

<b>Maricopa Association of Governments Building Code Amendments and Standards Manual BCAS #8</b>	
<b>Title: Recommendations from the Phoenix Residential Post-Tension Round Table Committee</b>	
Originally Reviewed by MAG Building Codes Committee: <b>10/14/2003</b>	
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Prepared by: **Phoenix Residential Post-Tension Round Table Committee**

This document has been prepared by the Phoenix Residential Post-Tension Round Table Committee as a supplement to the Construction and Maintenance Procedures Manual, 2<sup>nd</sup> Edition, issued by the Post-Tensioning Institute. This document is intended as a recommended general guide for the design, placement, installation, inspection and maintenance of residential post-tensioned slabs-on-ground in the Phoenix area. The purpose of this document is to address the unique characteristics of residential post-tensioned slabs-on-ground in the Phoenix area.

#### **Recommendations for All Stakeholders**

1. Construction shall be performed in conformance with the approved plans and specifications.
2. Any deviation from plans and specification shall require the Engineer's written approval.
3. Any repairs shall require the Engineer's written approval.
4. Engineer shall be notified prior to any slab cutting.
5. Concrete cutting and removal should only be performed by a qualified concrete contractor or post-tension contractor.

#### **Recommendations for the Concrete Contractor**

1. Concrete shall be placed monolithically across the entire slab area to be post-tensioned.
2. Cold joints at the garage tire stop, garage stem walls or any other location are unacceptable without the approval of the Engineer of Record. Warm joints (still plastic) shall be squared off prior to subsequent pour.
3. The use of a vibrator or other means of concrete consolidation is critical during the placement of the concrete, especially around the stressing and fixed end anchorage zones. This process eliminates voids in these areas and greatly reduces the possibility of honeycombing, which may lead to concrete blowouts.
4. Tooled control joints may be used, when applicable, to control cracking prior to stressing or for aesthetic reasons. Joint depth shall not exceed 1/5 of slab thickness.
5. A warning stamp that reads "Post-Tension Slab Do Not Cut or Drill" shall be placed in a conspicuous location in the garage.
6. Sub-base shall be compacted to a smooth, level and firm base.

### Recommendations for the Post-Tension Contractor

1. Corner bars shall be installed as shown or stated in the Plans.
2. Plumbing boxes shall be reinforced as shown or stated in the Plans.
3. All intersections of slab tendons shall be secured with tie wire *or other means (such as snap chairs)* to prevent displacement during placement of concrete.
4. If wedges are offset more than 1/8 inch, reseal wedges.

### Recommendations for the Engineer-of-Record

1. Specify sub-base requirements and choose appropriate coefficient of friction.
2. Identify each tendon by number, with length and elongation range listed.
3. Minimum slab width to receive tendons shall be 10 feet. Any slab width less than 10 feet shall be conventionally reinforced rather than post-tensioned.
4. Perimeter details for equivalent thickness slabs shall show the tendons at mid-depth of the slab and should provide a minimum of 2 inches of concrete cover to the anchor.
5. Backup bars shall be in compliance with the ICBO Report for the specific anchors used in construction.
6. Re-entrant corner bars shall consist of one #5.
7. No reinforcement is required around plumbing pipe penetrations outside of the anchor zone.
8. Reinforcement for plumbing boxes shall be clearly defined.
9. Reinforcement for penetrations in the anchor zone shall be clearly defined.
10. Specify slab thickness tolerance limits.
11. Options should be clearly described and labeled.
12. Vertical concentrated loads associated with holdowns and/or posts shall be addressed in the post-tension slab design.
13. When the post-tension slab is designed by an engineer other than the Engineer-of-Record for the superstructure, the Engineer-of-Record shall review the slab design for conformance with the design of the superstructure.
14. GENERAL NOTES shall include the following:
  - a. Reference to "Construction and Maintenance Procedures Manual for Post-Tensioned Slab-on-Ground Construction", 2<sup>nd</sup> Edition, by the Post-Tensioning Institute.
  - b. Maximum plumbing box size shall be 12" x 12", located a minimum of 6" from any edge.
  - c. Plumbing shall be boxed and wrapped prior to post-tension installation.
  - d. Slabs shall be formed and poured as monolithic slabs. If a cold joint occurs within a slab, contact Engineer of Record prior to proceeding with subsequent pour.
  - e. Slabs shall be stressed prior to roof tile stocking.

### Recommendations for the Special Inspector

1. Inspections shall be done under the direct supervision of an individual who has PTI certification.
2. Inspectors are required to be at stressing of slab.

### Recommendations for the Home Builder

1. The condition of the building pad should meet the requirements of the geotechnical report prior to the start of foundation construction.

2. Pumping concrete is recommended to reduce tendon displacement, sub-base disruption and vehicular traffic on building pads.
3. Engineer of Record shall be notified who will be performing the Special Inspections.
4. Proper grading/slopes shall be installed on all sides of the home after the slab is poured. Proper grading/slopes shall be maintained through the course of construction and for the life of the structure.
5. The main water shut off valve shall have a tag of durable, non-corrosive metal, permanently attached identifying the building as having a post-tensioned slab.

#### **Recommendations for the Municipal Plan Review**

1. Identify each tendon by number, with length and elongation range listed.
2. All intersections of slab tendons shall be secured with tie wire or other means (such as snap chairs) to prevent displacement during placement of concrete.
3. Reinforcement for plumbing boxes shall be clearly defined.
4. Reinforcement for penetrations in the anchor zone shall be clearly defined.