Construction & Maintenance of Post-Tensioned Slab-on-Ground Foundations

Why use PT Slab-on-Ground Foundations

- Better Performance
- Quicker to Construct
- More Economical (concrete savings)
- Easy to Install

Why are PT Slabs Easy to Install?

- Less pieces of reinforcing to handle
- Can fit irregular shapes easily
- Tendons and anchorages can be moved to avoid blockouts, penetrations, and recesses.
- But, MUST FOLLOW DETAILS!

PT Slab-on-Ground Foundations

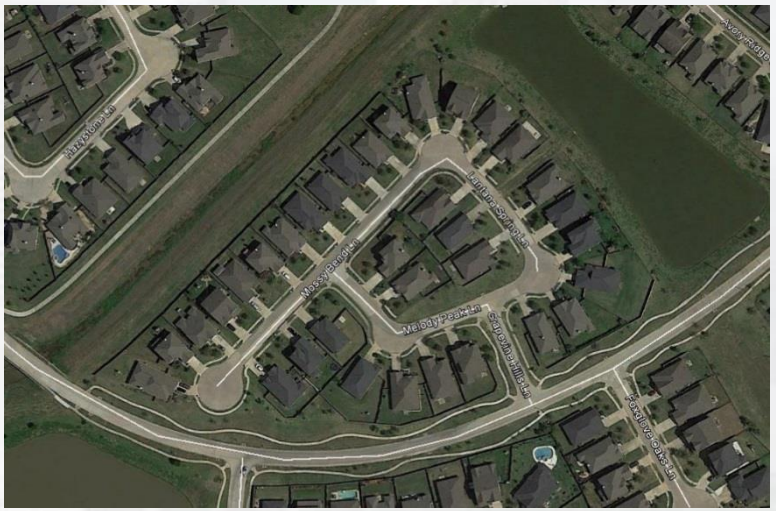
- Construction
  - Site Preparation
  - Foundation Construction
- Maintenance
  - End-Users Responsibilities

Site Preparation

- It's a Slab-on-GROUND – you have to know what you are building on.
- They are designed to meet a specific set of soil "parameters".
- The performance of ANY foundation is dependent up on obtaining accurate soil information about the site.

Site Investigation

- Look for Site Anomalies



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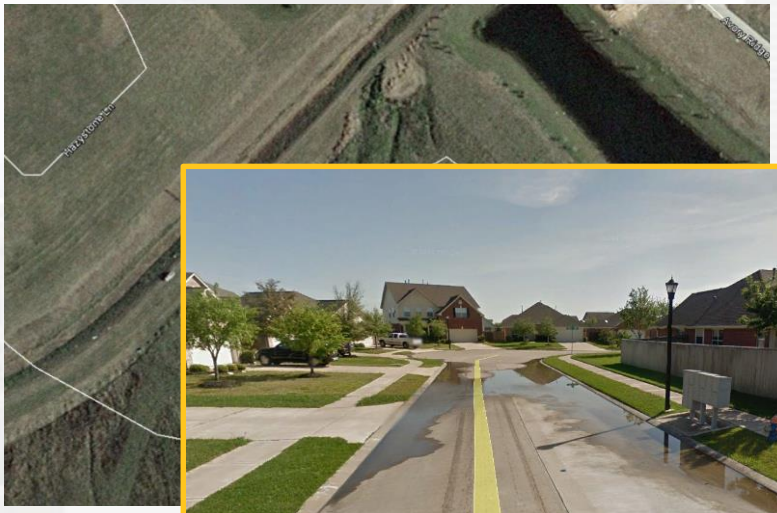

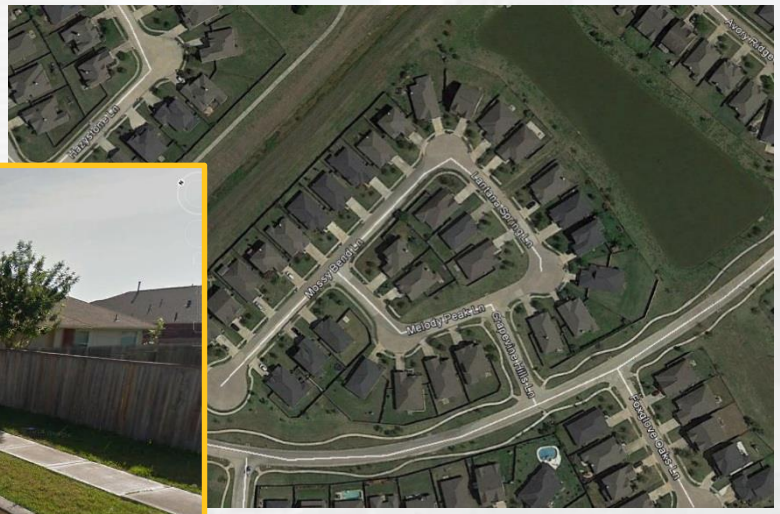

Site Preparation

Inspect the site to look for unusual conditions

- Trees can influence soil moisture & should be removed, including the root system

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- Trees can influence soil moisture & should be removed, including the root system
- *Anything* that appears “out of the ordinary”
- Contact the geotechnical and structural engineer for recommendations

Site Preparation

- **READ** the General Notes sheet prepared by the structural engineer. This sheet may contain special instructions about specific site preparation requirements.
- Contact the structural engineer should anything be unclear or in question.

Site Preparation

- The site should be initially stripped of all surface vegetation and other deleterious material.
- The exposed subgrade should be scarified and recompacted.
- Proof roll the site to identify any loose soil
- Grade the lot for positive drainage *away from* the foundation *during and after* construction.

Site Preparation

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Preparing for Concrete Placement

- Adequately brace forms
- CHECK THE FORM LAYOUT. Make sure that it is correct, level, and square.

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- Check all plumbing locations before the PT is installed and the concrete is placed.

Under-Slab Systems

Correcting mistakes in PT applications is difficult ……. and expensive.

Under-Slab Systems

Right-Way

Wrong Way

Preparing for Concrete Placement

- Adequately brace forms
- CHECK THE FORM LAYOUT. Make sure that it is correct, level, and square.
- Check all plumbing locations before the PT is installed and the concrete is placed.
- Do Not install screeds until after the PT is installed

Foundation Make-Up

- Clean the bottom of the stiffening ribs and footings
- Check all stiffening ribs and footing sizes and locations
- Check the slab thickness
- Provide a smooth and level subgrade

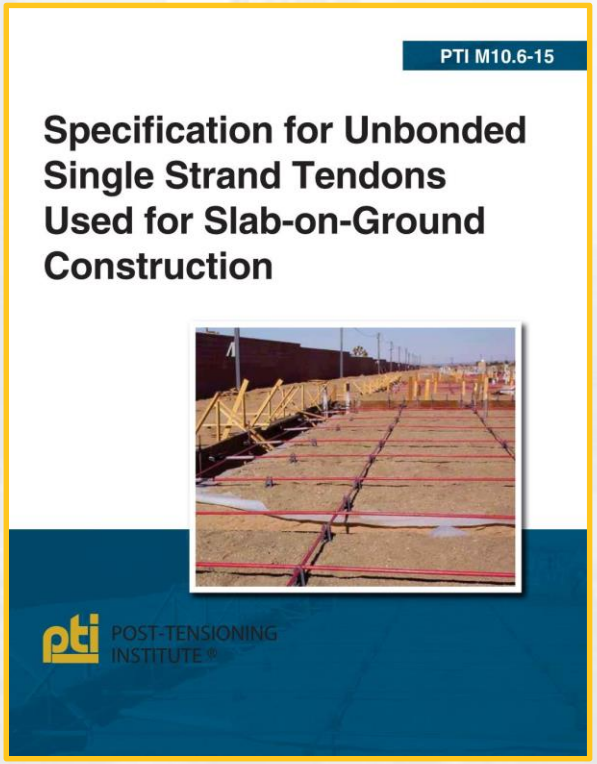
Specification for Unbonded Tendons for SOG Applications

New Publication by PTI:

Stand-alone Specification of PT Materials for SOG

Contact:
Post-Tensioning Institute at www.post-tensioning.org

NEW PUBLICATION

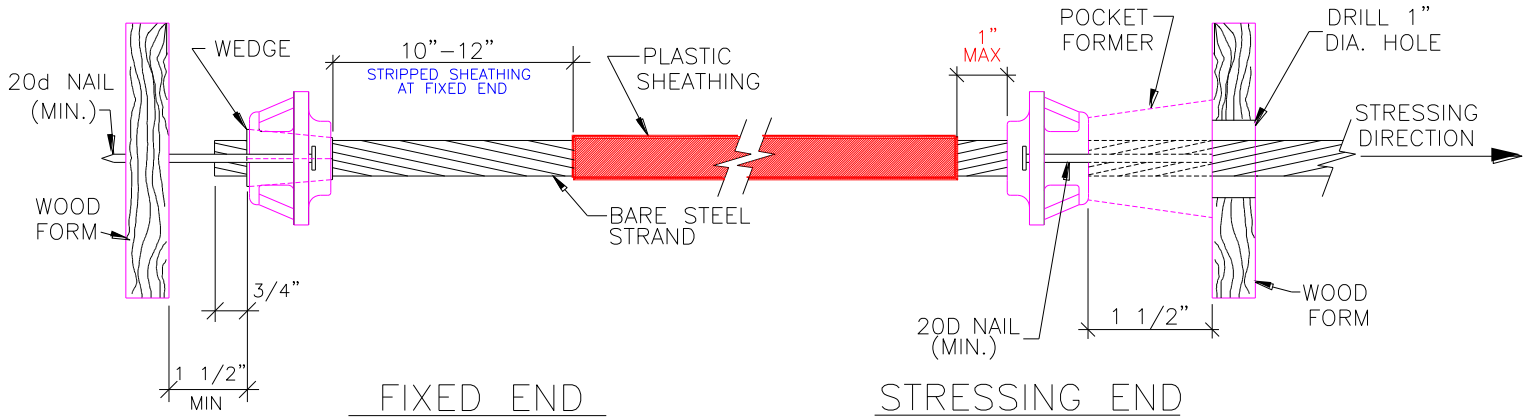


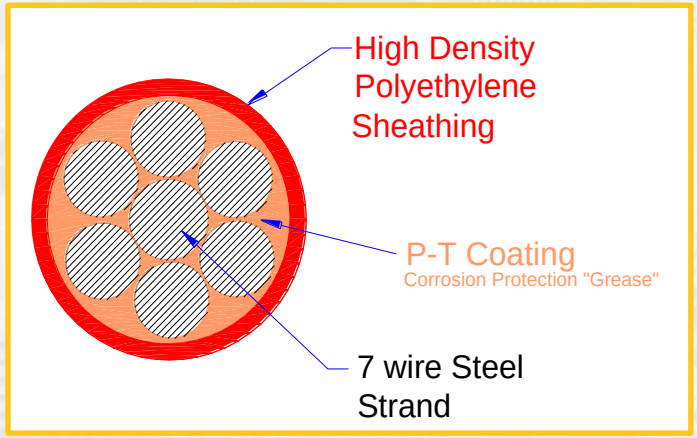
Specification for Unbonded Tendons for SOG Applications

- Resource for Architects, Engineers, Contractors, Inspectors and governing agencies to insure quality PT materials.

- In addition to detailed requirements for PT materials, specification contains requirements for:
  - Fabrication, handling, delivery and storage
  - Tendon Installation
  - Stressing
  - Elongation Measurement & Recording
  - Tendon Finishing

“Standard” PT System Anchorage Assembly



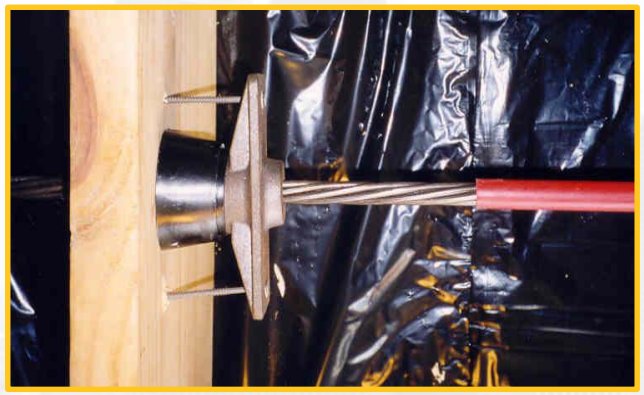


Anchor

2-pc Wedge

PT Installation Details

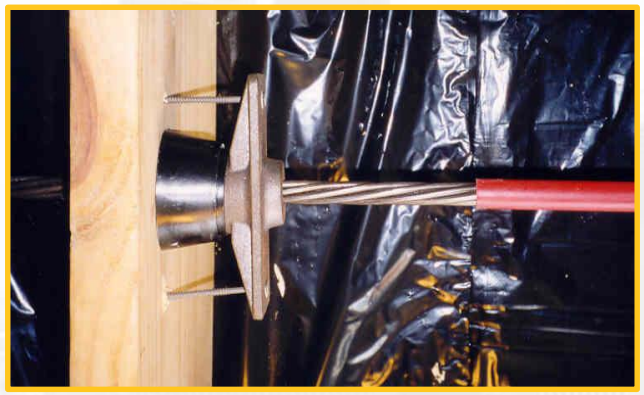
- Exposed Strand behind Stressing Anchors

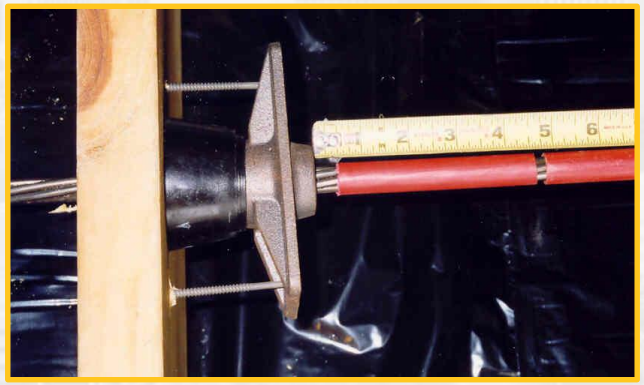


  - Increases friction - concrete forms into the interstices of the strand
  - Dangerous – causes jack to suddenly rotate when force is released
  - Damages the jack

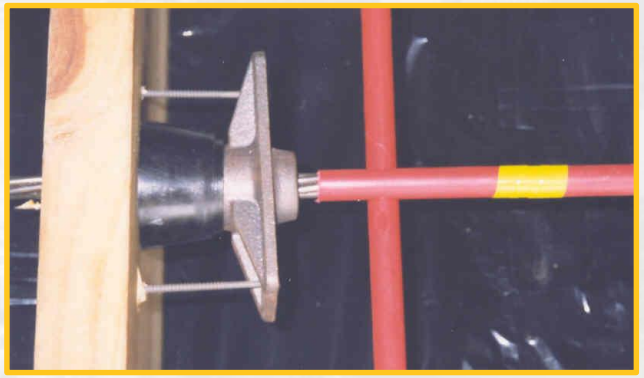
PT Installation Details

- Exposed Strand behind Stressing Anchors





- Replace Sheathing
- Tape
- 1 inch Rule



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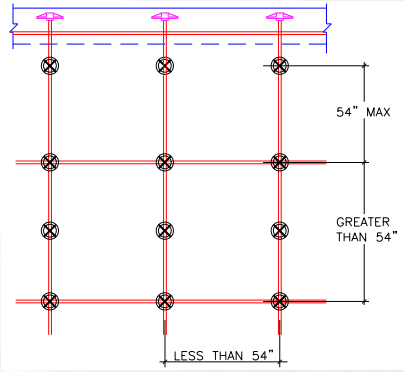

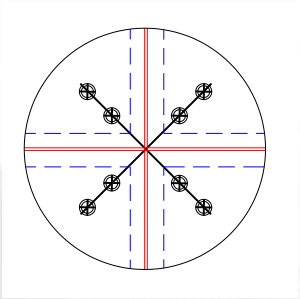

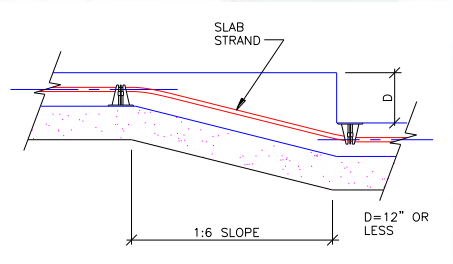

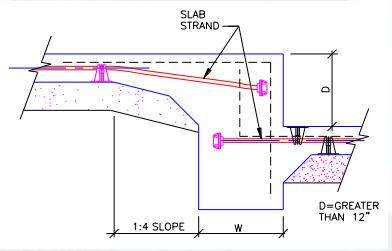

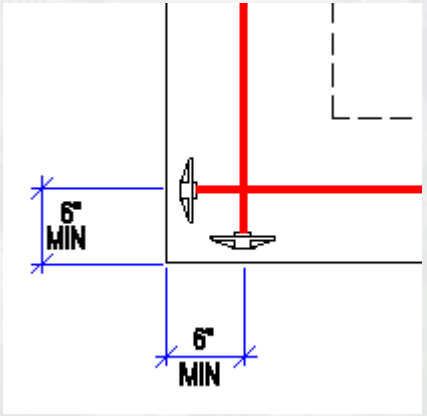

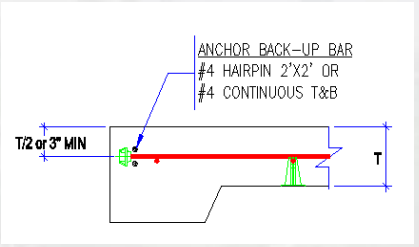

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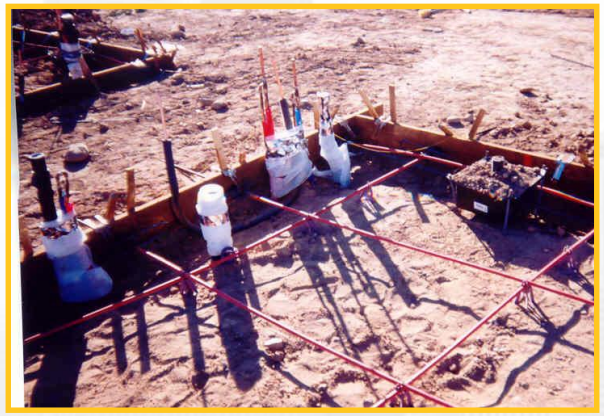

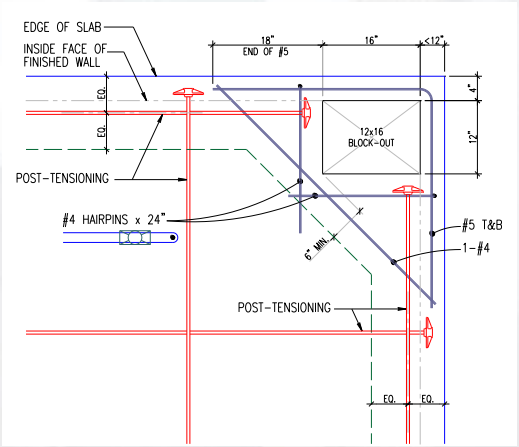

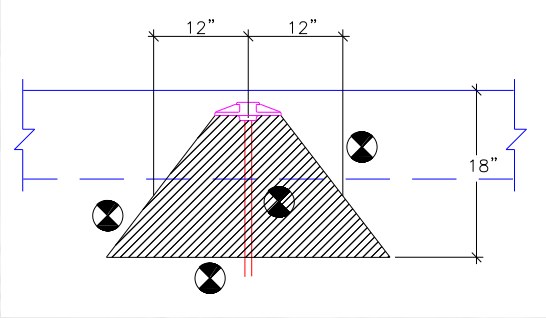

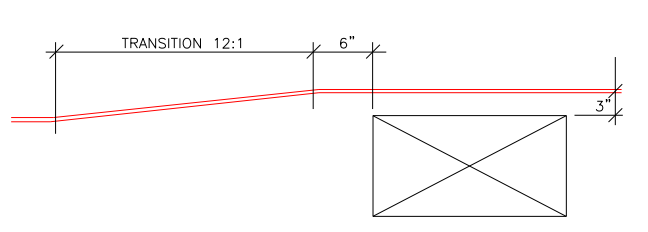

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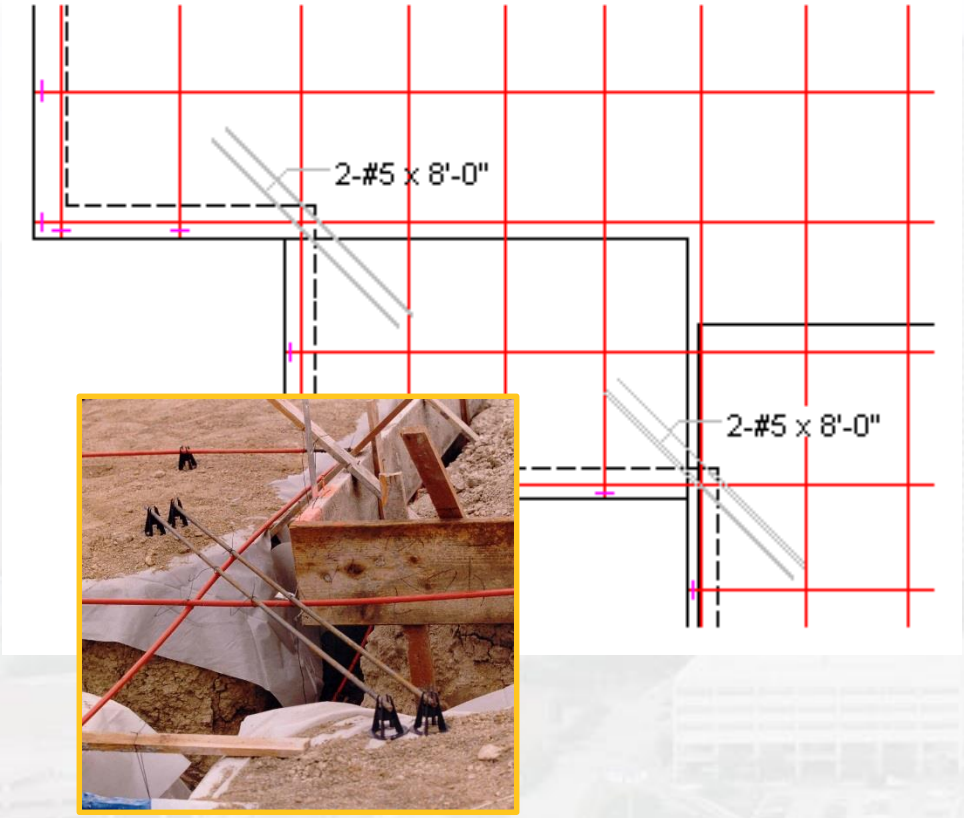


Initial curing tensile stresses build-up at reentrant (inside) corners causing cracking to occur. Rebar is typically installed at these locations.

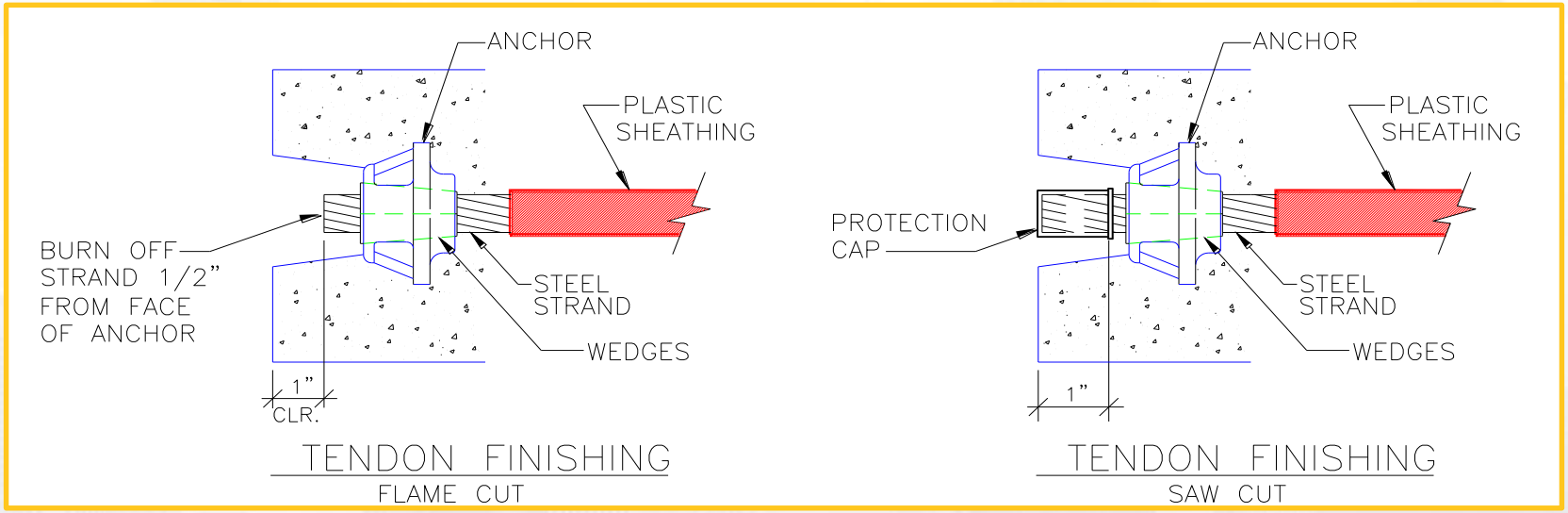
Concrete Placement

Do Not stand on Tendons

Cold Joints

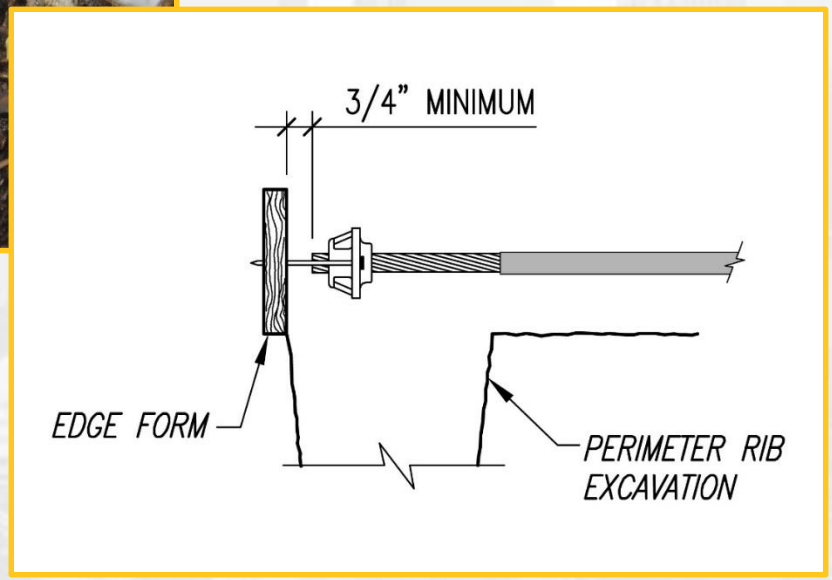
Consolidation

Tendon Finishing



1. Cut tendon tail after stressing is approved.
2. Fill stressing pocket recess.

Fixed-End Installation



Foundation Maintenance

The property owner is responsible for site maintenance, but they must be educated on what this mean as it relates to a SOG foundation.

Foundation Maintenance

The long-term performance of a slab-on-ground foundation is dependent upon good drainage and a moisture maintenance program by the property owner.

- Do not alter the drainage pattern of the site
- Provide a minimum of 3%-5% of slope away from the foundation with the first 5 feet
- Roof drains should not discharge water at the perimeter of the foundation

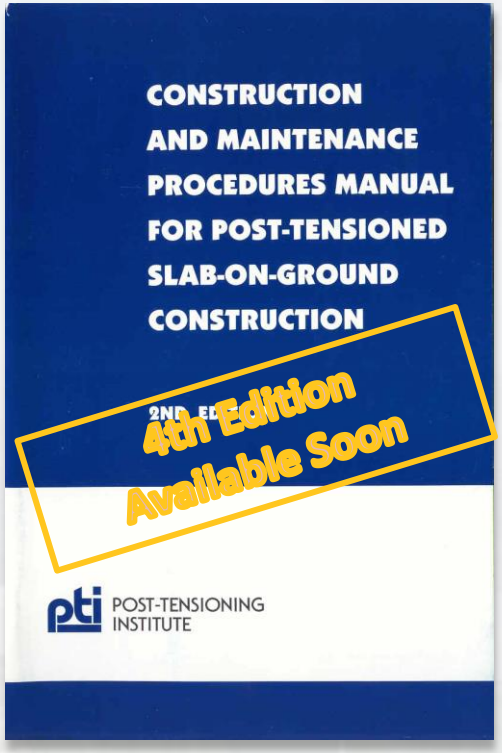
Construction & Maintenance of PT SOG Foundations

For more information concerning the construction & maintenance of post-tensioned slabs-on-ground,

Contact the

Post-Tensioning Institute at

www.post-tensioning.org



Also Available in Pocket-Size Version