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
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 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

- Grade the lot for positive drainage [away from] the foundation [during and after] construction.
Preparing for Concrete Placement

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

- High Density Polyethylene Sheathing
- P-T Coating Corrosion Protection “Grease”
- 7 wire Steel Strand
- 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

- Easy to Install ------ but MUST follow simple details.
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PT Installation Details

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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
1. Cut tendon tail after stressing is approved.
2. Fill stressing pocket recess.
Fixed-End Installation

3/4” MINIMUM

EDGE FORM

PERIMETER RIB EXCAVATION
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