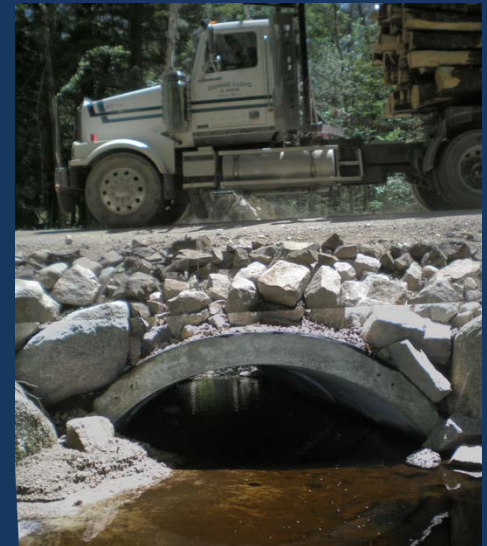


# Yankee Ingenuity – Innovative, Cost Effective Approaches to Environmentally Functional Forestry Haul Road Stream Crossings in Maine



Keith Kanoti  
Water Resources Forester  
Department of Agriculture  
Conservation and Forestry  
Maine Forest Service



**“Tell me what you want it to look like, not how to do it.”**



# Four Key Principles

Span the stream

Set elevation right

Slope matches stream

Substrate in the crossing





# Training





# Concrete Waste Blocks





# Concrete Waste Block Abutment Bridge



**22' span bridge \$6,200 Materials - \$11,200 Installed**



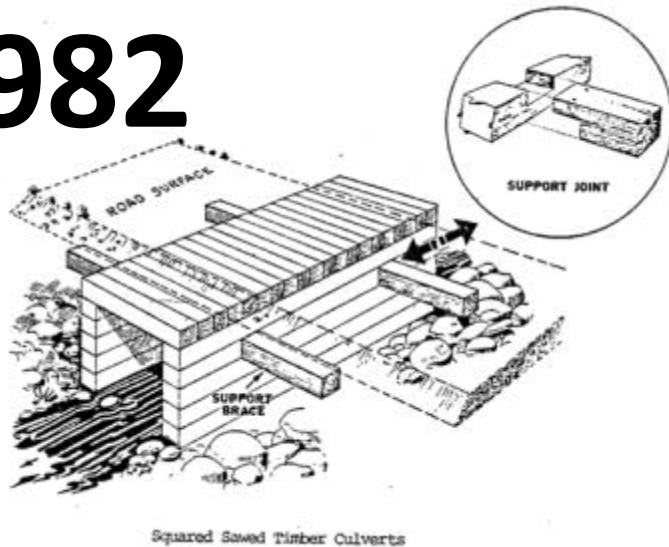
# Concrete deck panels and corner blocks





# Waste Block and PT boxes

1982



24' long 5' span  
PT box ~\$3,000  
installed →



↑  
50' long 10'  
span under 8'  
of fill ~\$10,000  
installed



# Mini-Bridge



**3' span Materials ~ \$700**

# Small Infiltrator Arch



**3.5' span 32' long \$2,800 installed**



# Large Infiltrator Arch



6' span 40' long Materials ~\$4,600

# Guard-rail ½ pipe



8' span 40' long ~\$6,800 installed



# Railcar ½ pipe



9' span 40' long materials free



# Temporary Bridges





# Temporary Bridges



# Temporary Bridges



**Abutment  
materials cost  
~\$1,700**



**Abutment  
material cost \$0  
24' bridge  
\$10,000**



# Dirigo Arches



**5' span 32' long ~\$3,000 installed**

# 5' Dirigo arch



**\$390 8' section**



# 8' Dirigo Arch



8' span 40' long ~\$9,600 installed

\$390 for 4' arch section

\$90 Footers 1'x2'x8'



# Precast Box





# Properly embedded pipes



# Skylight fill





# Decommissioning



# Questions?

