

**ADVERTISEMENT FOR ENGINEERING AND RELATED SERVICES
JULY 22, 2025**

**CONTRACT NOS. 4400032793, 4400032794, 4400032795,
4400032796, 4400032797, AND 4400032798
IDIQ CONTRACTS FOR GEOTECHNICAL SERVICES
STATEWIDE**

DBE GOAL = 3%

Under the authority granted by Title 48 of Louisiana Revised Statutes, the Louisiana Department of Transportation and Development (DOTD) hereby issues this advertisement for consulting firms to provide engineering and related services. **Consultants who are a Louisiana or foreign LLC or corporation should be appropriately registered with the [Louisiana Secretary of State](#), as contemplated by Title 12 of the Louisiana Revised Statutes, and with the [Louisiana Professional Engineering and Land Surveying \(LAPELS\)](#) Board under its rules for firms. If a consultant is not in good standing in accordance with those provisions, it may be subject to consequences contemplated in Title 12 and/or the LAPELS rules. All requirements of LAPELS must be met at the time the proposal is submitted. Prime consultants must be registered with the Louisiana Secretary of State and the Federal Government, using [SAM.gov](#), prior to contract execution.**

One (1) proposal will be selected for each contract solicited per this advertisement. Only one (1) DOTD Form 24-102 proposal is required for this advertisement, and it represents the prime consultant's qualifications and those of any and all sub-consultants proposed to be used for the referenced contract(s). All identifying contract number(s) should be listed in Section 2 of the DOTD Form 24-102. **USE THE DOTD FORM 24-102, DATED DECEMBER 12, 2024, PROVIDED WITH THE ADVERTISEMENT.**

DOTD Contract Manager (CM) – Kristy Smith

Any questions concerning this advertisement must be sent in writing to DOTDConsultantAds80@la.gov no less than 48 hours (excluding weekends and holidays) prior to the proposal deadline.

SCOPE OF SERVICES

The general tasks that the Consultant may be required to perform are described more specifically in Attachment A, which is incorporated herein by reference. The selected consultant will perform the specific services covered in an Indefinite Delivery/Indefinite Quantity (IDIQ) contract as detailed in individual Task Orders (TOs), which will specify TO-specific scope of services, contract time, and compensation.

The Consultant shall perform the work in accordance with the requirements of this advertisement, the resulting contract, and any TOs issued thereunder. Deliverables shall be in such format as required in Attachment A, unless otherwise specified in an individual TO. The work performed

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by the Consultant shall be performed in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances.

MINIMUM PERSONNEL REQUIREMENTS (MPRs)

The requirements set forth in Attachment B must be met at the time the proposal is submitted.

EVALUATION CRITERIA

The criteria to be used by DOTD in evaluating responses for the selection of a consultant to perform these services are listed below:

1. firm experience on similar projects, weighting factor of three (3);
2. staff experience on similar projects, weighting factor of four (4);
3. firm size as related to the project magnitude, weighting factor of three (3);
4. past performance on similar DOTD projects, weighting factor of six (6)*;
5. current work load with DOTD, weighting factor of five (5);
6. approach and methodology, weighting factor of nine (9).

*The Consultant is to identify in the table below those disciplines consistent with the approach and methodology proposed in Section 18 of the DOTD Form 24-102.

THE FOLLOWING TABLE MUST BE COMPLETED AND INCLUDED IN SECTION 12 OF THE DOTD FORM 24-102 PROPOSAL.

Sub-consultants are allowed to be used for this proposal. Fill in the table by identifying only those disciplines consistent with the approach and methodology proposed in Section 18 of the DOTD Form 24-102*, the name of each firm that is part of the proposal, and the percentage of work in each discipline to be performed by that firm. The percentage estimated for each discipline is for evaluation purposes only and will not control the actual performance or payment of the work. The percentages for the prime and sub-consultants must total 100% for each discipline, as well as the overall total percent of the contract. (Add rows and columns as needed)							
Discipline(s)	% of Overall Contract	Prime	Firm B	Firm C	Firm D	Firm E	Each Discipline must total to 100%
							100%
							100%
							100%
Identify the percentage of work for the overall contract to be performed by the prime consultant and each sub-consultant.							
Percent of Contract	100%						-----

*The disciplines are: Appraiser, Bridge, CE&I/OV, CPM, Data Collection, Environmental, Geotech, ITS, Other (must specify), Planning, Right-of-Way, Road, Survey, and Traffic.

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If sub-consultants are used, the prime consultant must perform greater than 50% of the work for the overall contract.

Proposals will be evaluated as set forth in the “Evaluation Criteria” section of this advertisement. The evaluation will be by means of a point-based rating system. Each of the above criteria will receive a rating on a scale of one (1) through five (5). The rating will then be multiplied by the corresponding weighting factor. The rating in each category will then be added to arrive at the proposal’s final rating.

DOTD’s Project Evaluation Team (PET) will be responsible for performing the above described evaluation, and will present a shortlist of the eight (8) (if eight are qualified), highest rated consultants to the Secretary of DOTD. The Secretary will make the final selection.

COMPLIANCE WITH SUPPLEMENTAL ETHICS REQUIREMENTS

DOTD has established supplemental ethics requirements applicable to consultants and PET members. These requirements are found in the “Supplemental Ethics Requirements” article of the sample contract linked to this advertisement under Contract Execution Requirements, which are incorporated herein by reference. Any firm that is found to have violated these requirements may not be considered for this selection.

By submission of a proposal to perform services pursuant to this advertisement, the Consultant agrees to comply with DOTD’s Supplemental Ethics Requirements.

RULES OF CONTACT UPON ADVERTISEMENT

DOTD is the single source of information regarding the contract selection. Any official correspondence will be in writing, and any official information regarding the contract will be disseminated by DOTD’s designated representative via the DOTD website. The following rules of contact will apply during the contract selection process, commencing on the advertisement posting date and ceasing at the time of final contract selection. Contact includes face-to-face communication, the use of a telephone, facsimile, electronic mail (email), or formal or informal written communications with DOTD. Any contact determined to be improper, at the sole discretion of DOTD, may result in the rejection of the proposal (i.e., DOTD Form 24-102).

Consultants and consultant organizations **shall correspond with DOTD regarding this advertisement only through the email address designated herein; DOTDConsultantAds80@la.gov** and during DOTD sponsored one-on-one meetings.

No consultant, or any other party on behalf of a consultant, shall contact any DOTD employee, other than as specified herein. This prohibition includes, but is not limited to, the contacting of: department, office, or section heads, project managers, members of the evaluation teams, and any official who may participate in the decision to award the contract resulting from this advertisement.

DOTD will not be responsible for any information or exchange that occurs outside the official process specified above.

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By submission of a proposal to perform services pursuant to this advertisement, the Consultant agrees to the communication protocol herein.

CONTRACT TIME

This IDIQ contract shall be in effect for **five (5) years**. **All TOs must be completed by the termination date of the IDIQ contract.** No TO will be initiated unless sufficient contract time remains to complete the TO.

NEGOTIATED COMPENSATION (September 2024)

The maximum compensation payable to the Consultant under each IDIQ contract shall not exceed **\$8,000,000**. Compensation to the Consultant for services rendered in connection with each TO may be made on the basis of lump sum, actual cost plus a fixed fee, cost per unit of work, or specific rates of compensation, as specified in each TO, subject to the limitation set forth in the IDIQ contract.

Compensation will be **negotiated** for each individual TO. Actual compensation will be determined by DOTD based on work hours negotiated between DOTD and the Consultant. The selected consultant will be required to submit a work hour proposal. The negotiation period for each individual TO shall not exceed sixty (60) calendar days, unless an abbreviated timeframe is specified in writing by the PM.

DIRECT EXPENSES

To the extent that the Consultant is allowed to claim reimbursement for direct expenses, all direct expense items that are not paid for in the firm's indirect cost rate, and are needed, and will be consumed during the life of the contract must be identified by the Consultant during contract development. The acquisition or rental of standard equipment or resources to be used in the provision of services rendered for this contract will not be considered for payment under direct expenses (e.g., vehicles for construction engineering and inspection (CE&I) inspectors).

The Consultant should own most of the equipment required to provide the work and services. The cost of this equipment should be included in the Consultant's indirect cost rate. Equipment may be considered "specialized" if it cannot be considered standard equipment for that particular consultant's normal operating business needs. If a consultant believes special equipment is needed for the contract, the Consultant must inquire through the Question and Answer process, as provided herein, whether the identified item will be considered specialized equipment for the individual contract.

To the extent that direct expenses are authorized to be compensated pursuant to a particular TO, all travel related expenses will be compensated under direct expenses, and will be in accordance with the most current Louisiana Office of State Travel regulations as promulgated in the Louisiana Administrative Code under the caption "PPM No. 49", with the exception that compensation for vehicle usage will be based on actual miles traveled directly and exclusively related to project needs. Vehicle rental rates will require prior approval from the PM.

CYBERSECURITY TRAINING

In accordance with La. R.S. 42:1267(B)(3) and the State of Louisiana's Information Security Policy, if the Consultant, any of its employees, agents, or sub-consultants will have access to State government information technology assets, the Consultant's employees, agents, or sub-consultants with such access must complete cybersecurity training annually, and the Consultant must present evidence of such compliance annually and upon request. The Consultant may use the cybersecurity training course offered by the Louisiana Department of State Civil Service without additional cost or may use any alternate course approved in writing by the Office of Technology Services.

For purposes of this Section, "access to State government information technology assets," means the possession of credentials, equipment, or authorization to access the internal workings of State information technology systems or networks. Examples would include but not be limited to State-issued laptops, VPN credentials to credentials to access the State network, badging to access the State's telecommunications closets or systems, or permissions to maintain or modify IT systems used by the State. Final determination of scope inclusions or exclusions relative to access to State government information technology assets will be made by the Office of Technology Services.

QUALITY ASSURANCE/QUALITY CONTROL

DOTD requires the selected consultant and all sub-consultants to develop a Quality Assurance/Quality Control (QA/QC) program in order to provide a mechanism by which all deliverables will be subject to a systematic and consistent review. The selected consultant shall address in its plan the review of all sub-consultant work and deliverables. **Only the selected consultant must submit their QA/QC plan to the DOTD PM within 10 business days of the award notification to the Consultant (do not include QA/QC plan in the DOTD Form 24-102).** Consultants must ensure quality and adhere to established DOTD policies, procedures, standards and guidelines in the preparation and review of all deliverables. DOTD may provide limited input and technical assistance to the Consultant. Any deliverables to be transmitted by the Consultant shall be transmitted with a DOTD Quality Assurance/Quality Control Checklist, and a certification that the deliverables meet DOTD's quality standards.

If Attachment A includes specific QA/QC requirements that contradict those set forth above, the requirements in Attachment A control.

TRAFFIC ENGINEERING PROCESS AND REPORT TRAINING REQUIREMENTS

As part of DOTD's on-going commitment to high quality traffic engineering reports, a traffic engineering training course must be taken by traffic engineering PEs and EIs in order to be eligible to work on DOTD projects. When traffic is included as a discipline on which past performance is evaluated, for consultants performing traffic engineering services (i.e., traffic analysis throughout all DOTD project stages and/or QC of traffic analysis), appropriate personnel must successfully complete the three (3) modules of the Traffic Engineering Process and Report Course offered by Louisiana Transportation Research Center (LTRC). This Course must be completed no later than the time the proposal is submitted or show proof of registration for the Course from the LTRC's Registration site. **Copies of training certificates or proof of registration are to be included in**

Section 20 of the proposal. It will be the prime consultant's responsibility to ensure their staff and sub-consultants complete the training. Copies of training records may be obtained from the LTRC website <https://registration.ltrc.lsu.edu/login>.

WORK ZONE TRAINING REQUIREMENTS

As part of DOTD's on-going commitment to work zone safety, required work zone training courses must now be taken every four (4) years in order for personnel to remain eligible to work on DOTD projects. For consultants performing preconstruction services (e.g., design, survey, subsurface utility, geotechnical, traffic, bridge inspection, environmental services), appropriate personnel must successfully complete these courses. In general, the person in responsible charge of traffic control plans shall be required to have Traffic Control Supervisor training. For preconstruction field services performed within the clear zone, at least one (1) member of the field crew shall have Traffic Control Supervisor or Traffic Control Technician training. The Consultant should identify all personnel listed in the staffing plan (Section 14) for the contract who have completed the appropriate work zone training courses. All preconstruction work zone training requirements shall be met **prior to contract execution**. It will be the prime consultant's responsibility to ensure their staff and sub-consultants have the appropriate work zone training.

In addition to the above requirements, if the Scope of Services set forth in Attachment A includes Construction Engineering and Inspection (CE&I), the following training requirements shall be met **at the time the proposal is submitted and are to be included in Section 20 of the proposal**:

Field Engineers:	Traffic Control Technician Traffic Control Supervisor Flagger
Field Engineer Interns:	Traffic Control Technician Traffic Control Supervisor Flagger
Field Senior Technicians, Survey Party Chiefs, and SUE Worksite Traffic Supervisors*:	Traffic Control Technician Traffic Control Supervisor Flagger
Other Field Personnel*:	Traffic Control Technician Flagger

* excluding Asphalt Plant Inspector, Paint Managers, and Paint Inspectors

Approved courses are offered by ATSSA and AGC. Substitutes for these courses must be approved by the DOTD Work Zone Task Force. For more information, please contact DOTD HQ Construction at 225-379-1584. Specific training course requirements are:

Flagger:	Successful completion every four (4) years of a work zone flagger course approved by the Department. The "DOTD Maintenance Basic Flagging Procedures
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Workshop” is not an acceptable substitute for the ATSSA and AGC flagging courses.

Traffic Control Technician (TCT): Successful completion every four (4) years of a work zone traffic control technician course approved by the Department. **After initial successful completion, it is not necessary to retake this course every four (4) years if Traffic Control Supervisor training is completed every four (4) years.**

Traffic Control Supervisor (TCS): Successful completion of a work zone traffic control supervisor course approved by the Department. Following an initial completion, traffic control supervisors must either complete a one (1)-day TCS refresher course or retake the original two (2)-day TCS course every four (4) years.

ATSSA contact information: (877) 642-4637

*****ALL WORK ZONE TRAINING CERTIFICATIONS MUST BE ACTIVE*****

REFERENCES

All services and documents will meet the standard requirements as to format and content of DOTD and will be prepared in accordance with the latest applicable editions, supplements, and revisions of the following:

1. [AASHTO Standards – The American Association of State Highway Transportation Officials](#)
2. [AASHTO Highway Safety Manual](#)
3. [AASHTO – A Policy on Geometric Design of Highways and Streets](#)
4. [ASTM Standards](#)
5. [Cybersecurity Training](#)
6. [DOTD – Bridge Design and Evaluation Manual \(BDEM\)](#)
7. [DOTD – Complete Streets](#)
8. [DOTD – Construction Contract Administration Manual](#)
9. [DOTD – Consultant Contract Services Manual](#)
10. [DOTD – Geotechnical Design Manual](#)
11. [DOTD – Hydraulics Manual](#)
12. [DOTD – Location and Survey Manual – REVISED OCTOBER 2023](#)
13. [DOTD – Addendum “A” to the Location & Survey Manual](#)
14. [DOTD – Louisiana Standard Specifications for Roads and Bridges](#)
15. [DOTD – Materials Sampling Manual](#)
16. [DOTD – Minimum Design Guidelines](#)
17. [DOTD – Off-System Highway Bridge Program Guidelines](#)
18. [DOTD – Pavement PRR Min Design Guidelines](#)

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19. [DOTD – Roadway Design Procedures and Details Manual](#)
20. [DOTD – Stage 1 Planning/Environmental Manual of Standard Practice](#)
21. [DOTD – Testing Procedures Manual](#)
22. [DOTD – Traffic Engineering Manual](#)
23. [DOTD – Traffic Engineering Process and Report](#)
24. [DOTD – Traffic Signal Manual](#)
25. [e-CFR – Electronic Code of Federal Regulations \(all applicable\)](#)
26. [FHWA – Bridge Inspector’s Reference Manual \(BIRM\)](#)
27. [FHWA – Manual on Uniform Traffic Control Devices for Streets and Highways \(MUTCD\)](#)
28. [National Electrical Safety Code \(NESC\)](#)
29. [LTRC – Local Public Agency Qualification Program: Construction, Engineering and Inspection course](#)
30. [NFPA 70 – National Electrical Code \(NEC\)](#)
31. [NEPA – National Environmental Policy Act](#)

CONTRACT EXECUTION REQUIREMENTS

The selected consultant will be required to execute the contract within ten (10) days after receipt of the contract.

A sample of the contract provisions can be found at the following link:
https://bit.ly/CCS_SampleContractProvisions.

DISADVANTAGED BUSINESS ENTERPRISE REQUIREMENT

This advertised contract has a Disadvantaged Business Enterprise (DBE) goal of **3%** of the contract fee. Credit for DBE participation will be limited to the firms certified pursuant to the Louisiana Unified Certification Program. For convenience, DOTD provides a list on its website (<http://www8.dotd.la.gov/UCP/UCPSearch.aspx>) of firms that have been certified as eligible to participate as DBEs on US DOT assisted contracts. This list is not an endorsement of the quality of performance of any firm but is simply an acknowledgment of the listed firms’ eligibility as a DBE. DOTD makes no representations of the accuracy or completeness of this list on any particular date or time. Prime consultants considering the use of a particular DBE sub-consultant are advised to obtain documentation of certification status from that sub-consultant prior to submission of DOTD Form 24-102.

Prime consultants must specify by firm name in Section 11 on the DOTD Form 24-102 all DBE firms which the prime intends will participate in providing services under the contract to meet the DBE goal and indicate for each the percent of the contract fee for the services that will be performed by each specified DBE firm. If the prime did not succeed in obtaining enough DBE participation to meet the goal, it must attach to the DOTD Form 24-102, behind Section 23, documentation of its good faith efforts to meet the goal.

SECONDARY SELECTION PROCESS

When multiple IDIQ contracts with similar scopes of service are available within a DOTD Section that is prepared to issue a TO, the TO selection procedures set forth in Attachment C shall be used to award that TO. Documentation of the selection process shall be retained by DOTD.

REVISIONS TO THE ADVERTISEMENT

DOTD reserves the right to revise any part of the advertisement by issuing addenda to the advertisement at any time. Issuance of this advertisement in no way constitutes a commitment by DOTD to award a contract. DOTD reserves the right to accept or reject, in whole or part, all DOTD Form 24-102s submitted, and/or cancel this consultant services procurement if it is determined to be in DOTD's best interest. All materials submitted in response to this advertisement become the property of DOTD, and selection or rejection of a proposal does not affect this right. DOTD also reserves the right, at its sole discretion, to waive administrative informalities contained in the advertisement.

CLARIFICATIONS

DOTD reserves the right to request clarification of ambiguities or apparent inconsistencies found within any proposal, if it is determined to be in DOTD's best interest.

PROPOSAL REQUIREMENTS

The Consultant's proposal for this advertisement must be submitted by email to DOTDConsultantAds80@la.gov. **USE THE DOTD FORM 24-102, DATED DECEMBER 12, 2024, PROVIDED WITH THE ADVERTISEMENT.** Hard copies of the Consultant's proposal are not required. All proposals must be in accordance with the requirements of this advertisement, and the Consultant Contract Services Manual. Unless otherwise stated in this advertisement, copies of licenses and certificates are not required to be submitted with the proposal.

If more than one (1) contract is to be selected based on this advertisement, no prime consultant is allowed to be a sub-consultant on any other consultant's 24-102. If a prime consultant is submitted as a sub-consultant on another consultant's 24-102, its proposal as a prime consultant may be deemed non-responsive.

ANY CONSULTANT FAILING TO SUBMIT ANY OF THE INFORMATION REQUIRED ON THE DOTD FORM 24-102, OR PROVIDING INACCURATE INFORMATION ON THE DOTD FORM 24-102, MAY BE CONSIDERED NON-RESPONSIVE.

DOTD employees may not submit a proposal, nor be included as part of a consultant's proposal.

Contract and/or part-time employees are allowed. Such employees should be shown in Section 14 of the DOTD Form 24-102 with an asterisk denoting their employment status.

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The DOTD Form 24-102 **PDF file shall be labeled** “CONTRACT NOS. 4400032793, 4400032794, 4400032795, 4400032796, 4400032797 AND 4400032798 Consultant’s name”, and must be received no later than 3:00 p.m. Central Time by DOTDConsultantAds80@la.gov via email on Thursday, August 14, 2025.

The PDF file must be attached in the email or as a hyperlink in the email or as an email through third-party file transfer websites such as Dropbox or WeTransfer.

Please note that delivery failure may occur on email files exceeding 25MB uncompressed. In addition, all emails are scanned for cybersecurity threats prior to delivery to DOTDConsultantAds80@la.gov; therefore, allow sufficient time for this process to take place when submitting your proposal.

ATTACHMENT A – SCOPE OF SERVICES

The project time is **typical**.

All services shall be provided in accordance with the latest version of the LADOTD Geotechnical Design Manual (GDM). A link to the manual may be found at the following URL: <https://dotd.la.gov/about/office-of-engineering/pavement-and-geotechnical/manuals-and-policies/>. The GDM currently contains requirements for Geotechnical Investigations and Geotechnical Reporting. The GDM will eventually incorporate and supersede the Geotechnical Engineering requirements listed in this document.

GEOTECHNICAL INVESTIGATION

1.0 Subsurface Investigation

Under this scope of services, the Consultant may perform geotechnical investigations consisting of soil borings, laboratory testing, cone penetrometer test (CPT) soundings, soil classification, and a Geotechnical Data Report (GDR). The geotechnical exploration services to be provided shall include, but are not limited to:

- Submitting Subsurface Investigation Plan for review and acceptance prior to the commencement of any field investigations (See GDM for Requirements);
- Performing field reconnaissance (including obtaining all rights of entry, utility locations, access, etc.);
- Obtaining and coordinating traffic control;
- Mobilization/demobilization of all equipment necessary to perform the work;
- Performing deep borings, CPT soundings, and shallow subgrade soil survey borings;
- Performing Thin-Walled Tube Sampling of Soils (ASTM D1587) and Standard Penetration Tests and Split-Barrel Sampling of Soils (ASTM D1586);
- Standard Penetration Tests and Split-Barrel Sampling of Soils (ASTM D1586) must be completed with a calibrated automatic hammer (ASTM D4633);
- Dry-Augered water table boring (up to 24');
- Sealing boreholes in accordance with all applicable regulations;
- Surveying and reporting Latitude, Longitude, and Elevation at the top of each borehole to a vertical and horizontal accuracy of at least 6 inches;
- Performing required laboratory testing;
- Classifying soils according to the visual-manual method (field/extrusion logs), Unified Soil Classification System (deep/bridge borings), and AASHTO classification system (soil subgrade survey borings);
- Drafting soil boring logs;

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- Digital submittal of all test data in the DOTD's standard format; and
- Submittal of Geotechnical Data Reports.

2.0 Laboratory Testing

The following sections discuss the geotechnical laboratory testing requirements for DOTD projects. The reporting requirements for test results in boring logs and Geotechnical Data Reports (GDRs) are discussed for each test in the GDM.

2.1.1 General Requirements

The following general requirements shall be followed when performing testing for DOTD projects:

- Unless otherwise stated in the contract documents, all geotechnical testing performed for DOTD projects shall be performed by an AASHTO-accredited laboratory holding accreditation for all tests listed in Table 1 and
- Table 2, plus one-dimensional consolidation testing.
- All tests shall be assigned by a geotechnical engineer familiar with the project scope and having adequate and relevant design experience.
- Routine testing shall be performed in the same location as the Laboratory Supervisor's domicile. Specialized or overflow testing may be shipped to another lab with written approval from the Geotechnical Design Section.
- All testing shall be performed in a laboratory space specifically used for sample extrusion, handling, and geotechnical lab testing.
- Dry preparation methods shall not be used for any borings other than Subgrade Soil Survey borings.

2.1.2 Test Type & Quantity

The following minimum testing requirements shall be observed:

2.1.2.1 Deep/Bridge Borings

The following minimum test requirements shall be observed for each deep boring:

Table Error! No text of specified style in document.1: Minimum Testing Requirements for Bridge Borings

Test Name	Test Standard	Frequency of Testing
Moisture Content	ASTM D2216	100% of all samples
Unconsolidated-Undrained Triaxial Compressive Strength ⁽¹⁾	ASTM D2850	75% of all cohesive samples
Atterberg Limits	ASTM D4318	75% of all cohesive samples

Grain Size Testing (cohesive)	ASTM D1140	All cohesive samples not visually classified as Peat, Organic Clay, or Fat Clay
Grain Size Testing (non-cohesive)	ASTM D1140 ASTM D6913	All sand samples, As needed to classify soil

⁽¹⁾ Includes wet unit weight testing for all samples tested

One-dimensional consolidation tests (ASTM D 2435) shall be performed where significant settlement is expected due to fill, and at all deep foundation group locations. A minimum of 2 consolidation tests shall be performed per applicable boring.

2.1.2.2 Subgrade Soil Survey Borings

The following minimum test requirements shall be observed for each Subgrade Soil Survey boring. Note that these are minimum requirements, and the purpose of the testing is to classify the soils via the AASHTO system:

Table 2: Minimum Testing Requirements for Subgrade Soil Surveys

Test Name	Test Standard	Frequency of Testing
Moisture Content	ASTM D2216	100% of all samples
Atterberg Limits	ASTM D4318	100% of all cohesive samples
Grain Size Testing	ASTM D1140, ASTM D6913	As needed to classify granular soils
Hydrometer	ASTM D7928	75% of all cohesive samples
Percent Organics	ASTM D2974	As needed
pH & Resistivity	ASTM G51, AASHTO T 288	As needed, at applicable pipe crossings

3.0 Soil Boring Logs

The Consultant may present soil boring logs in their own 8.5" x 11" format or DOTD's 11" x 17" format. Soil boring logs shall also be furnished on full-size plan sheets for inclusion into plan sets. All soil boring logs shall display the following results in the specified units, at a minimum:

- Project Information:
 - a. Boring ID, Project Number, Project Name, Bridge Recall Number, and Parish.
- Location Information:
 - a. Surveyed Latitude [decimal degrees to 5-6 decimals], Longitude [decimal degrees to 5-6 decimals], and Ground Surface Elevation [ft.].
- Depth Information:

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- a. All results shall be referenced to both Depth below Ground Surface [ft.] and Ground Surface Elevation [ft.] (two separate scales shown).
- Soil Classification:
 - a. Soil classification using the Unified Soil Classification System (USCS), Group Name and Group Symbol; and
 - b. Graphical representation of the soil stratigraphy.
- Sample Information:
 - a. Graphical representation of sample type; and
 - b. Sample identification.
- Groundwater Information:
 - a. Graphical and text representation of groundwater table depth and observation time.
- Test Results:
 - a. Pocket penetrometer value [tsf];
 - b. Torvane value [tsf];
 - c. Wet Density [pcf];
 - d. Moisture Content [%] and Atterberg Limits [%];
 - e. Percent Fines/Passing the No. 200 Sieve [%];
 - f. Compressive Strength [tsf], Triaxial Cell Pressure [psi], and Failure Mode; and
 - g. SPT Driving Resistance results for each 6-inch increment [blows/ft.] and reported N-Value [blows/ft.].
- Fieldwork Information:
 - a. Drilling Contractor, Rig Operator/Crew Chief, Logger, Equipment/Rig Description, SPT Hammer Type, Hammer Efficiency [%], Backfill Method, Date(s) of Fieldwork.
 - b. Other relevant notes describing observations made during the fieldwork or laboratory testing.

In addition to the USCS classification, the soil descriptions shall include soil consistency/strength, color, and other details or inclusions such as seams, nodules, organics, etc. Always combine soil strata of the same USCS Group Name, but limit grouping to two adjacent soil consistency/density categories (e.g., “Stiff to Very Stiff, LEAN CLAY, (CL)” or “Loose to Medium Dense, SILTY SAND, (SM)”, but not “Soft to Stiff, FAT CLAY, (CH)”).

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Test results that cannot be shown on the soil boring logs, such as grain size curves, consolidation curves, and stress vs. strain plots shall be included in the GDR appendix.

4.0 Digital Geotechnical Data

All geotechnical investigation data shall be furnished to the Geotechnical Design Section in a digital format after review and acceptance of the GDR.

All geotechnical data shall be furnished in a gINT file cloned from LADOTD's standard gINT schema. Other formats or gINT files containing a modified schema/structure will not be accepted. A copy of the standard template will be provided upon request. Raw data files from all CPT soundings shall also be furnished.

Geotechnical Consultants having the capability of furnishing data in Digital Interchange for Geotechnical and Geoenvironmental Specialists (DIGGS) may arrange to furnish data in that format instead.

GEOTECHNICAL REPORTING

Under this scope of services, the Consultant may furnish or report items including, but not limited to, the following:

- Subsurface Investigation Plan
- Geotechnical Design Criteria Document
- Geotechnical Data Report (GDR)
- Geotechnical Interpretation Report (GIR)
- Plan Sheets
- Special Provisions
- Soil Boring Logs
- Subgrade Soil Surveys
- Digital Geotechnical Data

GEOTECHNICAL ENGINEERING

Under this scope of services, the Consultant may perform geotechnical engineering services including, but not limited to:

5.0 Geotechnical Engineering Analysis and Design

All geotechnical engineering shall be performed in accordance with present LRFD design requirements and standard engineering practice. In addition to the referenced ASTM designations, refer to FHWA Geotechnical Engineering Circular No. 5 (GEC 5) for best practices pertaining to geotechnical site characterization. Specific design requirements listed below may be superseded by the Geotechnical Design Manual as additional chapters are published. Geotechnical engineering services may include, but are not limited to:

- Design of embankments and slopes (stability & settlement);
- Design and load testing of deep foundations (piles, drilled shafts, and other);
- Design of earth retaining structures (MSE, cantilever walls, sheet pile walls, etc.);
- Design of culverts;
- Construction monitoring; and
- Geotechnical instrumentation.

5.1.1 Plan Sheets & Special Provisions

Note that the Geotechnical Interpretation Report (GIR) is used to document assumptions and recommendations; however, the GIR will not be a bid document. Any recommendations needed to build the project shall be reflected in the plans and, if necessary, special provisions. As such,

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the Consultant shall also develop these items as necessary. The Consultant shall also compute quantities for each pay item applicable to the geotechnical elements in the project.

5.1.2 Constructability

All engineering analyses shall consider the constructability of the proposed solution. Any special phasing, temporary slopes, temporary earth retaining structures, etc. needed to construct a particular solution shall be discussed in the GIR and reflected in the plan sheets.

5.2 Embankments & Slopes

Design and recommendations for embankments and slopes shall be provided as follows:

5.2.1 Slope Stability

Embankment slopes steeper than 3(H):1(V) shall be analyzed for slope stability using the Spencer method. The following maximum resistance factors and equivalent factors of safety shall be considered for slope stability:

- Typical conditions: $\phi = 0.75$ (equivalent minimum FoS ≈ 1.3);
- Critical slopes (Interstate, slopes with structures, etc.): $\phi = 0.65$ (equivalent minimum FoS ≈ 1.5); and
- Rapid drawdown: $\phi = 0.85$ (equivalent minimum FoS ≈ 1.2).

All potential governing geometry, groundwater, surface water, and other loading conditions shall be considered for drained and undrained conditions as applicable.

Report deliverables shall include graphical representations of all stability models used for design, showing cross-section geometry, model/soil parameters, critical failure surfaces, and factors of safety. Initial and final (improved) conditions shall be shown, where applicable.

Plan sheets shall include notes, layouts, and details for slope monitoring/instrumentation (inclinometers, SAAs, etc.) and mitigation measures (ground improvement, walls, regrading, berms, etc.).

5.2.2 Settlement

The placement of new embankment fill and/or earth retaining structures may induce settlement of existing subsurface soils. Analyses shall be performed to estimate the total magnitude of consolidation settlement, time-rate of settlement, and effect of settlement on adjacent structures, utilities, or improvements. The goal of the analyses shall be to limit the post-construction settlement to 1 inch or less under new embankments and earth retaining structures, prevent damage to existing improvements, and limit the effects of downdrag on adjacent (new or existing) foundations. If necessary to meet these design goals, recommendations shall be made for mitigation measures such as ground improvement, load transfer platforms, lightweight fills, surcharging, and/or wick drains.

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Report deliverables shall include site characterization data and plots of selected design parameters versus elevation, interpretations of consolidation test data, input and output from settlement analysis software, plots of time-rate of settlement, evaluations of settlement/stress increase on adjacent structures, downdrag analyses, etc.

Plan sheets shall include notes, layouts, and details for settlement monitoring/instrumentation (settlement plates, liquid settlement cells, etc.) and recommended improvements/mitigation measures (wick drains, load transfer platforms, surcharges, etc.). Recommendations for settlement monitoring programs shall be provided if measures other than those in the Louisiana Standard Specifications for Roads and Bridges (LSSRB) are needed. Any construction sequencing differing from the LSSRB shall be clearly defined in the plan notes.

5.3 Pile Foundations

Pile tip elevations shall be designed using the static equilibrium methods presented in FHWA Geotechnical Engineering Circular No. 12 (GEC 12). Specifically, the Nordlund and α methods shall be used in cohesionless and cohesive soils, respectively.

If CPT soundings are made, pile design shall also be evaluated by the Schmertmann, LCPC, and DeRuiter & Beringen Methods, which are presented in the final report for LTRC Project 98-3GT, Evaluation of Bearing Capacity of Piles from Cone Penetration Test Data (Hani and Abu-Farsakh, 1999). The computations can be automated using the Louisiana Pile Design by Cone Penetration Test software, published by LTRC and located at <http://www.ltrc.lsu.edu/downloads.html>. In general, the most conservative pile capacity curves generated from the GEC 12 and CPT direct methods should be used in design in the absence of site-specific load test data.

Report deliverables shall include site characterization data and plots of selected design parameters versus elevation, discussion of pile drivability/constructability including predrilling and jetting recommendations, discussion of cost-benefit analysis for resistance factor selection, plots of nominal pile resistance versus elevation for all design methodologies used, and discussion of other relevant design assumptions. Pile load test recommendations shall be provided where applicable, including location, depth of casing, test pile tip elevation, maximum test load, and any instrumentation requirements.

Plan sheets shall include pile data tables and appropriate notes in accordance with DOTD Bridge Design Technical Memorandum 32.3. For load testing procedures not covered by the LSSRB, special provisions for the construction and testing of the test foundation shall be provided.

5.3.1 LRFD Design

The load and resistance factor design (LRFD) method shall be used to set pile lengths. Subsurface data for each bridge site shall be evaluated and divided into design “sites” (design reaches) based on the variability of the data. Refer to GEC 5 for best practices on selecting sites for LRFD design. At a minimum, all of the following resistance factors (ϕ) and corresponding pile resistance verification methods shall be evaluated based on costs and engineering benefits:

- $\phi = 0.80$: One Test Pile per design site with 2% (or a minimum of two) production piles tested using dynamic monitoring and signal matching;

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- $\phi = 0.65$: One Indicator Pile per design site with 2% (or a minimum of two) production piles tested using dynamic monitoring and signal matching; or
- $\phi = 0.50$: No Test/Indicator Piles, end-of-drive pile resistance verification using the Modified Gates equation.

5.3.2 Scour

Pile design shall consider scour in accordance with Bridge Design Technical Memorandum 21 (BDTM.21). Per Bridge Design Technical Memorandum 32, Rev. 3 (BDTM 32.3), required nominal resistances shall be computed for two cases and presented on the Pile Data Tables:

- The case where the pile is driven to the required tip elevation without the benefit of predrilling, and thus developing full side friction along its entire embedment length; and
- The case where the contractor performs predrilling to the scour elevation in order to advance the pile; thus eliminating side friction within the predrill/scour zone.

Note that the Louisiana Pile Design by Cone Penetration Test software does not take scour into account; therefore, for sites with a significant overburden effect (sand profiles), pile design using CPT may not be appropriate.

5.3.3 Other Considerations

Additional design considerations such as lateral loading, uplift, group effect, downdrag, etc. shall be addressed in accordance with GEC 12.

Note that DOTD has observed inconsistencies in the published SPT vs Phi angle correlations for certain areas of the state, specifically the Florida Parishes and northern part of the state near the Ouachita River. For design of pile foundations in these regions, the Consultant shall first discuss the design parameters with DOTD to determine whether alternative correlations may be warranted.

Also note that the Supplemental Specifications require that a Contractor be able to construct pile foundations up to 25% longer than the Plan Lengths shown in the pile data table. When issuing final order lengths on pile design projects, Consultants should strive to keep order lengths within this tolerance.

5.4 Drilled Shaft Foundations

Shaft tip elevations shall be designed using the static equilibrium methods presented in FHWA Geotechnical Engineering Circular No. 10 (GEC 10).

Report deliverables shall include site characterization data and plots of selected design parameters versus elevation, discussion of shaft constructability, plots of nominal shaft resistance versus elevation for all design methodologies used, and discussion of other relevant design assumptions. Shaft load test recommendations shall be provided where applicable, including location, depth of casing, test shaft tip elevation, maximum test load, and any instrumentation requirements. If bidirectional testing is recommended, load cell balance points shall be recommended for the test shafts.

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Plan sheets shall include pile data tables and appropriate notes in accordance with LADOTD Bridge Design Technical Memorandum 32.3. Any special instrumentation details (e.g., bi-directional cells and strain gages) and notes shall also be provided in the plans. For load testing procedures not covered by the LSSRB, special provisions for the construction and testing of the test foundation shall be provided.

5.4.1 LRFD Design

The load and resistance factor design (LRFD) method shall be used to set shaft lengths. Subsurface data for each bridge site shall be evaluated and divided into Design Sites (design reaches) based on the variability of the data. Refer to GEC 5 for best practices on selecting sites for LRFD design.

Drilled shafts shall be designed with a resistance factor, ϕ , of 0.70, corresponding with field verification using bi-directional load testing. Refer to LTRC Project 07-2GT, Calibration of Resistance Factors Needed in the LRFD Design of Drilled Shafts (Abu-Farsakh et al., 2010) to determine appropriate locally calibrated resistance factors for static design methods without load testing.

5.4.2 Other Considerations

Additional design considerations such as lateral loading, uplift, group effect, downdrag, etc. shall be addressed in accordance with GEC 10.

5.5 Other Foundations

If other types of foundations are recommended for the specific project conditions, the standard procedure format and the deliverables format outlined for piles and drilled shafts shall be followed with specific design details for the type of foundation recommended. Design methodologies should follow AASHTO LRFD and FHWA Geotechnical Engineering Circulars, where possible. Special provisions, plan sheets, and notes shall be provided as needed for foundation types not covered by the LSSRB.

5.6 Earth Retaining Structures

When adequate space is not available for a slope, an earth retaining structure may be necessary. DOTD has used mechanically stabilized earth (MSE) walls, gravity concrete walls, sheet pile walls, and others. If necessary, the Consultant shall select the most appropriate wall type for the specific project and evaluate the following, at a minimum:

- Global stability check of ERS;
- External stability check of ERS;
- Settlement analysis of ERS;
- Deflection, section type, and anchor system recommendations for sheet pile walls;
- Analysis of governing load conditions under drained and undrained soil conditions; and
- Analysis of any other critical/governing configurations of the ERS.

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Report deliverables shall include settlement and global slope stability output, as discussed in previous sections. Input and output for analysis of external stability of MSE walls and sheet pile wall analysis (stability, shear, moment, & deflections) shall be provided.

Plan deliverables for MSE walls shall include typical sections (including drainage), profiles indicating the top of leveling pad elevation, wall locations, minimum reinforcing lengths, and backfill and other material requirements. Plan deliverables for sheet pile walls shall include typical sections (including drainage), wall locations, required section types, wall top and tip elevations, required anchor force per foot of wall (for anchored walls), backfill and other material requirements, and any specialized notes needed for anchored wall systems. Phasing and removal of temporary wall systems shall be addressed in the plan notes.

Report and plan deliverables for other types of retaining walls shall follow generally recognized design procedures and the requirements stated in this document for MSE and sheet pile walls.

5.6.1 MSE Walls

DOTD developed “MSEW Design Guide, GEDG. No. 8,” latest edition may be used as a reference. The design procedures in FHWA Geotechnical Engineering Circular No. 11 (GEC 11) shall be used except where superseded by GEDG No. 8. Only DOTD approved wall systems will be allowed.

5.6.2 Sheet Piles

Sheet pile wall calculations should include appropriate undrained and drained soil conditions and estimated long-term and short-term deflections. The resistance factors from the AASHTO Bridge Design Specifications, latest edition, shall be used to design sheet pile walls. A minimum factor of safety of 1.5 shall be applied to the passive resistance when evaluating sheet pile walls. The USACE Design Guide titled “EM-1110-2-2504- Design of Sheet Pile Walls” may be used as a reference.

5.6.3 Other Retaining Wall Types

Other types of retaining walls that may be appropriate for DOTD transportation projects are drilled shaft walls, soldier pile & lagging walls, slurry walls, anchored (tied-back) walls, soil nailed walls, reticulated micro pile walls, jet-grouted walls, and deep soil mixing walls. These walls shall be designed using generally recognized design procedures applicable to the specific type of wall used.

Note that reinforced soil slopes may, in some cases, be an economical alternative to a retaining wall.

5.7 Culverts

The geotechnical design culvert locations shall consist of the following, when applicable: earth pressure calculations, bearing capacity analyses, settlement analyses, evaluation of constructability.

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Report deliverables shall include the input and output of such analyses. Plan deliverables shall include recommendations for bedding material, details and notes for ground improvement or foundation support, and notes for phasing or any special construction procedures needed.

6.0 Construction Monitoring

The following sections describe the various types of construction monitoring that can be expected on DOTD projects:

6.1 Pile Foundations

The Consultant shall provide construction phase review, engineering, and testing for pile foundation projects where the Consultant is the geotechnical engineer of record.

- Review of Contractor submittals such as Pile Installation Plan, wave equation analysis, and pile driving logs;
- Dynamic monitoring of Test, Indicator, and Monitor Piles with the Pile Driving Analyzer (PDA), including providing all equipment and sensors needed to perform the monitoring;
- Analysis and presentation of PDA data using CAPWAP, GRLWEAP, and PDI PLOT;
- Pile driving logs for all piles tested with dynamic monitoring;
- Recommending pile driving acceptance criteria, including bearing capacity graphs (inspector's charts);
- Analysis and interpretation of all static load test data; and
- Recommending final pile tip elevations based on the results of load tests and/or dynamic analyses.

A final report shall be provided for each project summarizing the results of all pile load testing, dynamic monitoring, and other field observations.

6.2 Drilled Shaft Foundations

The Consultant shall provide construction phase review, engineering, and testing for drilled shaft foundation projects where the Consultant is the geotechnical engineer of record.

- Review of Contractor submittals such as Drilled Shaft Installation Plan, excavation logs, slurry logs, concrete placement logs, etc.;
- Review of integrity test data such as cross-hole sonic test logs or thermal integrity profiling test logs;
- Analysis of static (bi-directional) or dynamic (drop hammer) test results;
- Recommending final shaft tip elevations based on the results of load testing.

A final report shall be provided for each project summarizing the results of all shaft load testing and other field observations.

6.3 Other Foundations

The scope of work for other foundations and the deliverables shall be as recommended in the Consultant's Geotechnical Interpretation Report and special provisions.

Geotechnical Instrumentation

The objective of geotechnical instrumentation in construction monitoring is to record and interpret the Instrumentation data and compare actual soil behavior to that predicted by design. Each type of Instrumentation has an intended purpose and allows major decisions to be made by Construction Managers that affect construction safety (prevent major failures), scheduling, and construction costs. No instrumentation shall alter the performance of the geotechnical design. The usual Instrumentation specified to monitor foundation performance on projects where stability and settlement are critical are slope inclinometers, piezometers, and settlement devices. The geotechnical interpretation report should recommend an instrumentation layout and the frequency of readings.

6.4 Deliverables

The deliverables for geotechnical instrumentation shall include:

- Plan and elevation location, details, and applicable notes for all instrumentation;
- Specifications for furnishing, installation, monitoring, and reporting for all instrumentation;
- Graphical presentation of lateral movement data and action recommendations;
- Graphical presentation of actual field settlement data and action recommendations; and
- Interpretation of other instrumentation data as recommended in the GIR.
- gINT files should be sent to LADOTD.67@gmail.com

7.0 List of Published Geotechnical DOTD Reports and Forms Plus Other Technical References

Most of the following can be obtained at the DOTD web site (www.dotd.state.la.us) or at the FHWA Bridge/Geotechnical web site (www.fhwa.dot.gov/bridge).

7.1 DOTD Reports and Forms "Latest Editions"

DOTD references include, but are not limited to, the following:

1. LADOTD Geotechnical Design Manual;
2. AASHTO LRFD Bridge Design Specifications, latest edition and supplements;
3. Standard Specifications;
4. Bridge Design Manual;
5. Road Design Manual;

6. Hydraulics Manual;
7. Drilled Shaft Foundation Construction Inspection Manual;
8. Drilled Shaft Construction Logs;
9. MSEW Design Guide, Geotechnical Engineering Design Guide (G.E.D.G.) No. 8;
10. LTRC "PILECPT" Software;
11. Pile and Driving Equipment Data Form.

7.2 Other Technical References:

DOTD has used the following as technical references and guidelines in the design and construction monitoring of Geotechnical features for DOTD projects in the past and are recommended for use by the Geotechnical Engineering consultant community. This list is not all encompassing and other publications may be used and referenced. Additions will be made as this Document is updated.

1. FHWA. (1997). *Soils and Foundations Reference Manual Vol I and Vol II*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved from https://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm?sort=default.
2. FHWA. (1998). *Geosynthetic Design and Construction Guidelines Manual*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved from https://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm?sort=default.
3. FHWA. (1998). *Geotechnical Instrumentation Manual*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved from https://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm?sort=default.
4. FHWA. (2001). *Subsurface Investigations - Geotechnical Site Characterization Reference Manual for NHI 132031*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved from https://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm?sort=default.
5. FHWA. (2006). *Soils and Foundations Reference Manual Vol I and Vol II*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved from https://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm?sort=default.
6. FHWA. (2016). *Geotechnical Engineering Circular 5 (GEC 5) - Evaluation of Soil and Rock Properties*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved from <https://www.fhwa.dot.gov/engineering/geotech/pubs/nhi16072.pdf>.
7. FHWA. (2002). *Geotechnical Engineering Circular 6 (GEC 6) – Shallow Foundations*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved https://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm?sort=default.
8. FHWA. (2015). *Geotechnical Engineering Circular 7 (GEC 7) – Soil Nail Walls*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. https://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm?sort=default.

9. FHWA. (2018). *Geotechnical Engineering Circular 10 (GEC 10) – Drilled Shafts: Construction Procedures and LRFD Design Methods*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved from https://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm?sort=default.
10. FHWA. (2016). *Geotechnical Engineering Circular 11 (GEC 11) - Design and Construction of Mechanically Stabilized Earth Walls- Vol. I and Vol. II*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved from <https://www.fhwa.dot.gov/engineering/geotech/pubs/nhi10024/>.
11. FHWA. (2016). *Geotechnical Engineering Circular 12 (GEC 12) - Design and Construction of Driven Pile Foundations*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved from <https://www.fhwa.dot.gov/engineering/geotech/pubs/gec12/index.cfm>.
12. FHWA. (2018). *Geotechnical Engineering Circular 13 (GEC 13) - Ground Modification Methods Reference Manual - Vol. I and Vol. II*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved from https://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm?sort=default.
13. FHWA. (2016). *Geotechnical Engineering Circular 14 (GEC 14) – Assuring Quality in Geotechnical Engineering Documents*. Washington, D.C.: Federal Highway Administration, U.S. Dept. of Transportation. Retrieved from https://www.fhwa.dot.gov/engineering/geotech/library_listing.cfm?sort=default.
14. Soil Slope and Embankment Design, Reference Manual, FHWA-NHI, 2003;
15. EM 1110-2-2504 Design of Sheet Pile Walls US Army Corps, 1994;
16. NAVFAC Design Manuals, DM 7.1, DM 7.2 and DM7.3, May 1982; and
17. USS Steel Sheet Pile Design Manual.
18. AASHTO. (2024). *AASHTO LRFD Bridge Design Specifications*, tenth Edition. Washington, D.C.: American Association of State Highway and Transportation Officials.
19. LADOTD. (2000). *Construction of Geotechnical Boreholes and Groundwater Monitoring Systems*. Baton Rouge: Louisiana Department of Transportation & Louisiana Department of Environmental Quality.
20. LADOTD. (2010). *Bridge Design Technical Memorandum No. 21 (BDTM.21) - DOTD Policy for Predicting the Scour Elevation for Bridges*. Baton Rouge: Louisiana Department of Transportation and Development.
21. LADOTD. (2018). *Bridge Design Technical Memorandum No. 32 Rev. No. 3 (BDTM.32.3)*. Baton Rouge: Louisiana Department of Transportation and Development.
22. Titi, H. H., & Abu-Farsakh, M. Y. (1999). *LTRC Project No. 98-3GT: Evaluation of Bearing Capacity of Piles from Cone Penetration Test Data*. Baton Rouge: Louisiana Transportation Research Center, Louisiana Department of Transportation and Development.

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23. Tumay, M. T., Abu-Farsakh, M. Y., & Zhang, Z. (2008). From Theory to Implementation of a CPT-Based Probabilistic and Fuzzy Soil Classification. Electronic Journal of Geotechnical Engineering (EJGE).

GEOTECHNICAL EXPLORATION AND LABORATORY REQUIREMENTS

The prime consultant's local office shall own and operate all necessary equipment to have the capability to perform Geotechnical Explorations listed below.

ASTM	Description
D1452	Standard Practice for Soil Investigation and Sampling by Auger Borings
D1586	Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils
D1587	Standard Practice for Thin-Walled Tube Sampling of Fine-Grained Soils for Geotechnical Purposes

The Prime Consultant should provide a summary of any relevant laboratory accreditations and qualifications that may be pertinent for this contract. At a minimum, the prime consultant should maintain AASHTO accreditations for the test methods listed in the table below. The Prime Consultant shall maintain the geotechnical laboratory and shall identify in the DOTD Form 24-102 Section 20 the office to perform work. The laboratory accreditation certificate(s) must be submitted in Section 20 of the DOTD Form 24-102 for the following test methods:

ASTM	Description
D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
D2435	Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading
D2216	Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
D2850	Standard Test Method for Unconsolidated-Undrained Triaxial Compression Test on Cohesive Soils
D1140	Standard Test Methods for Determining the Amount of Material Finer than 75-m (No. 200) Sieve in Soils by Washing

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The Prime Consultant shall be a licensed water well driller in the State of Louisiana. All Water well license certificate(s) shall be submitted in Section 20 of DOTD Form 24-102.

The Consultant shall address in Section 18 of DOTD Form 24-102 how they plan to meet the minimum accreditation requirements. All requirements shall be verified prior to Task Order execution unless prior approval is obtained from the Pavement & Geotechnical Design Administrator.

ELECTRONIC DELIVERABLES

The Consultant hereby agrees to produce electronic deliverables in conformance with DOTD Software and Deliverable Standards for Electronic Plans document in effect as of the effective date of the most recent contract action or modification, unless exempted in writing by the Project Manager. The Consultant is also responsible for ensuring that sub-consultants submit their electronic deliverables in conformance with the same standards. DOTD Software and Deliverable Standards for Electronic Plans document and DOTD CAD Standards Downloads are available via links on the DOTD web site.

The Consultant shall apply patches to CAD Standard Resources and install incremental updates of software as needed or required. The Consultant hereby agrees to install major updates to software versions and CAD Standard Resources in a timely manner. Major updates of CAD standards and software versions shall be applied per directive or approval of the DOTD Design Automation Manager. Such updates will not have a significant impact on the plan development time or project delivery date, nor will they require the Consultant to purchase additional software. Prior to proceeding with plan development, the Consultant shall contact the Project Manager for any special instructions regarding project-specific requirements.

In the event that any Digital Plan Delivery Standard conflicts with written documentation, including DOTD plan-development Manuals, the Digital Plan Delivery Standard governs. The Consultant is responsible for contacting the Project Manager should questions arise.

The Consultant shall upload (or check in) electronic deliverables directly into the DOTD ProjectWise repository at each plan delivery milestone. The Consultants are responsible for performing certain operations at each milestone including, but not limited to, the following:

- Upload (or check in) CAD plan deliverables to the discipline “Plans” folder
- Apply and maintain indexing attributes to CAD plans (and other deliverables as needed)
- Publish PDF format plan submittals in ProjectWise using automated publishing tools
- Digitally sign PDF format plan submittals in ProjectWise according to DOTD standards and procedures (Final Plans, Revisions and Change Orders). Signatures shall be applied in signature blocks provided with electronic seals and Title Sheets.

Additionally, after reviewing deliverables for each submittal milestone, the Project Manager shall notify the Consultant regarding the availability of two automatically-generated informational reports in ProjectWise. These reports document the completion status and other information regarding indexing attributes and CAD standards. The Consultants shall take these reports into account and make any necessary adjustments to plans before the next submittal milestone; or sooner, if directed by the Project Manager.

**GEOTECHNICAL UNITS AND RATES
(TO BE ESTABLISHED IN RATE LETTER)**

GEOTECHNICAL RATES	UNITS	RATE
FIELD FUNCTIONS		
Mobilization/Demobilization of Drilling Equipment	mi.	\$8.00
Drill Crew Travel Time	hr.	\$200.00
PDA Testing	day	\$750.00
DRILLING & SAMPLING (ASTM D1452, D1586, D1587, D3441, D5778)		
Drilling 200 ft. or less (3' c/c non-cohesive, 5' c/c cohesive, continuous)	ft.	\$40.00
Water Buggy	day	\$250.00
ATV Rates	day	\$250.00
Water Table Borehole (24' or less)	ea.	\$700.00
CPT 200 ft. or less, includes grouting	ft.	\$15.00
Difficult Boring Access (provide backup)	hr.	\$250.00
Setting Casing	ft.	\$25.00
Concrete Coring	in.	\$25.00
Auger Drilling (no sampling)	ft.	\$15.00
GPS Location Determination	ea.	\$35.00
Elevation Determination (Surveyed)	ea.	\$300.00
LABORATORY TESTING		
ASTM D2850: Triaxial – Unconsolidated Undrained (UU)	ea.	\$100.00
ASTM D7181: Triaxial – 3PT. Consolidated Drained	ea.	\$805.00
ASTM D4767: Triaxial – Consolidated Undrained w/Pore Water Pressures	ea.	\$736.00
ASTM D3080: Direct Shear Test	ea.	\$805.00
ASTM D4318: Atterberg Limits – Method B	ea.	\$100.00
ASTM D422: Particle Size Analysis w/ Hydrometer	ea.	\$150.00
ASTM D1140: Percent Passing No. 200 Sieve (Minus 200 Test)	ea.	\$75.00
ASTM D2435: Consolidation Test w/Rebound (10 Loads)	ea.	\$700.00
Consolidation Test Each Additional Loading >10 Initial Loads	ea.	\$50.00
ASTM D2976: pH Determination	ea.	\$35.00
ASTM D4943: Organic Content	ea.	\$75.00
ASTM D854: Specific Gravity	ea.	\$150.00
Shelby Tube Extrusion – In Lab	ea.	\$30.00
Dry Preparation of Subgrade Soils	ea.	\$75.00
Unit Weight (w/out Strength Testing)	ea.	\$30.00

- Louisiana State Travel Regulations shall be used to determine reimbursement for meals, lodging rates, and mileage.
- DOTD Traffic Control Manual shall be used to define procedures for traffic control. Police Officers used for public safety shall be in accordance with DOTD's Policy for Use of Police Officers in Construction/Maintenance Work Zones.
- Supplies (consumables such as gloves, cement, etc.) shall be no more than 10% of the drilling costs, with receipts required.

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- In the event of lost or damaged equipment, including but not limited to: cone penetrometers, drilling bits and rods, tools, etc. DOTD shall not be liable to absorb the cost of replacement.
- Additional test procedures not listed above will be negotiated on a per Task Order basis as required.
- Difficult Boring access charges apply for off-road borehole locations that require transporting equipment and supplies between location by the use of matting or bulldozer in excess of one hour. Hourly rates include billing rates for drill rig, service vehicles, and drill crew. Drill rig set up and dismantling is included in the drilling costs per linear foot and is not to be included in boring access charges.
- Payment for unit weight of undisturbed samples will be included in the cost for UU strength unless compressive strength is unable to be determined due to sample condition.
- Invoicing for Task Orders must be received starting the date of the NTP and every 30 days until the completion of the project.
- In lieu of the services of a professional Surveyor, the Prime Consultant may survey and report Latitude, Longitude, and Elevation at the top of each borehole to a vertical and horizontal accuracy of at least 6 inches.

ATTACHMENT B – MINIMUM PERSONNEL REQUIREMENTS (MPRs)

The following requirements must be met at the time the proposal is submitted:

1. At least one (1) principal of the prime consultant shall be a registered professional engineer in the state of Louisiana.
2. At least one (1) principal or other responsible member of the prime consultant shall be currently registered in the state of Louisiana as a professional engineer in civil engineering.
3. At least one (1) principal or responsible member of the prime consultant shall be a professional civil engineer, registered in the state of Louisiana, and shall have a minimum of ten (10) years of experience in responsible charge of geotechnical engineering projects in Louisiana.
4. At least one (1) principal or other responsible member of the prime consultant shall be a professional engineer, registered in the state of Louisiana, and shall have a minimum of seven (7) years of experience overseeing an accredited Geotechnical Soils Lab in Louisiana.
5. At least one (1) principal or other responsible member of the prime consultant shall be a professional engineer, registered in the state of Louisiana, and shall have a minimum of five (5) years of experience performing PDA testing.
6. At least one (1) laboratory manager shall have a minimum of five (5) years of experience in geotechnical laboratory testing.
7. At least one (1) field crew driller/supervisor shall have a minimum of ten (10) years of drilling and sampling experience demonstrated within the state of Louisiana.

MPRS ARE TO BE MET BY SEPARATE INDIVIDUALS OF THE PRIME CONSULTANT, UNLESS STATED OTHERWISE BELOW.

MPR Nos. 1 through 5 may be met by the same person.

NOTE: WHEN SATISFYING A MINIMUM PERSONNEL REQUIREMENT, PLEASE ENSURE THE RÉSUMÉ REFLECTS REQUIRED EXPERIENCE AS REQUESTED.

Although the MPRs must be met by the prime consultant only, this does not preclude the use of sub-consultant(s) in the performance of the contract.

- Please note the number of MPRs are minimal; however, all relevant personnel necessary to perform the Scope of Services must be identified in Section 14 of the DOTD Form 24-102 and their resumes included in Section 16 of the DOTD Form 24-102.

ATTACHMENT C – SECONDARY SELECTIONS FOR TASK ORDERS

Procedures for selecting among IDIQ contracts for issuance of Task Orders - Section 67

If proposed new TO is to be issued for the purpose of extending services related to services performed under a previously issued TO by a particular consultant with whom DOTD has an existing IDIQ contract containing the appropriate scope of services and with time and funding capacity available sufficient to support the issuance of the new TO under said contract, then that consultant's contract will be tasked.

Otherwise, when more than one IDIQ is available for the provision of the services required, the following procedure will be employed to determine which of the IDIQ contracts will be tasked.

1. Identify all IDIQ contracts that apply – type/scope of work in contract
 - a. If applies, move to next step
 - b. If does not apply, then cannot use the contract
2. Determine if there is sufficient time remaining on the contract to complete the work
 - a. If yes, proceed to next step
 - b. If no, then cannot use the contract
3. Determine if there is sufficient compensation remaining on contract to complete the work
 - a. If yes, proceed to next step
 - b. If no, cannot use the contract
4. Determine if specialty tasks and /or special equipment/assets are required or if timing of performance is critical
 - a. If specialty equipment is required, rate the Consultants based on their equipment capabilities as follows:
 - i. Rating = 2: If the specialty equipment is possessed in-house and in-state;
 - ii. Rating = 1: If the specialty equipment must be obtained from a third party or another state; or
 - iii. Rating = 0: If the specialty equipment is unavailable.

If equipment is unavailable, the Consultant should not or is not able to perform the work, as needed, do not use the contract. Document the reasons, *e.g.*, the Consultant is less experienced with the type of task(s), does not have assets on hand available to dedicate to the task(s), past performance indicates that the Consultant may have difficulty with pertinent task(s), the Consultant has multiple jobs ongoing for DOTD such that timeliness may be an issue, etc.
 - b. If no specialty tasks or timeliness issues are present, then proceed to the next step.

5. Determine if specialized expertise is critical
 - a. If specialized expertise is required, rate the consultants based on their capabilities as follows:
 - i. Rating = 2: If the expertise is in-house and in-state;
 - ii. Rating = 1: If the specialty equipment must be obtained from a third party or another state; or
 - iii. Rating = 0: If the specialty equipment is unavailable.

If expertise is unavailable, the Consultant should not or is not able to perform the work, as needed, do not use the contract. Document the reasons, *e.g.*, the Consultant is less experienced with the type of task(s), does not have expertise on hand available to dedicate to the task(s), past performance indicates that the Consultant may have difficulty with pertinent task(s), the Consultant has multiple jobs ongoing for DOTD such that timeliness may be an issue, etc.
 - b. If no specialized expertise is needed, then proceed to the next step.
6. Does the Consultant have familiarity with the specific project?
 - i. Rating = 3: If the Consultant has worked on the project.
 - ii. Rating = 0: If the Consultant has not worked on the project.
7. How is the Consultant currently performing on existing Task Orders?
 - i. Rating = 3: Consistently exceed expectations.
 - ii. Rating = 2: Meets and often exceeds performance expectations.
 - iii. Rating = 1: Meets expectations, but with needed improvements.
 - iv. Rating = 0: Significant improvements needed.
8. If the Consultants are equal on all other criteria, then select the contract with the most available compensation, with due consideration given to the risks involved and the needs of the project.
9. Once a selection for a TO is made, a spreadsheet will be prepared by the Project Manager justifying the selection of a particular consultant for an individual TO. The memo will be signed by the appropriate Section Head, approving the selection.