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
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 recompacked.
- 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.
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.
PT Installation 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
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

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