

# **Executive Summary**

## **TRA's Train No.3167 at Tainan Station**

At about 11:38, June 18, 2022, Train No. 3167, the local train of the Taiwan Railways Administration (TRA) bumped into construction fences intruded into the track area at K361+410 between Tainan Station and Bao'an Station. There were no fatalities or injuries in this occurrence.

According to the Transportation Occurrences Investigation Act, the Taiwan Transportation Safety Board is responsible for investigating major transportation occurrences that arise in the R.O.C. territory. This accident is considered as a major transportation occurrence within the scope of investigation. The Ministry of Transportation and Communication (MOTC), Railway Bureau, TRA, Southern Region Engineering Office of Railway Bureau, CECI Engineering Consultant, Inc., and Continental Engineering Corporation were invited to participate in the investigation.

The investigation report was approved by the 50<sup>th</sup> Board Meeting on May 5, 2023, and published on June 17, 2023.

After comprehensive investigation and analysis of the factual data, a total of five conclusions and six safety recommendations were obtained, which are detailed as follows:

## **Findings**

### **Findings related to probable causes**

1. The slinger of the contractor of Continental Engineering Corporation attached one lifting clamp at the bottom layer of the stacked steel columns. During the lifting process, the steel columns toppled due to

the shift of the center of gravity and pushed the fence into the track area, which was bumped by the accident train.

### **Findings related to risk**

1. Railway Bureau and TRA did not conduct hazard identification and risk assessment on the impact of the collapse and fall of stacked materials at the construction site near railway tracks on the safety of train operation. Therefore, there is no standardization of the where and how stacked materials are placed at the construction site near railway track, and no standardization of not extracting or moving the stacked materials from the lower layer.
2. The engineer of Continental Engineering Corporation failed to hand over the radio to the lookout in accordance with the regulations. When the accident happened, the lookout did not have a radio to immediately notify the approaching train to stop.
3. The top of the steel columns exceeds the fence by 8 cm, but the inspection passed on the day before and the day of the accident. The Southern Region Engineering Office of Railway Bureau and Continental Engineering Corporation did not properly implement construction safety management.
4. The north end lookout did not carry a radio, but the inspection passed on the day of accident. Continental Engineering Corporation did not properly implement construction safety management.

### **Other findings**

None

### **Safety Recommendations**

#### **To Railway Bureau, MOTC**

1. To increase the safety of train operations, the Railway Bureau should review current regulations about construction near railway tracks and, cooperating with the Taiwan Railways Administration, specify the safety management regulations and the implementation mechanisms for construction near railway tracks. In addition, the Railway Bureau should include the regulations in instruction to tenderers and contracts. The regulations should address the following:
  - (1) Where and how stacked materials and machinery are placed near railway tracks.
  - (2) How stacked materials are taken and moved.
2. Implement construction safety inspection and management properly.

**To Taiwan Railways Administration, MOTC**

1. To increase the safety of train operations, the Taiwan Railways Administration should review current regulations about construction near railway tracks and, cooperating with the Railway Bureau, specify the safety management regulations and the implementation mechanisms for construction near railway tracks. In addition, the Taiwan Railways Administration should include the regulations in instruction to tenderers and contracts. The regulations should address the following:
  - (1) Where and how stacked materials and machinery are placed near railway tracks.
  - (2) How stacked materials are taken and moved.

**To Continental Engineering Corporation**

1. Supervise the lifting personnel to carry out the lifting operation in the correct way according to the propaganda content of Occupational Safety and Health Administration, Ministry of Labor.

2. Implement lookouts to carry radios, so that they can immediately notify the approaching train to stop in case of emergency.
3. Implement construction safety inspection and management properly.

Note: The language used in the occurrence investigation Final Report is in Chinese. To provide a general understanding of this investigation for the non-Chinese reader, the Executive Summary of the Final Report was translated into English. Although efforts are made to translate it as accurately as possible, discrepancies may occur. In this case, the Chinese version will be the official version.