

# Evidence of Linde Tunnel Construction Dates and Discussion of Tunnel Drawings

## 1. Documentary Evidence

Shaw Environmental's letter to the US Army Corps of Engineers, dated 1/7/05, SRDB# 82865, stated:

The 97-inch tunnel between Junction Boxes #6 and #7 and the 80-inch tunnel between #7 and #9 were constructed in 1961. The nearby Building 31 tunnel set was constructed 4 years earlier and removed during remedial action in EA-M and EA-E due to interior fixed contamination. The 97-inch tunnel joined the Building 31 tunnel at Junction Box #6.

The FUSRAP remediation program was carried out by Shaw, under the Corps of Engineers direction. The above statement is consistent with the tunnel construction drawings that were subsequently obtained by NIOSH from the current site owner.

## 2. Worker Statements

As discussed in the Linde Working Group's meeting of 1/30/12, NIOSH acknowledges that worker statements are not entirely consistent on the issue of tunnel construction dates, finds the statement of the supervisor with direct access to plant construction drawings and details for the Linde site to be the clearest and most likely to be well-informed. The latter statement includes the following notes from the interview:

There were three (3) primary tunnels. The east-west tunnel went from the Powerhouse . . . across the whole length of the site to the Office Area in Buildings 1, 2 and 10 and to the operations in Bldgs. 2a and 2b. This tunnel was built prior to 1953.

The north-south tunnel also went the whole length of the site to Bldgs. 30, 31 and 57 on the northeast border of the site. There was a branch off this tunnel that went to the west to Bldg. 70. There [were] other junctions off this tunnel and one went to the north end of the property to Bldg. 31. These tunnels were built after 1956.

## 3. Tunnel Drawing Notations

a) Drawing A-437867, dated 2/1/61

This drawing was examined by members of the Linde WG at the 1/30/12 meeting. This drawing depicts the tunnel system running from Junction Box #6, between Buildings 30 and 31 south to Building #8 and west to Building 2A and the future site of Building 70. Particular attention was paid to notations that indicated evidence of new tunnel construction, as follows:

In the title box in the lower right hand of the drawing, there is the notation "UTILITY TUNNEL EXTENSION" at the top of the box, the title "LOCATION PLAN" and the date "Feb 11, 61", both inside the

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title box. Above that can be seen the stamped words “ISSUED FOR BIDS. DO NOT USE FOR CONSTRUCTION.”

In the main body of the drawing, there are many notations indicating new construction vs. old construction:

Between Bldgs 30 & 31, we see the notes “EXISTING JUNCTION BOX #2” and “NEW JUNCTION BOX #6”. To the north of the latter we see the words “EXISTING 80” TUNNEL”, while to the south of that junction box, we see the words “NEW 80” TUNNEL” and south of “NEW JUNCTION BOX #7” we see “NEW 97” TUNNEL” leading to “NEW JUNCTION BOX #8”.

Of note, there is a tunnel running from the new junction box #6 west to Building 30, labeled “NEW 68” TUNNEL” and an extension of that same tunnel running east to Building 31, labeled “6’7¾” “ (essentially 68”), with a further notation box inside Building 31 stating “NEW CONC. PADS & FENCE FOR RELOCATED EXIST. TRANSFORMERS”. This not only shows new tunnel construction in 1961, but it establishes that, before that year, no utilities entered Buildings 30 and 31 from underground. Information elsewhere on this drawing, labeled “General Notes” explain how utilities were supplied to the ceramics Plant area before the 1961 tunnel extension was built.

On the right edge of this drawing, there is a text section with the heading “GENERAL NOTES”. Some of these notes will be quoted at length:

“1. ACCESS TO ONE OF THE COAL STORAGE AREAS SHALL BE MAINTAINED AT ALL TIMES DURING THE TUNNEL AND UNDERGROUND LINE CONSTRUCTION.”

“2. IN ORDER TO MAINTAIN ACCESS FOR SHIPPING AND RECEIVING MATERIAL ALL RAILROAD TRACKS CANNOT BE CUT AT THE SAME TIME.”

“4. AN ACCESS ROAD SHALL BE PROVIDED CONTINUOUSLY TO STORAGE AREA YARD #67. WHEN THE EXISTING ROADWAY WEST OF BLDG 31 IS INTERRUPTED BY THE CONSTRUCTION OF JUNCTION BOX #6 AND THE 68” TO BLDG 31 . . .”

“5. THE PORTION OF THE TRESTLE FROM BLDGS 30 AND 31 SOUTH TO THE DOGLEG BETWEEN TRACKS #3 AND #4, SHALL BE MAINTAINED UNTIL THE TUNNEL IS IN SERVICE. AT JUNCTION BOX #6, EAST TO BLDG. 31, WEST TO BLDG. 30 AND WHERE THE TRESTLE CROSSES THE TUNNEL RUNNING WEST FROM JUNCTION BOX #7 THE LINES ON THE TRESTLE SHALL HAVE TO BE SUPPORTED DURING THE CONSTRUCTION PERIOD.” Note: this explains that the utilities for the Ceramics Plant buildings were carried by an overhead trestle until the 1961 tunnel construction replaced them. Later, you will see that the trestle was on the 1957 drawing of the Ceramics Plant utility tunnel section.

“6. THE NORTH-SOUTH ROADWAY ON THE EAST SIDE OF BLDG. 30 SHALL NOT BE CUT OFF BY THE TUNNEL CONSTRUCTION FROM JUNCTION BOX No 6 TO BLDG 30 IF THE NORTH-SOUTH ROADWAY ON THE WEST SIDE OF BLDG. 30 HAS BEEN CUT. ONE OF THESE ROADWAYS MUST BE OPEN AT ALL TIMES.”

“68”, 80” AND 97” FLAT BASE PIPE CLASS “D” AS MFG. BY AMERICAN-MARIETTA CO. SHALL BE FURNISHED BY LINDE CO. AND INSTALLED BY THE CONTRACTOR.”

b) Drawing A-360164, dated 3/20/57

This drawing was also examined by members of the Linde WG at the 1/30/12 meeting. This drawing depicts the tunnel system running from Junction Box #2, between Buildings 30 and 31 north to Junction Box #1, near Building #39, and then east to Junction Boxes #3 and #4 terminating at “PROPOSED BLDG. No. 57”. Evidence of new tunnel construction in 1957 was, as follows:

In the title box in the lower right hand of the drawing, there is the notation “UTILITY TUNNEL EXTENSION” at the top of the box, the title “LOCATION PLAN” and, under that, “57” & 80” UTILITY TUNNELS & SEWERS FOR NORTHSIDE OF PROPERTY” and the date “3/20/57”. Above that can be seen the stamped words “REVISED, REDRAWN & RELEAVED FOR CONSTRUCTION MARCH 20, 1957”. Under that we find “REVISED & REISSUED FOR BIDS JAN. 10, 1957”.

In the main body of the drawing, there are many notations indicating new construction vs. old construction:

At the top of the drawing, i.e. to the south, there are the words “EXISTING TRESSEL” [sic] just to the east of Building 30. That trestle system is shown reaching toward Building 31 as well as Building 30. No tunnels are shown to enter Buildings 30 or 31, although building entrance tunnels are shown from Junction Box #4 to Building #59 and a 42” tunnel from “JUNCTION WALL #5” to “PROPOSED BLDG. No. 57”. The north-south section of the tunnel between Junction Box #1 and Junction Wall #5 is shown to be 57” in diameter, much too small to walk upright in.

Indirect evidence of tunnel construction includes the fact that all buildings are only sketched in, while new and existing underground lines near the tunnel are shown in great detail. There are various notations on the drawing supportive of tunnel construction. There is a general instruction stating that “CONTRACTOR SHALL CONNECT ALL ACTIVE EXISTING LINES ENCOUNTERED TO RESPECTIVE NEW LINES AS REQUIRED.” In addition, there are many lines that cross the tunnel marked “TO BE ABANDONED”, an indication that such lines would be cut during tunnel construction. Directly above the 80” tunnel between Bldgs. 30 and 31, there is a notation stating “SMOKING SHED TO BE REMOVED BY OTHERS”. Near to Junction Box #1 is the notation “NEW 4” X H C.I. PIPE SUMP PUMP DISCHARGE” with an arrow pointing to the tunnel; it has been established that the tunnels were drained by sump pumps. Near Junction Box #1, there is the notation “REPAIR EXIST. ROAD”, which is probably an indication that tunnel excavation would damage the existing road during construction.

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c) Drawing A-63905, dated 1936

This drawing is entitled "LAYOUT UTILITY TUNNEL" and its date is only partially legible. This drawing does establish the existence of a utility tunnel running from Build #8 ("Powerhouse") underneath Building #14 ("Proving Laboratory", past Building 2 ("Shop"), underneath Building #11 ("Engineering Laboratory") and terminating at Building #10 ("Research Laboratory").

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