

## NCPI Through the Years –



While NCPI wasn't formed until the 1940s, it is critical in understanding the organization to know a little of the history of clay sewers in the U.S. leading up to that time.

1815 Clay pipe sewers are installed in Washington DC, just blocks from the White House.

1849 Ohio Manufacturing opens the first clay sewer pipe manufacturing plant

1865 The first mechanical steam driven press began extruding pipe

1900's ASTM Committee L was formed and eventually renamed Committee C04 on Clay Pipe

1910's Anson Marston joins Committee C04 on Clay Pipe and leads the development of the first C04 document (*Memoranda of Recommendations for the Laying of Sewer Pipe*).

ASTM accepts the recommendations as a tentative specification designated C12.

1930's Organizations around the country represent clay pipe manufacturers regionally

Metcalf & Eddy publish *American Sewerage Practice* – 99.3% of the population in cities of 100,000 or more use dilution as the only “treatment” of sewage. The remaining 0.7% of the population uses irrigation.

1940s The regional organizations coalesce to form the National Clay Pipe Institute

NCPI begins a research partnership with The Ohio State University Research Foundation (OSU) with research into the *Improvement of Clay Pipe and Pipe Joints, Behavior of Sewer Pipe Under Load, Rotary Drying & Firing* and *Small Pipe Die Design*

1950s Wastewater treatment begins & infiltration (once seen as a benefit) is suddenly a liability.

ASTM C301 (*Standard Test Methods for Vitrified Clay Pipe*) is published.

ASTM C425 (*Specification for Vitrified Clay Pipe Joints Using Materials Having resilient Properties*) is issued. The standard is later renamed *Specification for Compression Joints for Vitrified Clay Pipe Joints and Fittings*.

The research partnership with OSU continues with further projects on joint performance and *Performance of Test Bearing, Properties of Clay Flue Liners Tamping Process for Clay Pipe Forming, The Effects of Rate of Loading on the Supporting Strength of VCP, Study of the Effects of Trench Conditions & Arch Encasement on the Load Bearing Capacity of VCP*.

1960's Factory applied joints become the standard

*Study of Manning's "n" Factor* conducted

New jointing materials are developed in partnership with OSU

NCPI conducts proprietary research that results in significant changes to ASTM C301 *Standard Test Methods for Vitrified Clay Pipe* based on dramatic improvements in pipe strength.

1970's The NCPI Hydraulic Calculator is developed.

With the advent of the energy crisis, NCPI studies the energy usage in the production of various pipe materials.

NCPI sponsored a project led by California consultants Ramseier and Riek. The committee formed during this project would later be known as the Bay Area Committee on Air Testing. This work led to the first ASTM air test standard for sewer lines

ASTM C828, *Recommended Practice for Low-Pressure Air Test of Vitrified Clay Pipe Sewer Lines (4 – 12 in.)* is published

1980's The first NCPI computer program (Trench Load) is developed

1990's NCPI produces a series of education videos. *From the Earth and Back Again* wins an Industrial Telly Award.

The first installation of Trenchless VCP in the U.S.

ASTM C1208, *Specification for Vitrified Clay Pipe and Joints for Use in Microtunneling, Sliplining, Pipe Bursting and Tunnels* was the first ASTM standard explicitly approved for trenchless installations.

NCPI Toolbox is introduced.

2000's NCPI conducts research into the use and optimal mix design for CLSM (Controlled Low-Strength Material) as a bedding material.

EPA study conducted at the University of Houston confirms that modern VCP joints do not leak – in straight alignment, with angular deflection and shear load.

2010's Haunching Research

ASTM C700 Standard edited

For more information about the history and development of sewer systems through the years, visit [www.sewerhistory.org/](http://www.sewerhistory.org/).