The PT Supplier’s Role in the Building Process
The PT supplier’s “basic” scope is to furnish the PT material, installation drawings and stressing equipment. Because of the critical nature of the prestressing system, the real value of the PT supplier to the successful completion of a building project is much more - requiring PT experience, engineering capabilities and overall knowledge of concrete frame construction systems & techniques.
PT Material from a PTI Certified Plant

Look for this logo on all material documents

Ask for this certification from all suppliers

For information on the program requirements, go to: www.post-tensioning.org and to the Certification Tab
PT Material

Encapsulation System - Watertight encapsulation of the entire anchorage

- Have 50-mil thickness
- Positive connection of all components
- Minimum 4-inch overlap between sleeve & tendon sheathing
- Be translucent
PT Material Packaging

Look for this logo on all material documents

Note Buffering Material under Banding

Banding Placed at 1/3 points
PT Material Packaging

Ref Number: 1300750
Client: General Construction Company
Job Name: Project EXAMPLE
Location: Washington, D.C.
Shipping Memo No: 1530542

Bldg: Residential Tower
Level: 4 North
Area: --
Pour: 2
Location: Bands
PT Material Shipments

Protect Bundles during Transportation

Including loose hardware, stressing anchorages & accessories
PT Stressing Equipment

Suncoast Calibration Document

<table>
<thead>
<tr>
<th>Gauge Pressure (PSI)</th>
<th>Load Cell Readings (LBS)</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>6.100 6.000 6.000 6.000</td>
<td>6.033</td>
</tr>
<tr>
<td>2000</td>
<td>12.100 12.100 12.100 12.100</td>
<td>12.100</td>
</tr>
<tr>
<td>3000</td>
<td>18.200 18.100 18.200 18.167</td>
<td>18.167</td>
</tr>
<tr>
<td>5000</td>
<td>30.200 30.200 30.200 30.200</td>
<td>30.200</td>
</tr>
<tr>
<td>6000</td>
<td>36.000 36.100 36.100 36.102</td>
<td>36.102</td>
</tr>
</tbody>
</table>

The Gauge Pressure Corresponding to 33.04 KIPS is: **5500 PSI**
Beyond PT Material & Equipment

• Design Phase
  – Design Assist
  – Construction Joint / Pour Strip Placement
  – Restraint
  – Impact on Shear Wall Forming Systems
Beyond PT Material & Equipment

• **Pre-Bid Phase**
  – Value Engineering
  – Construction Schedule
    • Pour & Stressing Sequence (Formwork Utilization)
    • Optimizing details for quicker installation
    • Coordination with non-prestressed reinforcing
    • Congestion
  – Integration with other building systems
    • Curtain Wall Embeds
Beyond PT Material & Equipment

- **Bid Phase** - Accurately prepare material estimates
Beyond PT Material & Equipment

• **Bid Phase** - Accurately prepare material estimates
Beyond PT Material & Equipment

- **Bid Phase** - Accurately prepare material estimates
Beyond PT Material & Equipment

• *Post Award Phase*
  – Finalizing the Pour & Stressing Sequence to fit the selected formwork system & construction schedule
  – Coordinate with contractor, installer and other trades to facilitate installation details and coordinate other concrete embedded elements
  – Impact of Tower Crane or Placing Boom blockout or location on tendon placement & stressing
PT Field Installation Drawings

- The *backbone* of a successful project:
PT Design Provided by the LDP

- Basic information for PT Forces and Tendon Profile
PT Layout Provided by PT Supplier
PT Layout Provided by PT Supplier
PT Supports Provided by PT Supplier

E.O.R.: CONTROL POINT HAS BEEN ALTERED FOR THE THREE TENSIONS IN THE CLOUDED AREA TO ACCOMMODATE SWEETING TENDONS. VERIFY FOR ACCEPTANCE OR PROVIDE AN ALTERNATE SOLUTION.

E.O.R.: PROVIDE PROFILE FOR CLOUDED AREA BELOW.

E.O.R.: PROVIDE PROFILE FOR CLOUDED AREA BELOW.

E.O.R.: PROVIDE PROFILE FOR CLOUDED AREA BELOW.
Special Conditions

PT Design Provided by the LDP
What the PT Supplier Sees

Minimum of 2 tendons must run through the core steel of the column.
PT Design Provided by the LDP
What Is Provided by PT Supplier
Pre-Construction Phase

• Product Conflict resolution (embeds, curtain wall systems, penetrations, etc.)
• Congestion Issues (other reinforcement)
• Pre-concrete placement meeting with contractor, LDP and inspection agency
Construction Phase

- Pre-concreting meeting – enormously important – face to face or conference call
- Jobsite visits to resolve conflicts
- Review of Stressing Reports
Construction Phase

• Mislocation of steel
Construction Phase

Missing Hairpins

Honeycombs
Construction Phase

- Concrete Placement
Construction Phase

Missing Curvature Hairpins
Construction Phase

• Mislocated Anchors
Field Construction Procedures

Preparing Slab for Stressing:
1. Remove the pocket former.
2. Clean the anchor cavity.
3. Clean the strand from the wedge cavity to 6-inches from slab edge. The anchor cavity, wedges and strand must be clean of any concrete slurry, dirt or foreign material. If it is not clean, the wedges will not seat properly in the anchor cavity causing the strand to slip through the wedges resulting in short elongations and low force.
4. Insert the wedges and seat using a hand-seat tool in all stressing anchors.
5. Use a short piece of wire metal bonding strap (used to secure the master tendon bundles for shipping) as a reference device. Place the reference device against the slab edge (see Fig 1) and apply the reference mark to the top of the tendon tail using quick dry spray paint or marking pen (do not use a lumber cutter). This will set the initial reference mark a fixed distance of 1-1/4" from the slab edge.
6. For tendons stressing at any angled slab edge, the reference mark must be made completely around the tendon tail (not just on the top) since the mark will turn relative to the angled slab edge as the tendon elongates. As an alternate, tape can be wrapped around the tendon tail over the reference mark.
7. All reference marks are to be clean and straight. Over-spray or smeared marks will result in inaccurate elongation measurements.
8. For tendons that are stressed from both ends, reference marks must be placed at both tendon ends prior to stressing.

Elongation Measuring Procedure:
1. The measuring tool used must be of a rigid style such as a folding tape or ruler, not flexible like a retracting tape measure. The scale is to be kept clean.
2. Tendons are to never be stressed higher than specified (33 kips for 1/2" strands). Never over-stress a tendon in an attempt to achieve the calculated elongation.
3. After the tendon has been stressed to the required initial jacking force, this may take more than one cycle of the jack, place the reference device in the same position against the edge of concrete and measure the distance from the marking device to the final reference mark (see Fig 2). Measure to the closest 1/8", this distance is the measured elongation and is to be recorded on the elongation chart.
4. Care should be taken when measuring elongations on tendons with long stressing tails. The tails will bend downwards under their own weight. Lift the tendon tail up so that it is straight when taking the measurement.

Lift-Off Procedure:
1. Place a new reference mark on the tendon tail following the required prep procedure.
2. Open the jack 3-4 inches.
3. Place the jack on the tendon and increase the pressure slowly until the jack is tight against the anchor.
4. Increase the pressure slowly until the needle drops back. This drop-back reading is the force on the tendon and is to be recorded as the "lift-off" reading.
5. Restress the tendon to the specified initial jacking force of 33-kips.
6. Measure any additional elongation gained following the require measuring procedures.
7. If the drop-back is not observed when the specified initial jacking force of 33-kips is reached, increase the pressure 1-kip or 200psi if no drop back is observed, record as "no lift off".
Field Elongation Records

### Cover Sheet
- **Project Name:** Project X
- **Plant Location:** Level
- **Contractor:** Suncoast Post-Tensioning Ltd.
- **Inspecting Agency:** NA
- **Stressing Company:** NA
- **Stressing Date:** NA

### Post-Tension Tendon Elongation Report

<table>
<thead>
<tr>
<th>Unit Number</th>
<th>Tendon Name</th>
<th>Tendon Type</th>
<th>End 1</th>
<th>End 2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>Slab 1</td>
<td>80.0</td>
<td>7.38</td>
<td>7.68</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>Slab 1</td>
<td>76.3</td>
<td>7.38</td>
<td>7.68</td>
</tr>
<tr>
<td>3</td>
<td>C</td>
<td>Slab 1</td>
<td>72.3</td>
<td>6.38</td>
<td>6.68</td>
</tr>
<tr>
<td>4</td>
<td>D</td>
<td>Slab 1</td>
<td>70.0</td>
<td>5.38</td>
<td>5.68</td>
</tr>
<tr>
<td>5</td>
<td>E</td>
<td>Slab 1</td>
<td>60.0</td>
<td>4.38</td>
<td>4.68</td>
</tr>
</tbody>
</table>

### Inspecting Agency Representative Remarks

- Remarks about the testing results and conclusions are added in the report.

---

NOV 03 2018

Suncoast Post-Tensioning Ltd.
Houston, TX

Signature of All Party Independent Inspector: NA
Elongation Record Review

Name
Company
Address
City / State / Zip

PROJECT:
LEVEL/POUR:
TESTING LAB NAME:
REPORT DATE: [Signed and sealed testing lab report received on XX/XX/201X]

This letter addresses the review of elongations for the indicated pour based on the elongation report prepared by the testing agency listed. By submitting a signed and sealed cover letter, the testing agency is confirming to Suncoast that:

1. They were on-site and witnessed the stressing operation from beginning to end.
2. All tendons, as shown on the For Construction PT installation drawings prepared by Suncoast, were installed and accounted for prior to concrete placement and all tendons have been listed in the referenced elongation report.
3. All tendons were stressed up to but not above the specified gauge reading, and any observed anomalies in the equipment or the stressing operation has been noted in the referenced elongation report.
4. The elongations have been measured correctly and are accurately recorded on the referenced elongation report.

Based on receiving the signed and sealed letter from the Testing Lab which confirms that the four items listed above were verified and our review of the referenced elongation report, the forces stated on the contract documents have been provided to the structure, with the exception of the items noted below, if any.

Tendon elongations that fall within the +/- 7% tolerance are acceptable per ACI 318 and the project specifications.

EXCEPTIONS:

COMMENTS:

Please forward this letter to the LDP for their review.
The PT Supplier’s Role Extends Beyond Just Furnishing Material

Experience and knowledge, support and dedication, and understanding the total construction process for building slabs with unbonded tendons – the role of the PT supplier.