





Job Name: 25-4520 - City Park Improvments
Job Location: Lathrop, MO
Contractor: Sands Construction Company

Plant: Beaver Dam

Tech: J. Coppage

9/16/2026 3:43:57 PM

PC: E. Bradley



Structure ID: RP-01b - Roof Panel 1

P1 CVT

ROOF - EASI-SET BUILDING - RP-01 - 136" x 166"



PT Check for Floor Panel RP-01 02 (PCI MNL - 11)

Material Data

(7) Wire lo-lax Strand - ASTM A416

Φ_{ps} 0.500 in,

A= 0.153 in²

E= 28500000 psi

fpu= 270 ksi

Strand Length 636 in

Assume (Info supplied by strand manufacturer)

k= 0.0007 Wobble Friction Coeff.

μ = 0.05 Curvature friction coeff. (Initial tension of 3,000 lbs)

Strand is to be stressed 70% of ultimate

= 28917 lbs



Cable Configuration

Adjustments to tensioning

1) Dead end anchor wedge seating loss

~ Expected to be 1/8 in

2) Live end anchor wedge seating loss

~ Expected to be 1/8 in, recommend over pull 1/8"

3) Elastic Shortening

Neglect for this pnl

4) Friction Loss

Additional force to overcome frictional forces between strand and sheathing

Tensioning Computations

Basic Elongation = $\frac{(\text{Force required beyond initial tension}) (\text{Length of strand between anchorages})}{(\text{Area of strand}) (\text{Modulus of Elasticity})}$

= 3.78 in

Adjustments

a) Dead end anchor wedge seating: Add 1/8" to elong. No force adjustment req'd

Add 1/8 in

b) Live end seating: over pull by 1/8"

1/8 in

Force adjustment $t = \frac{PD}{PS} = e^{-(kL + \mu\alpha)}$ $\alpha = \text{curvature} = \pi(2.5) = 7.85 \text{ radians}$

c) Friction losses $\frac{PD}{PS} = e^{-(kL + \mu\alpha)}$

= 0.651

Avg. strand force = 0.825 17.47% Loss

Recommend sequential jacking at both ends of the tendon be used to reduce the overstressing the strand at the live end

Friction loss at mid-point of tendon

$\frac{PD}{PS} = e^{-\frac{(kL + \mu\alpha)}{2}}$

= 0.807

Avg. strand force over

half of tendon = 0.903 9.67% Loss

Total force and elongation at live end must be increased to compensate for friction losses

Elong. Adjustment = 0.365 in

Force Adjustment = 2796 lbs

Total Force Required = 32570 lbs OK

Elongation Summary:

Gross Theoretical Elongation			
Basic Elongation		3.78 in	
Dead End Seating Loss		0.125 in	
Live End Seating Loss		0.125 in	
Friction Losses		0.365 in	
Total Elongation		4.40 in	
Rounded		4 6/16 in	
Tolerance limits	-7.0%	4.09 in	4 1/16 in
	+7.0%	4.70 in	4 11/16 in