Section 10.1~~B~~

PILES~~ FOR PROJECTS LET AFTER JUNE 30, 2024~~

10.1~~B~~.1 Purpose

To establish a procedure for obtaining production pile lengths and driving criteria to be used in structures. This chapter also provides the procedure for documentation of pile installation. This procedure applies to conventional projects let after June 30th, 2024. For conventional projects let before July 1st, 2024, refer to ***Section 10.1A.*** For Design Build projects refer to ***Section 10.12***.

10.1~~B~~.2 Authority

Sections 20.23(3)(a), and 334.048(3), Florida Statutes (F.S.)

10.1~~B~~.3 References

Sections 455 and 105, Standard Specifications for Road and Bridge Construction and any supplements thereto.

10.1~~B~~.4 Scope

The principal users of this document include the State Construction Office (SCO), District Materials and Research Offices (DMRO), District Construction Offices (DCO), District Operations Centers, the State Materials Office (SMO), and Construction Engineering and Inspection (CEI) firms working for the Department.

10.1~~B~~.5 Definitions

District Construction Engineer (DCE): The authority on the entire construction activity in the District.

Construction Engineering and Inspection (CEI): In this procedure, it refers to the Consultant personnel performing CEI services or the Florida Department of Transportation (Department) personnel group performing CEI services.

Geotechnical Engineer (GE): In this procedure, the Geotechnical Engineer may be the District Geotechnical Engineer (DGE), any Department Engineer assigned for the

project by the DGE, the Consultant Geotechnical Engineer working directly for the DGE, or the Geotechnical Engineer employed by the Department's Consultant CEI and performing under the direction of the DCE and DGE.

Verification Testing Geotechnical Engineer (VTGE): The Engineer engaged by the Department to perform verification testing. Verification testing could be dynamic testing and integrity testing. It could be the same geotechnical firm working for the CEI, DGE, in-house Department personnel from the DGE, or a consultant working directly for the DGE.

Project Administrator (PA): The Administrator who shall be responsible for the everyday construction activity at the project under the direction of the Resident Engineer/Senior Project Engineer.

Resident Engineer (RE): The Engineer supervising the CEI personnel and is responsible for the construction activities in the residency. In this procedure, this could be the Senior Project Engineer responsible for the construction activities of the project.

Dynamic Testing Engineer (DTE): The Engineer working for the Contractor, in responsible charge of the performance of the dynamic load testing of driven piles, evaluation, signal matching and analysis of the dynamic load test data, the recommendation of the production pile lengths (when these are to be determined based on test pile information) and driving criteria.

Dynamic Testing Operator (DTO): The ~~technician~~ operator working for the Contractor and under the supervision of the DTE, who performs the dynamic load testing of instrumented piles and test piles in the field.

Commented [PK1]: Will need to be approved by Chief Engineer.

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10.1B.6 General

The steps to establish pile lengths and driving criteria consist of reviewing the Contractor's hammer system as detailed in the pile installation plan, recording test pile data, and setting of production pile lengths and driving criteria in accordance with ***Section 455, Structures Foundations, Standard Specifications (Section 455)***. All documents ~~referred~~referred to in this section must be signed in accordance with section 4-1 of the Standard Specifications.

10.1B.7 Pile Installation Plan

(A) Resident Level Responsibilities

The RE (or PA) shall receive from the Contractor at the preconstruction conference or at least thirty (30) days prior to the driving of the initial ~~test~~ pile a completed ***Pile Driving Installation Plan Form, No. 700-020-01***. The RE (or PA) shall forward, within the same working day, the Pile Installation Plan (PIP), including the ***Pile Driving Installation Plan Form*** to the GE for review and comments.

The RE (or PA), within one (1) working day of receipt of the GE's comments, shall forward them to the Contractor. The RE (or PA) shall perform a concurrent separate review of the PIP, incorporate their own comments to the ones received from the GE, and forward them to the Contractor.

The RE (or PA) shall contact as soon as possible the GE if, at any time during the installation, the pile driving system does not ~~appear to~~ drive the piles satisfactorily. A satisfactory driving system means a system being able to drive the piles in compliance with all the requirements of ***Section 455***.

If, at any time during the installation, after field observations and evaluation of dynamic test data and driving records, the GE recommends rejecting the PIP, the RE (or PA) shall notify the Contractor of this rejection within one (1) working day of receiving the recommendation for rejection. The notification shall contain the reason(s) for rejection of the PIP plan. Refer to Guidance Document ***10-1B-F*** *for* ***sample letter***.

The RE (or PA) shall upload PIP submittals and GE's recommendations and comments into the Department's electronic document management system, including revisions and addenda.

(B) District Materials and Research Office (DMRO) Level Responsibilities

The GE shall make comments to the RE (or PA) on the driving system within four (4) working days of receiving the PIP.

If, at any time during the installation, after field observations, the pile driving system does not perform satisfactorily, the GE shall evaluate dynamic testing data, driving records, and other pertinent data. Additional dynamic testing may be required. The GE shall discuss this issue with the District Materials and Research Engineer, the DCE and the RE to decide whether the PIP must be rejected. If it is established that the driving system does not produce results within the specifications, the GE shall issue a notification to the RE (or PA) recommending the rejection of the PIP. The notification shall include the reasons for the rejection of the PIP. Refer to Guidance Document ***10-1B-F*** *for* ***sample letter***.

10.1~~B~~.8 Test Pile Installation

(A) Resident Level Responsibilities

Test pile installation, whether it is for a permanent or temporary structure, shall be documented in the pile driving record. As soon as the Contractor's schedule for driving test piles is known, the RE (or PA) shall notify the GE of the schedule so the GE may observe the installation of the test piles to aid in setting production pile lengths.
The CEI must perform an over-the-shoulder inspection of the activities performed by the Contractor during the pile installation. This includes but is not limited to the following:

1. Ensuring the piles are lifted, supported and set up in accordance with the Contract Documents.
2. Ensuring pre-forming, pre-drilling and jetting are performed in accordance with the Contract Documents. If casing is required for preforming, ensure it is installed to the elevation shown in the Contract Documents.
3. Ensuring the minimum tip elevations and penetrations are met in accordance with the Contract Documents.
4. Ensuring the pile lengths and driving criteria requirements are met in accordance with the authorized pile lengths and driving criteria letters.
5. Ensuring the contractor's DTE, DTO and inspectors are provided in accordance with the Contract Documents and the Pile Installation Plan. If the DTE is acting as a DTO and performs the dynamic load test remotely, ensure the field operator assisting the DTE and the individual working as DTE are in constant communication. Ensure the DTE is included in the Quality Control Plan or Installation Plan.

Commented [DT2]: Review language that was sent to Larry about remote monitoring.

(B) Pile Driving Inspection and Recording

Pile inspection and recording is the Contractor's responsibility. Every test pile and production pile driven on the project shall be recorded electronically in the field in the ***Pile Driving Log, Form No. 700-010-60***. It shall contain all the data and observations pertaining to the driving of the test pile. The test pile lengths and any special requirements for piles can be found in the plans or specifications.

Two to four pages of the ***Pile Driving Log, Form No. 700-010-60*** are dedicated ~~for~~to recording information relating to each pile driven. Page 1 contains the general information about the project, driving criteria, and procedures. Page 2 (there could be up to Page 4 depending on the pile length) contains the ***driving log record*** and comments. Additional guidance is provided in the Pile Driving log instructions. The test pile information must be completed ~~as soon as practical~~ and submitted in accordance

with the Contract Documents. The link to download the Pile Driving Log form is presented in 10.1B.15.

Most of the items on Page 1 of the Pile Driving Log form are self-explanatory. The subcontractor's name should be noted only if someone other than the prime Contractor drives the piling.

The notes section shall describe any occurrences during the driving of the pile or any information that the recorder feels may be beneficial to the GE or the PA.

Page 2 (there could be up to Page 4 depending on the pile length) of the Pile Driving Log form describes the actual pile driving. All of the field information shall be completed for each foot of driving. The specifications require the Contractor to furnish high and low ground elevations at each pile group and bent. This elevation shall be of the ground line, not of the water line.

The measured hammer energy is the hammer energy determined during driving by observed stroke lengths, pressure gauges or hammer instrumentation (other methods may be used when proposed and approved). Stroke/pressure details must be documented.

The pile rebound shall be monitored and recorded accurately with the amount of rebound shown in inches and the elevation limits of rebound shown.

The notes column must describe, accurately and completely, the manner in which the pile driving proceeded noting any irregularities, unexpected occurrences, deviations from driving criteria or procedures, actual elevations where the jets were turned on and off, relationship between the pile tip and jet tip, depth to which the pile penetrated under its own weight, spalling, cracks, where and when cushions were changed, etc.

Upon completion of test pile driving documentation, the inspector must sign the form in the appropriate place. The original is retained in the project files. A completed form is to be sent to the GE within 24 hours of completion for review and use in setting the production pile lengths.

Additional information will need to be sent to the GE to aid in setting pile lengths. This information would include field data notes, including notes obtained for the monitoring of equipment, any dynamic load test information obtained, static/Statnamic load test results, and any other information that explains or records the events occurring during the driving of the piles.

This information shall be attached to the test pile record. Construction Training Qualification Program (***CTQP***) qualified inspectors shall be employed to document the pile driving logs for both permanent and temporary piles.

10.1~~B~~.9 Production Pile Lengths

Production pile lengths for permanent structures are established utilizing the results of the test pile program and contract documents.

(A) Resident Level Responsibilities

The Contractor's DTE shall submit a package containing the DLT data and a recommended signed and sealed pile lengths letter for the Department's review. Refer to Guidance Document ***10-1B-~~B~~ A*** *for* ***sample letter***. The RE (or PA) shall forward this package to the GE within the same working day.

Upon receipt of the Final Production Pile Lengths letter from the GE, the RE shall approve the recommendation and send it to the Contractor within the same working day.

The RE (or PA) shall upload all test pile logs and the Production Pile Lengths letter into the Department's electronic document management system, including the dynamic load test data and analyses data.

(B) DMRO Level Responsibilities

Within three (3) working days after receiving the Dynamic Load Test (DLT) data and proposed pile lengths by the Contractor's DTE, ~~-~~the GE shall review and examine the test pile data and ~~set up~~ rejects or concurs with the production pile length. If the GE ~~disagrees with~~ rejects the recommended DTE pile lengths, the GE shall issue a separate letter to the RE recommending the production pile lengths to be used on the project. Refer to ***Guidance Document 10-1B-~~A~~AB.*** If the GE concurs with the lengths recommended by the DTE, the GE ~~should~~ shall cosign the letter and send it back to the RE/PA. Refer to ***10-1B-~~B~~ A*** for ***sample letter***. Alternatively, if the DTE letter did not provide spaces for the GE and RE to cosign, the GE may issue a separate letter using the format of ***Guidance Document 10-1B-~~A~~AB***.

10.1~~B~~.10 Pile Driving Criteria

Pile driving criteria are established by the DTE utilizing the results of the test pile program, ~~and~~ contract documents, and the final authorized lengths issued by the GE. A

Commented [SB3]: Does this need to be split to define Resident and DMRO responsibilities?

pile driving criteria letter must be submitted by the ~~DB Firm~~Contractor at least one (1) working day prior to the beginning of the production pile driving. Refer to ***Guidance Documents 10-1B-C and 10-1B-D,*** for an ***Example of Acceptable Language in Driving Criteria letters***. The CEI is not required to submit a formal acceptance document on this submittal. However, if there are issues in the proposed driving criteria that are in conflict with the ~~RFC~~ Plans, accepted PIP, Specifications or other contract documents that may affect the integrity of the foundation**,** the RE (or PA) shall notify the Contractor upon receiving comments from the GE.

The RE (or PA) shall upload the Driving Criteria letter into the Department's electronic document management system, including the dynamic load test data and analyses data.

10.1~~B~~.11 Production Pile Installation

Pile driving of every production pile (permanent or temporary) shall be inspected and documented on the ***Pile Driving Log, Form No. 700-010-60***, in accordance with Section 10.1B.8 of this procedure. The RE (or PA) shall review the logs for accuracy.

Instrumented piles ~~and~~ including instrumented set~~-~~ checks and redrives shall be certified by the DTE performing the instrumentation in accordance with section 10.1B.13.

(A) Resident Level Responsibilities

The RE (or PA) shall perform an over-the-shoulder inspection for production piles with the same scope stated for test piles in section 10.1B.8 of this procedure.

The RE (or PA) shall upload all production pile driving logs, DLT data for all instrumented DLT (full length monitoring, set checks and/or ~~set-checks~~redrives), analysis outputs, certification letter produced in accordance with 10.1B.13, and the DGE concurrence, into the Department's electronic document management system.

(B) DMRO Level Responsibilities

The GE must perform a review of instrumented Dynamic Load Test (DLT) information and make comments as required. As the Contractor submits pile driving records, the GE must review them to verify compliance with specifications and driving criteria information and identify potential candidates for verification testing. Because of the short deadline to select piles for verification testing, this review should be started as soon as possible, in advance of the contractor submitting the foundation certification package.

10.1~~B~~.12 Pile Lengths and Driving Criteria for Temporary Piles

(A) Resident Level Responsibilities

Upon receipt of the pile lengths and driving criteria packages from the Contractor, the RE (or PA) shall forward them to the GE for review. Upon receipt of comments from the GE, the RE (or PA), shall forward them to the Contractor.

The RE (or PA) shall coordinate the activities to make sure the review process of this submittal is performed within the deadlines set forth by the specifications.

The RE (or PA) shall upload all test pile logs, and Production Pile Lengths and Driving Criteria letters and comments of GE for temporary piles into the Department's electronic document management system, including the dynamic load test data and analyses data.

(B) DMRO Level Responsibilities

Within three (3) working days of receiving the Production Pile Lengths letter, the GE shall perform a review of the proposed lengths and submit comments in a notification to the RE (or PA).

Within three (3) working days of receiving the Driving Criteria letter, the GE shall perform a review of the analysis, proposed blow count, and driving directions, and shall submit a notification to the RE (or PA) recommending approval or rejection of the driving criteria. If the Contractor submits lengths and driving criteria in one package, pile lengths comments and driving criteria recommendation for approval or rejection shall be performed within three (3) working days. Refer to ***Guidance Documents 10-1B-C and 10-1B-D,*** for an ***Example of Acceptable Language in Driving Criteria letters***. If the Driving Criteria letter is not approved, the notification must include the reasons for rejection. Review comments, approvals, or rejection performed by a consultant GE shall be discussed with and concurred by the DGE before submitting them to the RE (or PA).

Commented [TD4]: Maybe DGO District Geotech Office?

10.1~~B~~.13 Foundation Certification Packages

After completion of the piles driven in one foundation unit, the RE (or PA) will receive from the Contractor a Foundation Certification Package (FCP).

(A) Resident Level Responsibilities

Upon receipt of the FCP from the Contractor, the RE (or PA) shall forward the package to the DGE and the GE within the same working day and perform a concurrent review to verify that the package is complete. After the reviews are performed, the RE (or PA) shall notify the Contractor of the rejection and/or need for verification testing of the foundation unit within the same working day of receiving the notification from the GE.

(B) DMRO Level Responsibilities

The GE shall perform a review of the FCP to make sure it addresses all the requirements for acceptance (such as minimum tip elevation, load capacity and integrity). Also, the GE shall verify that the language of the signed and sealed certification clearly certifies the foundation unit without disclaimers. Refer to ***Guidance Documents 10-1B-E,*** for an ***Example of Acceptable Language in Pile Certification Letters***. The GE shall perform additional analyses to verify the accuracy of the driving criteria prior to receiving the FCP. These analyses shall commence at the time the Contractor's DTE submits the pile length and driving criteria letters. A careful review of the driving logs, dynamic load test data and FCP shall be performed to determine whether there is a need to perform verification testing.

Within one (1) working day of the receipt of the FCP, the GE shall submit a notification to the RE (or PA) recommending one of the following actions:

- Rejection of the FCP indicating the reasons for its rejection.
- Requesting a verification test and the verification test location.
- No action needed or no comments.

Commented [DT5]: Should acceptance come from the DGE or DGO? Refer to sections 10.1B.11 and 10.1B.12(B)

10.1~~B~~.14 Verification Testing and Acceptance

(A) Resident Level Responsibilities

If verification testing is required by the DGE, the RE (or PA) shall request the ~~DB firm~~Contractor to assist in performing a verification test on the pile selected by the GE. Once the Contractor indicates when the verification set -check test will be performed, the RE (or PA) shall schedule the VTGE to instrument the pile selected for verification testing.

Commented [DT6]: Should verification testing be concurred by the DGE or DGO? Refer to sections 10.1B.11 and 10.1B.12(B)

After receiving a notification from the GE indicating that the verification testing is complete and no further action is required (see item (B) below), the RE (or PA) shall forward the results of the verification testing to the Contractor within the same working day and notify ~~him~~ the Contractor that no further action is required. If the GE finds the tested pile is unacceptable, the RE (or PA) shall notify the Contractor within the same

working day, provide the Contractor with the verification test results and request the Contractor to follow the corrective procedures specified in the Specifications and other contract documents.

(B) DMRO Level Responsibilities

Within one (1) working day of testing, the GE shall provide the results of the verification testing to the RE (or PA). If the results are acceptable, the GE shall issue a notification to the RE (or PA) indicating that the verification testing is complete, and no further action is required. If the verification test results are unacceptable, the GE shall issue a notification to the RE (or PA) recommending rejection of the foundation, provide the verification test results, and request the ~~DB Firm~~Contractor to follow the corrective procedures specified in the Specifications and other contract documents.

10.1~~B~~.15 Training

All Department and CEI personnel performing inspections of pile installation must hold the Construction Training Qualification Program (CTQP) as Pile Driving Inspector.

10.1~~B~~.16 Forms

The following forms are available from the Policy & Process Management Forms Library at Procedural Document Library (fdot.gov):

700-010-60 Pile Driving Log
700-020-01 Pile Driving Installation Plan Form

Guidance Document 10-1B-A

SAMPLE LETTER No. 1
PRODUCTION PILE LENGTHS

_____ (Date)

(ADDRESSEE)

Re: PRODUCTION PILE LENGTHS
Financial Project ID:
FAP No.:
Contract No.:
County:
Structure #

Dear (_____):

The District ___ (put in which District, 1-7, or Turnpike Enterprise) Geotechnical Office has completed its review of the dynamic test/test load/core boring data for the subject bridge. The recommended production pile lengths are as follows:

LOCATION	PILE SIZE	RECOMMENDED PILE LENGTH

Recommended by:

_____
District Geotechnical Engineer

Authorized for contract administration purpose by: _____

_____
Resident Engineer

(Initials/Initials)

cc: State Construction Geotechnical Engineer
State Structures Engineer's Office (State Geotechnical Engineer)
FHWA (only if Federal Aid oversight project)

Guidance Document 10-1B-~~B~~A

SAMPLE LETTER No. 2
PRODUCTION PILE LENGTHS

(Date)

(ADDRESSEE)

Re: PRODUCTION PILE LENGTHS
Financial Project ID:
FAP No.:
Contract No.:
County:
Structure #

Dear (_____):

The (Geotechnical Consultant Firm name) has completed its review of the dynamic test/test load/core boring data for the subject bridge. The recommended production pile lengths are as follows:

LOCATION	PILE SIZE	RECOMMENDED PILE LENGTH

.

Recommended by: _____
Dynamic Testing Engineer

Recommended for acceptance by:

_____
District Geotechnical Engineer

Authorized for contract administration purpose by:

_____
Resident Engineer

(INITIALS/INITIALS)

cc: State Construction ~~Geotechnical~~ Engineer
State Structures Engineer's Office (State Geotechnical Engineer)

Guidance Document 10-1B-B

SAMPLE LETTER No. 1
PRODUCTION PILE LENGTHS

(Date)

(ADDRESSEE)

Re: PRODUCTION PILE LENGTHS
Financial Project ID:
FAP No.:
Contract No.:
County:
Structure #

Dear ( ):

The District (put in which District, 1-7, or Turnpike Enterprise) Geotechnical Office has completed its review of the dynamic test/test load/core boring data for the subject bridge. The recommended production pile lengths are as follows:

LOCATION	PILE SIZE	RECOMMENDED PILE LENGTH

Recommended by:

District Geotechnical Engineer

Authorized for contract administration purpose by:

Resident Engineer

(Initials/Initials)

cc: State Construction ~~Geotechnical~~ Engineer
State Structures Engineer's Office (State Geotechnical Engineer)
FHWA (only if Federal Aid oversight project)

FHWA (only if Federal Aid oversight project)

Guidance Document 10-1B-C

SAMPLE LETTER No. 3
DRIVING CRITERIA LETTER (OPEN-END DIESEL HAMMER)

(Date)

(ADDRESSEE)

Re: DRIVING CRITERIA
Financial Project ID:
FAP No.:
Contract No.:
County:
Structure #

Dear (_____):

~~The District ___~~ (Dynamic Testing Engineer or Firm Name~~put in which District, 1-8~~) ~~Geotechnical Office (or Geotechnical Consultant Firm name)~~ has completed its review of the dynamic load test data, pile driving records, and other information for the subject bridge. The recommended driving criteria are as follows:

BENT (OR PIER) #
Pile Driving for the ____foot long, ____ tons (___ Kips) Nominal Bearing Capacity production piles may be accepted if one of the following conditions is achieved:

1. Practical refusal (20 blows per 1 inch or less with a hammer stroke of at least ___ ft and pile rebound less than 0.25 inch) is achieved during the driving and the minimum tip elevation presented in the plans is achieved. A minimum of ___ blows shall be required on a new cushion before practical refusal can be applied.

2. The required blow count at the respective stroke height presented in the following table is achieved for 2 consecutive feet with less than 0.25 inch rebound and the minimum tip elevation is achieved. The blow count over the last two feet must be increasing. A minimum of ___ blows shall be required on a new cushion before the criterion below can be applied.

Stroke Height (ft)	Blows Per Foot
(several rows of stroke vs. Blows per foot)	
XX.X	XX
XX.X	XX
XX.X	XX

~~Firm Material Definition: (Note: Include this paragraph if no minimum tip elevation is specified) For purposes of penetration, firm material is defined as the material that offers a driving resistance of at least ___ per foot, at a minimum stroke of _____ ft.~~

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Commented [TD7]: Review with Kisan

Driving Requirements: (Indicate here at what maximum stroke and/or setting to start the driving, and the instructions to gradually increase the stroke, or reduce the stroke if the blow count reduces significantly and may create tension stresses) (Indicate also the maximum stroke allowed at any time of driving to prevent excessive stresses)

(Indicate special instructions for predrilling ~~and performing~~ if applicable)

(Indicate instructions regarding pile cushions) (Indicate that a new pile cushion shall be used for every pile) (Indicate the thickness required for the cushion) (Include the expected number of blows a cushion will need to be replaced) (Include the required number of hammer blows a new cushion must be impacted before the blowcount and practical refusal criteria can be applied)

(Indicate the equipment to which the criteria applies) The above Driving Criteria are based on the (Hammer Type) , serial number _____, using a hammer cushion consisting of ____ inch thick of (Material) and __ inch of (Material) as utilized during the test piles. If there is a change in the driving system please notify us immediately so that a new driving criteria can be determined.

Recommended by: _____

~~Geotechnical Engineer (If a Consultant generates the letter)~~Dynamic Testing Engineer

~~Recommended for acceptance by:~~

~~_____~~

~~District Geotechnical Engineer~~

(Initials/Initials)

cc: State Construction ~~Geotechnical~~ Engineer

State Structures Engineer's Office (State Geotechnical Engineer)
FHWA (only if Federal Aid oversight project)
District Geotechnical Engineer

Guidance Document 10-1B-D

SAMPLE LETTER No. 4
DRIVING CRITERIA LETTER (HYDRAULIC HAMMER)

(Date)

(ADDRESSEE)

Re: DRIVING CRITERIA
Financial Project ID:
FAP No.:
Contract No.:
County:
Structure #

Dear (_____):

(Dynamic Testing Engineer or Firm Name) ~~The District ___(put in which District, 1-8) Geotechnical Office (or Geotechnical Consultant Firm name)~~ has completed its review of the dynamic load test data, pile driving records, and other information for the subject bridge. The recommended driving criteria are as follows:

BENT (OR PIER) #
Pile Driving for the ____foot long, ____ tons (___ Kips) Nominal Bearing Capacity production piles may be accepted if one of the following conditions is achieved:

1. Practical refusal (20 blows per 1 inch or less with a hammer equivalent stroke of at least ___ ft (or an energy of ___ K-ft) and pile rebound less than 0.25 inch) is achieved during the driving and the minimum tip elevation presented in the plans is achieved. A minimum of ___ blows shall be required on a new cushion before practical refusal can be applied.

2. The required blow count at the respective equivalent stroke height presented in the following table is achieved for 2 consecutive feet with less than 0.25 inch rebound and the minimum tip elevation is achieved. The blow count over the last two feet must be increasing. A minimum of ___ blows shall be required on a new cushion before the criterion below can be applied.

Min. Equivalent Stroke Height (ft) (or Min. Energy (K-ft)	Blows Per Foot	Blows/minute Range (BPM)
(one to three rows of stroke or Energy vs. Blows per foot and BPM)		
XX.X	XX	XX to XX
XX.X	XX	XX to XX
XX.X	XX	XX to XX

Note: Energy to be measured by a (name of the remote device measuring energy)

~~Firm Material Definition: (Note: Include this paragraph if no minimum tip elevation is specified. This step may be omitted if dynamic load test data and other field observations indicate that all production piles will not reach the required blow count criterion until a minimum penetration of 20 feet is exceeded.) For purposes of penetration, firm material is defined as the material that offers a driving resistance of at least ____ per foot, at a minimum equivalent stroke (or minimum energy) of _____ ft (or K-ft).~~

Driving Requirements: (Indicate here at what maximum equivalent stroke and/or energy to start the driving, and the instructions to gradually increase the equivalent stroke, or reduce the equivalent stroke if the blow count reduces significantly and may create tension stresses) (Indicate also the maximum equivalent stroke (or energy) allowed at any time of driving to prevent excessive stresses)

(Indicate special instructions for predrilling ~~and performing~~ if applicable)

(Indicate instructions regarding pile cushions) (Indicate that a new pile cushion shall be used for every pile) (Indicate the thickness required for the cushion) (Include the expected number of blows a cushion will need to be replaced) (Include the required number of hammer blows a new cushion must be impacted before the blowcount and practical refusal criteria can be applied)

(Indicate the equipment to which the criteria applies) The above Driving Criteria are based on the (Hammer Type) , serial number _____, using a hammer cushion consisting of ____ inch thick of (Material) and ___ inch of (Material) as utilized during the test piles. If there is a change in the driving system please notify us immediately so that a new driving criteria can be determined.

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Commented [TD8]: Discuss if this should stay with Kisan

Commented [DT9]: The recommended by section should be edited to be specifically for the DTE to sign. The DGO and VTGE are only reviewing these documents and not signing. This would also set up for the DTE to have a reference document.

Verbiage in the opening paragraphs will also need to be edited coming from the DTE.

Recommended by: _____

~~Geotechnical Engineer (If a Consultant generates the letter)~~Dynamic Testing Engineer

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~~Recommended for acceptance by: _____~~

~~District Geotechnical Engineer~~

(Initials/Initials)

cc: State Construction ~~Geotechnical~~ Engineer
State Structures Engineer's Office (State Geotechnical Engineer)
FHWA (only if Federal Aid oversight project)
District Geotechnical Engineer

Guidance Document 10-1B-E
SAMPLE LETTER No. 5

Example of Acceptable Language in Pile Certification Letters

(ADDRESSEE) (DATE)

Financial Project ID:
FAP No.:
Contract No.:
County:
Subject: Foundation Certification Letter for Pier/Bent/structure
Project Name, Bridge/structure identification, Bridge #

Dear (_____):

Consultant Firm's Name has completed a review of the (list the documents that the consultant reviewed for this certification such as pile driving records, dynamic load test data, static, Statnamic, load test data, integrity test data, etc.). All ~~the production~~ piles in the foundation unit were inspected by a CTQP certified pile driving inspector under our supervision and the final position and axial alignment were verified. (Note: in case of tolerances being exceeded, an evaluation must be included in the package).

Based on our review, we hereby certify that all ~~these~~ piles in this foundation unit meet the required minimum tip elevations, the required axial capacity including uplift, lateral stability, and pile integrity.

Submitted by:

Firm's Name
FPBE CAT

_____
Dynamic Testing Engineer Name
FBPE license #

Guidance Document 10-1B-F

SAMPLE LETTER No. 6
PILE INSTALLATION PLAN REJECTION BASED ON FIELD PERFORMANCE

(Date)

(ADDRESSEE)

Re: Pile Installation Plan Rejection Based on Field Performance
Financial Project ID:
FAP No.:
Contract No.:
County:
Structure #

Dear (RE/PA):

The District (put in which District, 1-7, or Turnpike Enterprise) Geotechnical Office has evaluated the field performance of the pile driving operations as described in Pile Installation Plan. After discussions with the District Construction Office and the CEI personnel, we recommend the rejection of the Pile Installation Plan due to the following reasons:

(List the reasons of why the PIP needs to be rejected)

Recommended by:

_____
District Geotechnical Engineer

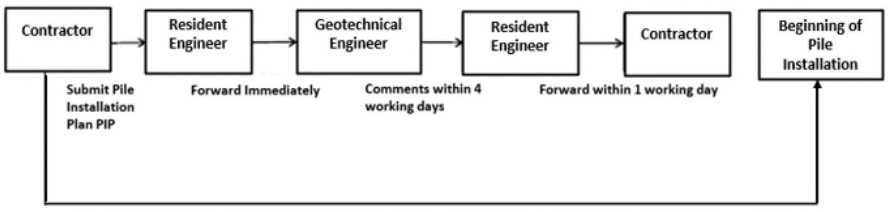
Concurred by:

_____
Resident Engineer

cc: State Construction ~~Geotechnical~~ Engineer
State Structures Engineer's Office (State Geotechnical Engineer)
FHWA (only if Federal Aid oversight project)
District Materials and Research Engineer (DMRE)
District Construction Engineer (DCE)

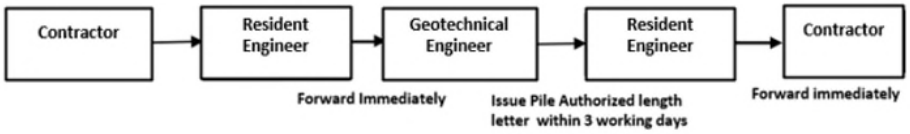
Attachment 10-1B Flow Charts

Review of Pile Installation Plan

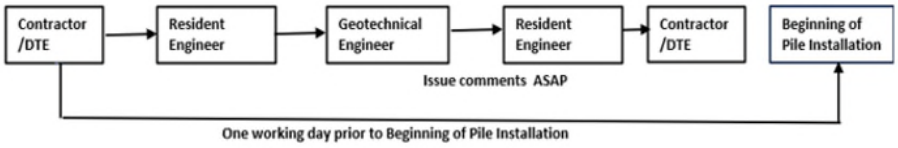


Contractor to submit PIP at preconstruction conference or 30 days prior to beginning of pile driving

Production Pile Lengths Letter – Permanent Piles



Driving Criteria Letter – Permanent piles



Production Pile Lengths Letter and Driving Criteria – Temporary Piles