Wood in Historical Structures



From 1990 to 2023

Winter 1990

Tunneling with white oak -

well underground

mostly anaerobic environment

Durability and Longevity of Wood Surround

Minneapolis East Interceptor

Minneapolis, Minnesota Minneapolis East Interceptor Phase II, Contract C

DATE OF COMPLETION May 1992

\$16,582,737

OWNER Metropolitan Council of Environmental Services







Project Description

TUNNEL MINING DIMENSIONS 9,450' x 130"

EXCAVATION METHOD 130" Lovat M-130 Series 3100 TBM



Basic Structure of Wood

Consider wood as soda straws grouped together – running vertically in the tree trunk

- Longitudinal tracheids have cell walls that surround the hollow lumen
- In service, wood is dried, but continues to gain / lose water (cell walls) with changes in humidity



Wood in Service Cases

Cooling Towers – NSP at Allen S King; Prairie Island; Sherco

- Structure of cooling tower columns (mostly redwood) used to support louvers where water flows down
- Wood is very wet, low oxygen conditions
- Soft rot decay from outside into the core

Wood Composites

Testing of Hardboard Siding Samples - Late 1990s in accordance with ASTM D 1037

- Mechanical Testing Static Bending
- Internal Bond Test
- Hardness Testing (Janka-Ball)
- Thickness Swell and Water Absorption

Wood in Service Species Identifications



Wood in Service Cases



Beam #7 with the crack at the bottom and showing how the crack shows up on the side of the beam. Note also the LVL that is bolted to the sides (both side of beam).



Wood in Service Cases



Building Science and Wood Products



