Direct Cost Reduction

Post-tensioning offers direct cost reduction over conventionally reinforced slabs primarily by reducing concrete and rebar material quantities as well as rebar installation labor. Typically, savings between 10% - 20% in direct cost are achieved.

Factors contributing to direct cost reduction:

- Thinner slab (1/3 of RC alternative) with less reinforcement
  - Reduction of material quantities and cost
  - Reduction of labor and material handling costs
  - Reduced total building height and cladding cost
- Reduction of beams and steps
  - Simplified and cheaper formwork

Cost Comparison: RC vs. PT Slabs

As a rule, the break even mark between conventional and prestressed solutions is approx. 7m spans.
Cost Structure: RC vs. PT Slabs

In a typical slab with spans over 7 meters, the net savings in material cost can range between 10% - 20% of original RC alternative.

- **Concrete**: RC 25% Reduction
- **Rebar**: RC 65% Reduction
- **PT System**: Total Savings 10% - 20%

Improved Construction Efficiency

Since post-tensioned slabs are designed to carry their own weight at time of stressing, they can significantly improve construction efficiency and deliver an additional 5%-10% of indirect savings.

Factors contributing to improved construction efficiency:

- Shorter construction cycles
- Less material handling and impact on other trades
- Simpler slab soffit – less beams and drop caps/panels
- Quicker removal of shoring gives more access to lower slabs
Superior Structural Performance

The prestressing in post-tensioned slabs takes optimal advantage of tendon, rebar and concrete properties to deliver an economical structural system

Factors contributing to superior structural performance:

- Use of high-strength materials
- Longer spans are achieved (L/40 – 45 vs. L/30 for RC alternative)
- Deflection control (DL is balanced by P/T)
- Crack control and water-tightness
- Reduced floor-to-floor height
- Lighter structure requires lighter lateral load resisting system
- Economy in column and footing design
- Reduced noise transmission compared to RC
- Lower total cost of ownership (maintenance) compared to RC alternatives

Sustainable Design

Compared to conventionally reinforced structures, post-tensioned buildings offer a more sustainable design alternative

Factors contributing to sustainability:

- Less material use than RC
- Reduced carbon footprint
- Lower cost of ownership
  - Less cracking
  - Lower deflection values
  - Reduced cost for corrosion maintenance