) The Commissioner shall examine at least one Important or Major bridge of each different pattern or type and satisfy himself about the adequacy with reference to safety of –

- (a) The general design of the bridge;
- (b) Designs of different parts or portions of the bridge,
- (c) The construction and erection of the whole structure of the bridge;
- (d) Girder spans and their bedding at all four supports; and
- (e) Type and design of bearings.

(2) Whether the Commissioner feels that it is necessary for the purpose of inspection and to see whether any riveting or bolting has been properly and efficiently executed, he may order the cutting out any rivets or opening of bolts and may also order the dismantling of any part of the structure of the bridge for more detailed examination.

(3) If the Commissioner considers it necessary, in addition to the certificate of a Bridge Engineer employed for the purpose, he can call for the load deflection test under the loads for which the bridge is designed and where this is not possible under the heaviest loads available.

(4) (a) When making card deflection test, the test cards are to be placed at right angles to the centre line of the track, in order to record oscillation and the recording pencil point should be as fine as possible and the load deflection test may also be carried out by any other suitable method or latest technology available for this purpose, apart from card deflection test.

(b) When central deflection is measured, the allowance shall be made for the deflection, if any, of the abutments or piers.

(5) In order to record the static deflection, the test shall be carried out at dead slow speed and at the maximum permissible speed of the section and the speed shall be carefully measured by stopwatch or by some automatic means.

- (6) The Bridge Engineer shall submit actual deflection cards to the Commissioner together with a statement of deflections and oscillations in Form XVIII.
- (7) The deflection of the girder shall be worked out theoretically and shall be shown in column 12 of Form XVIII to enable a comparison being made with the observed deflection.
- (8) In addition to the load deflection test, the Commissioner may, require stress recorder test to be carried out on any bridge girder, if results of load deflection tests are not satisfactory.
- (9) (a) The stress recorder test shall be carried out with a stress recorder of approved type.
(b) The tests loads and speeds shall be as specified for load deflection tests.
(c) The tests shall be taken, on the chords or flanges at mid span and on such web and floor members as the Commissioner shall specify.
(d) If a sufficient number of instruments are available, these tests shall be made simultaneously.
- (10) The stress recorder diagrams together with calculations showing how the maximum stress under the design load with full impact (including dead load stresses) is deduced from the measured stress shall be submitted by Bridge Engineer to the Commissioner who shall, before sanctioning the opening of the bridge, satisfy himself that the stresses in the girders shall not exceed those specified in the Indian Railway Standard Steel Bridge Code, 1962 with upto date Addendum and Corrigendum slips or latest version and other relevant codes.
- (11) If the Commissioner is satisfied that the girder has been properly designed for the work it is intended to perform, then, bridge girders are not required to be tested.
- (12) New steel girders and steel-concrete composite girders of standard designs need not be tested if those girders were inspected at the time of their manufacture by the Research, Design and Standards Organisation or any other inspecting agency engaged by Chief Bridge Engineer of concerned railway, and a certificate of satisfactory erection including the seating of the bearings and field riveting or bolting has been given:
Provided that the new concrete bridges need not be tested if load testing is not required to be conducted as per provisions of Indian Railway Standard Concrete Bridge Code, 1997 with upto date Addendum and Corrigendum slips or latest version and other relevant codes.
- (13) The Commissioner may decide that the second hand plate girders are not required to be tested if he is satisfied that,-
 - (i) the girder is strong enough for the work it is intended to perform; and
 - (ii) the responsible officer of the concerned railway has certified that the condition of the material and workmanship are such that the use of the girder for the specified loading shall not involve stresses in excess of those permitted in the Indian Railway Standard Steel Bridge Code, 1962 with upto date Addendum and Corrigendum slips or latest version and other relevant codes.
- (14) The Commissioner may have test of any number of spans made and may have a span tested any number of times and at any speeds as he considers necessary, up to the maximum permissible speed of the section of the railway.

- (15) The load deflection test may be carried out for non-standard bridge girders which are fabricated or constructed for the first time (need not be tested, if girder is already under use in some other bridge over Indian Railways and given satisfactory performance) and results of such tests shall be supplied to Commissioner.
- (16) The Commissioner may examine any non-standard bridge girders, which is fabricated or constructed for the first time.
- (17) The Commissioner shall be supplied with a certificate from the engineer (not below the rank of Junior Administrative Grade) responsible for design and construction of the bridge to the effect that welds have been designed in accordance with the Indian Railway Standard Welded Bridge Code, 2001 with upto date Addendum and Corrigendum slips or latest version and other relevant codes and executed to the satisfaction of the said engineer.
- (18) If radiographic examination of the welds is specified in the drawing or procedure sheet or is required to be done in accordance with the provisions of the Indian Railway Standard Welded Bridge Code, 2001 with upto date Addendum and Corrigendum slips or latest version and other relevant codes, the results of such examination shall be annexed to the certificate.”

CHAPTER V

THE INSPECTION REPORT

18. **Contents of Inspection Report** – (1) The inspection Report of the Commissioner shall specify that –
- (a) He has made a careful inspection of the railway and the rolling stock that may be used thereon;
 - (b) The moving and fixed dimensions as laid down have not been infringed;
 - (c) The structure of lines of rails, strength of bridges, general structural character of the works and the size of, and maximum gross load upon the axles of any rolling stock, comply with the requirements laid down; and
 - (d) In his opinion, the railway can be opened for the public carriage of passengers without any danger to the public using it.
- (2) The Inspection Report shall be clear and concise and shall deal with all matters which are required to be considered, particularly whether the railway line is designed for standard loading and the instances of deviation or infringement of Maximum and Minimum Dimensions.
19. **Documents accompanying Inspection Report** – The following documents shall accompany the Inspection Report namely :-
- (i) Index Plan and Section of railways;
 - (ii) Tabulated details in Forms I to DIV;
 - (iii) List of Question and Answers in Form XV;
 - (iv) Certificate by the General Manager of the concerned railway in Form XVI;
 - (v) List of infringements of Maximum and Minimum Dimensions I Form XVII;
 - (vi) Results of the bridge test in Form XVIII;
20. **Submission of Report to Central Government** – In respect of every reference made to him under sub-rule (3) of rule 3, the Commissioner shall submit an Inspection Report to the Central Government.

CHAPTER VI

SANCTION TO OPEN RAILWAY FOR PUBLIC CARRIAGE OF PASSANGERS

- 21. Sanction of opening of railway** (1) The Central Government may, after considering the Inspection Report of the Commissioner, modify or cancel the sanction given under rule 22(1) subject to such conditions, alterations or relaxations as may be considered necessary.
- (2) While modifying the opening of any railway, the Central Government shall give due consideration to the suggestions or conditions subject to which the Commissioner has opened the railway.
- (3) Where the Commissioner has not recommended the opening of any railway or has proposed to cancel the sanction already given, the Central Government shall confirm or modify the recommendation of Commissioner as necessary and shall direct the Railway Administration concerned to remove the defects or shortcomings reported by the Commissioner.
- (4) Where the defects or shortcomings are such that they cannot be removed unless the railway or a portion thereof is dismantled, then the Central Government shall order the closing of the railway forthwith for the public carriage of the passengers.
- (5) A railway line, which is closed for the public carriage of passengers under section 25, shall not be reopened unless it is duly inspected by the Commissioner in accordance with the provisions of Chapter IV of these rules and the Commissioner recommends the reopening of such railway line.
- (6) The actual date of opening of a new railway line or a section or portion of such line for passenger traffic shall be notified by concerned General Manager, after consulting the Central Government, by notification in the Official Gazette, and in the local news papers of the areas through which the railway line passes.
- Explanation: In these chapters new lines of railway shall include extensions of existing railways, new double, treble or other running lines laid alongside existing lines and conversion from one gauges to another.
- (7) For Introduction of Electric Traction:-
- (a) 25kv ac charging of section for railway electrification work for existing lines or new lines or gauge conversion lines or doubling lines or Multiple lines and energisation of any high tension installation in this regard shall be done with the approval of Electrical Inspector as provided under the Electricity Act, 2003;
 - (b) the competent authority to grant sanction to open the section with electric traction for above mentioned works shall be Principal Chief Electrical Engineer of Zonal Railway, with no further delegation.”

22. Opening of Railways by Commissioner-

- (1) The Commissioner, after inspection, may under Section 28 sanction the opening for public carriage of passengers of new lines of Railway within the respective circles subject to the conditions as the Commissioner may impose.

- 22A. Deviation from Schedule of Dimensions-** The Commissioner may, under section 28, allow any deviation from the maximum and minimum dimensions of Indian Railways Schedule of Dimensions, subject to any limit specified therein,

within the respective circles with such conditions as the Commissioner may impose.

22B. Opening of works specified under items (a) to (e) to proviso {other than items (f) and (g)} of sub-rule (3) of rule 3,-

(1) For items,-

- (a) construction, rebuilding, modification and strengthening of foot-over-bridges and road-over-bridges;
- (b) construction, rebuilding, regirdering and strengthening of minor bridges;
- (c) regirdering and strengthening of all existing bridges, other than minor bridges;
- (d) elimination of manned level crossing; and
- (e) upgradation of level crossing and diversion of roads at level crossings,

the Principal Chief Engineer of zonal railway, may without previous notice, sanction the opening of said minor works for passenger traffic, if he is satisfied, either with or without inspection:

Provided that the power being exercised by the Principal Chief Engineer of zonal railway under this rule should not be delegated:

Provided further that the works so opened without inspection, should ordinarily be inspected at the earliest possible date, the Principal Chief Engineer of zonal railway shall exercise his discretion as to the necessity of carrying out a subsequent inspection:

Provided also that the authority for opening said minor works shall be communicated in writing by the Principal Chief Engineer of zonal railway to the concerned railway administration and a record of all works so sanctioned during each year, with particulars of the prior or subsequent inspection, if made, shall be maintained by the Principal Chief Engineer of zonal railway.

(2) For interlocking of level crossing, the competent authority to grant sanction to open works shall be the Principal Chief Signal and Telecommunication Engineer of zonal railway, with no further delegation.

(3) For items,-

- (a) introduction of Double Distant Signalling alongwith corresponding changes at adjacent stations without yard remodelling;
- (b) introduction of new Intermediate Block Signalling, except in section with Slip Siding and Catch Siding, alongwith corresponding changes at adjacent stations without yard remodelling; and
- (c) introduction of new Automatic Block Signalling, except in section with Slip Siding and Catch Siding, alongwith corresponding changes at adjacent stations without yard remodeling,

the Competent Authority to grant sanction to open works shall be the General Manager of zonal railway, with no further delegation:

Provided that the General Manager or Principal Chief Signal and Telecommunication Engineer of the zonal railway, as the case may be, may sanction the opening of works for passenger traffic under this rule, if he is satisfied, either with or without inspection and works so opened without inspection, should ordinarily be inspected at the earliest possible date, but in case

of works of a minor types, the General Manager or Principal Chief Signal and Telecommunication Engineer of Zonal Railway, as the case may be, shall exercise his discretion as to the necessity of carrying out a subsequent inspection.

- 23. Sanction to use locomotive engines and rolling stock on new lines-**(1) The Commissioner may sanction the use of locomotive engines, rolling stock, or any other motive power under section 27 which is already running on any Zonal railway, or any division or section of any non-Government railway, or on any new lines in accordance with the provision of the Indian Railways (Open Lines) General Rules, 1976 or orders on the subject issued by the Central Government from time to time.
- (2) Before according sanction under sub-section (1), the Commissioner shall ascertain that the application of the Indian Railways (Open Lines) General Rules, 1976 by the concerned railway administration which operates the line has been previously sanctioned and notified in the Official Gazette.

CHAPTER VII

OPENING OF BRIDGES, MINOR WORKS, DIVERSIONS AND USE OF NEW TYPES OF ROLLING STOCK ON EXISTING RAILWAYS

24. Notice of construction of deviation lines, etc. – (1) Where it is proposed, on the railway which has been opened after inspection, to construct any deviation lines, stations, junctions or crossings on the level, or to make any addition, alteration or reconstruction materially affecting the character of any work and such work forms part of, or is directly connected with the working of that railway, except work mentioned in proviso to sub-rule (3) of rule 3, the railway administration concerned shall give notice to that effect to the Commissioner.

(2) Before any such work, the execution of which may affect the running of trains carrying passengers, is put in hand, the concerned railway administration shall furnish to the Commissioner for his approval drawings or particulars of the work and of any temporary arrangements necessary for carrying it out.

(3) Every temporary deviation line irrespective of its length and any permanent diversion less than 2 kilometers in length, where no new station is involved, shall be treated as new minor works.

(4) In case of an accident, temporary diversions may be opened under section 24 after a railway servant in-charge of the work of the concerned railway certifies that the use of such diversion will not be attended with danger to passengers or to the railway servants.

(5) Where the use of temporary diversion is likely to be extended to more than 3 days, the Commissioner shall, if he considers it necessary, take the earliest possible opportunity of inspecting it.”

25. Power of Commissioner to open minor works – (1) The Commissioner may, without previous notice, sanction the opening of any minor work for passenger traffic, except work mentioned in proviso to sub-rule (3) of rule 3, if he is satisfied, either with or without inspection, that the provisions of clauses (b), (c) and (d) of sub section (1) of section 22 have been duly fulfilled.

(2) Works so opened without inspection, should ordinarily be inspected at the earliest possible date, but in case of works of a minor character, the Commissioner of Railway Safety will exercise his discretion as to the necessity of carrying out a subsequent inspection.

(3) The authority for opening any work, except work mentioned in proviso to sub-rule (3) of rule 3, shall be communicated in writing by the Commissioner to the concerned railway administration and a record of all works so authorized during each year, with particulars of the prior or subsequent inspection, if made, shall be maintained by the Commissioner.

25A. Opening of works specified under sub-rule (3) of rule 3,-

(1) For items:

- (a) construction, rebuilding, modification and strengthening of foot-over-bridges and road-over-bridges;
- (b) construction, rebuilding, regirdering and strengthening of minor bridges;

- (c) regirdering and strengthening of all existing bridges, other than minor bridges;
- (d) elimination of manned level crossing;
- (e) upgradation of ~~non-interlocked~~ level crossing and diversion of roads at level crossings,

the Principal Chief Engineer of zonal railway, may without previous notice, sanction the opening of said minor works for passenger traffic, if he is satisfied, either with or without inspection:

Provided that the power being exercised by the Principal Chief Engineer of zonal railway under this rule should not be delegated:

Provided further that the works so opened without inspection, should ordinarily be inspected at the earliest possible date, the Principal Chief Engineer of zonal railway shall exercise his discretion as to the necessity of carrying out a subsequent inspection:

Provided also that the authority for opening said minor works shall be communicated in writing by the Principal Chief Engineer of zonal railway to the concerned railway administration and a record of all works so sanctioned during each year, with particulars of the prior or subsequent inspection, if made, shall be maintained by the Principal Chief Engineer of zonal railway.”;

- (2) For interlocking of level crossing the competent authority to grant sanction to ~~execute~~ and open works shall be Principal Chief Signal and Telecommunication Engineer of zonal railway, with no further delegation.”
- (3) For items,-
 - (a) introduction of Double Distant Signalling alongwith corresponding changes at adjacent stations without yard remodelling;
 - (b) introduction of new Intermediate Block Signaling, except in section with Slip Siding and Catch Siding, alongwith corresponding changes at adjacent stations without yard remodelling; and
 - (c) introduction of new Automatic Block Signaling, except in section with Slip Siding and Catch Siding, alongwith corresponding changes at adjacent stations without yard remodeling,

the Competent Authority to grant sanction to open works shall be the General Manager of Zonal Railway, with no further delegation.

Note-The General Manager or Principal Chief Signal and Telecommunication Engineer of the Zonal Railway, as the case may be, may sanction the opening of works for passenger traffic under sub-rules (2) and (3) of rule 25A, if he is satisfied, either with or without inspection and works so opened without inspection, should ordinarily be inspected at the earliest possible date, but in case of works of a minor types, the General Manager or Principal Chief Signal and Telecommunication Engineer of Zonal Railway, as the case may be, shall exercise his discretion as to the necessity of carrying out a subsequent inspection.

26. **Infringements of Maximum and Minimum Dimensions** - No infringement of the Maximum and Minimum Dimensions shall be permitted without the prior sanction of the Commissioner or of the Central Government.
27. **Opening of new or strengthened bridges** – (1) No railway important or major bridge shall be erected or opened to traffic, without the sanction of the Commissioner even though it is able to carry the loads without exceeding the stresses prescribed in the relevant Codes of Practice or in the absence of any such reference, the design criteria approved by the Central Government.”;
- (2) No load shall be imposed on any railway important or major bridge which would cause in any member thereof stresses greater than those specified in sub-rule (1), without the sanction of the Commissioner.
- (3) Closure of an existing important or major bridge shall require the sanction of the Commissioner.
- (4) No Railway minor bridge shall be erected or opened to traffic and no railway bridge (important or major and minor) shall be reopened to traffic, after regirdering and strengthening, without the sanction of the Principal Chief Engineer of Zonal Railway even though it is able to carry the loads without exceeding the stresses prescribed in the relevant Codes of Practice or in the absence of any such reference, the design criteria approved by the Central Government.
- (5) No load shall be imposed on any railway bridge defined in sub-rule (4) which would cause in any member thereof stresses greater than those specified in sub-rule (4), without the sanction of the Principal Chief Engineer of Zonal Railway.
- (6) Closure of an existing minor bridge shall require the sanction of the Principal Chief Engineer of Zonal Railway.”

28. **Introduction of New types of locomotives or rolling stock:-**

- (1) The Research, Design and Standards Organisation shall apply, for introduction of new types of locomotives or rolling stock different from those already running on any section or division of railway administrations for use by any railway administration, to the Central Government through the Commissioner.

Explanation: For the purposes of this sub-rule, any increase in sanctioned maximum speed of existing locomotives or rolling stock beyond the maximum speed sanctioned by Railway Board for similar type stock already running in the same category (Locomotives or Trainset including Electric Multiple Unit, Mainline Electric Multiple Unit or Coaches or Wagons or Track Machine or Cranes or Over Head Equipments Inspection Cars or any other category), shall be treated as introduction of new types of locomotives or rolling stock.”

- (2) The application under sub-rule (1) shall be accompanied by—
- (a) such diagrams as may be necessary to give full particulars of the axle loads, wheel spacing, length over buffers and other principal dimensions of the locomotive or rolling stock for which sanction is required;
- (b) provisional speed certificate or final speed certificate, as the case may be, issued by the Research, Design and Standards Organisation; and

- (c) the maximum number of motive power units or the maximum number of diesel or electric multiple units proposed to be coupled together for multiple operation shall be specifically mentioned.
- (3) The application shall be scrutinised by the Commissioner and his recommendations thereon shall be submitted to the Central Government for its orders.
- (4) No new type of locomotive or rolling stock which would cause stresses exceeding those specified in the IRS Bridge Rules, 1964, or the Standard Codes of Practice, or in the absence of any such reference, the design criteria approved by the Central Government for existing structures or excessive stresses in track shall be inducted until the sanction of the Central Government has been received through the Commissioner for doing so.
- (5) The Commissioner may, for permitting new designs of locomotives or rolling stock, require oscillation trials to be conducted and call for the records for his scrutiny.
- (6) A locomotive or rolling stock shall be considered new, if it is different from those already running on any section or division of railway administration:

Explanation: A locomotive or rolling stock having larger principal dimensions (>5%) or more infringements or higher maximum design axle load (>2%) or higher maximum design track loading density (>2%) or different basic bogie design or new design of braking system other than currently in use over Indian Railways or different kind of operation or different system of operation and control over the rolling stock or with proposed maximum speed more than the maximum speed of those similar type stocks already running in the same category (Locomotives or Trainset including Electric Multiple Unit, Mainline Electric Multiple Unit or Coaches or Wagons or Track Machine or Cranes or Over Head Equipments Inspection Cars or any other category), shall be regarded as new rolling stock. Any other rolling stock shall be termed as “Derived” stock.

- (6A) Sanction for introduction of a locomotive or rolling stock which is not considered new and termed as ‘Derived’, as per the criteria mentioned in sub-rule (6) of rule 28, shall be accorded by Director General, Research, Design and Standards Organisation and while issuing sanction for such ‘Derived’ locomotive or rolling stock, inclusion of conditions issued by Central Government in sanction letter of similar type, in same category, of locomotive or rolling stock, shall be duly considered. Head of concerned design directorate of Research, Design and Standards Organisation shall apply, for introduction of ‘Derived’ locomotives or rolling stock for use by any railway administration, to Director General, Research, Design and Standards Organisation and the application shall be accompanied by-
 - (a) such diagrams as may be necessary to give full particulars of the axle loads, wheel spacing, length over buffers and other principal dimensions of the locomotive or rolling stock for which sanction is required;
 - (b) provisional speed certificate or final speed certificate, as the case may be, issued by the Research, Design and Standards Organisation;
 - (c) the oscillation trial reports and records

- (d) the maximum number of motive power units or the maximum number of diesel or electric multiple units proposed to be coupled together for multiple operation shall be specifically mentioned.”
- (7) In case of any difference of opinion in the Research, Design and Standards Organisation, whether or not any change or modification is to be regarded as a new rolling stock, the Research, Design and Standards Organisation shall, through the Commissioner, refer the matter to the Central Government for final decision thereon.

28A. Use of new types of locomotives or rolling stock by railway administration-

- (1) The General Manager of a Government railway may sanction the use of any locomotive or rolling stock already introduced by the Central Government or Director General, Research, Design and Standards Organisation under the provisions of rule 28, on any section or division of railway under his control.

Provided that the railway administration other than the Government railway shall require the approval of the Central Government through the Commissioner for use of any locomotive or rolling stock already introduced on Government railway by the Central Government/DG RDSO under the provisions of rule 28, on any section of railway under its control.

- (2) The proposal for sanction of the General Manager of a Government railway under sub-rule (1) shall be accompanied by-
 - (i) such diagrams as may be necessary to give full particulars of the axle loads, wheel spacing, length over buffers and other principal dimensions of the rolling stock for which sanction is required;
 - (ii) the provisional speed certificate or final speed certificate, as the case may be, issued by the Research, Design and Standards Organization;
 - (iii) the sanction of the Central Government or Director General, Research, Design and Standards Organisation for introduction of the locomotives or rolling stock;
 - (iv) the calculations and stress sheets showing-
 - (a) the conclusions arrived at;
 - (b) the external forces on which the stress calculations are based;
 - (c) the stresses which will be produced in the various bridges over which the proposed locomotive or rolling stock will run; and
 - (d) the effects which the said locomotive or rolling stock will have on various structures or tracks as compared with those caused by locomotive or rolling stock already in use, or allowed by the existing Government orders:

Provided that the calculations and stress sheets under this clause must show as to what allowance has been made for any secondary or deformation stresses in addition to the primary stresses caused by external forces and what relief of stress, if any, has been included;

- (v) the cost of modification to signalling and telecommunication installations necessitated by the use, if any, of chopper or thyristor control systems;
- (vi) an approximate estimate of the cost of such improvements in existing structures or track as the use of the proposed locomotive or rolling stock is likely to render necessary on the concerned railway, whether immediately or in the near future; and
- (vii) a certificate signed by the Chief Engineer, the Chief Mechanical Engineer and the Chief Electrical Engineer (for electric stock) of the concerned railway in the following Performa, namely:—

CERTIFICATE

Certified that it is safe to run -----(particulars of locomotive or rolling stock proposed to run) not exceeding -----units (in the case of locomotive) coupled together on the section ----- (station) to ----- (station) from -----(km) to -----(km) of the ----- Railway at a maximum speed of -----(km/h) against a maximum speed of -----(km/h) certified by Research, Design and Standards Organization, subject to the following speed restrictions and conditions:—

(a) Speed restrictions: —

<i>Sl. No.</i>	<i>From km to km</i>	<i>Nature of speed restriction</i>	<i>Brief Reason for restriction</i>

(b) Special Conditions—

1

2

3

4

To be signed by—

1. The Chief Mechanical Engineer.....

2. The Chief Engineer.....

3. The Chief Electrical Engineer.....

*4. The Chief Signalling and
Telecommunications Engineer.....*

5. The Chief Operating Manager.....

Note 1.— The Chief Operating Manager and the Chief Signalling and Telecommunications Engineer should be associated when the increase in the speed of a locomotive or rolling stock is contemplated over the maximum sanctioned speed for a specific category of train (passenger or goods) over a particular section of the railway.

Note 2.— Over the railways where both the shop maintenance and open line maintenance of electric locos and electrical multiple unit rolling stock are under the control of the electrical department only, the Chief Electrical Engineer, otherwise the Chief Mechanical Engineer shall also sign.

Note 3.— When Motive power with chopper control is to be used, the Chief Electrical Engineer and the Chief Signalling and Telecommunication Engineer shall sign this certificate.

- (3) The Certificate referred to in clause (vii) of sub-rule (2) shall indicate — (a) clearly that the speed certified does not exceed the limits laid down by the Research, Designs and Standards Organisation; and (b) Specifically the maximum number of motive power units proposed to be coupled together for multiple operation.
- (4) The General Manager of the Government railway shall communicate the sanction to the Commissioner for his information ten days in advance of the actual use of locomotive or rolling stock over the railway.
- (4A) If infrastructure and operating conditions, for a new or derived locomotive or rolling stock, as specified in the Provisional or Final Speed Certificate issued by Research, Designs and Standards Organisation, are same as that for any other locomotive or rolling stock already running on the Railway, process mentioned in sub-rule (2) for sanction of General Manager shall not require to be followed:
Provided that instead, in such cases, only a notification (which will be considered at par with the sanction) shall be issued by the General Manager that permission is given for use of this locomotive or rolling stock on the Railway on the same infrastructure and operating conditions as already notified for such locomotive or rolling stock and this notification shall be sent to the Commissioner for his information ten days in advance of the actual use of locomotive or rolling stock over the railway.
- (5) The provisions of this rule shall, mutatis mutandis, apply to every proposal of a railway administration other than Government railway for seeking approval of the Central Government through the Commissioner, for the use of any locomotive or rolling stock already introduced on Indian railway by the Central Government or Director General, Research, Design and Standards Organisation under the provisions of rule 28, on any section of railway under its control.

28B. Introduction of new passenger carrying trains or change in speed of existing passenger carrying trains.—A railway administration may introduce a new passenger carrying train or allow any change in speed of existing passenger carrying train in accordance with the instructions issued by the Central Government in this regard, from time to time:

Provided that a railway administration shall require the approval of the Central Government through the Commissioner, at the first introduction of a new passenger carrying train above 130 kilometer per hour or first increase in speed of existing passenger carrying train above 130 kilometer per hour in a section of such railway.

29. Testing of bridges - Before sanctioning the open of new important or major bridges or the running of heavier loads over existing bridges, the Commissioner may require load deflection or stress recorder test to be carried out as specified in Chapter IV and tests on pre stress concrete girder or composite girder bridge may also be carried out and the Principal Chief Engineer of Zonal Railway may also follow the above practice for sanction to execute and open bridges as defined in rule 25A.”

30. **Use of new types of Block Instruments** – (1) A railway administration, which desires to use a new type of block instrument, or main Signaling instrument, which is not an approved type, shall apply for sanction to the Commissioner.
- (2) The application under sub-rule (1) must be accompanied by –
- (i) a list of the requirements which the instrument fulfils, together with the results of the field trial conducted by the railway concerned;
 - (ii) a certificate from the Chief Signaling and Telecommunications Engineer in the form given below:

CERTIFICATE

Certified that it is safe to use (particulars of the equipment) at the station/ on the section of the railway, with the following precautions:

- 1.
- 2.
- 3.
- 4. Etc.

(Sd/----

The Chief Signaling and Telecommunications Engineer.

Note- The application should be scrutinized by the Commissioner, who if satisfied, will communicate his sanction to the concerned railway. In case he is not fully satisfied, he will give his comments and recommendations for suitable further action.

- (iii) A statement whether the equipment complies with the specifications approved by the Central Government.
- (iv) A statement giving comments on the performance of the equipment as a result of bench trials conducted by Research, Designs and Standards Organization.
- (v) The circuit diagrams and other relevant diagrams and explanations, as may be necessary, to give full particulars of the principles of operation and safety features incorporated.
- (vi) A copy of the instructions approved by the Chief Operating Manager, to be issued for the operation of the equipment by the operating staff, including those instructions for working under abnormal or failure conditions;

CHAPTER VIII

REQUIREMENTS AND RECOMMENDATIONS FOR SIGNALING AND INTERLOCKING INSTALLATIONS

31. **Signals** – (1) The number of signals provided and the height of such signals shall be limited to the extent to the actual necessity for safety and traffic purposes.
- (2) The distance between the Distant/Warner and the first stop signal ahead shall be such that a train approaching the former at the highest authorized speed with due allowance for weight, braking power, gradient and sighting distance can be stopped before passing the latter.
- (3) The subsidiary signals shall be readily distinguishable from the running signals.
- (4) Where a signal or its back light is not visible to the railway servant operating the signals, the aspect of the signal and the condition of the light shall be repeated at the place of operation.
- (5) It is desirable that the signaling at all block stations and interlocked level crossings in the same section shall conform to the same standard and type.
- (6) Signals shall be so designed as to give the most restrictive aspect in the event of failure of any part of the mechanism, which operates them.
- (7) The location and type of signals shall be in accordance with the provisions contained in Chapter 7 of the Signal Engineering Manual, ~~Part I~~ and Chapter III of the Indian Railways Open Lines) General Rules, 1976.
32. **Points** – (1) The points shall be so located that movements over them shall be within the view of the cabin or the location from which they are worked unless and approved alternative arrangement for proving clearance of point zone is provided.
- (2) The points, locks and bars shall not be worked by wire but by rodding or by power operation.
- (3) Spring points shall not be used.
- (4) Movable crossings and movable diamond crossings on passenger lines shall be provided with complete facing point equipment of approved type.
- (5) The requirements of points as stipulated in Chapter 7 of the Signal Engineering Manual, shall be followed.
33. **Interlocking** - (1) Signal and interlocking apparatus and installations shall be in accordance with Chapter VII of the Signal Engineering Manual.
- (2) Apparatus provided for operation and control of signals, points, etc., shall be interlocked and arranged to comply with the essentials of interlocking and other requirements as laid down in Chapter VII of the Signal Engineering Manual.
- (3) The operation of the signaling gears may be from the lever frame or a panel with individual operation of points, signals and other functions or a panel providing operation of route setting type or any other approved means in accordance with the provisions of Chapter 7 and Chapter 12 of the Signal Engineering Manual.
- (4) When a signal is controlled by more than one agency, it shall be possible for every such controlling agency to replace the signal to “ON” position.

- (5) The Station Master shall be provided with interlocked mechanical or electrical control of the Home and Last Stop Signals except where the conditions stipulated in the Signal Engineering Manual, are fulfilled.
- (6) Standards of signaling and interlocking shall be arranged complying with the requirements of the Signal Engineering Manual.
- 34. Siding and trap points** – (1) Sidings shall be arranged in such a manner that shunting operations upon them shall involve the least possible use of, or obstruction, to running lines.
- (2) Trap points shall be provided upon goods lines and sidings at their junctions with passenger lines, with the points normally set against the passenger lines and interlocked with the signals.
- (3) Bay and loop platforms line and refuge loops shall be isolated from main through lines.
- 35. Junctions** – Bars or other approved devices shall be provided in order to define the fouling points of junctions, loops, siding connections, crossings and the like.
- 36. Provision for isolation at stations** – (1) The speed of trains running through stations shall be governed by the General Rules for all open lines administered by the railway administrations, both Government and the non-Government railways and shall be subject also to the restrictions relating to standards of interlocking prescribed in the Signal Engineering Manual.
- (2) At no station at which isolation has not been provided through running trains shall be permitted unless the conditions laid down in the second paragraph of rule 4.11 of the General Rules are complied with.
- (3) At any station where there is a speed restriction for through running trains different from neighbouring stations, a speed restriction board should be erected at the first approach signal or where no signals are provided, at full braking distance outside the first facing point.
- (4) In order to maintain safety for through running, points for trap sidings must not be inserted in the main line, except under approved special instructions in accordance with the Indian Railways Signal Engineering Manual.
- (5) All passenger running lines shall be isolated from all goods lines or siding connected thereto.
- (6) All goods running lines may be isolated from all sidings connected thereto.
- (7) It is not necessary to isolate one goods receiving line from another
- (8) Isolation may be accomplished by –
- (a) Connection to another line or ling siding;
 - (b) The provision of short dead endsiding; or
 - (c) the provision of trap.

Note-

- (i) Whichever may be the method for isolation, a starter signal shall be provided, except when omitted under approved special instructions.
- (ii) When a trap is provided, the trap switch should be located with the heel of the switch in rear of the fouling mark and preferably on the straight. The switch should be in the rail away from the line to be protected.

(9) The various methods of isolation are illustrated in the diagrams given in Appendix A attached to these rules and the following instructions shall apply to their use in the case of running lines, namely :- **Method A:** This method shall apply to cases in which the line on which the train will run when the points are set for isolation of the through line, is kept clear for the adequate distance prescribed in Rule 3.40 of the Indian Railways (Open Lines) General Rules, 1976. **Method B:** When a short dead end siding is provided, it shall not ordinarily be long enough to permit of vehicles being stabled thereon. To obtain the adequate distance prescribed under rule 3.40 of the General Rules the points of the dead end siding shall be set for the across over and against the siding, before a train is admitted on a line trapped by this method. Where it is necessary for the short dead end siding to be extended for the purpose of stabling vehicles, the above rule shall apply, unless a trap is provided on the dead end siding at a distance of not less than 180 meters (120 meters in case of stations provided with multi aspect signaling) from the starter signal where provided or from points leading to the main or through line. No train shall be admitted on the running line unless the trap is set and locked against vehicles occupying the further part of the dead end siding.

Method C: When a trap is used, a train must not be admitted on to the trapped line unless the trap has been closed, so that the train will not be derailed if the driver over shoots the trap.

(10) When Method A cannot be used, and for any reason it is not convenient to use Method B or Method C and to provide adequate distance by setting the points of the short dead end siding or trap for the cross over and against the siding or trap, a sand hump of approved design should be used as a substitute for adequate distance as provided in rule 3.40(4) of the Indian Railways (Open Lines) General Rules, 1976. In that case the length of the siding should be at least one rail length and formation should be made up for a short distance beyond the hump.

37. **General-** (1) The requirements and regulation of Block Instruments shall be in accordance with section of Chapter 18 of the Indian Railways Signal Engineering Manual.

(2) The requirements of Centralised Traffic Control (CTC) or Traffic management system shall be in accordance with section 4 of Chapter 13 of the Indian Railways Signal Engineering Manual."

CHAPTER IX

RULES FOR THE DESIGN AND INSPECTION OF EQUIPMENT FOR ELECTRIC TRACTION

- 38. Designs of electric installations** – (1) The design of all electrical installations, namely, transmission and distribution lines, substation, switching stations, Over Head Equipment, etc. shall be according to approved standards laid down by the Central Government and the Central Electrical Authority Regulation 2010 or any other relevant statutory rules for the time being in force. Wherever, any departure from accepted norms becomes necessary, approval of the Central Government shall be obtained.
- (2) (a) Adequate protective arrangements shall be made to ensure that the public cannot come in contact with the electric equipment on line within the railway premises.
- (b) Suitable protective screens shall be provided where live conductors pass under or over bridges.
- (3) The structures supporting overhead equipment shall be designed in accordance with the relevant Indian Standards. The wind pressure to be adopted in such cases shall be generally in accordance with Indian Standard 875 (part-3)-2015 Wind Loads on Buildings and Structures-2015 except when a higher value is prescribed by the State Government, which should be ascertained by a reference to the State Government, unless a notification on the subject in connection with the electric installation other than the electric traction on railways is already issued by the State Government.
- (4) When the distribution system involves overhead wires carried on steel structures including bridges and roofs and a return circuit via running rails or earth, all such structures, masts and associated tracks shall be effectively earthed and bonded or other precautions taken to ensure that contact with the steel work of the structure will not be dangerous to the public and the railway staff. In AC traction earthing and bonding shall be as per the approved Code for Bonding and Earthing.
- (5) Earthing arrangements at power supply installations shall strictly conform to the Indian Electricity Rules, 1956 and accepted Codes of Practice for Bonding and Earthing for AC traction.
- (6) No earth wire shall cross any track. Where structures to be connected to an earthwire are located on opposite sides of a track, separate wire runs shall be used for connecting the structures. In complicated areas, structures may be connected to individual earthing stations.
- (7) When over head lines transmitting electric power (other than lines forming part of the railway traction equipment) have to be carried across railway track, the details of the equipment provided in connection with such lines must be designed with the object of minimizing danger in the event of breakage and in accordance with the regulations for the Electrical Crossing, 1987. These details must be approved of the Electrical Inspector to the Government of India (EIG).
- Note-The Principal Chief Electrical Engineer of a Zonal Railway functions as the Electrical Inspector to the Government of India.
- (8) Lighting arresters of standard or approved types shall be provided wherever they are necessary.

(9) All component parts of the equipment which carry live conductors shall be provided with devices approved by the Electrical Inspector to the Government of India to prevent unauthorized persons climbing them. Anti-climbing device shall also be provided, wherever necessary, on structures carrying high-tension equipment within railway premises.

(10) On both sides of roads at level crossings, height gauges of suitable design shall be provided to ensure that no part of any road vehicle or its load shall come in contact with overhead equipment.

(11) Warning notices shall be erected in conspicuous positions at level crossings and the like indicating to the existence of live electrical equipment.

39. Display of caution boards and notices – The following caution board and notices written in English, Hindi and the regional language shall be displayed at the various locations indicated below :-

- (a) “Treatment for electric shock” boards, giving instructions for treatment of electric shock at all railway stations signaling cabins, Offices of the Station Manager, the Assistant Station Managers, Senior Sectional Engineers (Permanent Way), the Senior Sectional Engineer (Works, The Senior Sectional Engineer (Signal), Over Head Equipment Maintenance depots, Over Head Equipment Inspection Car Sheds, substations, switching station cubicles, loco sheds and the like.
- (b) General ‘Caution notices’ regarding danger of high voltage traction wires for public at various entrances to railway stations and for staff at prominent places at each station, particularly on stanchions or pillars supporting platform roof.
- (c) “25KV cautions Boards” shall be affixed on to the screen erected on foot over and road over bridges.
- (d) “Danger” boards on level crossing height gauges.
- (e) “Engine stop” boards, at termination of Over Head Equipment in the sections to be energized.
- (f) “Caution-Unwired turn out” boards ahead of all unwired turn outs or crossovers taking off from wired tracks.
- (g) “Warning” boards for neutral sections.
- (h) Boards for “Switching on” and “Switching off” of power at neutral sections.
- (i) “Danger boards to be installed on Over Head Equipment near watering stations, if any.
- (j) “25kV or 2x25kV caution” boards at substations and switching stations.
- (k) “Caution” notices on all diesel, Electric and steam locos, which work on the energized section, including those owned by private parties.
- (l) “Caution” boards at such signal posts where protective screening cannot be provided for signal and telecommunication staff.

40. Protection of private property against inductive effects of AC traction- Under 25kV or 2x25kV traction, there is a heavy induction on all metallic structures and conductors in the vicinity of track. Inductive effects show themselves on any overhead conductor, such as metallic clothes lines, power lines, and the like belonging to private parties running parallel and close to the electrified tracks. Wide publicity shall be given to the effects of the induction, so that special precautions may be taken by private parties concerned against the possibility of electric shocks from conductors running in their premises.

41. Approval of energization of High Tension installations-

- (1) Application shall be submitted at least a fortnight before energization to the Chief Electrical Engineer and the Electrical Inspector of the concerned railways for the following :-
 - (a) Formal approval, if not already received to the design and layout of all high voltage equipment including traction sub-stations, transmission lines, 25kV or 2x25kV feeders, switching stations, etc;
 - (b) Approval for energization of High Tension installations mentioned above including Over Head Equipment ;
 - (c) The application should be accompanied by documents as prescribed in Volume II(Part-I) of the Manual of AC Traction Maintenance and Operation, 1994 (sub-paragraph 2 of paragraph 21007)
- (2) On receipt of an application under sub-rule(1), the Electrical Inspector shall scrutinize and inspect the design and installations in respect of the following, namely :-
 - (a) The layout and design for substations, Over Head Equipment and other installations for compliance with The Electricity Act 2003 and the rules made thereunder;
 - (b) Inspection of the completed installations, either personally or by deputizing his officers for compliance with the safety requirements.
- (3) After conducting the inspection under sub-rule (2), the Inspector shall convey his approval for the energization of 25kV or 2x25kV feeder lines from traction sub-station to feeding posts, switching stations, and Auxiliary transformer stations, subject to such directions as he may consider necessary.

42. Submission of application to Principal Chief Electrical Engineer- An application shall be submitted to the Principal Chief Electrical Engineer of Zonal Railway with all relevant documents and certificates and notifications mentioned in paragraph 21008 and sub-paragraph 2 of paragraph 21009 of the Manual of AC Traction Maintenance and Operation, 1994, Volume II (Part I) alongwith the approval of the Electrical Inspector to the Government of India for energization.

43. Procedure for a energization of traction installations – (1)(i) After obtaining the sanction of the Electrical Inspector to the Government of India for energization under rule 41, the sub-station should be commissioned sufficiently in advance of the energization of Over Head Equipment.

- (ii) Before energization of the sub-station, full communication facilities should be available and power supply authorities should be ready to give power supply.
- (iii) On the appointed day necessary clearance certificate should be obtained from the Senior Divisional Electrical Engineer (Construction) and others who had been hitherto working in the sub-station premises to the effect that their staff had been withdrawn and the substation could be energized.
- (iv) After final measuring of the whole installation and check on the satisfactory operation of all equipments including protective relays, the traction sub stations and other installation may be energized.

(2) In addition to giving wide publicity through newspapers and other media, the Station Master shall –

- (i) Warn all passengers about the danger of 25kV or 2x25kV over Head Equipment and not allow them to ride on tops of coaches;
 - (ii) Advise all diesel and steam engine drivers not to climb on engines when they are under the Over Head Equipment;
 - (iii) Warn all members of the staff engaged in watering not to climb on the carriages without power being made off and obtaining order of the concerned controlling authority.
- (3) Energization of Over Head Equipment shall be progressively undertaken starting with 25/2x25KV feeders from the sub-stations to the feeding posts, bus bars of the feeding posts followed by one sub sector after another.
- (4) Before running electric rolling stock on the newly electrified section a confirmatory field test for the proper operation of the protective relays shall be conducted.
- (5)(i) The inspection of the entire section shall be carried out by means of an Over Head Equipment Inspection Car or by any other suitable means by the Principal Chief Electrical Engineer of Zonal Railway.
- (ii) A responsible officer preferably the Chief Project Manager or the Chief Electrical Engineer (Construction) and Senior Administrative Grade officer of Electrical Department should accompany the Principal Chief Electrical Engineer of Zonal Railway throughout the inspection.
- (iii) The engineers who had been in charge of the section during construction, concerned Divisional Officers should also be present.
- (iv) During inspection particular attention shall be paid to the safety and operational aspects of the train movements and to see that staff are in possession of statutory rule books, instructions books, registers, forms etc. and the Transportation, Electrical, Permanent Way and Signaling and Telecommunications staff are fully acquainted with the duties to be carried out after A.C traction is introduced.
- (6) Subject to the inspection being satisfactory an “all concerned message” may be issued by the Principal Chief Electrical Engineer of Zonal Railway communicating his sanction for the introduction of commercial services under electric traction.
- (7) The signaling and telecommunication requirements in 25 KV 50 Hz AC electrified sections shall be in accordance with the provisions of Chapter 22 of Indian Railways Engineering Manual and Telecommunication Manual for 25 KV 50 Hz AC Traction.

Note- A Catechism dealing with the requirements of signaling and Telecommunication installations for 25 KV 50 Hz AC electrified sections are enlisted as Appendices B and C to these rules.

SCHEDULE

(See rule 5(2))

Paragraphs 443 to 451 of the Indian Railways Code for the Engineering Department as modified time to time

443. Plans, Sections and Design for Works – A set of plans and sections for a project should consist of:-

- (i) General Map of the country traversed by the project scale about 25 km to 1 cm
- (ii) Index Map, scale about 2.5 km to 1 cm.
- (iii) Index Plan and Sections.
- (iv) Detailed Plans and Sections.
- (v) Plans and Cross Section.
- (vi) Plans of Station Yards.
- (vii) Detailed Drawings of Structures.
- (viii) Plans of Junction Arrangements.

444. As exceptions to this rule, Index Plans and Sections and plans of stations may be longer than 1200 mm if necessary, to enable all the information to be shown on one sheet. In such cases, however, the width of 840 mm should still be kept to, and the length in excess which however should not exceed 1020 mm should be folded so as not to project beyond the edges of the other sheet.

A Catalogue of maps published by the Survey of India is obtainable from the Director, Map Publication Survey of India, Hathibarkala Estate, Post Box No.28, Dehradun-248000.

2. The latest information on availability of maps and aerial photographs of the region would be available from the concerned Regional Director of Survey of India.

445. Throughout each set of plans and sections the kilometerage should be reckoned from the same fixed point. This fixed point should, if practicable, be at that end which is in the direction of the nearest set port with which the line is in through communication by rail, and should be clearly defined on the Index Plan and section and on at least the first and last sheets of the Detailed Plans and section. If the line takes off from an existing railway station the zero point should be fixed at the centre of the existing station yard, and when it ends at an existing station the end of the survey should be taken as the centre of that station. Each sheet should be plotted in the direction of the through kilometerage so that the kilometerage may be read from left to right.

FORM I

[See rule 5(1) (a)]
CURVE ABSTRACT

SECTION: LAKSHMIKANT PUR-KULPI STATION

GUAGE:1.676 m

LENGTH: 9.19 km

Degree of curvature and radius	Number of each	Length in kilometer of primary curve
1	2	3
1. 4.00 Degree (Radius 437.5M)	1	0.49KM
2. 3.00 Degree (Radius 583.33M)	3	1.13KM
3. 2.00 Degree (Radius 875M)	2	1.30KM
Total	6	2.92KM

Ratio of Curved Length to Total Length of line 31.97%

FORM II**[See rule 5(1) (a)]
GRADIENT ABSTRACT**

SECTION: LAKSHMIKANT PUR-KULPI STATION

GUAGE:1.676 m

LENGTH: 9.19 km

Gradient(compensated) and radius	Number of each	Length in km	Percentage to total length of line
1	2	3	4
1 in 100 or I percent	-	-	-
1 in 101 to 1 in 150	-	-	-
1 in 151 to 1 in 200	-	-	-
1 in 201 to 1 in 300	1	0.51	5.55%
1 in 301 to 1 in 400	2	.64	6.96%
1 in 401 to 1 in 500	2	1.00	10.88%
1 in 501 to 1 in 1000	1	1.10	11.97%
1 in 1001 to Level	9	5.94	64.64%
TOTAL	15	9.19 km	

Steepest Compensated Grade 1 in 3000(FALL)

Longest Continuous length of steepest Grade 5.51km

Followed by: LEVEL for 0.10 km

FORM III
[See rule 5(1) (c)]
GRADIENT ABSTRACT

SECTION: LAKSHMIKANT PUR-KULPI STATION
LENGTH: 9.19 km

GUAGE:1.676 m

Class of Bridge	Clear span in metre	Total Number of Spans	Water Way in lineal metre	Loading standard for which designed	Reference to type plan in case of Girder Bridges
1	2	3	4	5	6
1. Steel Girder (Riveted)	-	-	-	-	-
2. Steel Girder Welded	30.50	2	61.00	M.B.G. Loading	Drawing No. B.A-1123 to B.A-1124
3. P.S.C Girder	-	-	-	-	-
4. Composite Girder	-	-	-	-	-
5. RC/PSC/SLAB/BOX	-	-	-	-	-
(I) R.C.C Slab	5.00	1	6.00	- M.B.G.Loading	-
(II) R.C.C Slab	3.05	2	6.10	-do-	
(III) R.C.C Slab	2.00	9	16.00	-do-	
(IV) R.C.C Slab	1.83	2	6.66	-do-	
(V) R.C.C Box	3.05	2	6.10	-do-	
(VI) R.C.C Box	2.90	3	8.70	-do-	
6. Arches	-	-	-	-	
(Major Bridges)		2	61.00		
(Minor Bridges)		19	47.56		
Total		21	108.56		

Waterway per km : Major Bridge : 5.64m
: Major Bridge : 5.17 m
: Total : 11.18 m

Note: 1. "Major Bridges are those having a total water way of 18 lineal metres or upwards or having a clear opening of 12 lineal metres or upwards in anyone span.
2.The particulars furnished above are only for illustration

FORM II
[See rule 5(1) (d)]
IMPORTANT BRIDGES
Bridges having a total waterway of 300 linear
metres or 1000 sq. metres or upward

SECTION:
LENGTH: kms

GAUGE: 1.676 m

Name of River	Kilometrage	Drainage area Sq. km.	Rise of ordinary flood above low water Number of each Metre	Stop of bed per Km. Metre	Mean velocity in flood per second Metre	Sectional area in flood Sq. Metre.	Discharge per Second Cub Metre	Span		Height of underside of girder		Average depth of foundations below Low water level
								Metre	No .	Above low water Metre	Above flood level Metre	
1	2	3	4	5	6	7	8	9	10	11	12	13

FORM V
[See rule 5 (1) (e)]
BALLAST AND PERMANENT WAY:

Section.....

RAILWAY.....

Length: 8.78 km

GAUGE 1.676 m

1. The permanent way consists of 52 kg/90UT new rails of 'Indigenous Make' 13 M long (partly on single rail and partly on 3-Rail Welded Panels) laid on concrete sleepers with the density of M+7 (1540 sleepers per km) and 50 mm stone ballast with minimum cushion of 250 mm under the sleepers.
2. All the turnouts to be negotiated by passenger trains are of 1 in 12 (curved switch) elsewhere 1 in 8.5. Certified that Tested and approved P. Way materials have been used in this section.

Note: A brief description to be given of the rails, fastenings, sleepers and ballast provided. Details of dimensions of the rails, fishplates etc. should not be given in the case of the standard section. It should be stated whether any of the material is second hand and if so, its approximate age should be given.

In case of new rails and fish plates manufactured in India, the name of the producer should be given. If they are imported, the name of the country of origin should be indicated.

A certificate should also be submitted by the Chief Engineer/Engineer-in-Chief that the materials are of tested and approved quality and comply with the accepted specification.

FORM VI**[See rule 5(1) (f)]
STATION AND STATION SITES**

SECTION: LAKSHMIKANT PUR-KULPI

RAILWAY

LENGTH:9.19 km

GUAGE: 1.676 m

Name of Station	Class E=Engine Changing X=Crossing F=Flag	Kilometerages from fixed point*	Distance Apart			Clear length of Crossing loop	Remarks
			sites	Crossing	Engine changing		
1	2	3	4	5	6	7	8
LAKSHMIKANTPUR	X	61.48 km (fromSealdah)	5.35km			686.00M & 700.00M	
UDAYRAMPUR	Halt	66.83 (fromSealdah)	3.54km				
KULPI	Halt	70.67 (fromSealdah)					

*Note:- These should ordinarily agree with the kilometerage figured on kilometer posts and telegraph posts.

FORM VII

[See rule 5(1) (g)] STATION ACCOMODATION

SECTION: LAKSHMIKANT PUR-KULPI

RAILWAY

LENGTH:9.19 km

GUAGE: 1.676 m

Name of stations	Station Building				Goods Shed	Passenger Platforms		Goods Platfor m Length	Water Supply for Passengers
	Station Offices	Waitin g Room	Waiting Hall (2 nd Cl.)	Toilet s		Length	Height above Rail		
	Sq.m	Sq.m	Sq.m	Nos	Sq.m	m	m	m	
LAKSHMIKANT PUR	50.00	-	50.00	-	65	(P1)237.74 m (P2)274.40 m	H.L.(Com mon) H.L.(Com mon)	Nil	Hand Tube well on both the Platforms 300/200 mm diaDeepTubewell with 50,000 Gallons Capacity O.H Tank
UDAYRAMPUR	9.30	-	9.30	-	-	213.36 m	-do-	Nil	One tubewell with hand Pump at Station
KULPI	26.10	-	29.67	-	-	275.00 m	-do-	Nil	One Hand Tubewell on Platform

NOTE: (1) In case existing accommodation is to be utilized, indicate so by(a)

(2) The particulars shown above are illustrative.

FORM VIII**[See rule 5(1)(h)]
STATION MACHINERY**

SECTION: LAKSHMIKANT PUR-KULPI

RAILWAY

LENGTH:9.19 km

GUAGE: 1.676 m

Names of Station	Inter-locked	Interlocking Non-interlocked	SIGNALS						Type of Block working in use	Weigh Bridge No. & Capacity
			Isolated	Warners/ Distant	Outers	Home	Starters	Advance Starter		
1	2	3	4	5	6	7	8	9	10	11
LAKSHMIKANTPUR	Yes	-	-	Yes	-	Yes	Yes	Yes	Single line Block Instrument	Nil
UDAYRAMPUR	No	Yes	-	-					Halt	Nil
KULPI	No	Yes	-	-					One Train only Working System	Nil

NOTE: The particulars furnished in this form are illustrative.

FORM IX
[See rule 5(1)(i)]
LEVEL CROSSING ABSTRACT

SECTION:

RAILWAY

LENGTH:

GUAGE: 1.676M

No of crossing	Location Kilometres	Class as prescribed in the permanent way manual	Length of the Guard Rail	Width of the Gates at right angle to the centre line of Road	Distance of Gate Posts from centre line of nearest track	Wicket Gate provided or not	Length of straight portion of road outside Gates	Angle of Xing between Gates	Radius of centre line of road on approaches within (50M) of the centre lines of track	Interlocking of gates with signals or provision of telephone etc. against trains running through crossing	Gradient of Road way(a) between gates(b) outside gates	Width of metalling between gates	Distance of gate lodge from (i) centre of the nearest track (ii) edge of road metal	Whether road traffic has been warned about the proximity of level crossing	Provision of rumble strip/speed breaker
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

FORM X
[See rule 5(1)(j)]
BRIEF PARTICULARS OF TRACTION INSTALLATION

SECTION: Tundla-Delhi

NORTHERN RAILWAY

LENGTH: 292 RKM

GAUGE: 1.676 m

1. Total track kms electrified section – 650
2. Brief particulars of traction system:-

The type of Over Head Equipment installed on main line of the section is of the simple polygonal with swivelling brackets having tensions in the conductors regulated automatically. The tension in the catenary and contact wire is kept as 1000 kgf each. The contact wire has been given a presage of 103mm for a span of 72m (suitably reduced for smaller spans). On secondary lines and yards the Over Head Equipment is of fixed type and unregulated. The contact wire is grooved hard drawn copper with 107 sq. mm cross section supported by means of copper droppers from catenary which is standard (19.210mm) with 65mm cross section made up of cadmium copper having 80% conductivity. The maximum wind pressure for design of masts and foundation has been taken ----- kg/sqm. Maximum span adopted on main lines is 63m. The Over Head Equipment has been designed for a maximum speed of 160 km/h.

Note: The entry in the said space may be filled by time to time.

The power supply is taken from Uttar Pradesh State Electricity Board at a single point viz. Alight from where railways own transmission lines are run for feeding the sub-stations located at Hatras, Khurja and Sahibabad and at each of the sub-stations two power transformers 12.5 MVA, 132/25 KV are installed, one of them acting as standby. Standard arrangement of having neutral section 41m in length has been provided between two sub-stations for separation of phases. From sectioning and isolating facilities sub sectioning and paralleling stations have been provided. All the switching operation at power supply stations are remote controlled from a single remote control centre located at Tundla. The Remote Control Centre or Supervisory Control and Data Acquisition system has been provided by --- (Manufacturer) and is of ----- Type (Microprocessor or Personal Computer based). The same will be commissioned by ----- (Target Date, if not commissioned at the time of making application to Commissioner of Railway Safety)

Note: The Railway will provide suitable information as per sample.

Chief Project Manager or
(Construction)

OR Chief Electrical Engineer

Chief Electrical Engineer

Open Line Railway”

(In-charge of Project)

FORM XI
[See clause (k) of sub-rule (1) of rule 5]

POWER SUPPLY INSTALLATION ABSTRACT

SECTION:

RAILWAY:

LENGTH:KM

GAUGE: 1.676 m

Sl. No.	Type of Switching Stations	Total Nos.	Location and Nearest Railway Stations	Remarks
(1)	(2)	(3)	(4)	(5)
1	Traction substation and feeding stations	3		
2	Sectioning and paralleling stations	3		
3	Sub-sectioning and paralleling stations	14		
4	Sub-sectioning stations	Nil		
5	LT Supply transformer stations	23	(List to be attached)	

Chief Project Manager or
Engineer(Construction)

OR

Chief Electrical

Chief Electrical Engineer

Open Line Railway

(In-charge of Project)

FORM XII
[See clause (I) of sub-rule (1) of rule 5]

TRACTION MAINTENANCE DEPOT ABSTRACT

SECTION:

RAILWAY:

LENGTH:.....KM

GUAGE: 1.676 m

Sl. No.	Location	Name of the nearest Railway stations and distance therefrom	Whether with OHE maintenance car (tower wagon provided or not	Remarks
(1)	(2)	(3)	(4)	(5)
1	Km 1370/15-16	Hathras 2.0 kms towards Delhi	Yes	-
2	Km 1454/7-8	Sakur Basti 1.5 km towards Delhi	No	-

Chief Project Manager or
Engineer(Construction)

OR

Chief Electrical

Chief Electrical Engineer

Open Line Railway

(In-charge of Project)

FORM XIII
[See clause (m) of sub-rule (1) of rule 5]

RESTRICTED OVER HEAD EQUIPMENT CLEARANCES ABSTRACT

SECTION:

RAILWAY:

LENGTH: KM

GUAGE: 1.676 m

A. Overline Structures

S. No.	Location of Overline Structure	Type of Structure	Clearance from R.L. to Bottom of Structure	Height of Contact wire below the structure	Whether Catenary is anchored or Freely Running Below/Above the Structure	Minimum Static Clearance between 25 KV Live Parts & Earth	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

B. Location of OHE where specified (2.0m) working clearance are not available

S.No	Location	Type of nearest earthed part	Actual distance between live part and earth	Remarks
(1)	(2)	(3)	(4)	(5)
1	Km. 1172/3-4 Up line	OHE structure at location 1172/5-6 On line	1.85 m	

Chief Project Manager or
Engineer(Construction)

OR Chief Electrical

Chief Electrical Engineer

Open Line Railway

(In-charge of Project)

FORM XIV
[See clause (n) of sub-rule (1) of rule 5]

ELECTRICAL CROSSING OVER RAILWAY TRACKS ABSTRACT

SECTION:.....

RAILWAY:

LENGTH:....KM

GUAGE: 1.676 m

S.N o.	Locati on	Brief Tech. Particulars Including voltage	Whether with Guards OR w/o Guards	Owned by	Whether clearance as per the regulation for Electrical Crossing available	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	1321/3 -4	Three phase single circuit	w/o guards	Uttar Pradesh State Electricity Board	No	Relaxation given in terms of cl. 22 of the regulation. The height of lowest conductor from Rail level is 11.4M
2	1327/1 3/14	Double circuit three phase 11 KV inside station area	With guards	Aligarh Electric Supply	Yes	

Chief Project Manager or
Engineer(Construction)

OR

Chief Electrical

Chief Electrical Engineer
(In-charge of Project)

Open Line Railway

FORM XV
[See rule 5(1)(3)]
LIST OF QUESTIONS AND ANSWERS

SECTION

Length in km

Sl. No. (1)	Questions (2)	Answers (3)
	<u>Formation Earthwork</u>	
1	Are there any sections of the line over which special precautions to ensure safe working are necessary, owing to sharp curves or steep grades?	
2	What widths of formation have been adopted: (a) In bank, (b) In cutting (exclusive of side drains)?	
3	Have any special precautions been taken against slips in cutting and embankments?	
4	Are side drains to the formation and catch water drains above the side slopes, provided for all cuttings?	
5	Are trolley refuges necessary in any long cuttings, and if so, have they been provided at suitable intervals?	
	<u>TUNNELS</u>	
6	Are there any tunnels not fully lines?	
7	Do any portions of the sides or roof of any tunnel infringe maximum and minimum dimensions?	
8	Have adequate facilities been provided to enable workmen to escape from an approaching train without difficulty?	
9	Have the tunnels been properly ventilated?	
	<u>BRIDGES</u>	
10	Are the bridges/elevated structures designed in accordance with the provisions contained in Bridge Rules, having regard to the standards of loading which they are intended to carry? Full particulars should be appended of any case of departure from the requirements?	
11	Has due care been taken to provide sufficient waterway to guard against scour?	
12	Are free board and vertical clearance under bridge provided according to bridge sub structure code? If not, quote sanction number with date.	
13	Has due notice been taken of Railway affected works in the catchment of the waterways and all necessary safeguards provided for washaways and breaches due to breaching of tanks/bunds?	

14	Have the waterways provided been formally approved by the Local Government?	
15	Have sufficient head-way been provided for crafts plying or likely to ply, on navigable waters?	
16	Are there any bridges intended for use by the public? (a) If so, in the case of a road or pathway clear of the track, have adequate handrails or parapets been provided? (b) Or in the case of a passage common with the track, have suitable gates across the roadway, and signals for trains been provided?	
17	Are long bridges provided with adequate facilities to enable workmen to stand clear of an approaching train without difficulty?	
18	Have trolley refuges been provided if necessary?	
19	Are the wooden sleepers, adequately protected from fire?	
20	Are all girder bridges provided with guardrails< Are there any bridges where it is necessary to provide guard rails but these are not yet provided?	
21	Has information of the nature and depth of the foundation and hidden work in bridges, culverts and other structures likely to be exposed to scour, been recorded on the structures, themselves?	
22	Have surplusng arrangements been made for canals crossing track?	
23	Have completion drawings of all important bridges and other structure been prepared? Do these contain all information regarding foundations and other hidden work as actually executed< where are they recorded?	
	<u>LAND BOUNDARIES AND FENCING</u>	
24	Have the boundaries of the Railway land been properly defined by suitable marks, which can readily be found and identified?	
25	Have complete and accurate land plans been prepared and do they bear the signature of the responsible Civil and Railway Officer concerned? Where are they recorded?	
	<u>LEVEL CROSSINGS</u>	
26	Has the Local Government approved the sitting and classification of the level crossings?	
27	Have all level crossings been constructed in accordance with the Standard Specifications for level crossings (vide Chapter IX of P.Way Manual) according to the class of crossing?	

	<u>KILOMETER AND GRADIENT POSTS</u>	
28	Are proper Kilometer and gradient posts provided? (a) Are the telegraph posts numbered, and (b) can the figures be read with ease from passing trains and trolleys?	
29	From which fixed point has the Kilometerage been reckoned?	
	<u>BALLAST AND PERMANET WAY</u>	
30	Is the ballast provided of good quality and sufficient in quality for the traffic anticipated? Is there any departure from permanent way Manual?	
31	Is the permanent ways properly laid, complete with fastenings, and is it suitable for the proposed speed & loads?	
32	Are there any especially sharp curves at which checkrails are considered necessary? Have they been provided at all such curves?	
33	Are the curves laid out with transition curves at each end?	
34	Have all curves been adequately super elevated for the speeds in force? Is the super-elevation to be given to each curve indicated at site?	
	<u>STATION FACILITIES</u>	
35	Have Maximum and Minimum Dimensions in station yards been observed?	
36	Has suitable accommodation for passengers been provided at all stations?	
37	Have latrines been provided on platforms and are they properly situated, constructed and lighted?	
38	Are there proper arrangements for supplying drinking water?	
39	Is foot over bridges or sub-ways for crossing the line provided where necessary? Are any landings provided* Are the rise and tread of steps properly proportioned? *If the total height of steps exceeds 4.57 metres, it is usually desirable that there should be an intermediates landing not less than 1.22 metres I length.	
40	Are the names of stations shown both in Hindi and English and in vernacular language, in large and distinct letters in conspicuous positions so as to be seen readily by passengers in the trains both during day and night?	
41	Are clocks provided at all block stations?	

	<u>SIGNALLING</u>	<u>AND</u>
	<u>TRELECOMMUNCATION/BLOCK WORKING</u>	
42	Have the requirements and recommendations for signaling and interlocking, and the catechism for signaling and interlocking installations vide Chapter VII of these rules, and the appendix thereto, being fully complied with, according to the class of signaling and interlocking installed? If not, in what respect do the arrangements provided fall short of them?	
43	Have the requirements and recommendations for signaling and telecommunication installations in accordance with the instructions issued for the installations of S&T equipment in 25KV 50Hz electrified sections been complied with? If not, in what respect the arrangements provided fall short of them?	
	<u>STATION WORKING</u>	
44	Is provision made, whether by trap points or other means, to prevent, vehicles standing on sidings, from fouling any running line?	
45	Are there any stations situated on a steeper grade than 1 in 400? If, so what special safety devices are adopted and/or special rules enforced at those Stations?*	
46	<p>What safety sidings are provided?</p> <p>Are they suitable?@</p> <p>Are any others necessary?</p> <p>Note1: No station should be constructed nor should any siding join a passenger line on a steeper gradient than 1 in 260, except where it is unavoidable, and then only with the previous sanction of the Railway Board obtained through the Commissioner of Railway Safety, when a slip siding or other arrangements is made, sufficient to prevent accidents.</p> <p>@Note2: At any station situated in the immediate neighbourhood of an incline steeper than 1 in 80 falling towards the station and 1 in 100 falling away from the station, a catch siding in the former case, and a slip siding in the latter case, should be provided, if necessary, in a suitable position. The take off points to a catch siding or a slip siding should normally be set and locked for the siding, except where required to be trailed through.</p> <p>“For the purpose of the footnotes marked 1 and 2 the definition of a station yard as given in item 2 of Chapter II of Schedule of Dimensions shall apply”.</p>	
47	Are station yards so arranged that shunting past junctions or level crossings may be avoided as far as possible?	

48	Are shunting necks for goods working provided in large yards, where shunting operations cannot otherwise be carried on without interfering with incoming trains?	
	<u>ROLLING STOCK</u>	
49	Is the following information noted in a conspicuous position on each vehicle? (i) Passenger Carriages- The maximum number of passenger intended to be carried in each compartment of every description of carriage?*	
	(ii) Goods wagons- The tare weight of the empty wagon(including wheels, axles and axle boxes and springs) and the maximum load, in tones, which the wagon is constructed to carry?	
50	Are means for communications between passengers and the guard, provided in all trains carrying passengers?***	
51	Have all engines and tenders, and all vehicles intended to run on passenger trains been fitted with the vacuum/air brake?	
52	Are all locomotive & motor coaches provided with: (a) Cattle guards (b) High power headlights (c) Other prescribed safety equipments. *Note: This information should be in the vernacular language as well as in English and Hindi. **Except in the case of complete or partial failure of vaccume, trains carrying passengers may run without such means of communication, only in accordance with general Rule 4.18.	
	<u>FACILITIES FOR BOOKING</u>	
53	Are suitable arrangements made at all stations for the booking of passengers?	
54	Are suitable weighing machines provided at all stations open for goods/parcel booking?	
55	Are time and fare tables placed in a convenient position for inspection by the public at each station? Are these documents clearly exhibited in Hindi & English and also the vernacular language of the district?	
56	Is a copy of the general rules for regulating the working of the railway available for inspection at every station?	
57	Is every station provided with station diagram, station working orders, coaching and goods tariffs, and all other necessary manual or instructions, forms and registers for the work of the station?	
58	Do the working orders provided suitably for all special conditions met with at each station?	

	<u>ELECTRICAL</u>	
59	<p>Have the Rules for the Design and Inspection of equipment for Electric Traction (Vide Chapter IX of these rules) been individually and fully complied with?</p> <p>If not, where and in what respect, do the arrangements provided fall short of them?</p> <p><u>GENERAL</u></p> <p>What provision of Medical First Aid equipment has been made for use in the event of accident?</p>	

FORM XVI
[See rule5(4)]
CERTIFICATES TO BE GIVEN BY GENERAL MANAGER

I do hereby certify:-

(i) that the Maximum Dimensions for railway in Indian have in every case been worked to, with the exceptions detailed in the statement herewith annexed*

Also, that the Standard Dimensions will be observed in future, and that no work or structure infringing the Standard Dimensions will hereafter be permitted without the sanction of the Central Government.

(ii) that each bridge is of such design, dimensions and construction as will enable it to bear the dead load of the structure itself (with flooring, roadway, permanent way etc. complete), and in addition thereto, the equivalents of the live loads specified in the rules prescribing Standards of the Design and loading for Railway bridges, without exceeding the maximum permissible stress on the available material in any member or portion of the structure.

(iii) that more than two engines shall not under any circumstances be allowed at one time on the same track of one span of any bridge.

(iv) that every coaching vehicle constructed or procured for the use of the railway in mail and passenger trains is, and shall be provided with vacuum/air brake and effective means of communication between passengers, guard and driver.

Note: This item of certificate is not necessary for those light lines on which the use of vacuum or air brake has not been insisted upon.

(v) that one compartment or such number of berth or seats, as the railway administration may think fit, of a second class carriage of every train carrying passengers shall be reserved for the exclusive use of females.

(vi) that the railway shall be worked on the system known as Absolute Block System in accordance with the regulations prescribed in section Chapter VIII of the General Rules for Railways in Indian.

Note: In the statement showing the cases in which the Maximum and Minimum dimensions have been infringed full details for each case must be given, in the form attached (Form XVII) with explanation of the necessity for such infringements and a reference to the authority under which it was permitted. If there have been no infringements of the Maximum and Minimum Dimensions the words, "with the exception detailed in the statement herewith annexed", should be omitted or struck out.

(vii) Deleted

(viii) That the signaling and telecommunication equipment have been installed in accordance with the approved instructions and they are safe for passing traffic.

(ix) that has been delegated to accompany the Commissioner of Railways Safety on his inspection and all information supplied or engagements entered into by him shall bear my authority.

[Sd/-.....]
The General Manager

FORM XVI A
[See Rule 4A]
CERTIFICATES TO BE GIVEN BY CONCERNED SENIOR ADMINISTRATIVE
GRADE OFFICER

I do hereby certify:-

- (i) that the Maximum Dimensions for railway in India have in every case been worked to, with the exceptions detailed in the statement herewith annexed*
Also, that the Standard Dimensions will be observed in future, and that no work or structure infringing the Standard Dimensions will hereafter be permitted without the sanction of the Central Government.
- (ii) that each bridge is of such design, dimensions and construction as will enable it to bear the dead load of the structure itself (with flooring, roadway, permanent way etc. complete), and in addition thereto, the equivalents of the live loads specified in the rules prescribing Standards of the Design and loading for Railway bridges, without exceeding the maximum permissible stress on the available material in any member or portion of the structure.
- (iii) that more than two engines shall not under any circumstances be allowed at one time on the same track of one span of any bridge.
- (iv) that every coaching vehicle constructed or procured for the use of the railway in mail and passenger trains is, and shall be provided with vacuum/air brake and effective means of communication between passengers, guard and driver.

Note: This item of certificate is not necessary for those light lines on which the use of vacuum or air brake has not been insisted upon.

- (v) that one compartment or such number of berth or seats, as the railway administration may think fit, of a second class carriage of every train carrying passengers shall be reserved for the exclusive use of females.
- (vi) that the railway shall be worked on the system known as Absolute Block System in accordance with the regulations prescribed in section Chapter VIII of the General Rules for Railways in India.

Note: In the statement showing the cases in which the Maximum and Minimum dimensions have been infringed full details for each case must be given, in the form attached (Form XVII) with explanation of the necessity for such infringements and a reference to the authority under which it was permitted. If there have been no infringements of the Maximum and Minimum Dimensions the words, "with the exception detailed in the statement herewith annexed", should be omitted or struck out.

- (vii) That the signaling and telecommunication equipment have been installed in accordance with the approved instructions and they are safe for passing traffic.
- (viii) that has been delegated to accompany the ~~Commissioner of Railway Safety~~ Principal Chief Engineer or Principal Chief Electrical Engineer or Principal Chief Signal and Telecommunication Engineer on his inspection and all information supplied or engagements entered into by him shall bear my authority.

[Sd/-.....]

Concerned Senior Administrative Grade officer

FORM XVI B

[See items (h) to (j) specified in proviso to sub-rule (3) of rule 3 and rule 4B]

CERTIFICATE TO BE GIVEN BY HIGHER ADMINISTRATIVE GRADE OFFICER

I do hereby certify:-

- (i) that the Maximum Dimensions for railway in India have in every case been worked to, with the exceptions detailed in the statement herewith annexed and also, that the Standard Dimensions will be observed in future, and that no work or structure infringing the Standard Dimensions will hereafter be permitted without the sanction of the Central Government.**
- (ii) that every coaching vehicle constructed or procured for the use of the railway in mail and passenger trains is, and shall be provided with vacuum or air brake and effective means of communication between passengers, guard and driver.**

Note: This item of certificate is not necessary for those light lines on which the use of vacuum or air brake has not been insisted upon.

- (iii) that the railway shall be worked on the system known as Absolute Block System or Automatic Block System in accordance with the regulations prescribed in section Chapter VIII or Chapter IX of the General Rules for Railways in India.**

Note: In the statement showing the cases in which the Maximum and Minimum dimensions have been infringed full details for each case must be given, in the form attached (Form XVII) with explanation of the necessity for such infringements and a reference to the Authority under which it was permitted. If there have been no infringements of the Maximum and Minimum Dimensions the words, “with the exception detailed in the statement herewith annexed”, should be omitted or struck out.

- (iv) that the signaling and telecommunication equipment have been installed in accordance with the approved instructions and they are safe for passing traffic.**
- (v) that has been delegated to accompany the General Manager on his inspection and all information supplied or engagements entered into by him shall bear my authority.**

[Sd/-.....]

Higher Administrative Grade Officer

FORM XVII
[See rule 5(5)]
INFRINGEMENT OF MAXIMUM AND MINIMUM DIMENSIONS

SECTION

RAILWAY

LENGTH

GUAGE:1.676M

Sl. No.	Location		Name of Structures which infringe	Prescribed maximum and Minimum Dimensions		Existing Actual Dimensio n	Amount of infringeme nt	Particular of sanction to infringemen t & Remarks
	Division and Section	Kilomet erage		Chapter/ Item	Maximu m & Minimu m			

FORM XVIII
[See rule 17(6) and 17(7)]
DEFLECTIN TESTS OF BRIDGES

SECTION: Date of Tests.....

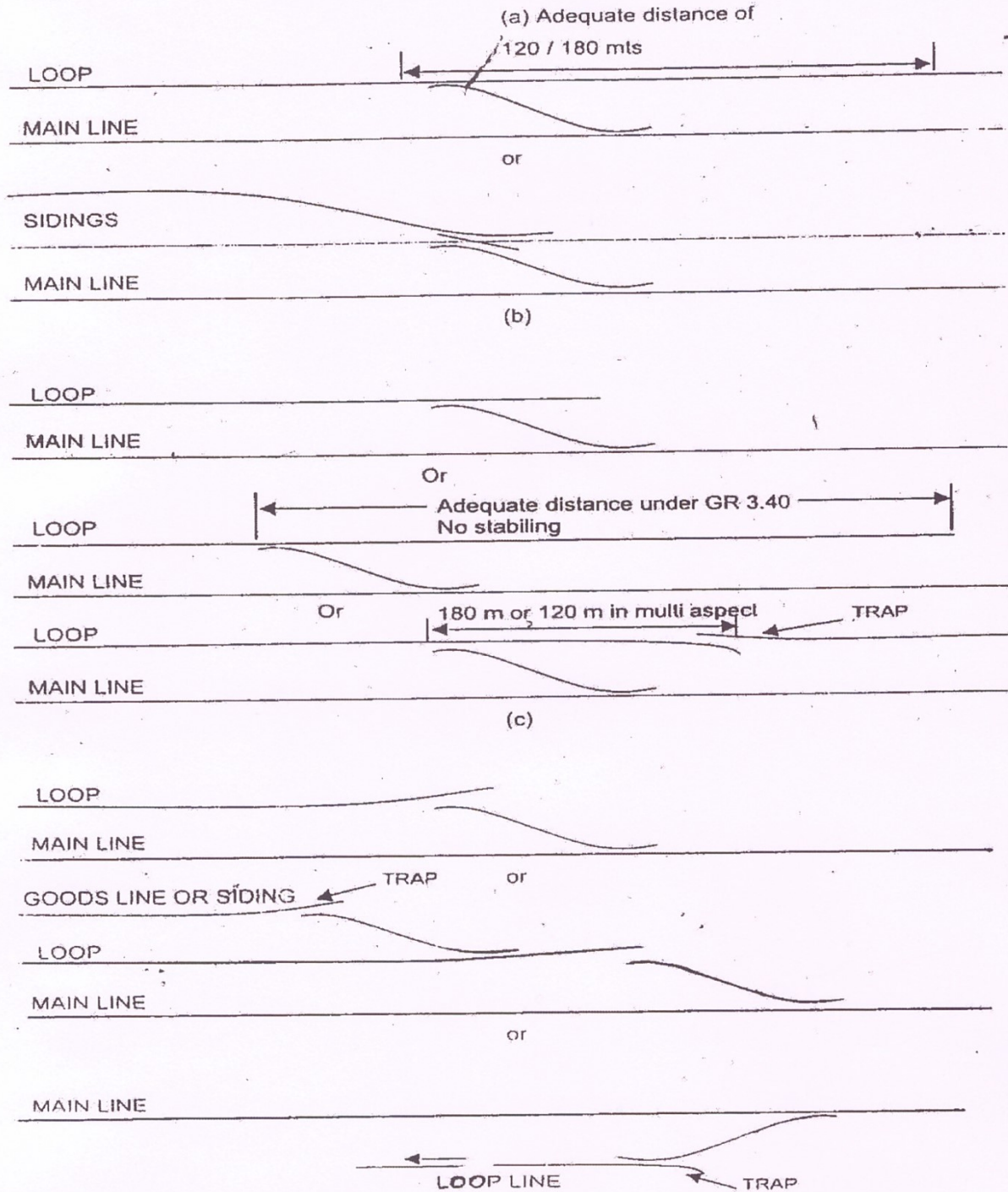
RAILWAY

LENGTH: Description of Test Load(Including Engine No.).....

GUAGE:1.676M

Bridg e Numb er	Kilomete rage	Material of girders	Clear Span between bearing plates	Overall Depth of girders	Speed of train	Test Load EUDL	Deflecti on in M.M	Design load DUDL for B.M	Ration of Design load B.M to test load B.M	Reduced Deflection under design load(for Slow speed tests)=(8x 10)	Theoretic al(calcula ted) deflection (approx.) under designed load
1	2	3	4	5	6	7	8	9	10	11	12

APPENDIX A
[See rule 36(9)]
DIAGRAM ILLUSTRATING METHODS OF
PROVIDING ISOLATION



-75-

APPENDIX B
[See rule 43(7)]
CATECHISM FOR SIGNALLING AND
INTERLOCKING INSTALLATIONS

INSPECTION AT THE SIGNALS:

(1) Are all running signals controlling trains placed in such a position and at such a height above rail level so that they can be clearly seen by Drivers in sufficient time and be readily distinguished by night or by day from the subsidiary signals?

(2) Are all signals constructed so that their normal position is at “ON” or most restrictive and that they stand at or return to this position in case of failure of any part of the signals or their connections?
Note: This paragraph does not apply to automatic signals, the normal position of which is “OFF”

(3) Do all signals come fully “OFF” when worked and return freely to the “ON” position?

(4) In the case of slotted or controlled signals, can the signals be freely returned to danger by either of the controlling agencies?
Note: This paragraph does not apply where signals are controlled by key transmitters or similar form of control.

(5) Are signal counter weights, where possible, fixed out of reach?

(6) Is the facing side of the arms of all semaphore Signals (including miniature and disc signals) painted the same colour as the light exhibited in the “ON” position?
Note: This paragraph does not apply to calling on signals.

(7) Are signals not in use fixed at “ON” and distinguished by having two crossed bars attached to them each bar being not less than one 1 meter long and 100 millimetres wide?

(8) Are all signals of standard type and do they comply with the requirements as laid down in the General Rules and have they been passed by the Sighting Committee?

(9) (i) Are all fixed signals, the front light of which cannot be seen from the point from which they are worked, provide with a small white back light not larger than is actually necessary and visible only when the signal is at “NO”? Also is the fixed green light of every Warner, which is used by it, provided with a white back light? (ii) Do all the distant signals in Multiple Aspect area show two back lights in the “ON” position and no light in any other position or where electric lighting of distant signals is provided, it shows at least one back light in the ‘ON’ position?

Note: Colour light signals need not be provided with back lights since these are provided with visual indicator.

(10) Do miniature and dwarf signals, used to control shunting show the same front and back light, as are prescribed for running signals and are the lenses small enough to make them distinguishable from running signals?

(11) Are signal lamp brackets fixed on the posts, and is suitable provisions made for lighting and cleaning lamps?

(12) If any signal is placed at more than 180m away from the facing points it controls, is arrangement made to keep the points locked until the train has passed them?

(13) Are all signal arms placed on the left-hand side of the post as seen by the Driver of approaching trains to which the signals refer?

(14) Are all signal posts placed on the left-hand side of the track of approaching trains to which they refer? If placed otherwise, for what reason?

(15) Where two or more lines diverge, are the signals fixed on a bracket post or on separate doll posts carried on a signal bridge?

(16) Where two or more lines converge, are the signals fixed on altogether separate posts or on separate doll posts carried on a signal bridge?

(17) Are bracket and bridge signals arranged so that each signal from left to right, from the point of view of approaching trains applies to each corresponding line from left to right, and are they distinguished by “grouping” and by making the more important signals higher than those of lesser importance?

Note: The highest arm must always refer to the straight line.

(18) In the case of two or more signals referring to parallel lines, are they arranged in transverse line as nearly as circumstances allow?

(19) Does any case occur of more than one signal referring to trains moving in the same direction being placed on the same post, other than Warner, shunt or calling on signals?

(20)(a) Are Warner Signals fixed 1.5 to 2m's below a stop arm or fixed green light?

(b) Are “Co-acting” or “Calling on” signals placed not less than 2.5 m below the Samaphore arm above?

(21) Are Warner Signals, which are un-worked, secured in the “ON” position?

(22) Are arrangements made to render it impossible for the Warner arm to be taken off independently of the stop arm above it and when the stop arm returns to danger, the Warner if “OFF” automatically returns to danger?

(23) At diverging junction, is one Warner Signal only provided applying to the through line?

(24)(a) Do all signal lights show red in the “ON” position, Or yellow/double yellow in the case of Distant signals, or no light in the case of Calling on Signals?

(b) Do all running signal lights show Green in the “OFF” position in two aspect signaling sections and yellow double yellow/green in multi aspect signaling sections?

(25) Are signals where necessary effectively guyed?

II. INSPECTION AT THE POINTS:

1. Is the locking of facing points such that the points cannot be or become unlocked while a train is passing over them ?i.e.

(a) are lock bars provided of the length exceeding the greatest distance between any two adjacent axles likely to be used on the line or alternatively is the point or lock lever electrically controlled by track Circuits?

(b) in the case of key locks, are the locks either under the train and therefore inaccessible; or if not place under the train, is the arrangement such that the key is used to release the signals and that it cannot be brought back to the points until such signals have been put to the “ON” position?.

2. Is the arrangement such that the operation of the facing point lock depends on the correct operation of the lock bar where used, and is it impossible for the lock bar to be forced over while a train is passing over it?

3. Are the locks of a substantial pattern and make? Are they fixed in such a manner as to ensure the necessary rigidity and are key sufficiently large and strong to minimize the chance of their being mislaid or broken?

4. Do key locks fitted to facing points on passenger running lines lock both switches?

5. Are switches adjusted to come tight against stock rails? Does the insertion of a 5mm obstruction piece between the switch and stock rails 150 mm from the toe of the switch prevent the points being

locked and prevent the relevant signal from being taken “OFF” the giving of which is preceded by the locking of the points.

6. Do facing point lock plungers clear the stretcher blade when the points are unbolted and in the event of there being an obstruction at the points, it is impossible for the point lock plunger to enter the stretcher blade and for the point lock lever to be forced into its normal or reverse position?

7. Are all facing points fitted with a gauge tie plate where steel sleepers are not provided at the toe of the switches, and are they provided with split stretcher bars or other fitting giving equal security?

8. Are all point locks and detectors securely fixed?

9.(a) Are detectors fitted to all facing points and do they efficiently detected with both switches the signals controlling the movement of trains over them?

(b) IN cases where the lock and switches are actuated by the same lever, do they detected the locking mechanism as well as switches?

10. Are trailing points on passenger running lines used in the facing direction for shunting movements which are not fitted with facing points locks detected with the relative shunt signals?

11. Is it possible for any detector slide to enter a notch other than that intended for it?

12. Do point indicators show the prescribed indications i.e. while for the straight and green for the turn out in both directions and where fitted to trap points or to derails where these are still in use, red in both directions when the trap is open or the derail is on the line; and green in both directions when the trap is closed or the derail is off the line.

13. Where the point indicators of the directional type have been provided, has this been done under approved special instruction?

III. INSPECTION ON THE TRACK:

1. Are all through lines isolated from each other, from other running lines and from all sidings?

2. Are running lines isolated from all sidings and goods lines, either by-

(a) trapping into dead ends taking off the sidings or goods lines; or

(b) derailing switches, or derails placed on the lines giving access from the sidings or goods lines, to the running lines?

Note: The use of derails is now obsolete. Existing ones may, however, continue to be used but when they require replacement, trap points should be substituted.

1. Are dead ends traps, derailing switches or derails where these are still in use, so locked as to prevent any possibility of the running line being fouled for which signals have been taken off?
2. Are the dead end traps, derailing switches or derails where these are still in use, fitted with indicators, or are they protected by signals?
3. Are these dead end traps, derailing switches or derails where these are still in use, placed in such a position as to ensure that any vehicles that may be derailed by them shall not foul any running line?
- 4.(i) Are all points worked by rodding within a distance of 320 m from the lever operating them or in case of facing points on a passenger running line operated and locked by the same lever within a distance of 180 m?
(ii) If the distance are greater than those are specified above, are they within 460 m and 275 m respectively, and are a stroke of not less than 200 mm provided at the lever tail?
5. Is the rodding efficiently laid and properly compensated where necessary and means for adjustment provided?
6. Are all signal connections efficiently installed and means for adjustment provided?

IV INSPECTIN IN THE CABIN OR AT THE LEVER FRAME WHERE THERE IS NO CABIN

1. Is the signal cabin provided with the following essentials?:-
 - (a) A clock in cabins where train movements are registered.
 - (b) A diagram correctly representing the arrangements of the points and signals worked from the cabin in their normal position and the number of the points and signals?
 - (c) Lights so arranged as not to be mistaken for running signals or interfere with their sighting?
1. Is There sufficient space in the cabin to allow the cabin man or operator freedom of movements for manipulating the levers or other apparatus in the cabin?
2. Is the gear leading off from the cabin or frame securely fixed?
3. Are the levers painted with distinguishing colours and in addition to its own number does each lever bear the number of the levers, which must proceed it, and in the proper order?

4. Is the cabin so located and built as to enable the cabin man to have the best possible view of all points and signals, the working of which he is responsible for and also for all movements under his control?
5. Are all signals, which are not visible from the cabin or frame electrically repeated? If so, does the repeater repeat the light as well as the arm?
6. Have instructions for working been issued to the staff and included in the Railway Working Instructions, and are they correct and sufficient?
7. Is the Station Master provided with interlocked mechanical or electrical control of the Home and Last Stop Signals?

V . TEST TO BE MADE IN THE LEVER CABIN OR AT THE LEVER FRAME:

Note: It is essential that the interlocking of all signals with the points must be so effected as to ensure the following conditions, which may be tested from the cabin or frame by pulling over the levers for each combination allowed by the locking table and checking the security of each such combination by attempting to infringe it.

1. Is it possible to take off conflicting signal at the same time?
2. Is it possible to take off a signal until –
 - (a) all points on the running line including overlap are correctly set and the facing points locked?
 - (b) all points, giving access to the running line from sidings and goods lines, are set against the running line?
 - (c) Level Crossing gates, if included in or controlled by the interlocking, are locked across the roadway?
 - (d) a signal lever, when operated locks or back locks as necessary, the levers operating the points and gate locks referred to in this paragraph?
3. When all signals are “ON” are all points, which would be locked by the taking off of such signals, free for shunting purposes?
4. Is it possible to take off a Warner Signal until all the relative stop signals in advance have first been taken off and when off does it back lock such signals?
5. Does the locking in the frame correspond with that shown in the approved locking table?
6. Is the locking strong, durable and accurate, i.e. can a tappet enter a notch other than that for which it is intended, or can the locking be forced?
7. Does the locking in the lever frame act on the commencement of the movement of the lever in case of direct locking type of lever frames and pressing the catch handle in case of catch handle/DW type of lever frame?
8. Is release locking not effective before the completion of the movement of the lever?

B. ADDITIONAL CATECHISM FOR POWER OPERATED POINTS AND SIGNALS

Note:- These rules must be followed in conjunction with those laid down in the catechism for signaling and interlocking installations so far as they are applicable to power working.

I SIGNALS:

1. Is the mechanism case weather proof and protected from unauthorized interference?
2. Do the indication contacts close if the arm is more than ± 5 degrees from “ON” or “OFF” position?
3. Is the signal and hold off mechanism so constructed, that in the event of a failure, the signal shall go to the “ON” position?
4. Is a surface leakage distance of not less than 6mm provided between any exposed metallic part of the mechanism carrying current and any other metallic part thereof?

The following regulations shall apply to colour light signals only.

5. Are the signals so bright as to cause confusion in reading at night?
6. When lamps are operated at normal voltage, is the range (on a straight track) of signals used to govern high-speed trains, not less than 200m on a clear day with a bright sun at or near its zenith?
7. Deleted
8. Does the signal give a distinct indication to drivers when approaching or stopped at a signal?

II. POINTS:

1. Is the switch operating mechanism of substantial design securely fixed and protected from unauthorized interference?
2. Is the mechanism provided with means for emergency operation in the event of a failure?
3. Does the use of the Crank handle or other apparatus for emergency operation disconnect the power supply to the motor and prevent clearance of signal for which such points are required to be set.

4. Is there a surface leakage distance of not less than 6mm provided between any exposed metallic part carrying current and any other metallic part of the mechanism?
5. Is the mechanism so constructed that it can be stopped reversed or obstructed at any point of its movement without damage?
6. Is the mechanism so constructed that it cannot give a “Normal” or “Reverse” indication, unless the closed switch be within 5mm of the stock rail and in the case of facing points the switches are properly locked?
7. In order to prevent the movement of points while a train is passing over them, are points provided with track circuit locking?”
8. Where the movements of trains over the points are not within easy visibility of the cabin, is occupation of the section between the stop signals leading over the points and the fouling point ahead of such points, electrically indicated in the cabin?

III CABIN AND LEVER FRAME:

1. In the case of power interlocking frames, is the lever frame mechanism completely enclosed with removable covers giving free access to all parts and provision made for securing such covers against unauthorized opening?
2. Have all exposed metallic parts carrying current, not less than 6mm surface leakage distance between them and any other metallic part of the mechanism?
3. Are the levers operating power worked points provided with “Normal” and “Reverse” indication locks, adapted directly to prevent the full movement of the lever, unless the point mechanism has made the required movement and the points are in a position corresponding to that of the lever and in case of facing points unless they are securely locked?

Note:- This test need not apply where approved alternative electric locking is provided.

4. Are levers operating power worked signals provided with “Normal” indication locks, adopted directly to prevent the full return movement of the lever to the normal position, unless the arm has returned to the “ON” position?

Note:- This test need not apply to a mechanical lever frame, if the signal is repeated at the place of operation through an arm and light repeater.

5. Are all electric locks mechanically replaced to the locking position?

6. Is all the wiring between different parts of the apparatus made with suitably insulated wire and efficiently protected?
7. Is the lever frame properly earthed and are efficient safeguards provided to prevent injury to the operator, in the event of a short circuit or other similar circumstances?

IV CABLES AND CIRCUITS:

1. Do all main cables terminate in properly sealed or locked boxes?
2. Are circuits controlling the operating and indication of signals so arranged, that as far as practicable, a cross connection or a short circuit on any of the wires, cannot give a false "Clear" indication?
3. Are circuits controlling the operation and indication of points so arranged that, as far as practicable, a cross connection or a short circuit, cannot operate the switch, or give a false indication of the position of the points?
4. Is the battery or power supply for line circuits, as far as practicable, arranged at the end of the circuit farthest from the operated unit?
5. (a) Are all main track circuits as far as practicable so arranged as to provide the best protection against broken rails, points crossings, etc.?
(b) Are the adjacent track circuits staggered in polarity?
6. Are sidings and junctions tracks circuited up to the fouling mark or sidings derailing where this is till in use?
7. Are hand worked switches, in or leading to automatic signaling territory, equipped with a circuit controller operated by the normally closed switch.
8. Are such switches electrically locked by the approaching track circuits to prevent their movement in the face of an approaching train?

APPENDIX-C
[See rule 43(7)]
CATECHISM FOR SIGNALLING AND
TELECOMMUNICATION INSTALLATIONS FOR 25KV 50HZ,
SINGLE PHASE ACT ELECTRIFIED SECTIONS

SECTION-I – SIGNALS:

1. Are the signals located in accordance with the approved instructions as per Manual of Instructions for installation of Signalling and Telecommunications Equipment in 25KV, 50HZ AC electrified sections?
 2. Have the protective iron screens as required for signals/fittings within 2m of live conductor/parts been provided and earthed?
 3. Where it is not possible to provide protective iron screens, has a caution board been provided on the signal posts in accordance with the approved instructions?
- Has the “Signal Sighting Committee” certified that the driver’s view of the signal is clear?
5. Have only multi aspect signals been used in colour light signaling area?
 6. Is the AC power supply arrangement for the colour light signals of a type approved for Railway Electrified areas?

SECTION-II – POINTS:

Have the rodding transmission of points and other apparatus been insulated as per the approved instruction?

SECTION-III- ELECTRICAL SIGNALLING EQUIPMENT:

1. Does the design of signaling equipment and the circuits used in Railway Electrified areas provided for a safety factor of 1.5 against AC interference.
2. Has it been ensured that the signaling equipment not suitable for Railway Electrified areas on external circuits like banner type indicators, Luminous indicators, telephone type relays, electrical lever locks, rotary key transmitter, DC neutral polar relays, 250 ohms DC neutral line relays and door coils of IRS block Instrument etc. have not been used?
3. Has it been ensured that all stick relay have at least 4 front and 4 back contacts and their pick up transfer time is not less than 300 milli seconds?

SECTION-IV- CABLING AND WIRING OF CIRCUITS:

1. Have all telephone circuits, except cabin to cabin and cabin to ASM circuits, which may be retained on signaling cable, been transferred to separate underground telecommunication cable?
2. Have all overhead wire circuits been shifted or cabled as per the approved instructions?
3. Has it been checked that the voltage induced due to parallelism in the telecommunication cable under normal and short circuit conditions are within safe limits (Limits specified by the Consulting Committee of International Telegraph and Telephones)?
4. Has it been ensured that the earth return circuits are not retained and have been replaced by metallic return circuits except the block circuits?

5. Has the principle of double cutting been used for all external signaling circuits?
6. Have the external circuits and batteries been isolated from internal circuits and batteries?
7. Has it been ensured that the induced voltages in the length of inter cabin telephone circuits in signaling cables does not exceed 60 V?

SECTION-V – BATTERIES:

1. Has it been ensured that power supply for internal and external circuits and for each block instrument are isolated?
2. Has it been ensured that the battery for signaling equipment is separate from the battery for telecommunication equipment?

SECTION-VI- EARTHING:

1. Have the lever frames and other equipment been earthed in accordance with the approved instruction?
2. Has it been checked that no earthing pipe is less than 3 m away from any other earthing pipe?
3. Has it been tested that the earth resistance does not exceed 10 ohms for the signaling equipment and 1 ohm for telecommunication copper cable earth?
4. Has the screening of the telecommunication cable terminated at the sectionalizing points and repeater stations been earthed in accordance with approved instruction?

SECTION-VII TRACK CIRCUITS:

1. Has it been ensured that track circuits are of approved type?
2. Have measurements of DC tray currents been taken before installations of DC single rail track circuits and whether these are within permissible limits?
3. Has the longitudinal and transverse bonding in track circuited areas been provided as per the approved instruction?
4. Have the DC single rail track circuits of closed type been installed in accordance with the approved instructions?
5. Have the protective measures like surge discharges (intervals off discharge) been provided on track circuits, where required, as per the approved instructions?

SECTION VIII- EMERGENCY CONTROL:

Have emergency control telephone post been provided at correct regular intervals along the track in electrified areas as per the approved instruction?

SECTION-IX- BLOCK INSTRUMENTS:

1. Are the block instruments installed of a type approved for use in AC electrified sections?
2. Have block filters for single and double line block instruments been provided in accordance with the approved instructions?
3. Are the filter units of a approved design?

4. Have the line terminals of block filters been painted red to caution the maintenance staff against high voltages?
5. Where a block section falls between an electrified and non-electrified section, has it been ensured that block filters have been provided for block instruments at either ends of such block section?
6. Have the block telephones been provided on a separate pair of conductors in accordance with the approved instructions?
7. Have the block circuits been provided on underground cables as per the approved instructions?
8. Have position polarised relays of SGE block instruments been provided in accordance with the approved instructions?
9. Have the block release and advance starter control of block instrument been provided in accordance with the approved circuit?
10. Has it been ensured that the circuits from non electrified section approaching and electrified section and vice versa been cabled for a length of 1 km beyond the electrified section.

SECTION-X- GENERAL SAFETY:

1. Has the chart on method of treating electric shock been displayed in cabins and relay rooms, etc.?
2. Has the rubber matting been provided in relay rooms, repeater stations and cable huts etc. as per the approved instructions?
3. Have special instructions been issued to the personnel that the accessible parts of the installation and apparatus in the repeater stations and cable huts, connected to the telecom cable are likely to attain an induced voltage of 150 V AC under 5 normal working conditions and have such parts of installation and apparatus suitably marked to indicate this?
4. Have the metallic cabinets/covers/frames of telecommunication equipments provided in railway electrified areas been earthed properly?
5. Are the protective devices installed on telephones provided at grid stations, 25 KV sub stations and switching posts as per the approved instructions?
6. Are the tools used by maintenance staff properly insulated.

[No. 70/WDO/ORI/RO/1.]

R.N. MALHOTRA, Member Engineering & Ex-Officio Secy.