



INSPECTOR TRAINING

Amster Howard

UCT

Orlando FL

February 7, 2023

alternate title

**DO IT RIGHT
OR
DO IT TWICE**



**Specifications do not
eliminate leaks,
inspectors do.**



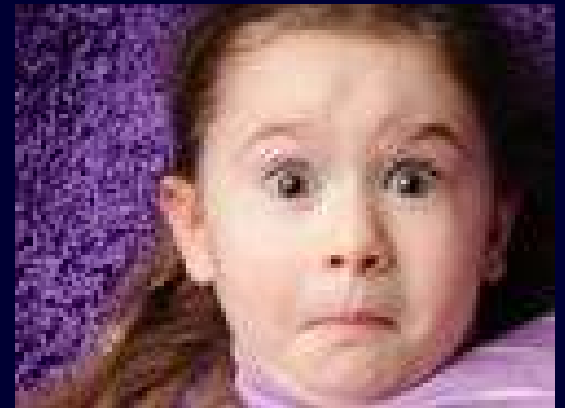
35 % deflection

- **Uncovered corrugated HDPE pipe**
- **20% deflection**
- **5 ft cover**





**“contractor pushing
pipe down to
grade with
backhoe bucket”**



CONTRACTOR HAS MORE AFFECT ON DEFLECTION THAN DESIGNER

**Engineer and computer can design
installation for 1 % deflection.**

Contractor can make it 10 %.



**CONTRACTOR
AFFECTS DEFLECTION
MORE THAN
DESIGNER**

Engineer and computer can design
installation for 1 % deflection.

Contractor  make it 10 %.

GOOD INSPECTION

**\$2 million project turned into
\$35 million lawsuit**

**\$20 million job had to have all pipe
removed and re-installed for
\$20 million rebuild**

**Half mile of pipe buried 50 feet
deep had to be dug up and
replaced**

2 common factors



100% BLAME THE PIPE

- **\$2 million project turned into \$35 million lawsuit**
- **\$20 million job had to have all pipe removed and re-installed for \$20 million rebuild**
- **Half mile of pipe buried 50 feet deep had to be dug up and replaced**

NO INSPECTOR

Currently, no overall training for pipeline inspectors for water line, storm drains, sanitary sewers, or culverts

There are online training courses for OSHA requirements, sling safety,

There are short, informational videos available from pipe trade associations covering their particular pipe

OPTIONS FOR BURIED PIPE INSPECTORS

INSTALLATION OF PE PIPE

Pressure Pipe

AWWA M55

ASTM D2774

ASTM F1668

PPI Handbook of Polyethylene Pipe

PPI Field Manual

MAB-3 Sample Specifications

Manufacturer Instructions

**American Society of Civil Engineers
(ASCE)**

continuing education for pipeline installation:

Live or virtual training

- **Buried Pipe Design and Installation (2 days)**
- **Pipeline Installation (1 day)**

Guided Online Course

- **Pipeline Installation (2 hrs/week for 6 weeks)**

THESE COURSES DIRECTED AT ENGINEERS

“on the job training



MYTH

you can measure density with sharp stick



“SELF COMPACTING”

90-95% compaction ??

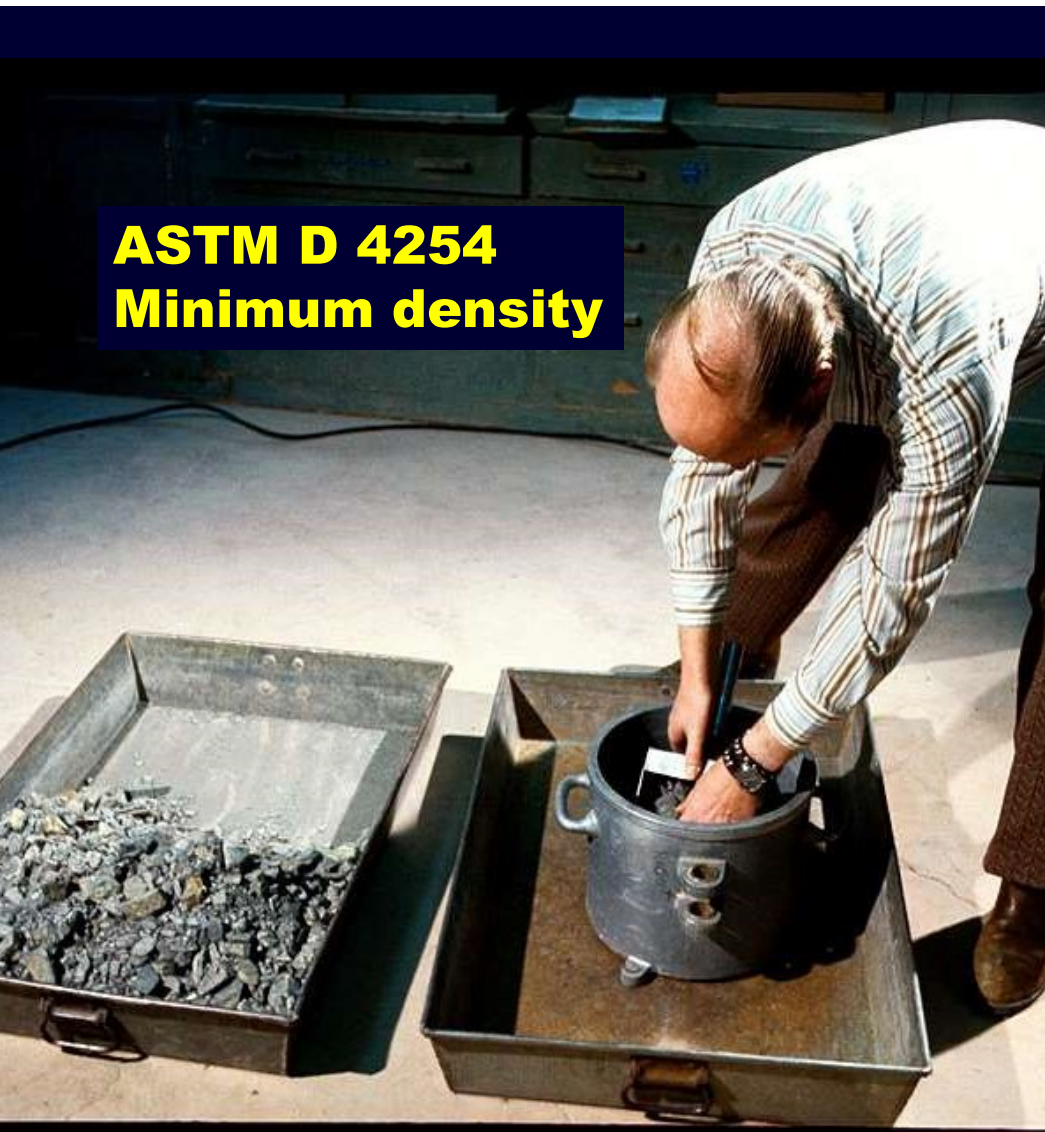
**Some contractors claim dumping gravel
gets 95% compaction**

**self-
compacting
soils
?**

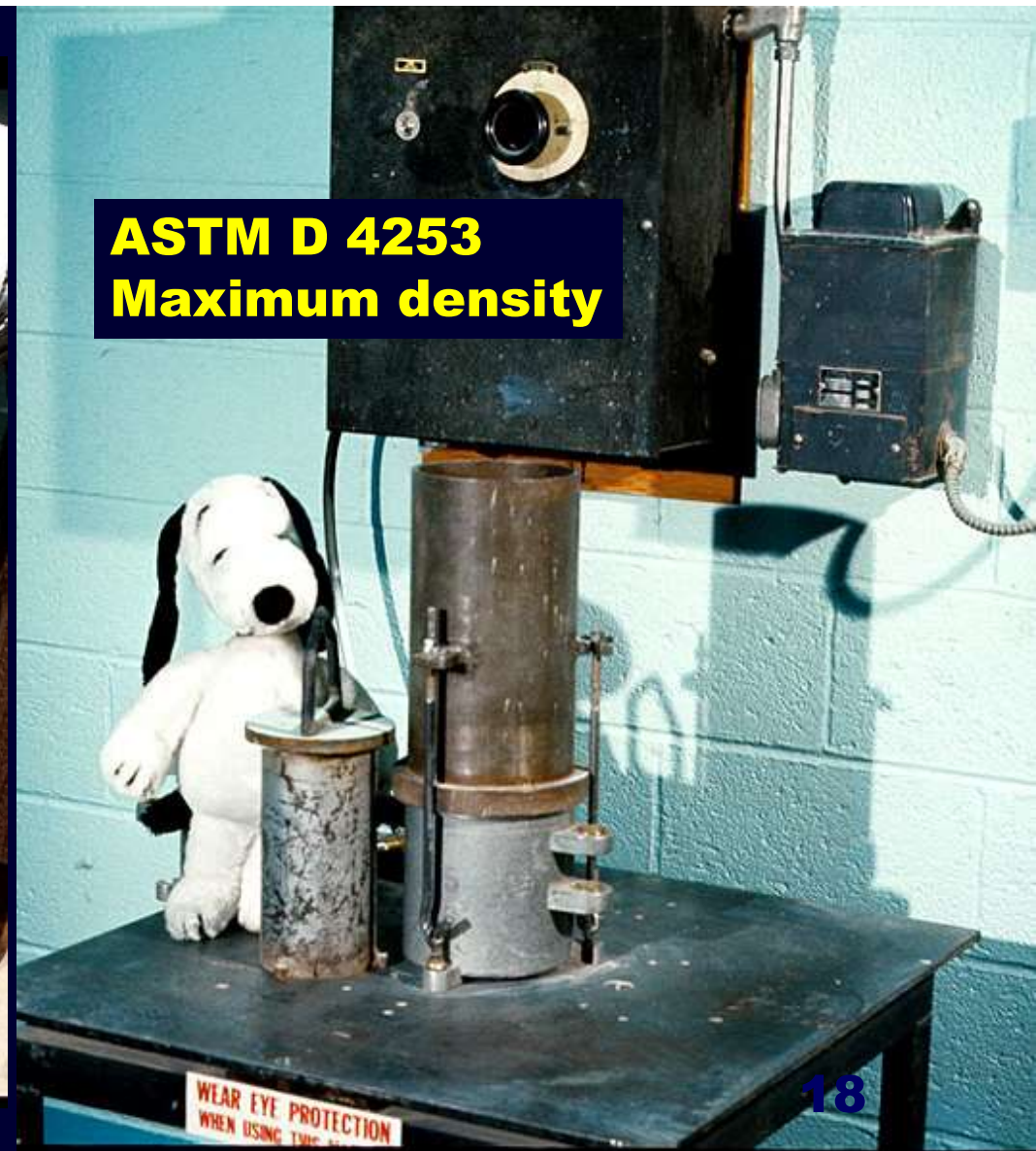


MYTH !

ASTM D 4254
Minimum density



ASTM D 4253
Maximum density



DUMPED SAND AND GRAVEL

**Minimum density test is about
80% of the maximum density.**

**USBR data for tests on clean sand, gravel,
and some silty gravels**

GW GP SW SP



“SELF COMPACTING”

90-95% ~~compaction~~ action ??

~80%

**Some contractors claim dumping gravel
gets 95% compaction**

Culvert failure kills five



**Pipeline failures can
Be deadly.**

**AWWA estimates
drinking water loss of
6 billion gallons
And
2 billion dollars
Per day**



**LEAKS AND FAILURES
ARE EXPENSIVE !**

**\$1.5 million to build
\$5 million to repair**



***Pipeline Installation
for Inspectors***

14 hours on-line training

pipe.thinkific.com

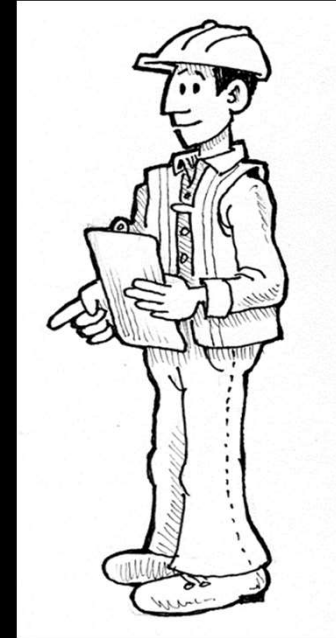
**AmsterHoward.com
>inspector training**

13.3 hours of leaks and failures

most due to lack of inspection

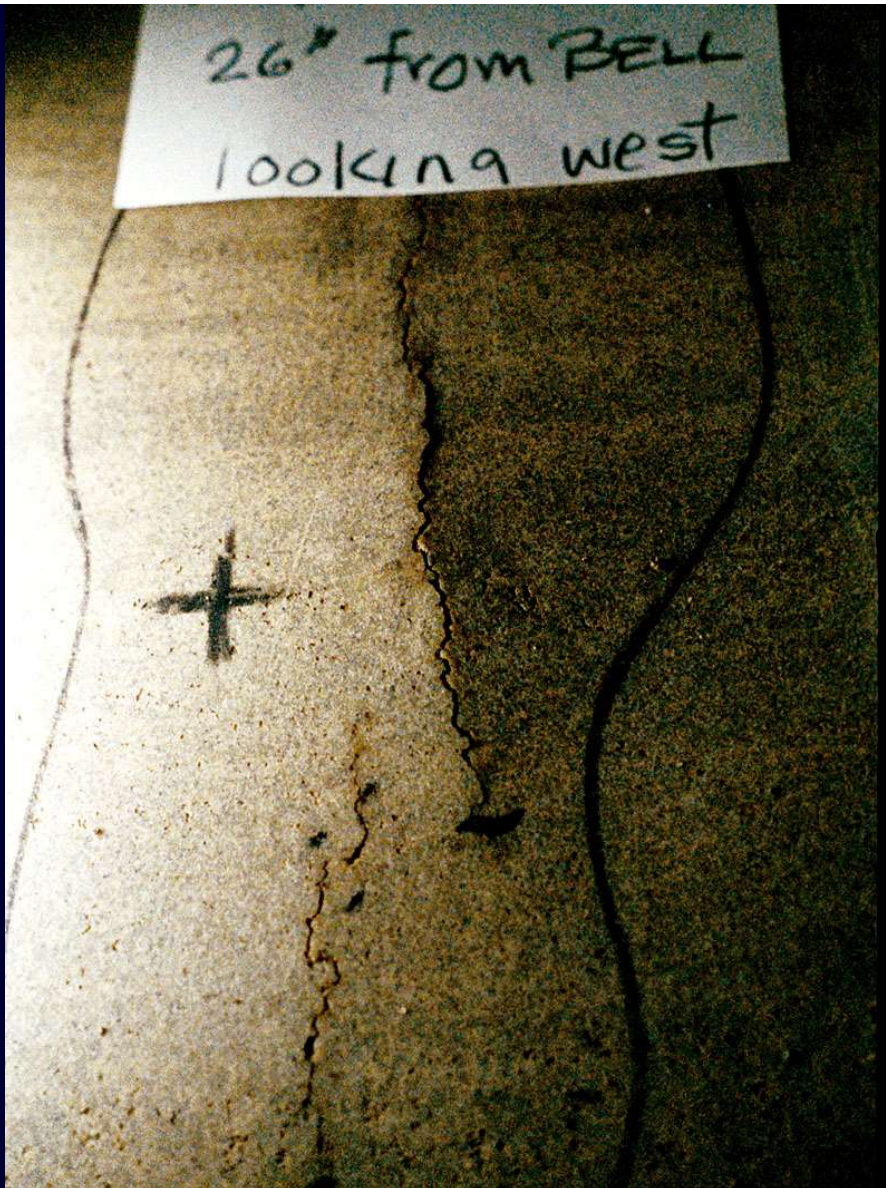
YOUR CHOICE

- **train your inspectors**
- **pay consultants to investigate failures**



Sample of
“Pipeline Installation for Inspectors”



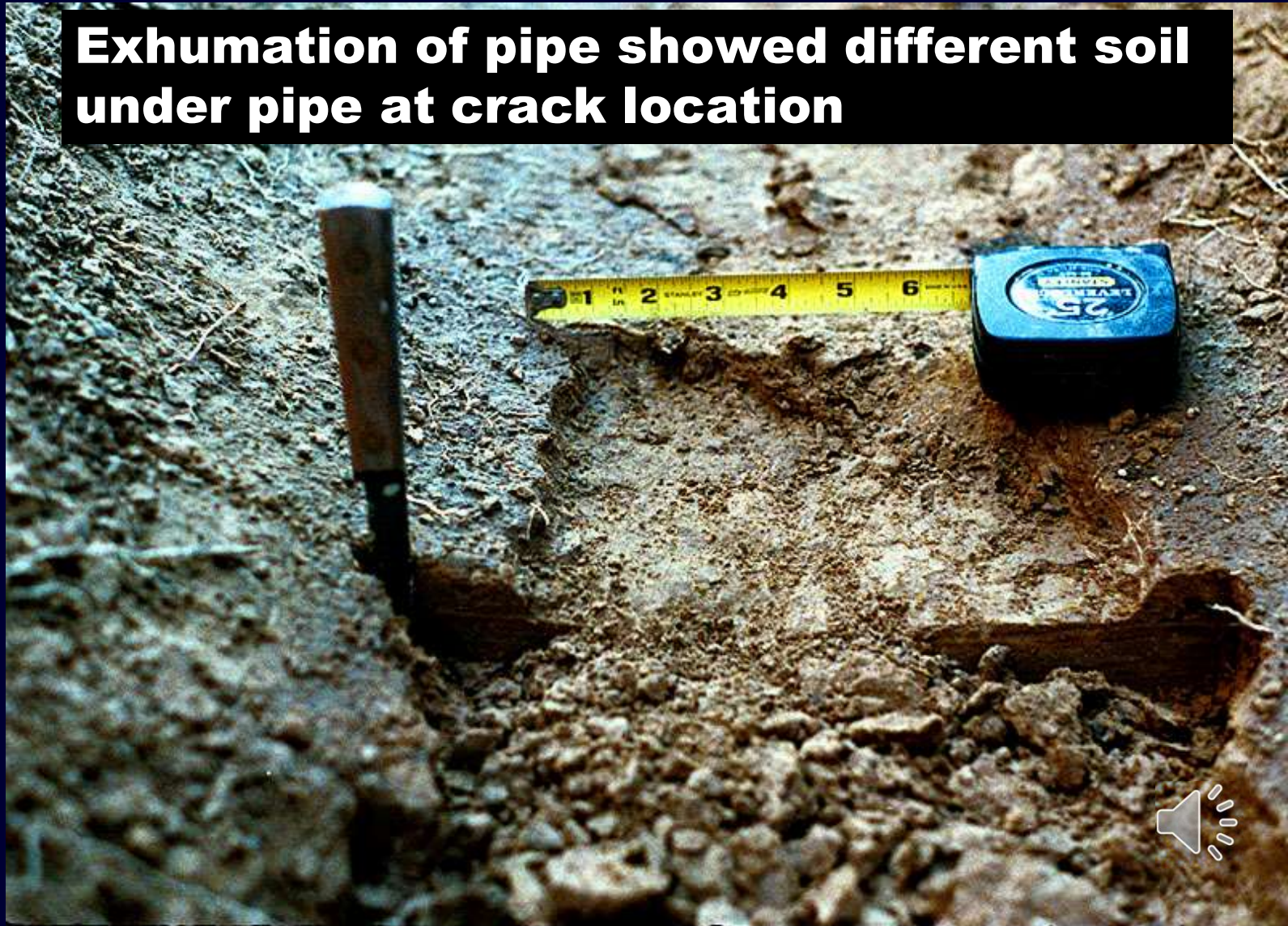


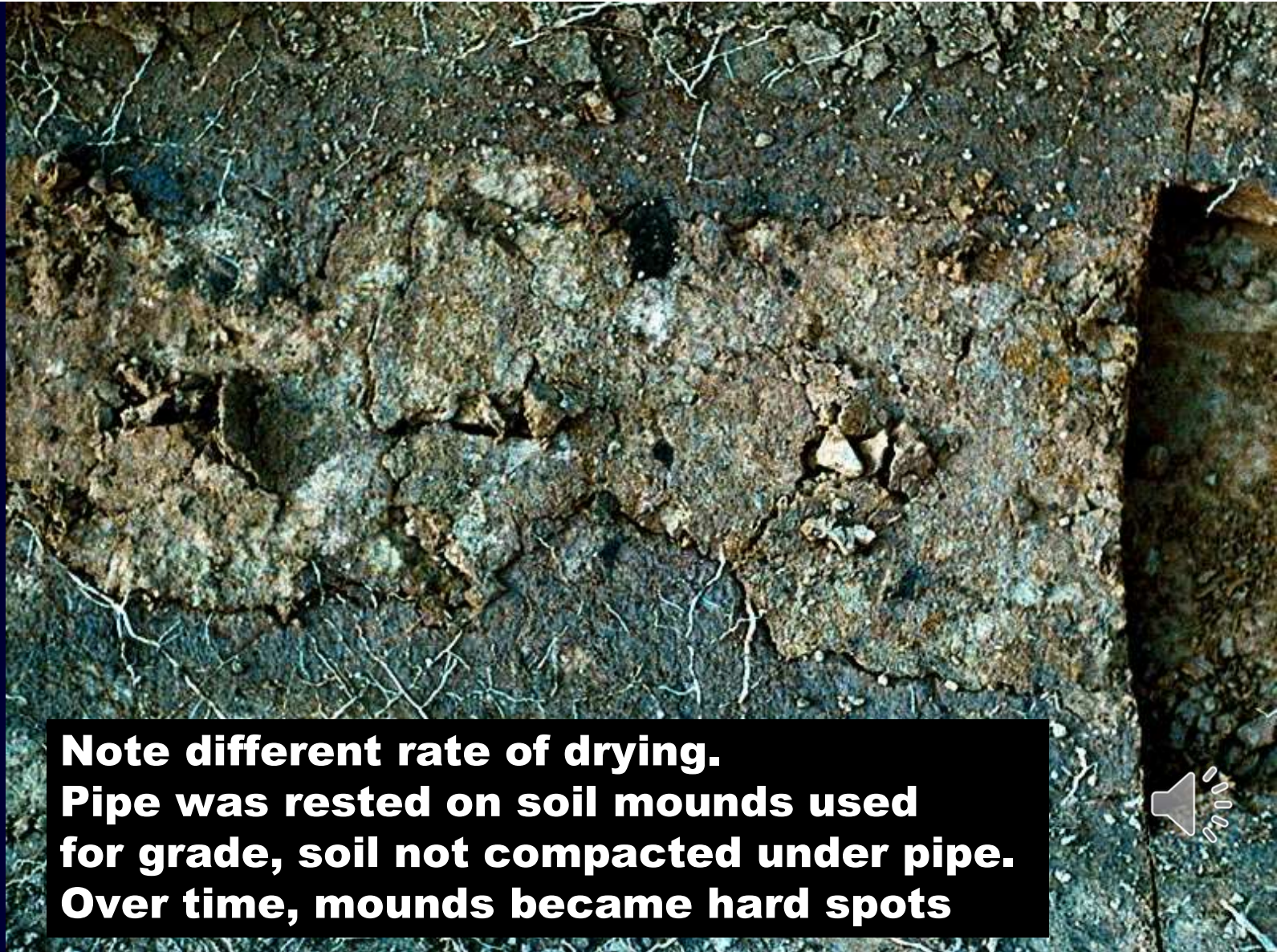
Invert crack about same distance from bell end of pipe.

Note the reverse curvature at the bottom.



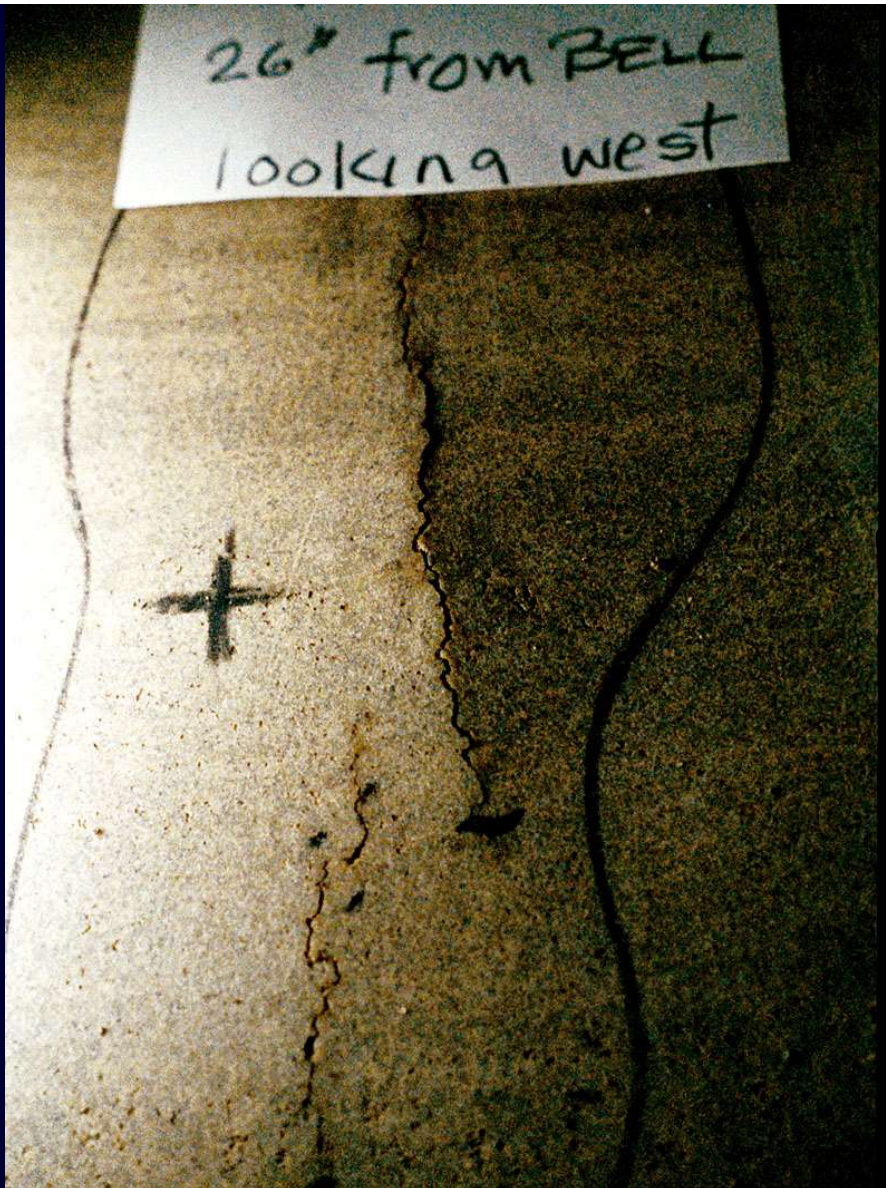
Exhumation of pipe showed different soil under pipe at crack location





**Note different rate of drying.
Pipe was rested on soil mounds used
for grade, soil not compacted under pipe.
Over time, mounds became hard spots**

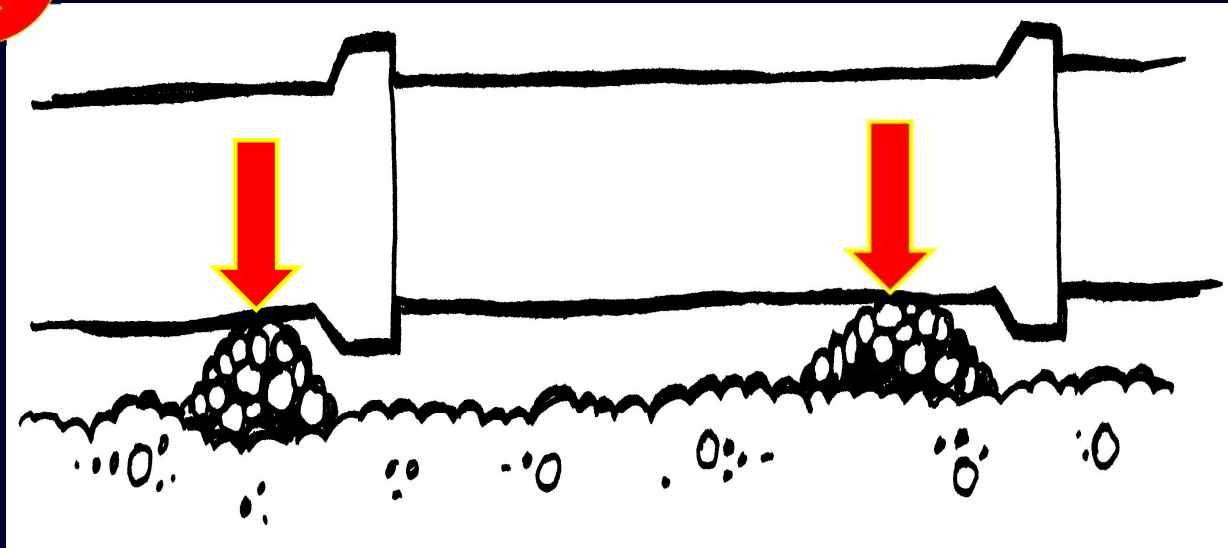




**Invert crack over
a mound**

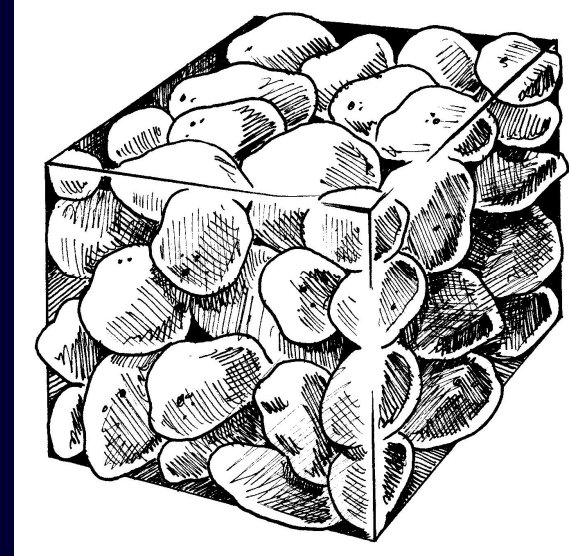
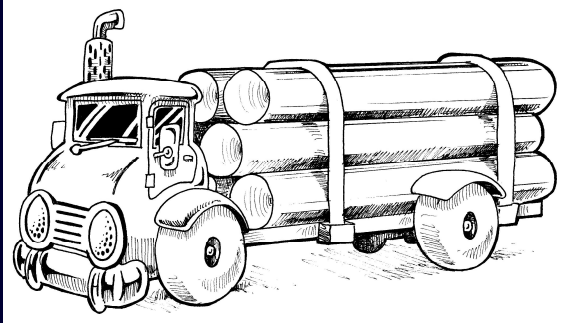
**Note the reverse
curvature at the
bottom indicating
that the pipe had
molded over the
mound.**





pipe resting on mounds





pipe.thinkific.com

NOW \$999

Or

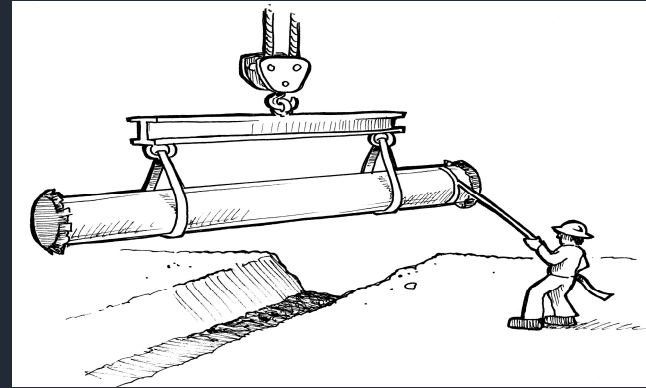
\$899 for groups of 10 or more

14 hours

**on-line
Quizzes**

Certificate

PDHs



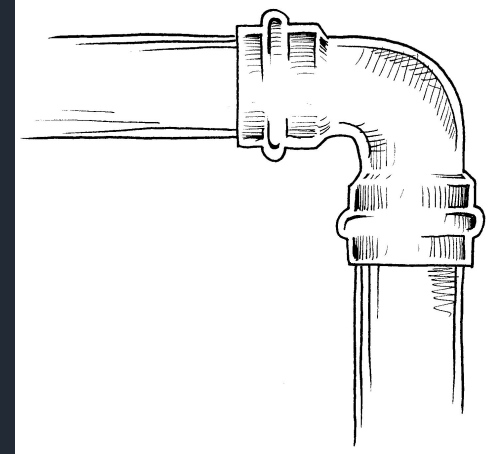


abundance of case histories





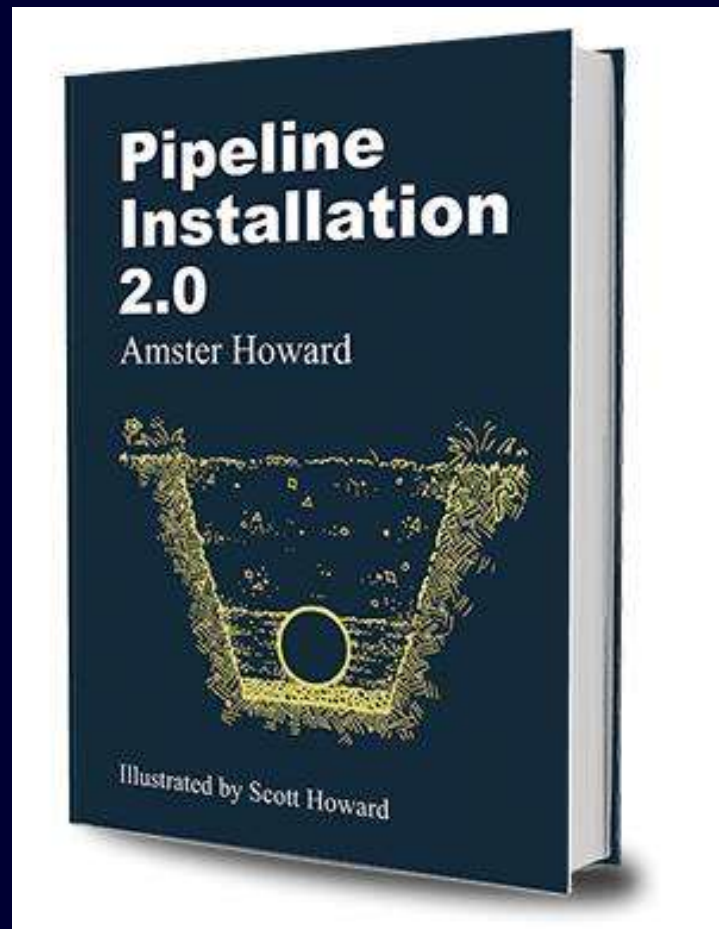
**Water
Sewer
Wastewater
Culverts
Storm Drain**



**DOES NOT cover
pipelines for petroleum
products.**

**based on book
“Pipeline Installation
2.0.”**

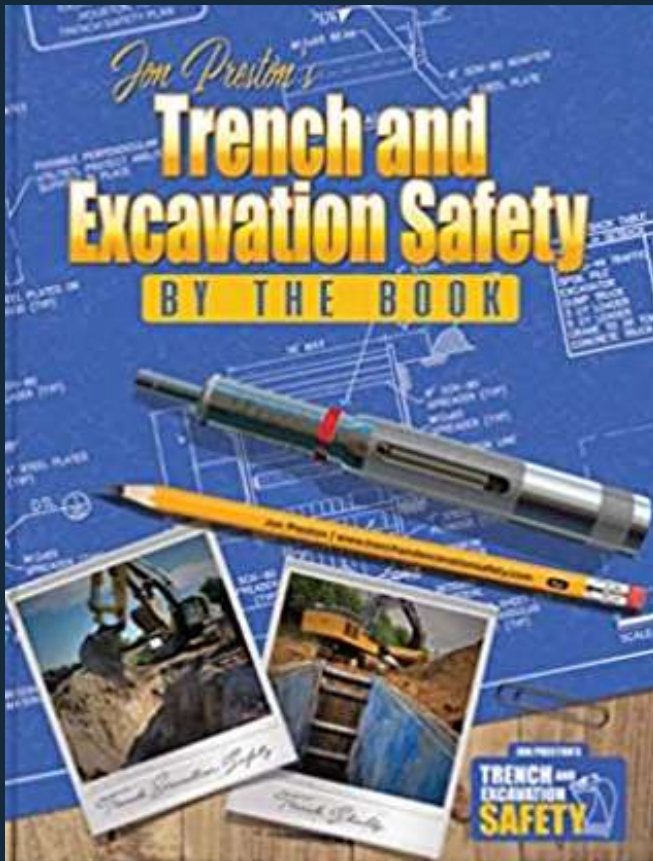
FREE copy of book
(\$125 value)



Trench and Excavation Safety

By

Jon Preston



- \$60 on Amazon
But free copy
provided
with
course.

“I've been a civil construction inspector for over 30 years. I enjoyed this training, learned some things, and was a little disappointed when it ended.”

Scott Hakes

King County WA

Questions? Comments?

