

New York, Feb. 24th, 1911.

Chas. Buchanan, Esq.,
Lloyd's Register,
71, Fenchurch St.,
London, E. C., Eng.

Dear Mr. Buchanan:-

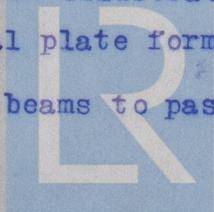
SS "CACIQUE".

With reference to your letter of 17th October, 1910, which perhaps you may recall, and which gave me the result of calculations made by your Office regarding the damage which the above vessel sustained during her first voyage to the girders under the maindecks in #3 hatchway and the deck itself.

Your letter stated that the calculations proved that the damage resulted entirely from an improper concentration of the Nitrate cargo in the 'tween decks. I may say that I have never agreed with this opinion, but I deferred writing you further on the subject until the steamer had again reached this port, that I might be able to state definitely whether the girders were really weak or otherwise.

The steamer has recently been here and I found evidence that the decks even in #1 and #4 holds gave signs of weakness in way of the hatchways. As some weights were being put in these 'tween decks, I had, as a temporary expedient, wooden shores or stanchions put under the centre of the fore and aft girder in both the lower hold and 'tween decks.

My own opinion is that it is more the fault of construction than of design, and I enclose you a rough sketch illustrating this view. On the sketch you will note that the vertical plate forming the backbone of the girder is cut away to allow the bulb beams to pass through and that



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compensating strength by means of an angle lug has only been given to the vertical plate on the flat side of the bulb beam.

I think that you will agree with me that the only strength left in the girder is the depth of the bottom angles, viz: 4 inches. To put it in a more concrete form, if you were to take a saw and cut from the bottom of the triangular piece cut out to the bottom of the girder, you would have absolutely no girder left and, therefore, you have two-thirds practically of the strength of the vertical member of your girder cut away.

Another weak point about the hatchways is in the side coaming plates: These plates are put in in two lengths, butted at the centre of the hatchway, with a strap tapered away at the bottom edge, and not even turned round the coaming plate, the strap being secured to the plate by about six rivets on each side. This takes away more than half the strength of the coaming plate. In your letter you stated that the standard you require for the strength of 'tween deck beams is 8 ft. of coal at 50 cu. ft. to the ton; I take it that the combined girder strength would require a modulus of resistance of about 100, this giving a fair margin of strength. I have tried to calculate out the actual strength of the girder, the hatch coaming plate, and the bulb angle forming the coaming, and I make these roughly: Girder, 26.67; coaming plate, 9; bulb angle, 25.87; giving a total modulus of resistance of 61.54. There may be some slight errors in my figures, but I think they are approximately correct and prove that the girder is far too weak as constructed; but, had the girder not been cut and the coaming plate been continuous, the modulus would have been practically 100, and the girder would have been strong enough.

I am sorry to inflict this on you, but hope it will prove of interest, and, if you have any light to throw on the subject, I shall be very glad to hear from you.

Trusting you are in the best of health, with kindest regards,
Yours very truly,

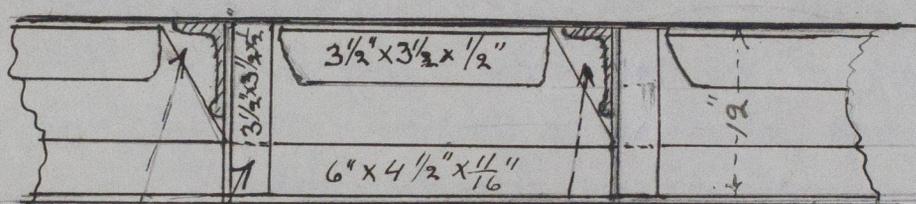
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3/8" Cacique.



Rough sketch of Girder under decks

Vertical plate cut away to allow
bulk beams to pass through.

Compensating angle leg on one side of beam.

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