RAILWAY ACCIDENT

REPORT OF INQUIRY

INTO

THE RAILWAY ACCIDENT THAT OCCURRED

NEAR GOREY, CO. WEXFORD

ON 31st DECEMBER, 1975

PUBLISHED BY THE STATIONERY OFFICE, PRICE 30p.

Department of Transport and Power,

Dublin.

JULY, 1977.

RAILWAY ACCIDENT NEAR GOREY, CO. WEXFORD ON 31ST DECEMBER, 1975

1. The Minister for Transport and Power by Order dated the 9th day of January, 1976 directed that an Inquiry be made by Mr. [redacted], B.E., M.I.E.I. into the causes of a railway accident which occurred near Gorey at about 09.28 hours on Wednesday, 31st December, 1975.

2. I inspected the accident site on 31st December, 1975 and I heard evidence from persons concerned or having relevant knowledge of the accident and from officers of Coras Iompair Eireann on the 17th and 18th June, 1976 at the Land Commission Court Room, 24 Upper Merrion Street, Dublin. The evidence was not taken on oath and was heard in public. I have the honour to report as follows:-

3. The train involved in the accident was the 08.05 hours Rosslare Harbour/Dublin passenger train. The train was derailed near Bridge No. 292 which is known locally as either Cain or Clogh Bridge. This bridge carries the single line railway track over a public road.

4. It is regretted that as a result of the accident four passengers and one C.I.E. employee were killed. Thirty nine passengers and four C.I.E. employees received injuries of varying severity.

5. The accident occurred in daylight. The weather conditions were dull and overcast and it was raining.

6. The line was reopened for traffic on 5th January, 1976.

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DESCRIPTION

Site

7. Cain Bridge is near the 63 mile post in the Ferns/Gorey Section of the Wexford/Dublin line, is about 3 miles south of Gorey, and is on a straight section of track on the top of an embankment. There is a slight up-gradient from the Ferns direction. The bridge construction was two diagonally braced wrought-iron lattice girders on masonry abutments.

The train

8. The train consisted of a locomotive and eight vehicles. There were 94 passengers on the train.

The course of the accident and damage caused

9. The derailment commenced when the locomotive reached the bridge. The locomotive and the five leading vehicles crossed over the public road and were derailed. The locomotive came to rest at the toe of the embankment. The three leading vehicles were completely wrecked. The fourth and fifth vehicles were badly damaged. The sixth vehicle was partly derailed, the rearmost two vehicles remained on the rails. Damage to the permanent way was substantial.

E V I D E N C E

10. Mr. [redacted], representing C.I.E. outlined the course of the accident. He stated that the derailment occurred approximately two minutes after the bridge had been destroyed by a tractor-drawn low loader which was carrying a mechanical excavator from east to west along the public road which passed under Cain Bridge. He said that evidence would establish that a portion of the excavator struck the bridge dislodging both wrought iron girders and leaving the actual rails unsupported and out of alignment. As a result of this collision the girder on the east side of the track was fractured and the girder on the west side of the track was carried for a distance of 42 feet along the public road.

line was opened in 1863. It had been constructed pursuant to the provisions of the Dublin, Wicklow and Wexford Railway (Enniscorthy Extension) Act, 1860 and in accordance with plans deposited in connection with that Act. In a report dated 11th November, 1863 a Railway Inspecting Officer of the day had certified that the newly constructed railway complied with his requirements and could be opened for passenger traffic. In relation to Bridge No. 292 (Cain Bridge) the deposited plans provided for the public road to be diverted and lowered 8 feet and that the arch was to have a 25 feet span and to be 15 feet high. At the time of the accident the clearance under the bridge had, in some places, been reduced to 13 feet 10 inches. There were no Local Authority signs to indicate the clearance height available to road traffic passing under the bridge. C.I.E. was conscious for some time of the problem created by the presence on roads of higher vehicles and vehicles with higher loads than had previously existed. C.I.E. had discussed the problem with appropriate Government Departments and understood that certain steps had been taken by the Department of Local Government. For its own part C.I.E. had arranged for the regular appearance in national newspapers of Warning Notices alerting vehicle owners to the problem.

Mr [redacted] said that once a Railway Company had constructed a railway line with all its attendant works including bridges, in accordance with the provisions of the Act authorising the railway there was no continuing statutory obligation on the Railway Company to take account of changes of circumstances over which it has no control. C.I.E. has no power to interfere with the road surface under railway bridges nor has it power to erect

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advance warning signs for bridges with restricted clearances. C.I.E. can erect signs on the bridges themselves and since 1974 has been engaged in a programme of erecting such notices on bridges, with priority being given to national primary and secondary roads.

11. Driver [redacted] stated that he was a regular driver on the Dublin/Rosslare Harbour line. He drove the 03.29 hours ex Dublin newspaper train on 31st December, 1975 and noticed nothing unusual in the section between Gorey and Ferns. His train had crossed Cain Bridge about four hours prior to the accident. He was returning to Dublin as a passenger on the 08.05 hours train ex Rosslare Harbour. He had no recollection of the events leading up to the derailment.

12. Driver [redacted] who drove the train involved in the accident said that his train's speed as it approached Cain Bridge was approximately 55m.p.h. He sounded the hooter for an accommodation crossing before Cain Bridge. When the train was about 400 yards from the bridge he saw a man standing beside the track 75/100 yards ahead waving his hands and apparently trying to stop the train. Driver [redacted] sounded the hooter and applied both brakes. He next noticed the top of a yellow machine which he thought might be about to come up the side of the embankment and cross the line. Driver [redacted] then saw that the two rails and certain parts of the bridge structure were displaced and he knew that his train would be derailed. He continued to apply both brakes. He estimated the train's speed as it reached the bridge to be between 20 and 30m.p.h.

Driver [redacted] had driven a train over Cain Bridge the previous day and had noticed nothing unusual. On the morning of the accident the brakes and speedometer were working satisfactorily.

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13. Guard [redacted] who was the guard on the train involved in the accident noticed an instantaneous brake application followed immediately by a continuous brake application and heard the hooter just before the train was derailed. He saw nothing unusual prior to the derailment. He was travelling in the guard's van. He estimated the train's speed at the time of the first brake application at between 45 and 50m.p.h.

14. Dining Car Attendant [redacted] was on duty in the snack bar of the 08.05 ex Rosslare Harbour train on 31st December, 1975 as the train approached Cain Bridge. He remembered that there was a sudden brake application just before the accident. He did not recollect hearing the hooter.

15. Travelling Ticket Collector [redacted] confirmed that there were 94 passengers, including certain C.I.E. employees, on the 08.05 ex Rosslare Harbour train when it departed from Ferns. He noticed nothing unusual prior to the accident. He did not recollect either feeling a brake application or hearing the hooter immediately before the accident.

16. Platelayer [redacted] said that he was a platelayer on the section of line that includes Cain Bridge for about 20 years. After the accident a neighbour told him that the bridge had been struck by a road vehicle. He had previously seen low loaders carrying mechanical equipment along the public road that passes under Cain Bridge. He had never heard of the bridge being struck by a road vehicle prior to the day of the accident.

Mr. [redacted] stated that he was only responsible for inspecting and maintaining the track. He was not responsible for bridge maintenance but if he noticed anything unusual at a bridge he would report this to his ganger. He had never noticed anything unusual at Cain Bridge.

17. Permanent Way Ganger [redacted] stated that he had inspected the section of track that included Cain Bridge on the day before the accident and found it satisfactory. He was not responsible for the maintenance of the bridge structure but if he noticed anything needing attention he would report the defect to the Inspector. He had no knowledge of Cain Bridge being struck by a road vehicle prior to the accident nor had he ever inspected the bridge for evidence that it had been struck by road vehicles.

18. Permanent Way Inspector [redacted] stated that he had responsibility for the maintenance of about 53 miles of track, including the section at Cain Bridge. His responsibilities included bridge maintenance. Bridges were inspected annually. Cain Bridge was last cleaned and repainted in 1968 in accordance with a specification prepared by the Chief Civil Engineer. Metal bridges are repainted about every seven years. He had never seen any defects or evidence of sinking in the bridge abutments. He was unaware that there were drainage holes in the lattice girder bottom plates. In 1974 Mr. [redacted] found a ¼ inch to ½ inch deep mark near the centre of one of the bridge girders (left-hand girder travelling on the track towards Gorey) which suggested it had been struck by a high road vehicle. He considered it was not necessary to report this mark as the damage was so slight even though he was aware of C.I.E.'s concern about bridges being struck by road vehicles. He last inspected Cain Bridge in February, 1975.

19. Mr. [redacted] told the inquiry that on the morning of the accident he was at his father's house about 150 yards from Cain Bridge and he saw a low loader carrying an excavator along the

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Public road towards the bridge. Having heard a bang he went to investigate if the excavator had struck the bridge. He met a man driving a car whom he believed to be the driver of the excavator which was on the low loader. This man told him the bridge was down. He then heard a train hooter and he immediately ran across a field to signal the train to stop. When he reached the track at a point about 200 yards from the bridge the train which was travelling from the Ferns direction was about 50 to 60 yards away. He signalled to the driver. He was satisfied from the squeaking sounds that the train driver applied his brakes immediately. Mr. [redacted] estimated the time interval between his hearing the bang and signalling to the train driver to be about one and a half minutes.

20. Garda Sergeant [redacted] said that following receipt of a telephone message he went to the accident site, arriving at about 09.45 hours. At the site the driver of the low loader said told him that his vehicle had collided with the bridge.

Subsequent to the accident the Gardai found fresh yellow paint marks in roughly the centre of both bridge girders. The Garda Forensic Section found, after tests, that the paint in these marks was similar to the paint on the excavator which was being carried on the low loader. Garda [redacted] stated that after the accident the excavator was projecting over the left-hand side of low loader. He had not heard any previous report of Cain Bridge being struck by a road vehicle. On the day of the accident there were no notices to indicate the clearance under the bridge.

21. Area Rail Manager [redacted] told the enquiry that when he visited the site on 6th January, 1978 he met, by chance, the driver of the tractor that was hauling the low loader on the day of the accident, who told him that immediately the accident

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happened he got out of the tractor and seeing that the bridge was badly damaged he asked the excavator driver to call Ferns and Gorey. The tractor driver also said that the bridge was rotten through and he was unfortunate to be the first to damage it.

22. Messrs. [redacted] and [redacted] of the Institute for Industrial Research and Standards gave evidence on the results of their examination of sections of the bridge structure. This examination was carried out at the request of the Department of Transport and Power. Mr. [redacted] said that the material in the main lattice girders was wrought iron. The bridge metalwork was generally sound, apart from the accident damage, and some corrosion on the inside of the bottom plate of both girders. Mr. [redacted] found that all three drainage holes in the bottom plate of the girder which was fractured were blocked, and two of the three drainage holes in the bottom plate of the second girder were blocked. He estimated the loss of cross sectional area in the bottom plate adjacent to the fracture at about 5½%. Mr. [redacted] was of the opinion that this loss of cross sectional area would reduce the vertical load carrying and horizontal impact capacities by about the same percentages.

23. Dr. [redacted], Consulting Engineer, said he had, at the request of C.I.E., examined the structural condition and load carrying capacity of the bridge structure. He found the bridge girders in good condition. There was some local corrosion of the bottom flange plates in the portions between the bottom flange angles. The overall effect of this corrosion was small. The vertical load carrying capacity would be reduced by about 3% which was not significant from the point of view of railway traffic.

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The corrosion would reduce the horizontal impact capacity by about one half of one percent.

Dr. [redacted] was satisfied that the bridge girders and abutments were in good overall condition and structurally sound.

A bridge of the same design, constructed in steel, would not have any substantially better resistence to lateral impact.

24. Dr. [redacted], Bristol University, giving evidence on behalf of CIE, stated that he had examined the fractured girder and was satisfied that the fracture was consistent with there having been an impact load on the lower flange of the girder, probably preceded by an upward and forward lift. He found no evidence of fatigue fracture or fatigue failure in the bridge girder.

25. Area Civil Engineer [redacted] stated that he had inspected Cain Bridge in August, 1975 and found the bridge and abutments in a sound condition. He did not inspect the girder bottom plate drainage holes. He saw no sign that the bridge had been struck by a road vehicle. He then described the condition of the bridge when he arrived at the scene about two hours after the accident. The east lattice girder was lying on the ground and was broken in two parts, the west lattice girder which was resting on the yellow excavator had been carried obout 42 feet from its normal location. There were yellow paint marks on both girders. He measured the highest point of the excavator which was about 14 feet 8 inches above road level. By simulating the girder positions, he estimated the clearance under the bridge prior to the accident at about 13 feet 10 inches. Mr. [redacted] was satisfied that the excavator had struck the bridge and displaced the two lattice girders. There were no notices to indicate the safe clearance under the bridge. In his opinion headroom at all low clearance bridges should be increased. He was aware of a bridge having a headroom clearance of 16 feet 6 inches being struck by a high road vehicle.

26. Building and New Works Engineer [redacted] said that Cain Bridge was constructed in 1863 and that the section of line which included Cain Bridge was inspected and approved by a Railway Inspecting Officer in 1863.

Mr. [redacted] was satisfied that prior to the accident the bridge was safe for railway traffic loading. He examined the bridge sections after the accident and, taking account of its age, the amount of metal corrosion was negligible. There was a small nick in one of the girders. Provisions in the bridge structure for horizontal impact from high vehicles were lips on the bearing plates and the cross decking. He examined the bridge abutments after the accident and found them to be in excellent condition.

Mr. [redacted] said that the original clearance under the bridge was 15 feet. The clearance was measured at 13 feet 10 inches in 1972. He was satisfied that the reduced clearance did not result from any subsidence in either the track or bridge abutments.

27. Mechanical Engineer [redacted] said that he inspected Cain Bridge after the accident. The lattice girder from the west side of the bridge was in one piece and the lattice girder from the east side of the bridge was broken into two parts. There were two indentations about 8 inches apart, near the centre of the west lattice girder bottom plate and one similar indentation near the centre of the east lattice girder bottom plate. When he examined the excavator which was on the low loader he found two damaged plates about 8 inches apart, at the top of the dipper stick. There were some yellow paint marks on both girders. In his opinion the excavator dipper stick had struck both lattice girders.

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28. Technical Manager [redacted] told the inquiry that when he inspected the locomotive after the accident it was lying on its side and both brake handles were in the fully released position. In his opinion the driver was holding the brakes fully on at the moment of derailment but when the locomotive turned over the driver was on his back at which stage he probably pushed the brake handles into the release position.

Mr. [redacted] detailed damage to the rolling stock. The locomotive was lying about 75 feet beyond Cain Bridge after the accident. There was no evidence of skidding on the locomotive wheels.

29. Senior Engineer [redacted] estimated the stopping distance for the train, travelling at 55 m.p.h. when approaching Cain Bridge from Ferns and allowing for reaction time of 2 seconds before the brake handles were applied, at 753 yards. He did not think that heavy rain would have much effect on the stopping distance.

CONCLUSIONS

30. The 08.05 hours Rosslare Harbour/Dublin passenger train was derailed at Cain Bridge, which carried the railway over a public road, when it ran into a section of railway track that was unsupported and out of alignment.

31. This section of railway track was unsupported and out of alignment as a result of Cain Bridge having been damaged in a road accident very shortly before the arrival of the train.

32. Responsibility for this tragic derailment cannot be attributed to any member of the train's crew. Nothing in the mechanical condition of the train contributed to the derailment.

33. The section of railway that includes Cain Bridge was constructed in 1863 pursuant to the provisions of the Dublin, Wicklow and Wexford (Enniscorthy Extension) Act, 1860 and in accordance with plans deposited in connection with that Act. A clearance height of 15 feet under Cain Bridge was marked on these plans. This section of the railway was inspected and approved before it was opened for railway traffic. In 1972 and on the day

of the accident the clearance height under Cain Bridge was about 13 feet 10 inches.

34. Cain Bridge was structurally adequate to cater for the loads imposed on it by railway traffic.

REMARKS AND RECOMMENDATIONS

35. There were no signs or notices either on Cain Bridge or on the public road approaches to the bridge to advise road users of the clearance under this bridge. In recent years C.I.E. and Local Authorities have erected such signs and notices at many low-clearance railway bridges. Initially this programme was confined to railway overbridges on national primary and secondary roads and was subsequently extended to include bridges over certain tertiary roads. In view of the increasing number of high vehicles now using public roads and of the potential risk to railway traffic that could arise in the event of a high road vehicle accidentally hitting and damaging a railway overbridge, adequate signs should be erected as soon as possible on and at the approaches to all railway overbridges crossing public roads advising road users of the clearance height under bridges where the clearance height is 15 feet 6 inches or lower.

36. While Cain Bridge was structurally adequate to cater for the loads imposed on it by railway traffic there was some corrosion in the lattice girder bottom plates, drainage holes in the bottom plates were blocked and there was a mark on one girder indicating that it had previously been struck by a road vehicle. All metal railway bridges should be examined frequently by C.I.E. for evidence of corrosion and blocked drainage holes and the appropriate corrective action should be taken as soon as possible. Bridges over public roads should also be examined frequently for signs or marks which may indicate that they have been struck by road vehicles. All such signs or marks should be

reported immediately to the Chief Civil Engineer C.I.E. for his professional assessment and for C.I.E. to arrange any necessary remedial action to the bridge structure.

37. The prompt action of Mr. [redacted], in trying to warn the train driver before his train reached Cain Bridge was very commendable.

[redacted]
Railway Inspecting Officer.