QUALITY CONTROL CHECKLISTS
FOR FOUNDATION INSPECTION OF
RESIDENTIAL AND OTHER LOW-RISE BUILDINGS

by
The Structural Committee
of
The Foundation Performance Association
www.foundationperformance.org
Houston, Texas

Document # FPA-SC-10-0

<table>
<thead>
<tr>
<th>ISSUE HISTORY</th>
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<tbody>
<tr>
<td><strong>Rev#</strong></td>
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<tr>
<td>A</td>
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The following documents are the results of two years of work completed in the late nineteen nineties by the Inspections Subcommittee of the Foundation Performance Committee. Jack Spivey chaired this committee and his fellow members were:

MR. MICHAEL SKOLLER P.E.
MR. JOE EDWARDS
MR. LOWELL BRUMLEY P.E.
MR. DEAN EICHELBERGER

Meetings took place on a monthly basis and were attended by many interested parties. Special recognition should be given to Mr. Jim Dutton of Du-West Foundation Repair and Mr. Dan Jaggers of Olshan Foundation Repair. Their assistance with the foundation repair sections was invaluable. The topics for discussion have followed a general outline, which was established at the onset of the meetings. It was determined that our basic intent would be to establish a set of standards and procedures for the inspection of foundation construction and foundation repairs. These standards were to be incorporated into an inspection document, which would be thorough in its scope, but also easy to use. It was established early on in our discussions that the best form for our purposes would be a simple checklist, which would fully cover the subject of the inspection. It was also determined that keeping the checklist to one page would afford the most user-friendly instrument for our purposes. Once these parameters were established the subjects of the inspections were taken in the following order:

FOUNDATION MAKE-UP -- POST TENSION
STRESSING POST TENSION
FOUNDATION MAKE-UP -- CONVENTIONAL/REBAR
CONCRETE PLACEMENT
CONSTRUCTION PIERS
REPAIR PIERS
SEGMENTED REPAIR PILES

These topics were judged to represent the major types of foundation construction and foundation repairs found in the Houston area. They are certainly not inclusive of every inspection situation or construction method in use, but they do offer a basic set of standards for the majority of inspections that would be encountered in typical residential construction.

They are also designed to be used by anyone who has some knowledge of foundation construction. It was our intention that they would serve field inspectors, builders, builders’ superintendents, municipal inspectors, or anyone with an interest in quality foundations.

The first order of business worked on by the subcommittee was to establish a heading format for each inspection. This portion of the form is meant to establish a context for the inspection. The basics of the site such as, the builder, subdivision, address, lot and block, are all set out at the top of the form. The next section is meant to establish the parameters that will govern the rest of the inspection. The most important of these, deals with the plans. No inspection should be undertaken without a set of plans, which should include the name of the engineer, the date of the plans and the detail sheet. Other pertinent details of the site that are covered in this section are the date, the time, the weather, and whether there is a detached garage.
The above guidelines were followed on each form, with the following variations dictated by the context of the inspection:

- For the Concrete Placement Form there is specific reference to the Foundation Make-Up Form, and the items in need of repair.
- In the Stress Form, there is an added reference to the cable count, the concrete placement date, and the post tension construction company.
- On the Construction Piers Form, there is a reference to the Geotechnical Engineer, and on the Repair Piers and Segmented Repair Piles Forms, there is reference to the design documentation and the municipal permit.

Once the context is established in the heading, the form moves on to sections relating to different aspects of each inspection. In general, these sections are documented by simply checking the item to show that it has been correctly completed. The checkmark (✓) serves to show that the item has been considered and complies with the plans, whereas an x (X) denotes that the item does not comply with the plans. In some sections, direct questions are asked that should be answered. Finally, the lower sections of the forms generally have reference to a drawing of the slab, the piers or piles, or the foundation being repaired. The drawings further document the conditions specific to the site and the foundation and allow the inspector to orient the data being described in the conclusion of the inspection.

Each of these forms represents an attempt to document the events related to a specific foundation project or a specific foundation repair. It should be remembered that all the answers and data reported are typically the only documentation of what actually happened during this phase of construction. For this reason, every item is pertinent and should be given careful consideration during the inspection. Though many of the items listed are fairly common knowledge to the typical inspector or builder, it is the sequencing and nuances of certain questions and items listed, which are the greatest advantage of using the forms. The committee felt that all major items such as beam size, tendon counts, plan dates, etc., were adequately covered in each form.

It should be noted that the Repair Piers and Segmented Repair Piles Forms contain information that is not found in any established sources or specifications. This is particularly true of the Segmented Repair Piles Form. It was generally agreed that these items are rarely inspected by an independent inspector.

This document is made freely available to the public through the Foundation Performance Association at www.foundationperformance.org so engineers, architects, inspectors, contractors, and other professionals involved in the quality control of foundations systems for residential and low-rise buildings may have access to the information. To ensure the document remains as current as possible, it will be periodically updated under the same document number but with new revision numbers. Please direct suggestions for improvement to the current chair of the structural committee.

The Foundation Performance Association and its members make no warranty regarding the accuracy of the information contained herein and will not be liable for any damages, including consequential damages, resulting from the use of this document.
QC Checklists

1. POST-TENSION SYSTEM FOUNDATION MAKE-UP
2. CONCRETE PLACEMENT
3. POST-TENSION SYSTEM STRESSING
4. CONVENTIONAL (REBAR) FOUNDATION MAKE-UP
5. CONSTRUCTION (BUILDERS) PIERS
6. REPAIR PIERS
7. SEGMENTED REPAIR PILES
## QC Checklist #1 - POST-TENSION SYSTEM FOUNDATION MAKE-UP

<table>
<thead>
<tr>
<th>Client</th>
<th>Quality Control Company</th>
</tr>
</thead>
</table>

### Site Information

- **Builder**: [Name]
- **Subdivision**: [Name]
- **Date**: [Date]
- **Time**: [Time]
- **Site Address**: [Address]
- **Lot**: [Lot]
- **Blk**: [Block]
- **Sec**: [Section]
- **Plan Site Specific**: [Yes/No]
- **Plan Provided at Site**: [Yes/No]
- **Weather**: [Condition]
- **Plan Date**: [Date]
- **Detail Sheet Date**: [Date]

### Forms Information

- **Concrete Contractor**: [Name]
- **Detached Garage**: [Yes/No]
- **Permit #**: [Number]

### Check (✓) If Items Comply With The Plans

<table>
<thead>
<tr>
<th>Item</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>[Yes/No]</td>
</tr>
<tr>
<td>Detail Sheet</td>
<td>[Yes/No]</td>
</tr>
<tr>
<td>Concrete</td>
<td>[Yes/No]</td>
</tr>
<tr>
<td>Trees</td>
<td>[Yes/No]</td>
</tr>
</tbody>
</table>

### Additional Reviews

- **Forms**: [Secure/Not Secure]
- **Floats**: [Installed/Not Installed]
- **Proper Clearance**: [At Floats/Not At Floats]
- **Garage Front Closed**: [Yes/No]

### Tendons Information

- **Count**: [L to R, F to B, Garage]
- **Number of Tendons Left**: [On Site/Not On Site]
- **Rebar**: [1/2”/Other]
- **Water**: [Yes/No]
- **Diagonal Tendons at Re-entrant Corners**: [Yes/No]
- **Nose Bars**: [Construction Joints]
- **Anchor Bolts**: [On Site/Not On Site]
- **Diameter**: [In] Length [In]

### Reinforcing Steel Information

- **WWF**: [Mesh] Size [Roll] Sheet [OR] #3 @ [In] on center both ways
- **Rebar**: [Grade]
- **Clearances**: [Per Plan, Sides, Bottom, Top]
- **Splices Lapped per Plan**: [Yes/No]
- **Corner Rebar Installed**: [Yes/No]
- **Typical Rebar/Exterior Beams**: [Continuous]
- **Typical Rebar/Interior Beams**: [Continuous]
- **Corner Bars Installed at Dead Ends**: [Yes/No]
- **Bay Windows or Porches**: [Rebar, Strips, Extra Rebar Added]
- **Construction Joints**: [Yes/No]
- **Anchor Bolts**: [On Site/Not On Site]
- **Other Fasteners**: [Yes/No]

### Is Foundation Ready for Concrete?

- **Yes**: [Yes/No]

### Changes Needed:

- [Sketch]

---

**Quality Controller’s Signature**

**Superintendent’s Signature**
# QC Checklist #2 - CONCRETE PLACEMENT

**SITE**
- Subdivision Lot: __ Other: __
- Lot Description: __
- Are there obstructions at the site which would prevent access for concrete trucks? Yes [ ] No [ ]
- Explain: __

**WEATHER**
- Weather conditions: START: __ FINISH: __
- Will temperature rise above 40° F for five hours: __
- Forty-eight hour forecast: HIGH TEMPERATURE: __ LOW TEMPERATURE: __

**CONCRETE**
- Concrete Company: __
- Batch Plant: __
- Tickets on site? Yes [ ] No [ ]
- Delivered by truck over what distance? __
- Was a pump used? Yes [ ] No [ ]
- Pump Co.: __
- Mix: __ psi __ psi __ psi
- "pump mix"—Pump Prime Placed outside of form: Yes [ ] No [ ]
- Sack Mix: __ __ __ __ OR Strength Mix: Yes [ ] No [ ]
- Additives: __
- NO CALCIUM CHLORIDE—APPLIES TO POST TENSION SLAB
- Fly Ash: Type C? Yes [ ] No [ ] __ __ __ %
- Slump as ordered from plant: __ __ __ (in)
- Explain (Discrepancies if slump is different): __
- Was concrete consolidated by vibrator? Yes [ ] No [ ] Other: __
- Test Cylinders Taken: Yes [ ] No [ ]
- Testing Company: __
- Slump Test Taken: Yes [ ] No [ ]
- Testing Company: __
- If water is added at the jobsite, show the amounts over ten gallons and give a visual estimate of the final slump:

<table>
<thead>
<tr>
<th>Truck #</th>
<th>Poured Out Gallons</th>
<th>Placement Location</th>
<th>Est. Slump</th>
<th>Tested Slump</th>
<th>Temp.</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

- Anchor bolts on site: Yes [ ] No [ ]
- Diameter: __ (in) Length: __ (in)
- Other Fasteners: __
- Sketch: __

**ADDITIONAL COMMENTS:**

Quality Controller’s Signature: __

Superintendent’s Signature: __
QC Checklist #3 – POST-TENSION STRESSING

CLIENT ___________________ QUALITY CONTROL COMPANY ___________________

Builder __________________ Subdivision ___________________ Date ____________ Time ____________
Site Address _______________ Lot _______ Blk _______ Sec ________ Plan site specific Yes [ ] No [ ]
Plan #: ___________________ Cable Count ___________________ Design Engineer ___________________
Post Tension Company ________ Superintendent ____________________

Plan provided at site Yes [ ] No [ ] Weather ___________ Plan Date ___________ Detail Sheet Date ___________
Concrete Placement Date __________ Stress Date __________ Partial Stress Date __________

Check ( ✓ ) If Items Comply With The Plans
(X ) If Items Do Not Comply With The Plans

[ ] Are there any cracks in the surface of the slab Yes [ ] No [ ] Describe ________________

ADDITIONAL REVIEWS
Date _____ Time _____

Estimate size and locate on the sketch below
[ ] Are elongations specified on the plans Yes [ ] No [ ]
[ ] Are the tendons painted at the edge of the slab Yes [ ] No [ ]
[ ] What is the predetermined distance between the mark and the edge of the slab ___(in)
[ ] Are the wedges placed in a vertical position Yes [ ] No [ ]
[ ] Is there evidence of gripper marks on the gripper end of all tendons Yes [ ] No [ ] ( If no show location on sketch below)
[ ] Are tendons stressed from two ends Yes [ ] No [ ] If So, How Many _______

1/2" Diameter Tendon Elongation Measurements
(Min/Max Range Recommended by PTI)

USE CHART IF ELONGATIONS ARE NOT LISTED ON PLAN, OR MULTIPLY TENDON LENGTH IN FEET BY 0.08 TO CALCULATE APPROXIMATE ELONGATION IN INCHES FOR LENGTH OVER 30 FEET.

SKETCH
Draw a simple sketch of the foundation configuration noting all tendon locations and their elongation measurements. Also note any problems which you have observed, particularly blowouts at corners or the garage entry and cracks.

FOLLOWING STRESS VERIFICATION
[ ] Are the tendon ends cut inside the pocket former
[ ] After stressing are the nails cut
[ ] Are the tendon ends grouted with a non-shrink grout

Quality Controller’s Signature ___________________ Superintendent’s Signature ___________________
### Q C Checklist #4–CONVENTIONAL (REBAR) FOUNDATION MAKE-UP

**Builder**

**Subdivision**

**Date**

**Time**

**Site Address**

**Lot**

**Blk**

**Sec**

Plan site specific

Yes

No

**Plan #:**

**Design Engineer**

**Superintendent**

Plan provided at site

Yes

No

**Weather**

**Plan Date**

**Detail Sheet Date**

Concrete Placement Date

**Detached Garage**

Yes

No

---

**SITE**

**Subdivision** Lot _____

**Lot Description**

**Fill on site**

Yes

No

**Compaction verified by Geotechnical Engineer:**

Yes

No

Date

**Will make up drain**

Yes

No

**Trees removed**

Are trees within 20’ of foundation

Yes

No

---

**SLAB**

- **Thickness** (in)
- Measured: Screeds Stringline Other
- **Level and Firm**

No

---

**BEAMS**

- **Design Depth:** (in) Exterior Interior
- **Actual Depth:** (in) (in) (in) (in)
- **Design Width:** (in)
- **Actual Width:** (in) (in) (in) (in)
- **Average depth into undisturbed soil** (in)
- **Clean of loose soil & debris**
- **Water in beams**
- **Will water drain**
- **Plumbing obstructions accommodated**
- **Pier tops clean**

---

**POLYETHYLENE SHEETING**

- 6-mil Lapped and Taped
- **Seated in the bottom of beams**
- **secured at sides**
- **Mastic/tape applied at plumbing**

---

**CONSTRUCTION PIERS**

- **Number of piers**

- Are pier tops clean of debris

---

**REINFORCING STEEL**

Grade of Steel

---

**BEAM SECTIONS**

- **Exterior Beams:**
  - Steel size
  - Number top
  - Bottom
  - Stirrup size
  - Spacing
  - (in)
  - Strut

- **Interior Beams:**
  - Steel size
  - Number top
  - Bottom
  - Stirrup size
  - Spacing
  - (in)

**Extra Beam depth**

Yes

No

**Additional steel required**

---

**PROPER CLEARANCE:**

- Bottom
  - (in)
  - Sides
  - (in)
  - Top
  - (in)
  - Support System

Continuity: Splices lapped per plan

Yes

No

Corner bars installed

Yes

No

---

**VOID BOXES in bottom of beam**

Yes

No

---

**CONSTRUCTION JOINTS**

**Anchor bolts on site**

Yes

No

**Diameter** (in)

**Length** (in)

---

**IS THE FOUNDATION READY FOR CONCRETE PLACEMENT?**

Yes

No

**SKETCH**

---

**CHECK (✓) If Items Comply With The Plans**

**(X) If Items Do Not Comply With The Plans**

---

**Quality Controller’s Signature**

**Superintendent’s Signature**
QC Checklist #5 – CONSTRUCTION (BUILDER’S) PIERs

Builder: __________________________ Subdivision: ___________ Date: ___________ Time: ___________

Site Address: ____________________ Lot: _______ Blk: _______ Sec: _______ Plan site specific: Yes [ ] No [ ]

Plan #: __________________________ Design Engineer: ___________ Superintendent: ___________ Geotechnical Engineer: ___________

Plan provided at site: Yes [ ] No [ ] Date: ___________ Plan Date: ___________ Detail Sheet Date: ___________

Weather at site: ___________ Concrete Contractor: ___________ Geotechnical Report #: ___________

Check (✔) If Items Comply With The Plans (X) If Items Do Not Comply With The Plans

SITE

Check (✔) If Items Comply With The Plans (X) If Items Do Not Comply With The Plans

ADDITIONAL REVIEWS

Date: ___________ Time: ___________

SITE

Fill on site: Yes [ ] No [ ]

Compaction verified by Geotechnical Engineer: Yes [ ] No [ ] Date: ___________

Trees removed: Yes [ ] No [ ] Location: ___________

Are trees within 20’ of foundation: Yes [ ] No [ ]

PIERS

Name of drilling company: ___________

Can drill equipment access all pier locations: Yes [ ] No [ ]

Type of drilling apparatus: Truck Mounted: ___________ Bobcat: ___________ Other: ___________

Total number of piers: ___________

PIER SIZES

Shaft Bell Pier Shaft Bell Pier Shaft Bell Pier

Dia. Dia. Depth No. Rebar Rebar Stirrups Piers Spacing Total

(in) (in) (ft) (in) (in) (in) (in) (in) (in)

(in) (in) (in) (in) (in) (in) (in) (in) (in)

(in) (in) (in) (in) (in) (in) (in) (in) (in)

(in) (in) (in) (in) (in) (in) (in) (in) (in)

(in) (in) (in) (in) (in) (in) (in) (in) (in)

Sketch Typical Pier Showing Depth

Describe the manner of measuring the bell sizes: (Bell checking tool required)

Pocket Penetrometer reading taken from auger cutting: Yes [ ] No [ ]

Was water apparent in pier hole: Yes [ ] No [ ] Depth: __________”

Action Taken: ___________

REINFORCING

Rebar placed per plan: Yes [ ] No [ ]

Rebar grade: ___________

Does rebar extend above pier top: Yes [ ] No [ ]

How much above: __________ (in) Sleeve: Yes [ ] No [ ]

Describe: ___________

CONCRETE

Will concrete truck be able to access site: Yes [ ] No [ ]

Concrete company: ___________

Was pump truck used: Yes [ ] No [ ]

Specified strength of concrete: __________ psi

Was concrete placed on the same day as the pier drilling: Yes [ ] No [ ]

Estimated time of completion: ___________

If not, explain: ___________

Draw a sketch of the structure indicating the pier placement

SKETCH

ARE THE PIER HOLES READY FOR CONCRETE PLACEMENT: Yes [ ] No [ ]

CHANGES NEEDED:

______________________________

______________________________

Quality Controller’s Signature: ___________

Superintendent’s Signature: ___________
**QC Checklist #6 – REPAIR PIERS**

**Owner**

**Client**

**Subdivision**

**Date**

**Time**

**Site Address**

Lot ___ Blk ___ Sec ___________ Plan site specific Yes □ No □

**Plan #**

**Design Engineer**

**Superintendent**

**Geotechnical Engineer**

**Plan provided at site** Yes □ No □

**Plan Date**

**Detail Sheet Date**

**Weather at site** Yes □ No □

**Permit #**

**Geotechnical Report #**

---

**Check (✔) If Items Comply With The Plans**

**Additional Reviews**

**Date**

**Time**

**SITE**

**Subdivision Lot**

**Other**

**Explain**

**Soils Report on site** Yes □ No □

**Bearing Soils at what depth** (ft)

**Test hole drilled to what depth** (ft)

**Bearing soils at** (ft)

**Underground plumbing test** Yes □ No □

**Water lines under slab** Yes □ No □

**Site obstructions to drilling, Describe:**

**Trees removed** Yes □ No □

**Location**

---

**UNDERPINNING**

**Name of repair contractor:**

**Method of repair:**

**Total number of piers:** Interior ___ Exterior ___

---

**PIER SIZES**

<table>
<thead>
<tr>
<th>Shaft Dia.</th>
<th>Bell Dia.</th>
<th>Pier Depth</th>
<th>No.</th>
<th>Rebar Size</th>
<th>Piers</th>
<th>Spacing</th>
<th>Total</th>
</tr>
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<tbody>
<tr>
<td>(in)</td>
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</table>

**Sketch Typical Pier Showing Depth**

**Describe the manner of measuring the bell sizes:**

(Bell checking tool required)

**Describe bearing strata:**

**Pocket Penetrometer reading** Yes □ No □

**TSF**

**Note locations below**

**Was water apparent in pier hole** Yes □ No □

**Depth**

Action Taken

---

**REINFORCING**

**Rebar per plans** Yes □ No □

**Rebar grade**

---

**HELICAL PIERS**

**Test hole depth** (ft)

**Bearing Data**

**Pier Log Onsite** Yes □ No □

**Shaft Diameter**

---

**Concrete**

**Will concrete truck be able to access site** Yes □ No □

**Was pump truck used** Yes □ No □

**Concrete company:**

**Truck numbers:**

**Batch Time**

**Onsite Time**

**Specified strength of concrete:** psi

**Slump as delivered**

**Water added** Yes □ No □

**Amount**

**Was concrete placed on the same day as the pier was belled** Yes □ No □

**Projected time of completion of concrete placement**

If not, explain:

**ESTIMATED MAXIMUM LIFT** INCHES: TO BE GROUTED Yes □ No □

*Draw a sketch of the structure indicating the pier placement*

---

**SKETCH**

**ARE THE PIER HOLES READY FOR CONCRETE PLACEMENT** Yes □ No □

**CHANGES NEEDED:**

---

**Quality Controller’s Signature**

**Superintendent’s Signature**
QC Checklist #7 – SEGMENTED REPAIR PILES

**SITE**

<table>
<thead>
<tr>
<th>Subdivision Lot</th>
<th>Other</th>
<th>Geotechnical Report on site</th>
<th>Explain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Yes □ No □</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Test hole drilled to what depth</th>
<th>Bearing Soils at what depth</th>
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<tbody>
<tr>
<td>(ft)</td>
<td>(ft)</td>
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</table>

<table>
<thead>
<tr>
<th>Underground plumbing test</th>
<th>Water lines under slab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes □ No □</td>
<td>Yes □ No □</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Site obstructions to drilling</th>
<th>Describe</th>
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<table>
<thead>
<tr>
<th>Were builder’s piers present</th>
<th>Yes □ No □</th>
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</table>

**UNDERPINNING**

<table>
<thead>
<tr>
<th>Name of repair contractor</th>
<th>Piling system</th>
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</table>

<table>
<thead>
<tr>
<th>Total number of piles</th>
<th>Interior</th>
<th>Exterior</th>
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**FIELD OBSERVATIONS**

<table>
<thead>
<tr>
<th>Round</th>
<th>Size</th>
<th>Segment</th>
<th>Number of Segments</th>
<th>Pile Cap Length</th>
<th>Pile Cap Quantity</th>
<th>Distance From Top of Slab</th>
<th>Total Depth From Top of Slab</th>
<th>Observed Measurement of Lift at Refusal</th>
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<tbody>
<tr>
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<td>(d)</td>
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\[(A \times B) + (C \times D) + E = \text{TOTAL DEPTH}\]

**CHANGES NEEDED:**

Quality Controller’s Signature ________________________ Superintendent’s Signature ________________________$