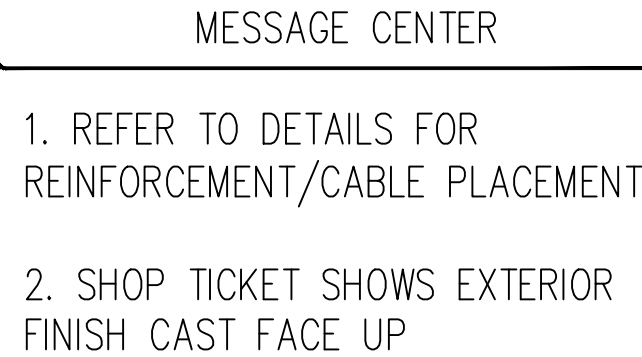
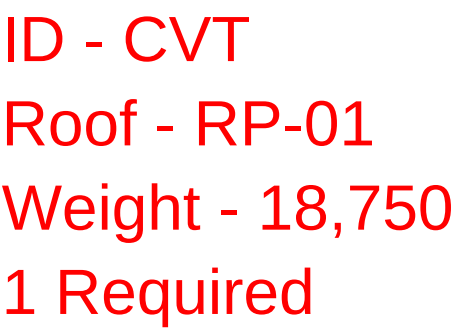




BUILDING	-
SHEET NUMBER	NUMBER REQUIRED
1 25 3	1

PIECE MARK
RP-01

PT Check for Roof Panels RP-01 & 02 (PCI MNL - 1)

Material Data

(7) Wire lo-lax Strand - ASTM A416

Φ_{ps} 0.500 in,

A_s 0.153 in²

E_s 28500000 psi

f_{pu} 270 ksi

Strand Length **990 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

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

= 5.88 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 $t = \frac{551 \text{ lbs}}{551 \text{ lbs}} \alpha = \text{curvature} = \pi(2.5) = 7.85 \text{ radians}$

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

= 0.637

Avg. strand force = 0.819 18.13% 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

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

= 0.798

Avg. strand force over

half of tendon = 0.899 10.08% Loss

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

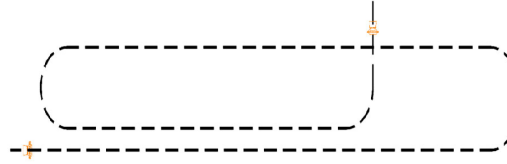
Elong. Adjustment = 0.593 in

Force Adjustment = 2916 lbs

Total Force Required = 32383 lbs **OK**

Elongation Summary:

Gross Theoretical Elongation			
Basic Elongation	5.88 in		
Dead End Seating Loss	0.125 in		
Live End Seating Loss	0.125 in		
Friction Losses	0.593 in		
Total Elongation	6.73 in		
Rounded	6 12/16 in		
Tolerance limits	-7.0%	6.26 in	6 4/16 in
	+7.0%	7.20 in	7 3/16 in



Cable Configuration

25-3470

CCHS Precast Buildings

Left Hand Dugout

ID - CVT

Roof - RP-01

Weight - 18,750

1 Required