

Title: Policy for Borings, Borehole Backfilling and Local Enforcement Agency Engagement

BACKGROUND

Recently the subject of the California Department of Transportation (Caltrans) needing a Water Well Drillers (C-57) license, obtaining drilling permits and paying inspection fees was raised by different local enforcement agencies (counties, cities, water districts, etc.). Some local enforcement agencies state that we are not in compliance with applicable laws. Consequently our drilling activities are being affected (projects being shut down by local enforcement agencies, etc.). In order to maintain project delivery and our environmental stewardship responsibilities, this Directive has been developed.

DIRECTIVE

This Geotechnical Services Directive supersedes the "Borehole Backfill Documentation" Memorandum dated March 10, 2010, and the "California Water Code and Well Drilling Permits" Issue Memorandum, dated August 10, 2012. Effective immediately Caltrans geoprofessionals are required to comply with State Water Code and any local enforcement agency (LEA) requirements by doing the following:

- Contact the LEA to determine if the proposed activities fall under the LEA definition of C-57 work.
- Discuss with the LEA project-specific details, such as number of borings/soundings, depths, if groundwater is expected to be encountered, the proposed grout mix and backfilling procedure.
- Obtain LEA requirements and special conditions to perform borings/soundings and backfilling requirements, document the LEA responses and archive the documentation.
- Perform and document field work consistent with Caltrans, State Water Code and LEA requirements.

PURPOSE

This Geotechnical Services Directive will:

- Reduce the risk of impacts to California's groundwater resources.
- Establish drilling practices that are compliant with State and local laws related to groundwater protection.
- Provide assurance to the LEAs that Caltrans will follow local requirements.
- Provide detailed instructions and requirements for proper documentation and the archiving of communication with LEAs to all affected Caltrans personnel.

DEFINITION

For the purposes of this policy, C-57 work is defined as:

- Any boring or sounding that encounters groundwater.
- Any boring or sounding that terminates at a specific distance above groundwater. The LEA determines this distance.

RESPONSIBILITIES

A. Geoprofessional Roles and Responsibilities

1. For C-57 Work:

- a) Contact the LEA to determine if the proposed activities fall under the LEA definition of C-57 work.
- b) Submit a Drilling Request (attached) to Drilling Services and/or a Cone Penetrometer Testing (CPT) Request (attached) to the Geotechnical Instrumentation Branch (GIB).
- c) Provide LEA requirements to the A&E consultant.
- d) Obtain and provide the A&E estimate to the District Project Manager.
- e) Notify Drilling Services if CPT soundings will be performed so they can schedule and perform grouting operations (this is an interim step until GIB obtains the required backfilling equipment).
- f) Ensure piezometers are properly constructed and capped in compliance to State Water Code and LEA requirements.
- g) Complete the Borehole Backfill Data Sheet (attached) and archive according to the Geotechnical Archive section of the Geotechnical Manual.

2. For Non C-57 Work:

- a) Contact the LEA to determine if the proposed activities fall under the LEA definition of C-57 work.
- b) If the LEA asserts permits/fees are required, contact the Office Chief of Geotechnical Support and suspend work pending resolution.
- c) Following resolution, submit a Drilling Request (attached) to Drilling Services and/or a Cone Penetrometer Testing (CPT) Request (attached) to the Geotechnical Instrumentation Branch (GIB).
- d) Complete the Borehole Backfill Data Sheet (attached) and archive according to the Geotechnical Archive section of the Geotechnical Manual.

B. Supervisor and Managers of Geoprofessional

1. Perform verification activities and document compliance with this Directive (e.g. periodic compliance reports, QC/QA reports, etc.)

C. A&E Consultant Roles & Responsibilities for C-57 work

1. Obtain LEA permits and pay fees.
2. Schedule backfill inspections with LEA and coordinate with the geoprofessional.

3. Observe Caltrans drilling and CPT operations, including borehole/sounding backfilling and standpipe piezometer construction/destruction to ensure compliance with enforcement agency requirements.
4. Complete and submit the Well Completion Report (WCR) to the LEA, the Department of Water Resources, and Drilling Services. The WCR is required to be submitted within 60 days after monitoring well (including standpipe piezometers) are constructed, altered or destructed.

D. Drilling Services Roles & Responsibilities

1. For C-57 work as identified on the Drilling Request, obtain an A&E Task Order to have a C-57 licensed representative on-site during drilling and CPT operations.
2. For grouting operations: mix, pump and tremie according to LEA requirements as listed on the Drilling Request.
3. For backfilling with bentonite chips: tremie bentonite chips for holes deeper than 30 feet.
4. Displaced water shall be contained in a drum.
5. Receive the WCR and enter into the standpipe piezometer database.

E. Geotechnical Instrumentation Branch Roles & Responsibilities

1. For grouting operations: mix, pump and tremie grout according to LEA requirements as listed on the CPT Request.
2. For backfilling with bentonite chips: tremie bentonite chips for holes deeper than 30 feet.
3. Displaced water shall be contained in a drum.

APPROVED

Philip J. Stolarski

PHILIP J. STOLARSKI
State Materials Engineer
Deputy Division Chief

Materials Engineering and Testing Services and Geotechnical Services (METS/GS)
Division of Engineering Services

5-8-14

Date

Attachments:

- Drilling Request
- Cone Penetrometer Test Request
- Borehole Backfill Data Sheet

- PRELIMINARY MULTI
 FINAL

Date: _____

DRILLING REQUEST

OFFICE OF GEOTECHNICAL SUPPORT

Instructions: Please complete this form and email to drill.requests@dot.ca.gov

PROJECT INFORMATION

Geoprofessional	Telephone No.	Approving Senior Signature / Initial			Telephone No.
		District	County	Route	Post Miles
Geographic Name / Bridge Name					

Project No. / EA	Phase	Sub Object	Activity	PRSM Hrs	3656 Res	PRSM Start Date	PRSM End Date	Requested Start Date
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DRILLING AND SAMPLING

- Hxb / 94mm Diamond Core (2.4") Punch Core
 Nxb Diamond Core Horizontal Drilling Auger Boring
 Hydraulic Drive Rig 1" Soil Tube (Wacker) Other _____

Drive / Push Samples

- SPT
 Shelby Tube
 Brass

Est. # Borings: _____

Est. Max. Depth: _____

Expected Rock / Soil Type(s): _____

Attach layout of boring locations to final Drilling Request

TRAFFIC CONTROL

- Lane Closure **Performed By:**
 Ramp Closure Maintenance
 Shoulder Closure Construction
 Night Day Task Order

Attach lane closure schedule (from District)

MAINTENANCE YARD

Yard Name: _____
 Contact Person: _____
 Phone No: _____
 Cell No: _____
 Gate Code: _____

PERMITS

- LEA has been contacted
 C-57 Work Not C-57 Work
 Fish & Game Army Corp
 USFWS Other _____
 Private Property Railroad Tribal Lands

Attach all permits to final Drilling Request

REMARKS

INSTALLATIONS

Est. # of SI Borings: _____

Est. # of Piezo Borings: _____

Monuments (Qty)

- 3.34" Geo-Lok _____ (ft)
 2.75" Geo-Lok _____ (ft)
TDR Cable
 18 Gauge _____ (ft)
 Other _____ (ft)

PVC Slotted (0.020")

- 1.5" (S-80) _____ (ft)
 2" (S-40) _____ (ft)
 4" (S-80) _____ (ft)
 Other _____ (ft)

PVC Blank

- 1.5" (S-80) _____ (ft)
 2" (S-40) _____ (ft)
 4" (S-80) _____ (ft)
 Other _____ (ft)

- 5.5" Flush Mount _____ (ea)
 8" Flush Mount _____ (ea)
 Locking Standpipe _____ (ea)
 Other _____ (ea)

BOREHOLE BACKFILL

- Neat Cement Cement-Bentonite Grout Bentonite Chips No. 8 Sand

gallons of water / 94# cement: _____

%bentonite: _____

Received Date: _____

Completed Date: _____

- PRELIMINARY MULTI
 FINAL

CONE PENETROMETER TEST REQUEST

OFFICE OF GEOTECHNICAL SUPPORT

Date: _____

Instructions: Please complete this form and email to Gem-Yeu_Ma@dot.ca.gov, (916)227-1080

PROJECT INFORMATION

Geoprofessional	Telephone No.	Approving Senior Signature / Initial			Telephone No.
		District	County	Route	Post Miles
Geographic Name / Bridge Name					

Project No. / EA	Phase	Sub Object	Activity	PRSM Hrs 3650 Res	PRSM Start Date	PRSM End Date	Requested Start Date
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TYPE OF CONE PENETROMETER TEST (CPT) REQUIRED

<input type="checkbox"/> Standard Cone	Estimated # of Holes: _____	Estimated Depth Per Hole (ft) _____	
<input type="checkbox"/> Seismic Cone	Estimated # of Holes: _____	Estimated Depth Per Hole (ft) _____	
Seismic Interval (ft) _____			
<input type="checkbox"/> Piezometric Cone	Estimated # of Holes: _____	Estimated Depth Per Hole (ft) _____	

<h4 style="text-align: center;">TRAFFIC CONTROL</h4> <p><input type="checkbox"/> Lane Closure Performed By:</p> <p><input type="checkbox"/> Ramp Closure <input type="checkbox"/> Maintenance</p> <p><input type="checkbox"/> Shoulder Closure <input type="checkbox"/> Construction</p> <p><input type="checkbox"/> Night <input type="checkbox"/> Day <input type="checkbox"/> Task Order</p> <p>Attach lane closure schedule (from District)</p>	<h4 style="text-align: center;">MAINTENANCE YARD</h4> <p>Yard Name: _____</p> <p>Contact Person: _____</p> <p>Phone No: _____</p> <p>Cell No: _____</p> <p>Gate Code: _____</p>	<h4 style="text-align: center;">PERMITS</h4> <p style="text-align: center;">LEA has been contacted</p> <p><input type="checkbox"/> C-57 Work <input type="checkbox"/> Not C-57 Work</p> <p><input type="checkbox"/> Fish & Game <input type="checkbox"/> Army Corp</p> <p><input type="checkbox"/> USFWS <input type="checkbox"/> Other _____</p> <p><input type="checkbox"/> Private Property <input type="checkbox"/> Railroad <input type="checkbox"/> Tribal Lands</p> <p style="text-align: center;">Attach all permits to final CPT Request</p>
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REMARKS

CORING DETAILS

Is pavement coring required? _____

If yes, coring must be coordinated by the Geotechnical Professional. The Geotechnical Instrumentation Branch will assist securing coring services upon request.

BOREHOLE BACKFILL Neat Cement Cement-Bentonite Grout Bentonite Chips

gallons of water / 94# cement: % bentonite:

Received Date: _____ Completed Date: _____

Note: It is the Geoprofessional's responsibility to secure all permits, identify work boundaries and to coordinate Underground Services Alert (USA) operations prior to CPT work.

Last Revised: 5/7/2014

BOREHOLE BACKFILL DATA SHEET

Date: _____

OFFICE OF GEOTECHNICAL SUPPORT

Instructions: Complete this form and upload into GeoDOG

Page 1 of ____

PROJECT INFORMATION

On-Site Geoprofessional	Telephone No.	Approving Senior Signature / Initial			Telephone No.
		District	County	Route	Post Miles
Geographic Name / Bridge Name					

Project No. / EA _____ Phase _____ Sub-Object _____ Activity _____ Drilling Leadworker or CPT Technician _____
LEA: _____ LEA Inspector: _____ LEA Phone No.: _____

Drilling/Push:

Boring Number: _____ Depth to Groundwater (ft): _____ GW not encountered
Boring Type: CPT Mud Rotary Hollow Stem Augers Other: _____
Hole diameter: _____ (in) Total Depth: _____ (ft) Vertical Inclined: _____ (degrees)
Slope Inclinometer Installed¹? Yes No Length: _____ (ft) Diameter: _____ (in)

Sealing Materials:

Sealed full depth? Yes No If no, sealing interval: From: _____ (ft bgs²) To: _____ (ft bgs)

Proportions used: _____ gallons per 94# sack of cement _____ % Bentonite (if allowed)
Calculated Grout Volume: _____ (gallons³) Grout Take (actual) : _____ (gallons)
Bentonite Chips: diameter: _____ (in) Calculated bags needed⁴: _____ Actual bags used: _____

Placement:

From Surface: Tremie: Flush Thread: Drill Steel: Diameter: _____ (in)
Pump Make: Moyno Gardnerdenver Chemgrout

Directions:

This form is to be used for all boreholes and soundings.

This form is to be archived on GeoDOG.

This form comes in two formats. There is a page 1 format and a additional page format. Always use page 1, but use additional pages as necessary.

¹ If a Slope Inclinometer was installed and it has drilled holes or slots to measure water, then it is a Stand Pipe Piezometer and a Well Completion Report is required.

² BGS means Below Ground Surface

³ dia _____ (in) times dia _____ (in) times depth _____ (ft) times 0.0408 = _____ gallons

⁴ See the information on the back of the Bentonite Chip bag

BOREHOLE BACKFILL DATA SHEET

OFFICE OF GEOTECHNICAL SUPPORT

Page ____ of ____

Drilling/Push:

Boring Number: _____ Depth to Groundwater (ft): _____ GW not encountered
Boring Type: CPT Mud Rotary Hollow Stem Augers Other: _____
Hole diameter: _____ (in) Total Depth: _____ (ft) Vertical: _____ Inclined: _____ (degrees)
Slope Inclinometer Installed*? Yes No Length: _____ (ft) Diameter: _____ (in)

Sealing Materials:

Sealed full depth? Yes No If no, sealing interval: From: _____ (ft bgs²) To: _____ (ft bgs)

Proportions used: _____ gallons per 94# sack of cement _____ % Bentonite (if allowed)
Calculated Grout Volume: _____ (gallons³) Grout Take (actual) : _____ (gallons)
Bentonite Chips: diameter: _____ (in) Calculated bags needed⁴: _____ Actual bags used: _____

Placement:

From Surface: Tremie: Flush Thread: Drill Steel: Diameter: _____ (in)
Pump Make: Moyno Gardnerdenver Chemgrout

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Boring Number: _____ Depth to Groundwater (ft): _____ GW not encountered
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