

(4) Classification by the relevant causes

The major factors, considered the possibility as related to the passersby entering the level crossing in the situation that the train was approaching to the level crossing, were classified as follows.

- (i) Bad visibility of trains from the once stop position of the level crossing.
- (ii) Passersby, automobile, etc., did not stop before the level crossing.
- (iii) The restriction of physical function of the passersby had been affected.

Refer to "7. Examples of the accident investigation, pages 16 - 19, and Table 4, page 22 - 23.

3. Implement measures urgently such as to abolish or install of crossing gate and road warning device, in the level crossing without crossing gate

(1) Level crossing without crossing gate is dangerous

The rules, to stop once before the level crossing and check safety of left and right, after that, across the level crossing, have been recognized by many people, inspired by the safety education in the schools, etc., and guided in the lectures in the training to acquire driver's license of automobiles, etc., and individual passerby have been implemented definitely.

It is necessary for the passersby to implement certainly the confirmation of safety whether train is approaching or not, particularly in the level crossing without crossing gate.

However, as described in the above (4) relevant causes, the accident occurred as the passerby could not confirmed safety due to some factors and entered the level crossing when train was approaching. Like this, the level crossing without crossing gate has high risk of accident.

(2) Some safety measures depended only to the awareness of passerby of level crossing have a limit

Among 34 accidents with fatality in the level crossing without crossing gate, that the JTSC had published the investigation report by January 2019, 10 accidents, including the accidents without casualties, had been occurred in the same level crossing.

Among these 10 accidents, there were the level crossing where implemented the traffic control, the installation of sign board to call attention, etc., responding to the past accidents, but accident occurred again.

Moreover, among 34 accidents which the accident investigation reports were published, over half 18 accidents were the case that passerby of level crossing was the aged person over 65 years old, and six accidents were the case that passerby of level crossing was the handicapped person in the hearing function, etc.

Furthermore, it is probable that there is the characteristics that the driver of automobile is hard to confirm the train compared to the pedestrian, because the driver of automobile confirms the approaching train from the position of the driver's seat, located further backward of the once stop line of the level crossing.

In addition, it is considered as difficult for the passerby of level crossing to judge visually the time till the train approach at the level crossing when the velocity of the train is fast, for example, the train running in 120 km/h advances about 33 m in one second.

Therefore, there is the case that the safety measures only depending on the awareness of passerby in the safety confirmation whether train is approaching or not, in the level crossing without crossing gate, have a limit.

(3) Decide the policy of measures urgently and implement concrete measures

The ultimate measure to eliminate level crossing accident is to eliminate level crossings, and it is necessary for the railway operator and the road administrator, etc., to promote more positively to obtain agreement with the local residents for the abolishment and integration of level crossing.

There was the case that realized the abolishment of level crossing, by promoted discussions between railway operator, the road administrator, the local residents, etc. On the other hand, there are the level crossings still existed as class three or class four with the high risk against accidents, although discussion had been implemented between relevant parties but the future policy to abolish level crossing or to install level crossing protection devices are not decided yet.

Therefore, it is considered as necessary to implement the concrete measures by fixed conclusion in early stage on the abolishment of level crossing or the preparation of level crossing protection devices by promoting the discussion between relevant parties, to make zero or to reduce the risks against accident as soon as possible.

From the point of view of the danger against occurrence of accidents, it is necessary to decide the policy on the abolishment or the preparation of level crossing protection device and to take concrete measures, especially in class three and class four level crossings described in the followings.

- Level crossing where passerby of level crossing is hard to notice the approaching train.

[Example]

- The case that the visibility of level crossing was obstructed by the neighboring building or fence, etc.
- The case that the sight distance of train was restricted by the effects of curve and tunnel, etc., existed in the track in the neighborhood of level crossing, etc.

- Level crossing where trains pass in high speed

[Ref.] The train running at 80 km/h advances about 22 m in one second, the train running at 120 km/h advances about 33 m in one second.

- Level crossing where many trains are passing.

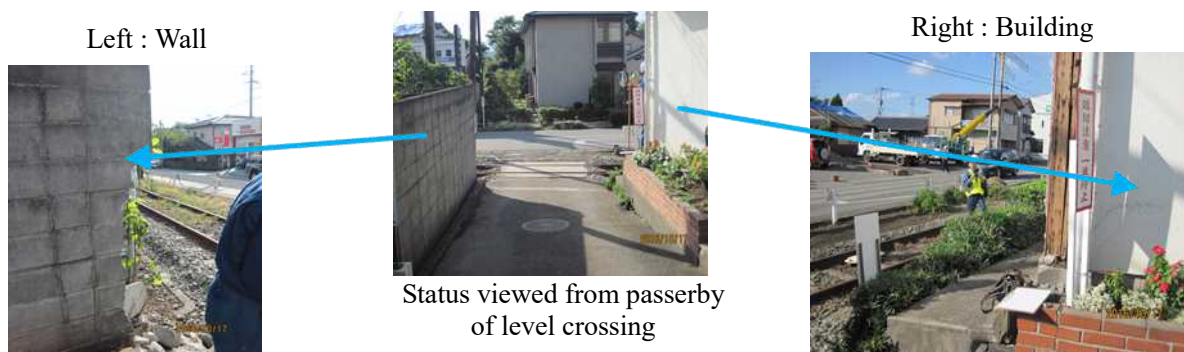
- Level crossing with long crossing road due to double tracks, etc., and required long time to be crossed.

[Ref.] It is said that the average aged pedestrian of 65 years old advances 1.2 m in one second, and the pedestrian of above 75 years old advances 1.0 m in one second, in average.

[Quoted from the home page of the Railway Bureau, MLIT "On the measures to prevent level crossing accident by aged people, etc.", October 2015.]

- Level crossing constantly used by the children going school, aged persons, handicapped persons, etc.
- Level crossing where passersby increased or anticipated to increase in the future by the change of surrounding circumstances due to the development of residential areas, etc.
- Level crossing where accident had occurred in the past.

The railway operator can comprehend the status of the individual level crossing such as the sighting status of level crossing, the velocity and the number of operating trains passing the level crossing, the length of level crossing, etc. Therefore, it is important for the railway operator to extract level crossing with high risk as described in the above, to promote discussions by appealing to the relevant parties positively, to realize the abolishment of level crossing or the installation of level crossing protection device in early stage.



Example that the visibility of level crossing is obstructed by the neighboring buildings or fences