

American schoolchildren were slaughtered in a hail of bullets after packing like sardines into a bathroom in a doomed bid to escape the murderous rampage of Newtown gunman Adam Lanza.

Harrowing details about last year's mass shooting were revealed on Friday when US police released thousands of pages of documents, photographs and recordings from their investigation.

Lanza murdered 20 first graders and six adults at Sandy Hook Elementary School, using a rifle taken from his suburban mother's legally acquired home defense arsenal.

The troubled 20-year-old killer wore yellow ear plugs that muffled the screams of his victims. After committing one of the country's worst school massacres -- in less than 11 minutes -- he shot himself in the mouth.

One of the first police officers who arrived at the scene on December 14, 2012 said he discovered a "massive pile up" of corpses in the bathroom of one classroom in the small Connecticut town.

"There appeared to be about 15 bodies in the small room and several bodies, including, two adults near the entrance to the room," said the officer, Christopher Vanghele.

An adult victim lay across the dead children, who were stacked "two or three high" and packed in "like sardines," probably by the teachers when they heard gunshots.

"As the pile got higher it appeared that there was a mad scramble to get into the bathroom, with people stepping on one another and climbing on top of each other," he said.

There was no longer any space for the teachers to get in, but in the panic they failed to lock the outer classroom door.

The shooter interrupted them and "opened fire on the mass of children and adults... it was clear that no one had survived".

Other files said Lanza was dressed almost entirely in black, his clothes -- shirts, trousers, boxer shorts, socks, sneakers, fingerless gloves and a belt -- stained with blood and gunpowder.

According to an FBI incident report he ducked into a classroom and turned a weapon on himself after two law enforcement officers arrived, shattering his brain and skull, according to the attached forensics analysis.

The massacre, just one in what was then a series of deadly shooting sprees across the United States, inspired a short-lived and ultimately failed drive to tighten American gun ownership rules.

According to another witness interviewed by the FBI, Lanza and his mother Nancy owned at least four firearms, which were kept in a gun safe in the school shooter's bedroom closet.

Witness testimony, which has been redacted to remove some names and other identifying details, also revealed little known details about Lanza, who suffered from Asperger's Syndrome.

The gunman was a vegan, interested in Japanese techno music and had been taking Chinese lessons. He also knew how to build a computer from scratch by assembling spare parts.

His mother at one point took him out of school because he was sensitive to sound and light and photographs showed various windows taped over with white plastic and black bin liners.

Lanza carried out the murders the morning after his mother Nancy returned from a few days away, which she told one friend had been an "experiment" to allow him to stay home alone.

She told friends she was thinking about moving to the western state of Washington or to North Carolina to enrol her son at a special school or get him a job to make him more self-sufficient.

The investigation was unable to find a motive other than to conclude that the killer was obsessed with mass murders and had "significant mental health issues".

Nancy and Adam Lanza were said to have been close, with the mother not afraid of her son, but allegedly afraid for him.

Earlier this month, US authorities released recordings of emergency calls made by trapped and terrified people from within the school as the killer stalked the classrooms.

Lanza drove to Sandy Hook Elementary having that morning fatally shot his mother in the head as she lay in bed.

On arrival, he killed the school principal and a psychologist in a hallway, then shot dead two adults each in two first-grade classrooms, and shot 15 children dead in one classroom and five dead in the other.