

HEADQUARTERS
Company B, 343rd Engrs. (GS)
APO 464, U. S. Army

EAH/ohm
19 May 1944

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Subject: Underground Construction in Italy.

To: Army Engineer, Fifth Army,
A. P. O. #464, U. S. Army.

1. In accordance with instructions issued by Commanding Officer, 343rd Engineers (GS), the following report is hereby submitted.

"On 20 March 1944, rough initial topographical surveys were made of the site selected and a rough skeleton layout was submitted to the Army Engineer for approval. With modifications, one was approved, and a completed drawing was received by the Engineer Company on 22 March 1944. At 0800 hours 23 March 1944 the construction was begun.

"The site consisted of a seven to ten foot layer of clay superimposed on soft sandstone of an unknown depth (60'-0"). At first appearance it was thought that this sandstone was of sufficient softness to be cut out with air-spades, but the early days of excavation proved that while perhaps 30% of the rock might be thus workable, the other portions of the rock shelves were of variable hardness, all so difficult to cut with an air-spade as to reduce progress to a negative quantity. As a consequence it was decided to use explosives. Forty percent dynamite was the best for the purpose but only "Nobels Explosive" was available in a slow explosive, so quarrying was begun with that, pending the arrival of dynamite.

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"Also, 23 March to 25 March was spent in excavating and preparing a face from which to start tunneling. On March 25th tunneling was begun. On 27 March, a section of an Allied Tunneling Company arrived to assist in construction. In view of the fact that their personnel consisted almost entirely of hard-rock miners, they were divided into drilling and dynamiting crews of three men each and such a crew assigned to each mucking crew. In addition, at the suggestion of the Commanding Officer, 60 cm gauge track and one ton dump cars were located and installed in the tunnels to speed up mucking operations. Our speed was increased tremendously. This section, with its specialized experience and knowledge, was a very potent factor in the speedy completion of the job.

"On April 8th, part of a Company of a Combat Engineer Regiment was assigned to assist in the completion of the 1st priority, which was urgently desired.

"On 15 April, the first priority (about 3200 cubic yards of excavation), consisting of three latrines (less fixtures), fifteen rooms, and 1000 lineal feet of tunnel was completed, all electric lights had been installed, ventilating section fans were working, one 43'-0" shaft had been sunk, and a stairway entrance up the 43'-0" shaft into the building above completed.

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"After twenty-two days of twenty-four hour a day labor one day was taken off, and on 17 April, 2nd priority work, thirteen rooms and two hundred and fifty feet of tunnel was begun.

"This second priority was completed on 22 April and work immediately begun on the 3rd priority. This last priority was by far the largest, consisting

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"At this time it may be well to mention a few of the difficulties encountered. When the main entrance tunnel was begun, though it was at the same elevation and between the other two entrances, no evidence of rock was found. It was necessary to solid sheet with 3" lumber, 160' of this tunnel. At about 120' in, this main tunnel also went through an old well shaft. This was turned to good advantage by sealing it off at floor level, venting it to the ground surface above and draining the sewage from the latrines into it; that is, using it as a septic tank.

"At one time all of the compressors and the light plant were put out of commission for seven hours by artillery fire.

"Again, our water service, a 2' x 6' tunnel, cut from solid rock, was blocked by a shell explosion.

"Our spoil was disposed of by surfacing roads in the area, and by stockpiling it in places available to Engineers employed on road work.

"In all, to sum up, in forty-three days, 1960 lineal feet of tunnel were driven, three latrines comprising 15 toilet bowls, four urinals, and three lavatories were installed complete with water supply and drains, 38 rooms, varying in size 12' x 12' to 20' x 60' were excavated, two shafts totaling 100' length with 12' x 12' section were sunk, 10 doors installed, one 43'-0" stairway and one 16'-0" stairway were built, one 8' x 20' partition installed, 5 rooms lined with plywood, 10000 lineal feet of light wire, complete with insulators, installed with 300 lights, 10 eight inch ventilation shafts sunk in latrines, kitchens, and dead end halls, and permanent 1000 cubic feet per minute exhaust fans installed. A total of 2400 cubic yards of 15000 tons of stone was quarried and disposed of at an average rate of 250 cubic yards per day.

"A total of 61,500 M.H. were worked, 48000 of them on quarrying and rock disposal, and the balance on auxiliary work".

/s/ Ezekiel A. Hamilton
EZEKIEL A. HAMILTON
Capt., C. E.
Commanding