

To: A.N.C.X.F.

(Copies to: Headquarters, 21 Army Group
Combined Operations Headquarters
C.R.E. 15 (Kent) G.H.Q. Troops Engineers,
British Liberation Army).

27th July, 1944.

N.L.O. PONTOON CAUSEWAYS - FINAL REPORT.

I beg to report that on the instructions of F.O.B.A.A. and with the concurrence of C.R.E. 15 (Kent) G.H.Q. Troops Engineers, I ceased to act as N.L.O. Pontoon Causeways on 24th July, 1944, and returned to England. A report on the construction and operation of Pontoon Causeways is submitted herewith.

2. The twelve Skipper-Lieutenants, R.N.R. appointed as pilots worked extremely hard when called upon, and it is considered that they did well under rather difficult circumstances. Skipper-Lieutenant Donovan proved efficient and reliable as the senior pilot.

3. The Assistant N.L.O., Lieutenant D. Law, R.N.R. also proved to be a good seaman, efficient and hard working.

4. It has been a great pleasure to work with Lieut. Colonel Fayle, C.R.E. 15th (Kent) G.H.Q. Troops Engineers, in whom, it is felt, the Navy has lost a very good seaman.

EWM/CH:

Commander, R.N.V.R.
N.L.O. Pontoon Causeways.

I. REPORT ON CONSTRUCTION AND OPERATION OF CAUSEWAY.

(i) Construction

The services of N.L.O. were not required for ^{thus} the portion of the work, except to arrange for the laying of moorings off the building site. All arrangements in connection with the choice and allocation of building sites had already been completed and appeared to be satisfactory in every way.

(ii) Trials.

A causeway was laid in Osborne Bay, Isle of Wight, and as a result of trials carried out here with L.C.T. a technique was devised and agreed by Lieut.Colonel Fayle, R.E. and N.L.O.

(iii) Training.

Training of tugs' crews commenced immediately after trials and twelve causeway pilots were subsequently appointed. Training of pilots and tugs' crews was carried out by N.L.O. and his Assistant, Lieut.D.Law, R.N.R. The period available for training was short, but a reasonable standard of efficiency was attained during this time.

As many L.C.T. as possible were given an opportunity of using the causeway, and a large number of L.C.T. C.O.'s and 1st Lieutenants were taken as spectators. N.L.O. also gave a short lecture on the working of the causeway to C.O.'s of Forces 'J' and 'G' who had been unable to witness trials ^{on the bank in} and training.

(iv) Towing.

N.L.O. discussed and agreed mooring arrangements for assembly of equipment in Osborne Bay with the staff of Commander-in-Chief, Portsmouth, and arranged for additional towing facilities from the building site to the assembly area. Towing serials from assembly area to assault area were also discussed and agreed with staff of Commander-in-Chief, Portsmouth, and N.L.O. was placed in charge of the despatch of tows from Osborne Bay. The provision and making up of all towing equipment was also arranged by N.L.O. In this work the assistance of the Skipper-Lieutenants appointed as pilots and Boom Defence Officer, Gosport, proved of the utmost value.

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All the initial serials were despatched to time and in good order, but subsequent weather conditions made this part of the operation both difficult and delayed. Some ten percent of the equipment failed to reach the far shore, and a small percentage was lost off the beaches.

(v) Operation.

Another reason that The use of causeways in the early stages of the operation was on a small scale, ^{was} principally owing to the fact that they were not long enough to work much below high water stand, due to the delays in getting equipment across. Had causeways been completed to low water, one at a time, instead of construction proceeding on all six at once, their value at other states of tide would, no doubt, have been appreciated more fully.

The bad weather conditions from D+13 to D+16 resulted in considerable damage to causeways from stranded craft, and several tugs were put out of action. The causeways themselves stood up to the weather extremely well and ^{scouring} ~~sewing~~ and silting was comparatively slight.

When causeways had been put into working order again, lack of tugs made the original technique unworkable, and craft commenced using some causeways without tugs or pilots. This resulted in damage to a number of craft although a considerable increase in speed of working was achieved.

Lieut.Colonel Fayle stated as his opinion that a great deal more use could have been made of the causeways at an earlier date had the services of his N.L.O. been available to co-ordinate arrangements between the Army and Navy and generally supervise the working of pilots and tugs. This was not possible owing to the fact that N.L.O. was in charge of the despatch of tows from Osborne Bay, although it is considered, as suggested by N.L.O. at the time, that after the despatch of the large initial serials this part of the work could have been left to the Assistant N.L.O.

From the arrival of N.L.O. at the far shore on D+27, every effort

was made to make authorities "causeway minded", and an appreciable increase in the numbers of craft using them was apparent. Up to D +40, the four causeways worked had landed 10,000 vehicles and 100,000 men. Had it been considered advisable or necessary, twice this amount could have been handled with ease.

II. REPORT ON CONCLUSIONS AND LESSONS LEARNED.

(i) Construction.

- (a) Adequate moorings for completed strings should be available off the construction site.
- (b) A pier or hard allowing access for boats and pontoon tugs at all states of the tide is necessary at the site.
- (c) Pontoon tugs for handling strings after construction, and for training, must be provided in addition to those required for the operation, otherwise engines are liable to be worn out before "D" Day.

A number of dinghies and motor launches are also required for getting working parties off to strings afloat and general boat work and inspection.

- (d) Blisters should be longer - say 15 x 4 instead of 10 x 4 - and constructed with scow-ends.
- (e) Adequate provision for securing towing gear should be made in constructing, and fendering should be built in as an integral part of both blister and sinkers.
- (f) pontoons seven feet high, instead of five feet as now standard, would enable causeways to be worked with much less chance of craft grounding, and would dispense with most of the difficulties of silting and reverse slopes. On reasonably steep beaches this would enable L.S.T. to use sunken causeways.

(ii) Training.

- (a) An adequate training period for tugs' crews is essential, and at least one month is considered necessary. Pilots would not be required if all L.C.T. C.O.'s could be given one day's practice

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on the causeway with instruction in the capabilities of tugs and the necessary signals. Beachmasters and other naval personnel likely to be concerned with causeways should also be given a short course in the working of causeways.

- (b) It is considered that the working of causeways would be simple and more efficient if carried out entirely by the Navy, since this is really a naval operation and is not necessarily connected with the construction or maintenance side. The difficulty of naval personnel controlling or endeavouring to control tugs manned by Army personnel is a very real one.

(iii) Towing.

The bolted eye plates provided for towing proved reasonably satisfactory, but it is considered that in future these should be welded as well. 3" S.W.R. bridles with $3\frac{1}{2}$ fathom legs spliced into a towing ring should also be provided for each tow. Tows should also be ballasted slightly by the stern to prevent diving and filling of the forward pontoons. All filling pipes and air vents should be carefully sealed, the filling pipes being well secured in the "up" position. 2 x 30 sinkers would tow easily in pairs if a single method of securing them rigidly side by side could be devised, which should not present much difficulty. In this case ^{3" S.W.R.} $3\frac{1}{2}$ bridles with 5 fathom legs would be advisable.

L.S.T.s did not prove satisfactory towing vessels in the weather experienced. It is considered that this was due to the speed of the tows and the fact that nearly all vessels used their 6" kedge wire as a towing warp. The effect of this heavy wire on such a light tow was rather like that of an iron bar, and considerable strain was placed on the towing bridles. A manilla spring in the towing pendant would have eased the strain on the bridles and towing eyes of the pontoons and reduced the weight on the forward end of the tow.

Trawlers proved quite capable of towing one 2 x 30 sinker in bad weather.

The pontoon tugs towed well singly but speeds of over six knots, even in calm weather, are inadvisable.

(iv) Operation.

As was to be expected, many suggestions for modification in the form and technique of working causeways were made from the commencement of working.

In the American sector the use of tugs was dispensed with, except in emergency and a double causeway (two 2 x 30 sinkers side by side) was used, craft coming up at an angle of 45° or in some cases at right angles. This worked well with L.C.T.'s Mark 5 and 6, but is not considered suitable for Mark 4's. At right angles there is no gain in depth of water between bow and stern, and the 5 ft. height of the causeway allows insufficient margin on a falling tide, or with any sea running. The blister system, using tugs, is considered safer but slower. A combination of the two systems would allow for maximum working under all conditions.

Pontoons 7 ft high, with a sloping ramp on the blisters, should prove ideal.

The lack of fendering resulted in a good deal of damage to craft, as did the difficulty in working the whole length of the causeway. Craft which had used the causeway constantly would drive across it on a falling tide in spite of the apparently obvious consequences. No method of fixing would ensure marking poles remaining in position, and a large buoy or float at the end of together with leading marks on shore the causeway/would appear to be the only method of indicating its position when submerged.