

ROOF - EASI-SET BUILDING - RP-03 - 120" x 158"

[illegible]



ROOF REINFORCING
SCALE: $\frac{1}{4}" = 1'-0"$

Job Name: 25-3470P8 CCHS Precast Building
Job Location: 5185 Fort Campbell BLVD
Contractor: Christian County Board of Education C/O A&K Construction

Plant: Beaver Dam

Tech: J. Coppage

9/10/2026 9:57:18 AM

PC: E. Bradley



Structure ID: RP-03 - Roof Panel 3

P1 CVT

ROOF - EASI-SET BUILDING - RP-03 - 120" x 158"



PT Check for RP-03-06 (PCI MNL - 116)

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 595 in

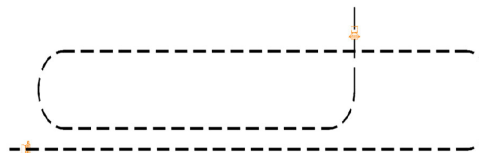
Assume (Info supplied by strand manufacturer)

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

$$\text{Basic Elongation} = \frac{(\text{Force required beyond initial tension}) (\text{Length of strand between anchorages})}{(\text{Area of strand}) (\text{Modulus of Elasticity})}$$
$$= 3.54 \text{ in}$$

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 $t = 916 \text{ lbs lbs}$ $\alpha = \text{curvature} = \pi(2.5) = 7.85 \text{ radians}$

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

= 0.652

Avg. strand force = 0.826 17.39% 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

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

= 0.808

Avg. strand force over half of tendon = 0.904 9.62% Loss

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

Elong. Adjustment = 0.340 in

Force Adjustment = 2782 lbs

Total Force Required = 32615 lbs **OK**

Elongation Summary:

Gross Theoretical Elongation			
Basic Elongation	3.54 in		
Dead End Seating Loss	0.125 in		
Live End Seating Loss	0.125 in		
Friction Losses	0.340 in		
Total Elongation	4.13 in		
Rounded	4 2/16 in		
Tolerance limits	-7.0%	3.84 in	3 13/16 in
	+7.0%	4.42 in	4 7/16 in