

OFFICE OF THE CHIEF ENGINEER
LOCAL SELF GOVERNMENT DEPARTMENT
3RD FLOOR, REVENUE COMPLEX
PUBLIC OFFICE COMPOUND,
THIRUVANANTHAPURAM -33

Phone : 0471-2324951
0471-2325071
Tele FAX:0471-2324951
email: celsgd@gmail.com
website: www.cclsgd.com

No. DB4/4993/2016/CE/LSGD

Dated : 31.05.2016

CIRCULAR

Sub:- Convening State Level Co-ordination meeting on Railway affecting tanks / works in State of Kerala – reg.

Ref:- Lr. No. CE/R&B/G1/AEE-II/11433/15 dated 12.05.2016 of the C.E, PWD Roads & Bridges and Administration, Thiruvananthapuram

Copy of Manual of construction for Railway affecting works are enclosed herewith. All the Engineering Heads of Local Self Government Institutions are requested to submit necessary details on Railway affecting tanks / works in State of Kerala under your jurisdiction before 05.06.2016.

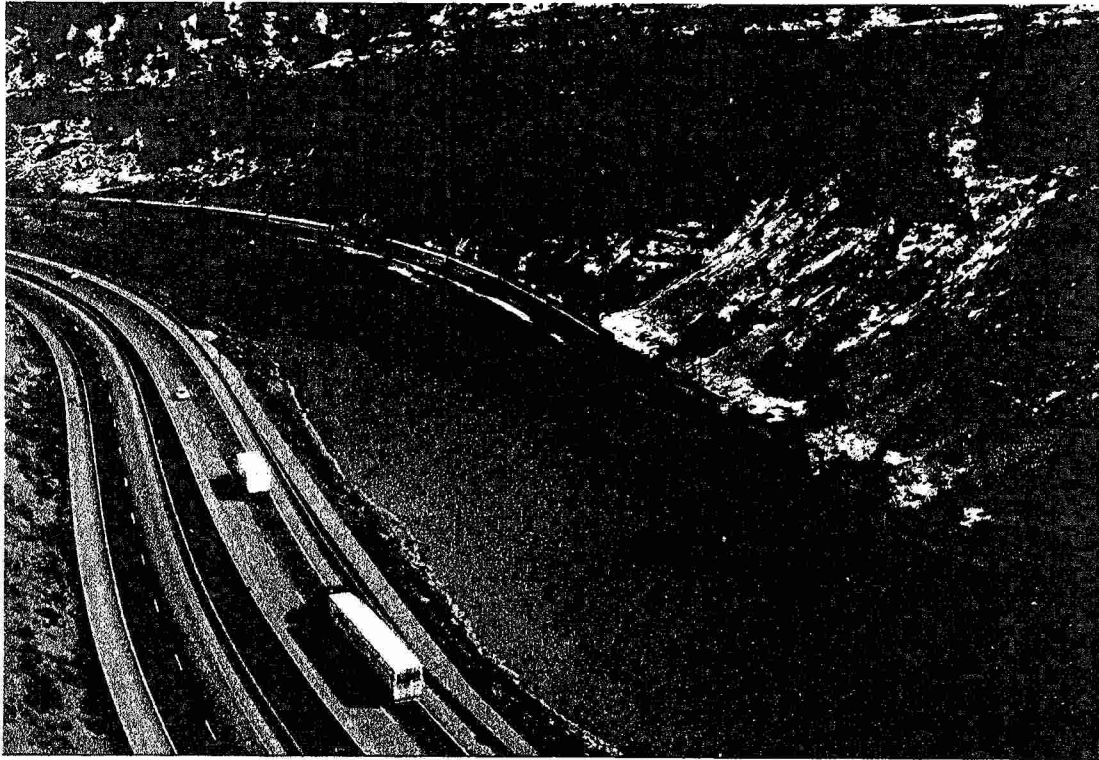


For Chief Engineer

(*)



GOVERNMENT OF KERALA
PUBLIC WORKS DEPARTMENT



**MANUAL OF INSTRUCTIONS FOR
RAILWAY AFFECTING WORKS**

**CHIEF ENGINEER
ADMINISTRATION AND ROADS & BRIDGES, IT**

CHAPTER - 1

GENERAL

SCOPE

- 1.1 This manual deals with the rules, procedures and general practice to be followed for the construction, inspection and maintenance of Railway Affecting Works in the State of Kerala for uniform adoption all over the State

DEFINITION OF RAILWAY AFFECTING WORKS

- 1.2 Railway affecting works are those construction with defective design, failure, improper or poor maintenance or operation of which may cause serious damages / breaches or flooding of railway line or bridge. Examples of such works are:
 - 1.2.1 Irrigation and water supply tanks or reservoirs
 - 1.2.2 Canals in embankment and river bunds.
 - 1.2.3 Road embankments with inadequate waterway for drainage situated upstream or downstream of the railway line
 - 1.2.4 Other works or operations which might alter or impede the natural course of flood flow or cause an increase in the volume of such flow. These may be new irrigation projects, new townships, new forest belts, large scale deforestation etc.

AUTHORITY TO DECLARE A WORK AS RAILWAY AFFECTING

- 1.3 A work can be declared as railway affecting by an officer not below the rank of an Executive Engineer of the State Government or Divisional Engineer / Executive Engineer of the Railways. In the event of any dispute, the matter will be referred to the State Committee of Engineers. The State Committee of Engineer's decision is the final.

LIST OF RAILWAY AFFECTING WORKS

- 1.4 All the departments in the State, such as Irrigation, Roads & Bridges and National Highway wings shall identify the railway affecting works in their jurisdiction. The Chief Engineers of P.W.D. Roads & Bridges, Irrigation and N.H. Wing shall maintain lists of such works review them from time to time and update the

list at least once a year.

The nominated Chief Engineers of the State committee of Engineers will send copies of the list at least one month before the onset of the monsoon every year to the State Committee of Engineers, Railway Chief Engineers. Divisional Engineer / Executive Engineers of the Railways, Executive Engineers of State Govt. will also notify the list on behalf of State Committee of Engineers.

NEW RAILWAY AFFECTING WORKS

- 1.5 No new work or modification / remodeling of an existing work, which is likely to be classified as Railway affecting shall be undertaken by any department without getting prior approval of the State Committee of Engineers. If the State Committee of Engineers decides that the new proposal is genuine, the same shall be sent to Chief Bridge Engineer, Railways along with required details such as Plans, design data, hydraulic particulars etc for taking further steps from railway department.

INSPECTION, MAINTENANCE & OPERATION OF RAILWAY AFFECTING WORKS

- 1.6 It is the responsibility of the parties concerned to inspect regularly and to maintain the Railway Affecting Works in accordance with the procedure. Any repair or strengthening needed shall be carried out with the utmost care and speed, before the onset of the monsoon. The representatives of Railways shall have access and be given facilities to inspect the railway affecting works.

ACTION IN CASE OF APPREHENDED DANGER

- 1.7 In case of any apprehended danger or actual damage to a railway track, immediate action shall be taken by the party concerned to advise the Station Master or the Divisional Railway Engineer, so as to enable the railway officials to take immediate precautionary and other measures to ensure safety of trains and to avoid accidents.

ROLE OF STATE COMMITTEE OF ENGINEERS

- 1.8 State Committee of Engineers has an important role to play in the matter of Railway Affecting Works. The functions of the

Committee are briefly as follows:

- a. Exchange of Information about schemes envisaged by any one department and likely to affect the work or safety of assets of another department and consequential safeguards to be adopted.
- b. Keeping up-to-date list of railway affecting works etc naming the officials responsible for joint inspection of each such work immediately after monsoons and if possible, also in advance of monsoon, and watching that the dept responsible for proper maintenance of such works promptly carries out the necessary repairs.
- c. Evolving a procedure for –
 - i. Obtaining & broadcasting by depts. Concerned warnings or forecasts of heavy rains, floods, storms etc as well as the actual heavy rainfall recorded and expected floods, downstream to the officers concerned in the various departments,
 - ii. Public cooperation in promptly conveying to the department concerned any unusual occurrence e.g. breaches of reservoirs / tanks
- d. Assessing whether waterways protection works etc provided by any department in an area severely affected by floods have proved to be inadequate and improvements needed for future. State Committee of Engineers shall meet at least twice a year preferably in April and November

DECLARATION OF A SECTION AS VULNERABLE

- 1.9 Chief Engineer / Divisional Railway Engineer concerned shall declare the sections of the railway that are likely to be affected by non-completion of the urgently required repairs & strengthening or for whatever compelling circumstances as vulnerable, and shall make suitable arrangements like patrolling of the section during monsoon and also take other necessary precautions to ensure the safety of the railway line.

POWER OF CENTRAL GOVERNMENT TO GIVE DIRECTION FOR SAFETY

- 1.10 Notwithstanding anything contained in any other law, the Central

Government may, if it is of the opinion that any work undertaken or may be undertaken, is likely to alter or impede the natural course of water flow or cause an increase in the volume of such flow endangering any cutting, embankment or other work on a railway, issue directions in writing to any person, officer or authority responsible for such work to close, regulate or prohibit that work.

CHAPTER – 2

CRITERIA OF AND TYPES OF RAILWAY AFFECTING WORKS

General

- 2.1 Criteria for identifying the work as "Railway affecting" can at best be outlined under broad principles for the guidance of the Engineers. Every case has to be decided on merits taking into account some other factors, i.e., local conditions such as location of railway affecting works whether upstream / downstream of the railway line, slope of the ground, extent of discharge in the event of failure of work, capacity of the railway line to absorb the shock etc.
- 2.2 The following types of tanks / reservoirs may be deemed to be railway affecting:
- I) Tanks within 0.4 Km of the railway line irrespective of the capacity and having a full supply level higher than the formation of the railway line.
 - II) Tank within 8 Km of railway line having capacity of 0.05 M. Cum and more.
 - III) Tank between 8 Km to 32 Km of Railway line having capacity of 0.14 M Cum to 3.0 M Cum varying linearly.
 - IV) Tank on down stream of Railway line where FSL touches the Railway Embankments.
 - V) Tank through which railway line passes having bunds and surpassing works on downstream and liable to cause damage to the railway line and affect stability of its embankments and bridges, due to sudden lowering of the level on account of breach in the bund or escape works.
 - VI) Tank through which railway line passes having crest level of surpassing weir above danger level of the railway bridge or formation level of the railway line.
 - VII) Tank on upstream of railway line having past history of breaches affects working of the railways and not remodeled to cope with known surplus discharge. Tank located upstream

of the railway line having inadequate slope (until brought to the desired safe standards) for the tank bund.

- VIII) Any tank or a series of tanks in the catchments of a stream crossing the railway line with a catchments area not less than 5% of the total catchments area of the stream at the point of railway crossing.

CANALS & DRAINAGE CHANNELS

2.3 Following may be considered as railway affecting works:

- i. All channels crossing railway lines having discharge of more than 5 ^{cum} / sec and having FSL more than 0.30m above ground level.
- ii. Channels in partial cutting & partial embankment on upstream of the railway line running parallel or oblique including the drainage works as specified below;
 - a) Discharge between 7 to 14 cum / sec within range of 0.4 km from railway line.
 - b) Discharge between 14 to 28 cum / sec and within range of 0.8 km from railway line.
 - c) Discharge more than 28 cum / sec within range of 1.6 km from railway line.

ROAD EMBANKMENTS

- 2.4 Road embankments higher than 3m with bridges, culverts and retaining walls within 0.8 km on either side of the railway line.

CHAPTER – 3

THE EFFECT ON SAFETY OF RAILWAY LINE & BRIDGES

Rivers, Canals, and Reservoirs

- 3.1** The rivers, canals and reservoirs may endanger the safety of the railway line in the following manner,
 - 3.1.1** Overflowing of the water in the vicinity of the railway line, particularly when FSL of the reservoir is higher than the formation of the railway line,
 - 3.1.2** In the case of railway line passing through the rivers/ canals having surplus arrangement on the down stream side, lowering of water level due to failure or breach in the bund or surplus work may endanger the stability of the railway embankment.
 - 3.1.3** By passage of discharge in excess of the designed discharge.
 - 3.1.4** Due to overflow of flood waters from the surrounding areas through inlets or through cuts made in the canal banks by the villagers or due to heavy rainfall where the canal bed is below the general ground level.
 - 3.1.5** Due to breach in canal banks on account of any reason
 - 3.1.6** In adequate cross drainage works on such canals or drainage channels may lead to heading up of water on the upstream side and water stagnation which can result in breaches and subsequent rush of excessive waters towards railway embankment endangering its safety.

Road Embankments with opening / sluices within 0.800 Km of Railway Line

- 3.2** Road embankments and openings therein may prevent axial flow through the railway bridges by virtue of their location. Inadequate waterway or insufficient headway in these openings may cause heading up of water or breaches in embankment, thus creating serious situation by sudden rush of accumulated water towards railway line / bridges.

CHAPTER – 4

INSPECTIONS & REPAIRS

Inspecting Authority

- 4.1 The railway affecting works falling within the jurisdiction of concerned Assistant Engineers of State PWD / Irrigation / N.H. / L.S.G.D and Permanent way Inspector / Assistant Engineers of Railways will be inspected by them
- 4.2 The concerned Assistant Engineers of both State Government and Railways shall inspect every railway affecting works in his jurisdiction soon after the monsoon and submit his report to his head of department. This report shall be accompanied by approximate estimate for repairs for those works not considered in sound condition.
- 4.3 If any dispute between the State Government officers and Railway Officials, regarding the repairs of railway affecting works, the matter may be brought to the notice of "State Committee of Engineers" through their head of department. The decision of "State Committee of Engineers" will be the final.
- 4.4 The concerned department i.e. either State Government or Railways as the case may be, will arrange to carry out necessary repairs and complete on priority basis before next monsoon.
- 4.5 In case the repairs of the works, which were found in unsound condition are not completed in time for certain compelling reasons, the Assistant Engineer concerned of the State Govt. shall advise his Executive Engineer, who shall send a separate list of such cases to the Divisional Engineer, railways with a copy to the nominated Chief Engineer of the State. Further arrangements will also be made by the State Government in consultation with Chief Engineer / Divisional Engineer, Railways. Divisional Engineer Railways will inform immediately the nearest accessible Railway Station Master & concerned Assistant Engineer of Railways in the event of actual mishap / threat.

CHAPTER – 5

NORMS TO BE FOLLOWED FOR NEW CONSTRUCTION OF RAILWAY BRIDGES OVER CANALS / ROADS EMBANKMENTS

5.1 In Kerala State, which is blessed with rivers, water bodies and Kayals, inland navigation is part of normal life of people. One of the main reasons for adopting the water way-for their transportation, even though slower than other modes of transportation, is that it is cheaper. The Government of India has announced the Kochi - Kottapuram route as "National Waterway-III". One of the main criterion fixed as part of the standards by the Inland Waterways Authority of India, is that the vertical clearance between the water level and any other overhead structure like bridges etc shall be as under,

Class of canal	Type of waterway	Vertical Clearance
I	River	4.00
	Canal	4.00
II	River	5.00
	Canal	5.00
III	River	7.00
	Canal	7.00
IV	River	10.00
	Canal	10.00
V	River	10.00
	Canal	10.00
VI	River	10.00
	Canal	10.00
VII	River	10.00
	Canal	10.00

The vertical clearance fixed for State Waterway and feeder canals is 5.00 m. But many of the Railway bridges located in these waterways do not have these mandatory clearances. For example:- The existing railway bridge over Parvathy Puthanar at Chakkai, Thiruvananthapuram has a vertical clearance of 3.200 m only, which is very much lesser than the bare minimum prescribed under Class-I canal, i.e. 4m.