

DRAFT

12th February 1960

RLBC/P12

NATIONAL INSTITUTE FOR RESEARCH IN NUCLEAR SCIENCE

GENERAL PURPOSES COMMITTEE

Rutherford Laboratory - Steam Supplies

Note by the Secretary

1. The attached statement from the Southern Works Organisation of the Development and Engineering Group of the Authority sets out the case for a new steam main to the Rutherford Laboratory.
2. A.E.R.E. Harwell will make use of this new main for their own buildings and it therefore seems appropriate for the cost of this scheme to be divided between the Authority and the National Institute. It has been agreed that the cost of laying on Authority land should be borne by the Authority and the cost of laying on the Rutherford Laboratory site should be borne by the National Institute.
3. The cost of the National Institute proportion of this scheme is £20,000. Funds are available in the estimates for 1960/61.
4. In order that work can be carried out in the summer months when steam requirements are considerably reduced, approval is sought by correspondence to proceed with this scheme at a cost to the National Institute of £20,000.
5. I shall be grateful if members will let me know whether they have any objections to the proposal, if possible before March 18th. If there are no objections, I will ask the Chairman whether he will approve on behalf of the Committee.

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*Mr. Haynes*

RUTHERFORD LABORATORIES - STEAM SUPPLIES

1. The source of heat for the Rutherford Laboratories of the National Institute for Research in Nuclear Science is the main boiler plant of the Atomic Energy Research Establishment at Harwell.
2. An initial estimate of the steam demand for this purpose indicated that a short 4" service connection from the existing 6" main in the vicinity of the Proton Linear Accelerator (Building 412) would suffice. This connection with a corresponding condense release main has been installed, and is capable of passing 9,000 lbs of steam per hour.
3. On completing the design of the buildings being constructed under the first phase, it has been possible to make a more accurate assessment of the steam requirements. The heating load will need 9,500 lbs/hr to which must be added the magnet heating and air conditioning plant consumption, amounting to a further 2,000 lbs/hr. The heating load for the phase II buildings calls for a further 5,500 lbs/hr.
4. In the future there is mooted a restaurant-cum-lecture theatre, an extension for the propane bubble chamber, control room extension, radio chemical laboratory, computer building and ancillary maintenance buildings. This could need another 6,000 lbs of steam per hour.
5. The total load now envisaged is in the order of 23,000 lbs/hour of which 9,000 can be supplied without unduly high velocities from the mains already installed. This leaves a deficiency of 14,000 lbs/hour.
6. It is not practicable to increase the size of the existing service connection to the Laboratories since the 6" feeder will in turn be overloaded. It is therefore proposed to lay a new steam main from an existing 12" main within the A.E.R.E. It is recommended that this main should be 8" as far as the eastern boundary of the National Institute site where a blanked tee be left for future development and then a 6" to interconnect with the existing distribution mains. The 6" main will carry 20,000 lbs/hour, which with the facility to add further connection to the 8", which is good for 35,000 lbs/hour, should allow a reasonable margin for future development.
7. In order to return the condense it is proposed to run a 4" gravity condense main to the point of junction of the 6" and 8" steam mains, thence a 5" main to a new condense receiver and pump house just North of Fermi Avenue. From there a new 3" pumped main to the Boiler House hot wells.

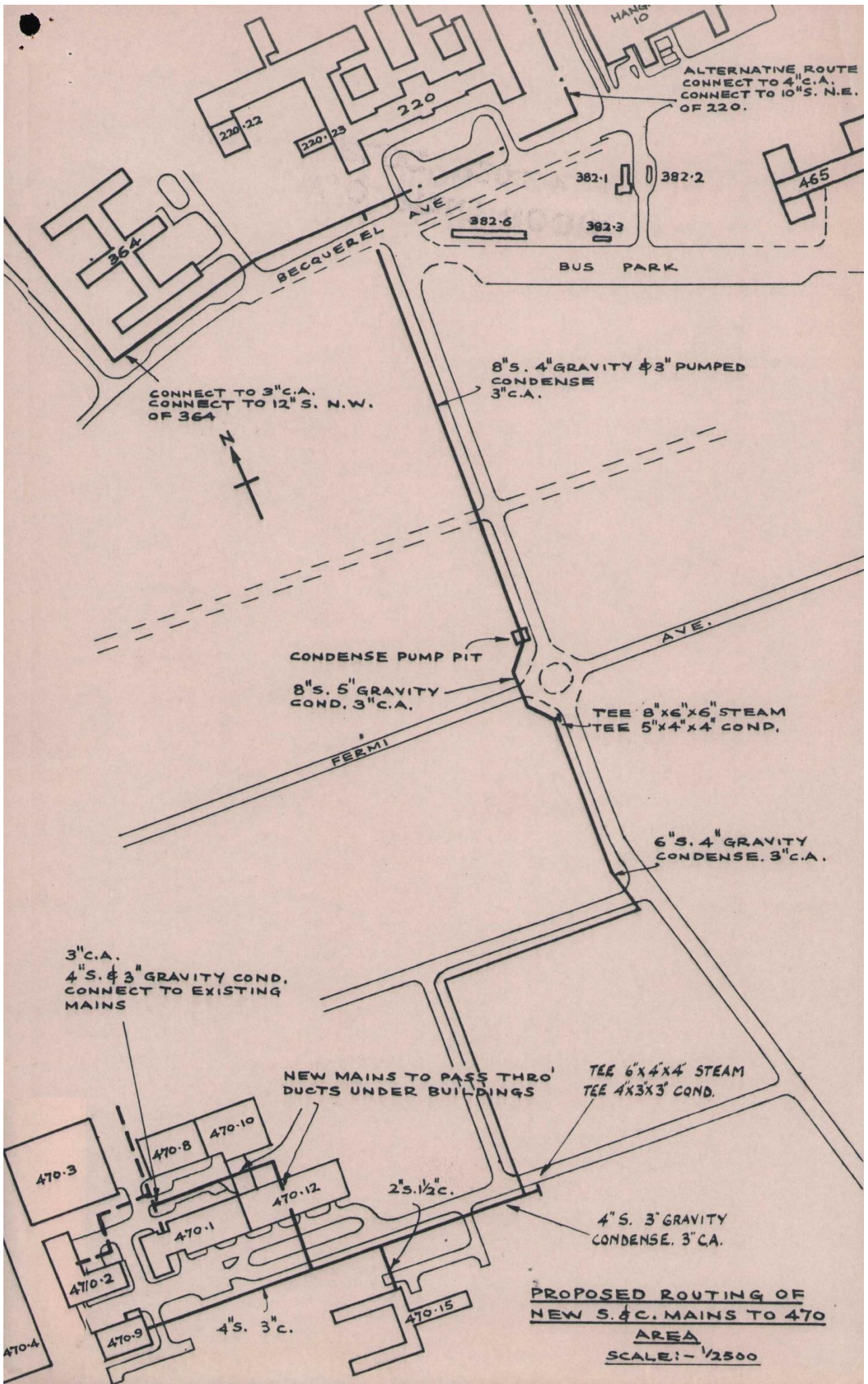
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8. At the same time, and in the same trench with resulting economy it is proposed to install a 3" compressed air main to link up with the distribution mains which have already been installed. This has the advantage of providing increased supplies and at the same time improving reliability by converting the existing spur feeder into a ring main.
9. The intention would be to lay steam mains in steel and condense mains in copper in the ground, both pipes being insulated together with light weight cellular concrete. This is now the standard Harwell practice.
10. The cost of these works is estimated at £40,000. Of this sum £35,000 would be expended in 1960/61 and the remaining £5,000 in the following year.
11. The proposals are indicated on the attached sketch.

G. M. Harbert.

22nd February, 1960.

Distribution: Mr. Bowles (2)  
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File (2)



ALTERNATIVE ROUTE  
CONNECT TO 4" C.A.  
CONNECT TO 10" S. N.E.  
OF 220.

CONNECT TO 3" C.A.  
CONNECT TO 12" S. N.W.  
OF 364

8" S. 4" GRAVITY & 3" PUMPED  
CONDENSE  
3" C.A.

CONDENSE PUMP PIT

8" S. 5" GRAVITY  
COND. 3" C.A.

TEE 8" X 6" X 6" STEAM  
TEE 5" X 4" X 4" COND.

6" S. 4" GRAVITY  
CONDENSE. 3" C.A.

3" C.A.  
4" S. & 3" GRAVITY COND.  
CONNECT TO EXISTING  
MAINS

NEW MAINS TO PASS THRO'  
DUCTS UNDER BUILDINGS

TEE 6" X 4" X 4" STEAM  
TEE 4" X 3" X 3" COND.

4" S. 3" GRAVITY  
CONDENSE. 3" C.A.

PROPOSED ROUTING OF  
NEW S. & C. MAINS TO 470  
AREA  
SCALE: - 1/2500

S.W.O. PRINT ROOM  
\* BLDG 220. \*