

Notes for 4,28

Reflected and transmitted pulses

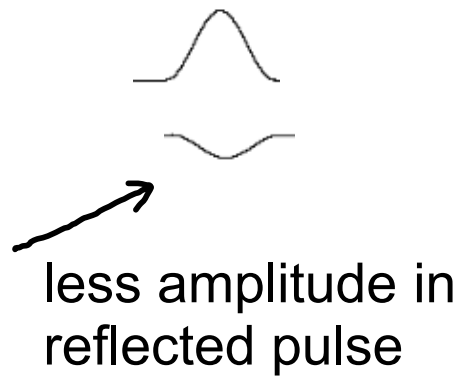
<http://www.kettering.edu/~drussell/Demos/reflect/reflect.html>

<http://physics.usask.ca/~hirose/ep225/animation/reflection/anim-reflection.htm>

Fixed boundary- reflected pulse

1) Note, reflected pulse is inverted.

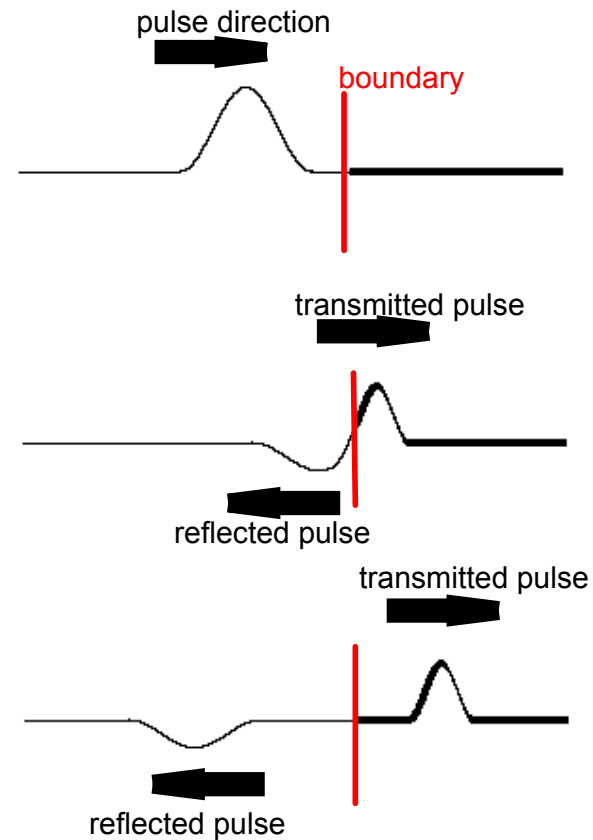
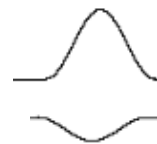
2) Note, the size of the reflected pulse is diminished



1) Less particle displacement

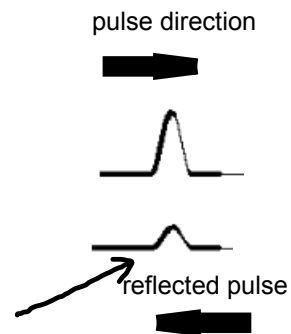
2) Less energy (some goes into second medium)

same "v", "freq.", and " λ ",
because same medium



Open Termination- reflected pulse

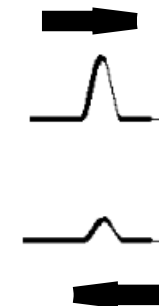
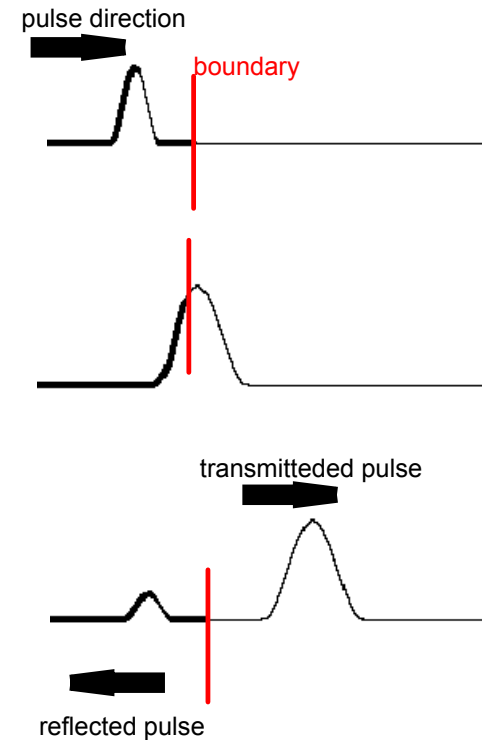
- 1) Note, reflected pulse is erect.
- 2) Note, the size of the reflected pulse is diminished



less amplitude in reflected pulse

- 1) Less particle displacement
- 2) Less energy (some goes into second medium)

same "v", "freq.", and " λ "



Transmitted Pulse

Fixed boundary-transmitted pulse

No change in "frequency"

No change in "phase"



-less energy

(some reflected back into first medium)

Change in "amplitude"

-less particle displacement

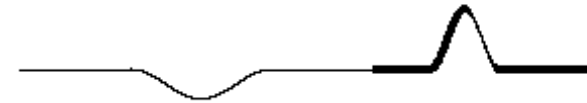
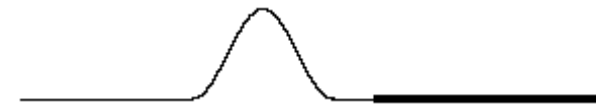
(medium is more dense so the particles are displaced less-fixed)

-more particle displacement

(medium is less dense so the particles are displaced more-open)

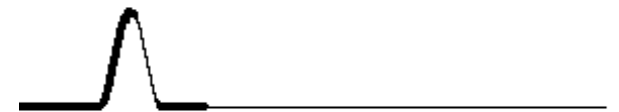
Change in "velocity"

therefore, change in " λ "

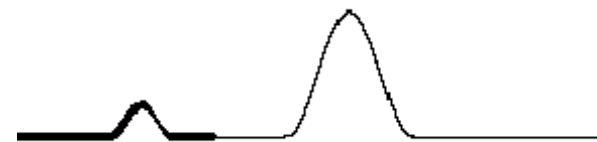


or

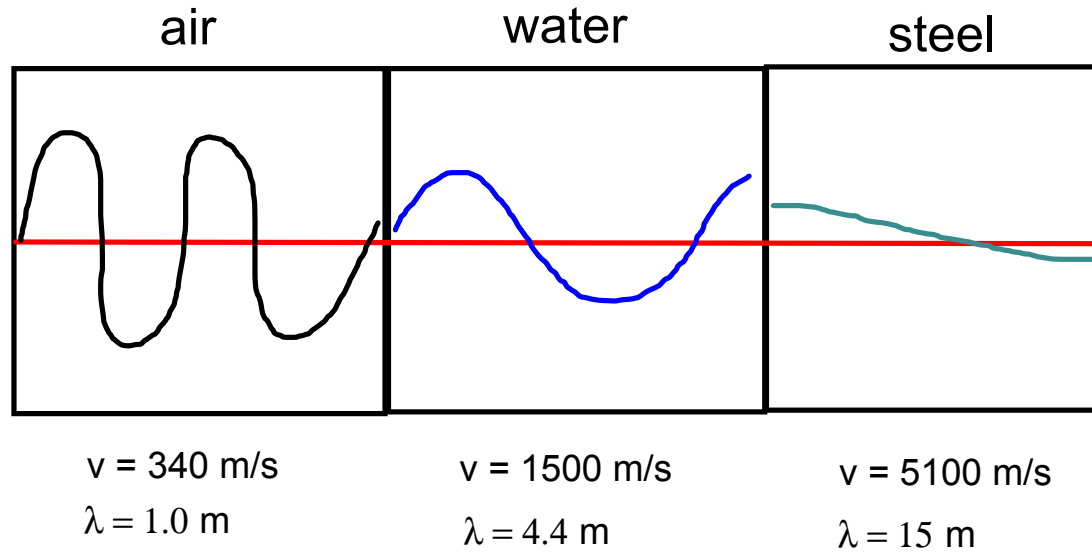
Open termination-transmitted pulse



w:



340Hz sound wave travels in air, water, and steel



- Note:
- 1) The wavelength is shortest in air and longest in steel!
(shorter λ in air because slower velocity)
 - 2) The amplitude is greatest in air and least in steel!
(less amplitude in steel because denser medium)