**Problem (5-17)**

For the analysis period, the NPW of the new equipment = +$420 as the original equipment.

\[
\text{NPW}_{12\text{ years}} = +$420 + $420 \left( \frac{1}{P/F, 10\%, 6} \right)
\]

\[
= +$657.09
\]

**Problem (5-21)**

Maximum investment = Present Worth of Benefits

\[
= 1,000 \left( \frac{1}{P/A, 4\%, 10} \right) + 500 \left( \frac{1}{P/A, 4\%, 5} \right)
\]

\[
= 1,000 (8.111) + 500 (4.452)
\]

\[
= $10,337
\]

**Problem (5-26)**

PW Costs = $700,000,000 + $10,000,000 \left( \frac{1}{P/A, 9\%, 80} \right)

\[
= $811,000,000
\]

PW Receipts = ($550,000) \left( \frac{1}{P/A, 9\%, 10} \right) + ($50,000) \left( \frac{1}{P/A, 9\%, 70} \right)

\[
= $849,000,000
\]

NPW = $849,000,000 - $811,000,000 = $38,000,000

This project meets the 9% minimum rate of return as NPW is positive.
Problem (5-48)

Compute the PW of Cost for a 25-year analysis period.

Single Stage Construction

PW of Cost  = $22,400,000 + $100,000 (P/A, 4%, 25)
= $22,400,000 + $100,000 (15.622)
= $23,962,000

Two Stage Construction

PW Cost = $14,200,000 + $75,000 (P/A, 4%, 25) + $12,600,000 (P/F, 4%, 25)
= $14,200,000 + $75,000 (15.622) + $12,600,000 (0.3751)
= $20,098,000

Choose two stage construction.

GOOD LUCK