

Toilets and Sewers in Mohenjo-daro

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By the beginning of the third millennium BC in India, as in China, Egypt, and Mesopotamia, scientific development was well advanced. Excavations carried on at the sites of the Indus civilization have revealed remnants of **an ancient civilization unsurpassed in civil engineering accomplishments, particularly baths and drainage**. Whilst much is known of the hygienic measures of the period, little is known of the scientific knowledge upon which it was based. The lower city, which was tightly packed with residential units, was constructed on a grid pattern consisting of a number of blocks separated by major cross streets. Baked-brick houses faced the street, and domestic life was centred around an enclosed courtyard. **The cities had an elaborate public drainage system. Sanitation was provided through an extensive system of covered drains running the length of the main streets and connected by chutes with most residences.**



The Great Bath at Mohenjo-daro

This civilization is known for its well planned cities, brick built houses, excellent drainage system and water storage tanks. Benjamin Rowland (1904–1972), author of *Art and Architecture of India*, wrote: "Indeed it could be said that the population of the Indus cities lived more comfortably than did their contemporaries in the crowded and ill-built metropolises elsewhere. People were literate and had their own script. Dance and music formed essential part of their daily life."

They had wide main streets and were magnificently laid out in grid form, reflecting careful town planning. They **had sewers, municipal water systems**, public baths, and well-fortified citadels. The private houses were well built, of fine solid baked bricks which have not crumbled over the centuries. Many of them were two stories high, and had **seat latrines and chutes for refuse**. Homes were built around courtyards. The people of the Indus Valley civilization had an advanced technology. They knew how to make cotton cloth and copper and bronze castings and forgings. Some of their art objects have a wonderful simple realism. The torso of one small dancing figure is so unbelievably alive that one can almost feel the easy muscles at work under the smooth skin.

"Mohenjo-daro had some of the most advanced toilets and sewers, with lavatories built into the outer walls of houses. There were "Western-style" toilets made from bricks with wooden seats on top. They had vertical chutes, through which waste fell into street drains or cesspits. Sir Mortimer Wheeler, the director-general of archaeology in India from 1944 to

1948, wrote: "The high quality of the sanitary arrangements could well be envied in many parts of the world today."

Nearly all of the hundreds of houses excavated had their own bathing rooms. Generally located on the ground floor, the bath was made of brick, sometimes with a surrounding curb to sit on. The water drained away through a hole in the floor, down chutes or pottery pipes in the walls, into the municipal drainage system." The Indian architects designed sewage disposal systems on a large scale, building networks of brick effluent drains following the lines of the streets. The drains were seven to ten feet wide, cut at two feet below ground level with U-shaped bottoms lined with loose brick easily taken up for cleaning. At the intersection of two drains, the sewage planners installed cesspools with steps leading down into them, for periodic cleaning. By 2700 BC these cities had standardized earthenware plumbing pipes with broad flanges for easy jointing with asphalt to stop leaks."



Mohenjo-daro is located in what is now Sindh Province, Pakistan.