

# 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

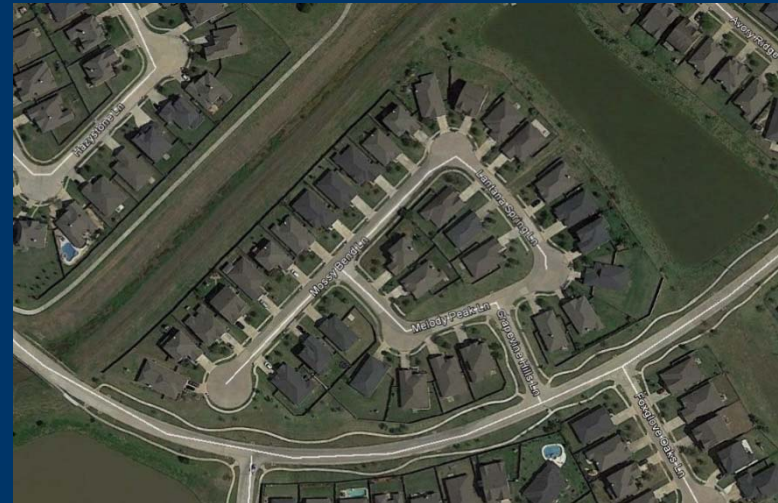
- Construction
  - Site Preparation
  - Foundation Construction
- Maintenance
  - End-Users Responsibilities

# 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

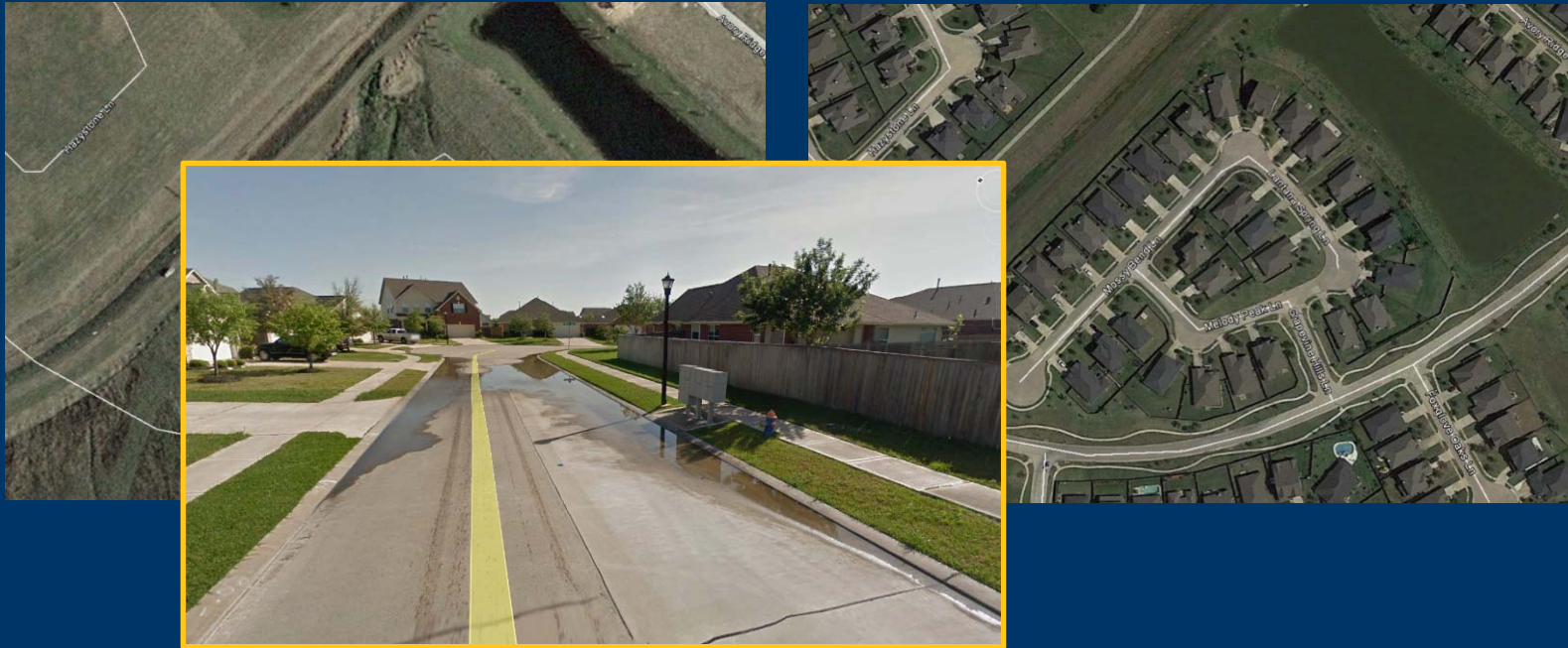
## Look for Site Anomalies





# 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





# Site Preparation

*Inspect the site to look for unusual conditions*

- 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 recompact.
- 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.

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# Under-Slab Systems



Right-Way



Wrong Way

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# 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](http://www.post-tensioning.org)*

**NEW PUBLICATION**

PTI M10.6-15

**Specification for Unbonded  
Single Strand Tendons  
Used for Slab-on-Ground  
Construction**



**pti** POST-TENSIONING  
INSTITUTE

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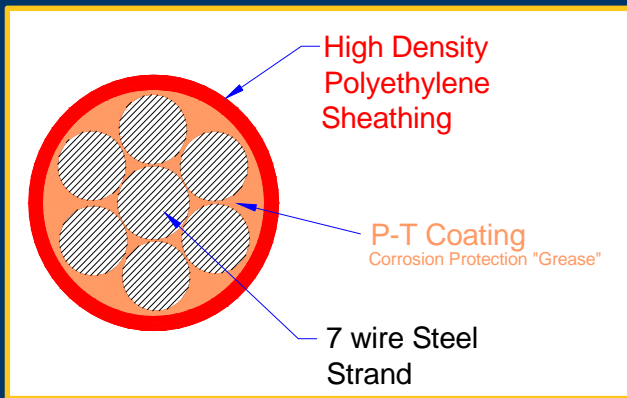
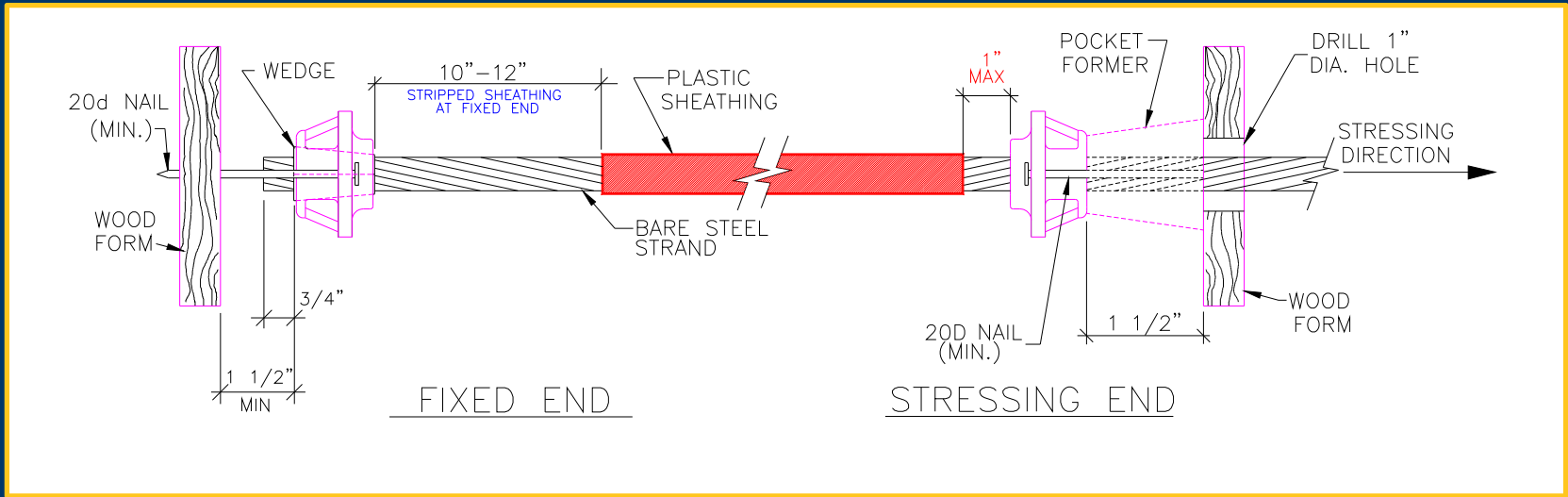


# Specification for Unbonded Tendons for SOG Applications

- 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

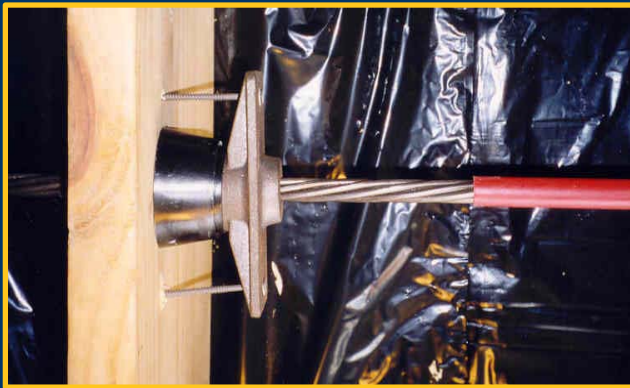


Anchor

2-pc Wedge

# PT Installation Details

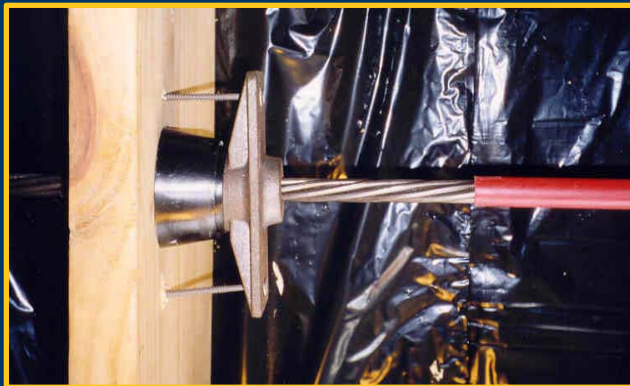
- Exposed Strand behind Stressing Anchors



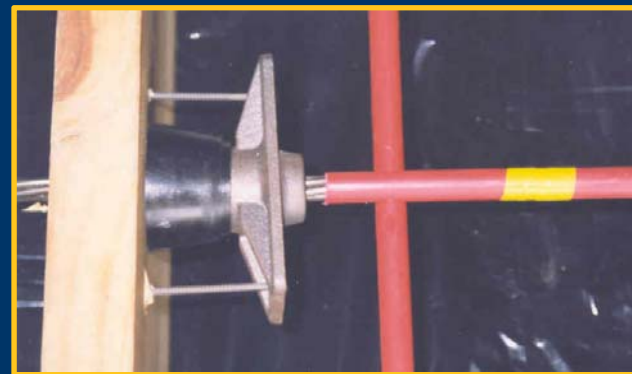
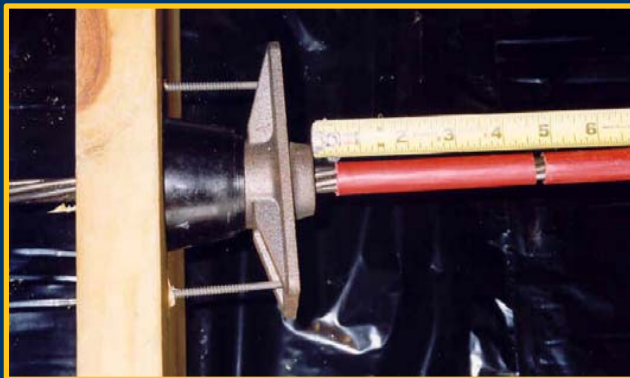
- Increases friction - concrete forms into the interstices of the strand
- Dangerous – causes jack to suddenly rotate when force is released
- Damages the jack

# PT Installation Details

- Exposed Strand behind Stressing Anchors

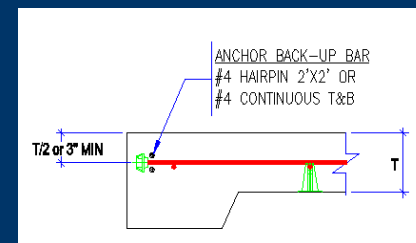
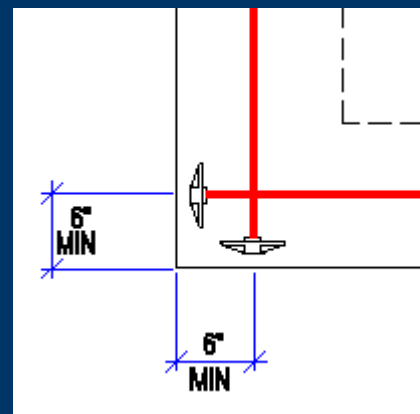
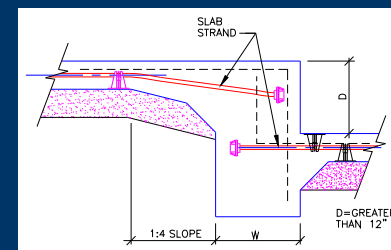
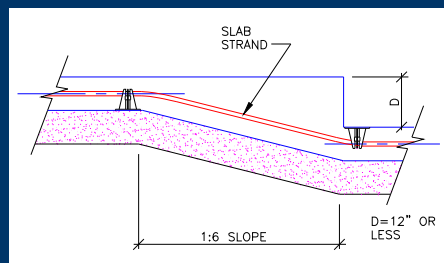
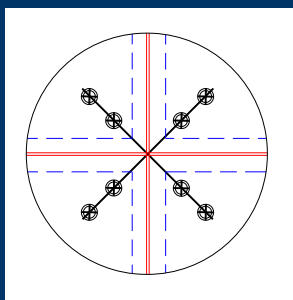
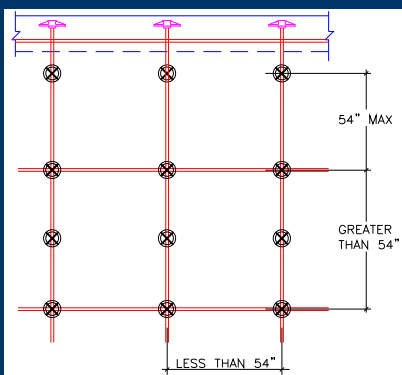


- Replace Sheathing
- Tape
- 1 inch Rule



# PT Installation Details

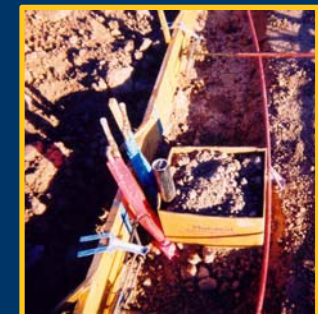
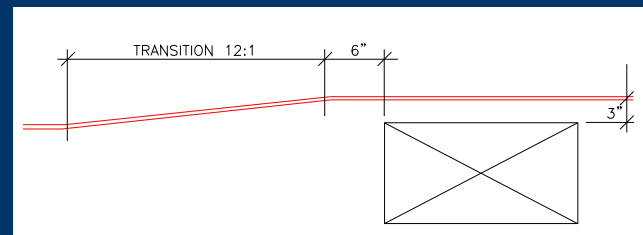
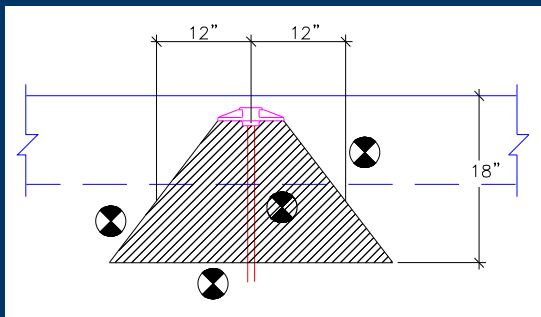
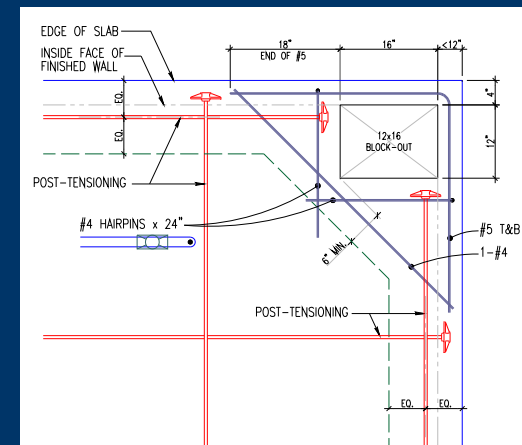
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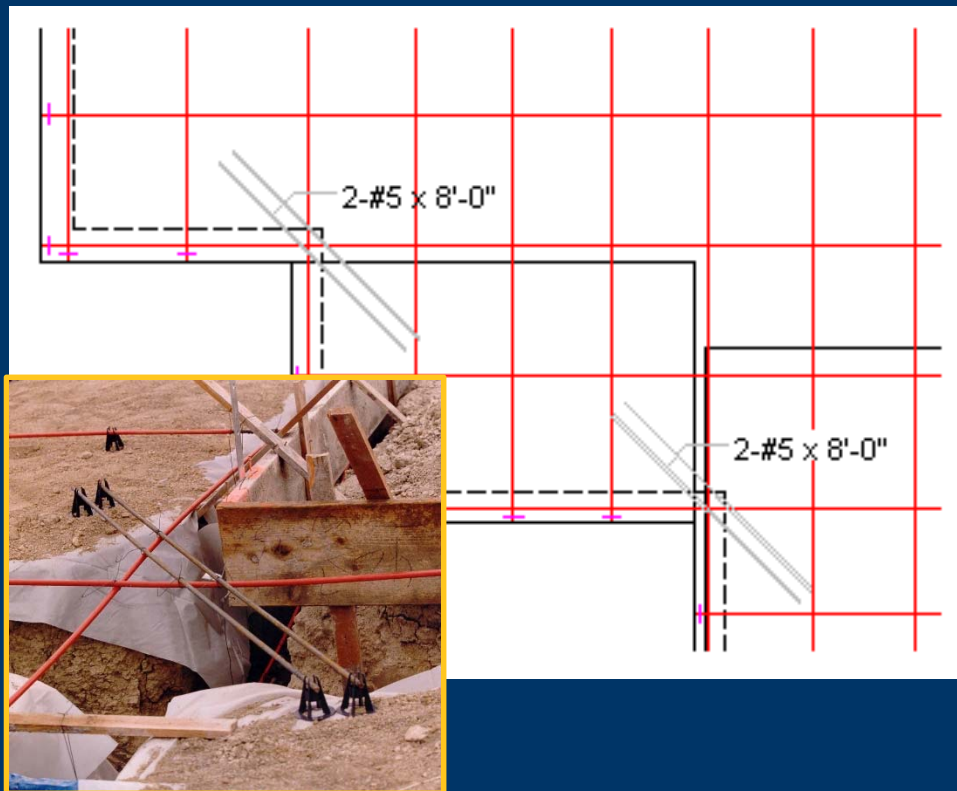


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# PT Installation Details

- Easy to Install ----- but MUST follow simple details.



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



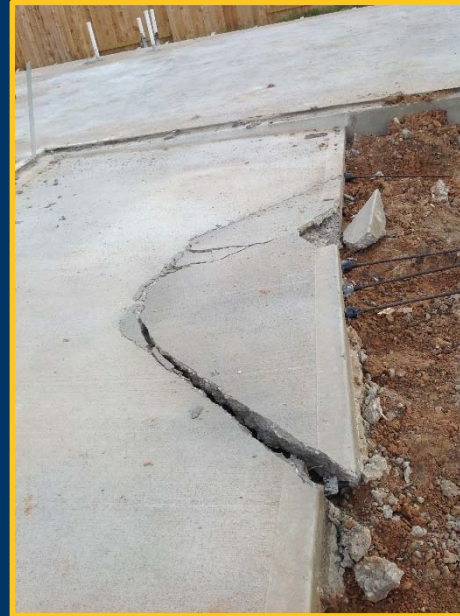
# Concrete Placement



Do Not stand on Tendons

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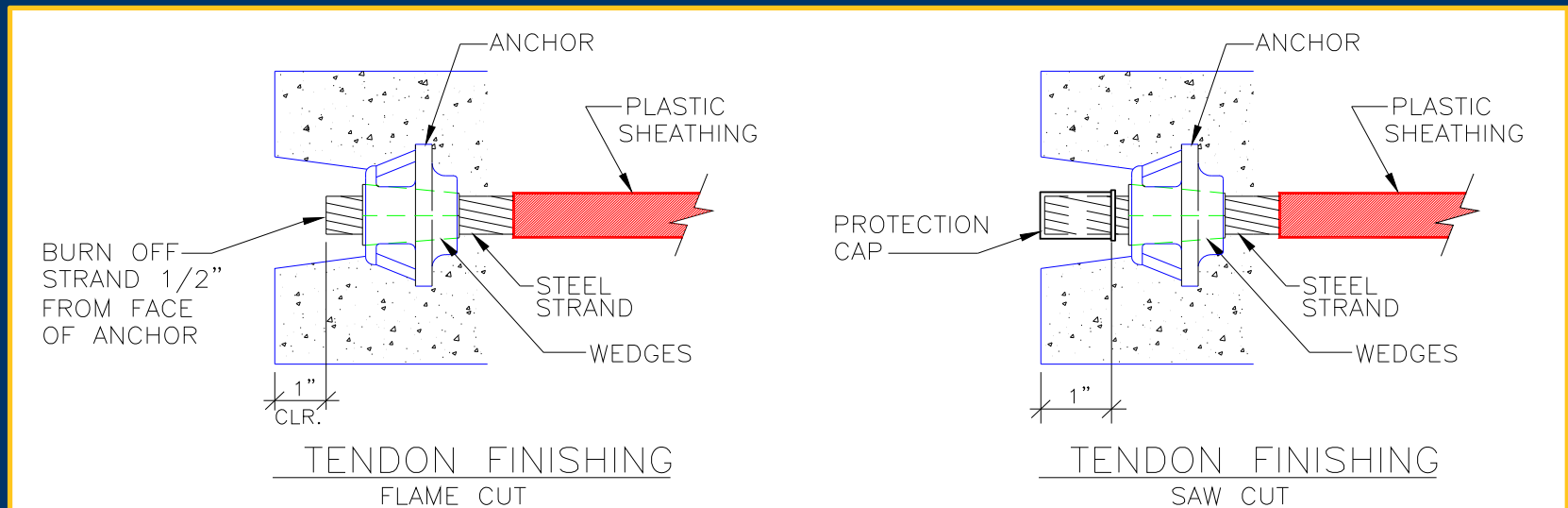


Cold Joints



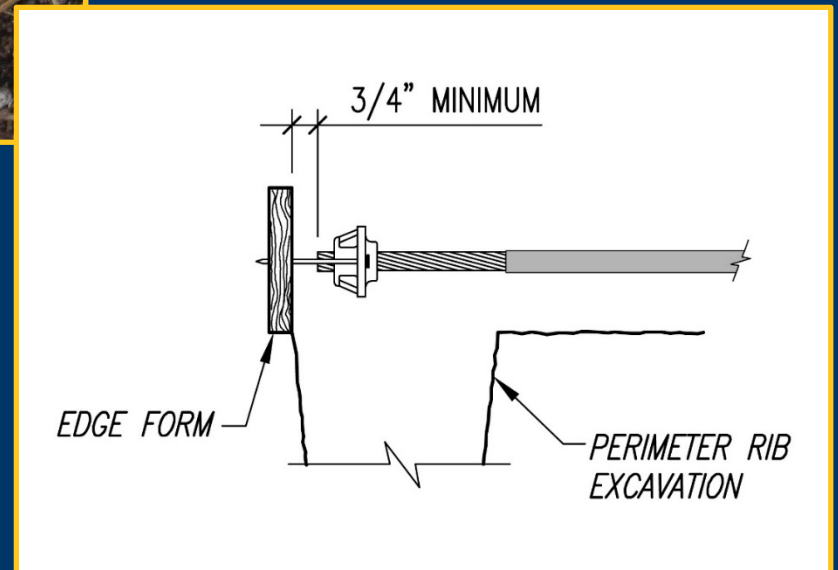
Consolidation

# 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

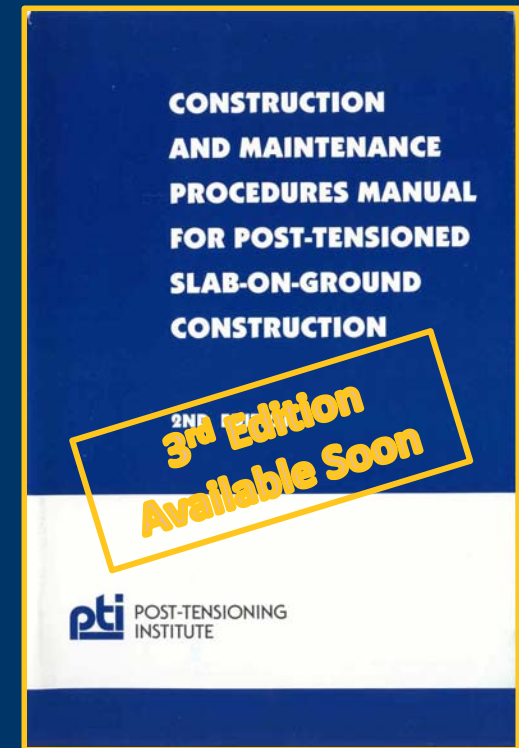
*The long-term performance of a slab-on-ground foundation is dependent upon good drainage and a moisture maintenance program by the property owner.*



- 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](http://www.post-tensioning.org)*



Also Available in Pocket-Size Version

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