

**ADVERTISEMENT FOR ENGINEERING AND RELATED SERVICES
JUNE 6, 2022**

ADDENDUM NO. 1, JUNE 20, 2022

**CONTRACT NOS. 4400024650, 4400024651, 4400024652, 4400024653,
4400024654, 4400024655, 4400024656 AND 4400024657
IDIQ CONTRACTS FOR GEOTECHNICAL SERVICES
STATEWIDE**

DBE GOAL = 2%

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 MARCH 1, 2022, PROVIDED WITH THE ADVERTISEMENT.**

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 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 evaluation 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.

<p>Sub-consultants are allowed to be used for this proposal. Fill in the table by identifying only those evaluation 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 past performance evaluation discipline to be performed by that firm. The percentage estimated for each evaluation 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 past performance evaluation discipline, as well as the overall total percent of the contract. (Add rows and columns as needed)</p>							
Evaluation Discipline(s)	% of Overall Contract	Prime	Firm B	Firm C	Firm D	Firm E	Each Discipline must total to 100%
							100%
							100%
							100%
<p>Identify the percentage of work for the overall contract to be performed by the prime consultant and each sub-consultant.</p>							
Percent of Contract	100%						-----

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

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 nine (9) (if nine 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, 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.

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.

COMPENSATION

The maximum compensation payable to the consultant under each IDIQ contract shall not exceed **\$5,000,000**. 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 may be either negotiated or non-negotiated as determined by DOTD for each individual TO. When the compensation is negotiated, it will be determined by DOTD based on work hours negotiated between DOTD and the consultant. After notification of selection, a kick-off meeting will be held with the selected consultant and appropriate DOTD personnel. The selected consultant will be required to submit a work hour proposal. All negotiations must be completed within the timeframe set forth in the Consultant Contract Services Manual, unless an abbreviated timeframe is specified in writing by the PM.

GEOTECHNICAL UNITS AND RATES

GEOTECHNICAL RATES	UNITS	RATE
FIELD FUNCTIONS		
MOBILIZATION/DEMOBILIZATION, DRILLING EQUIPMENT	MI.	Negotiated
DRILL CREW TRAVEL TIME	HR.	172.00
SUPPORT TRUCK	MI.	PPM
<i>DRILLING & SAMPLING (ASTM D1586, D1587,D3441)</i>		
5FT. ON CENTER		
100FT OR LESS	FT.	\$21.00
101FT TO 150FT	FT.	\$28.75
151FT TO 200FT	FT.	\$34.00
<i>CONTINUOUS SAMPLING</i>		
100FT OR LESS	FT.	\$34.00
WATER BUGGY	DAY	\$217.00
ATV RATES	DAY	\$230.00
<i>CONE PENETROMETER TESTING</i>		
100FT OR LESS, INCLUDING GROUTING	FT.	\$15.00
101FT TO 150FT	FT.	\$17.00
AUGER DRILLING	FT.	\$14.00
DIFFICULT BORING ACCESS	HR.	\$247.00

SETTING CASING	FT.	\$11.50
SEALING BOREHOLES, 4"	FT.	\$7.00
CORING OF PORTLAND CEMENT CONCRETE FOR BORINGS	IN.	\$19.00
LOCATION & ELEVATION DETERMINATION	EA.	\$250.00
LABORATORY TESTING		
<i>STRENGTH TESTING</i>		
ASTM D2850: TRIAXIAL - UNCONSOLIDATED UNDRAINED	EA.	\$75.00
ASTM D7181: TRIAXIAL - CONSOLIDATED DRAINED 3 PT.	EA.	\$805.00
ASTM D4767: TRIAXIAL - CONSOLIDATED UNDRAINED W/PORE WATER PRESSURES MEASUREMENTS	EA.	\$736.00
ASTM D3880: DIRECT SHEAR TEST	EA.	\$805.00
<i>INDEX TESTING</i>		
ASTM D4318: ATTERBERG LIMITS - METHOD A (MULTIPOINT LL)	EA.	\$110.00
ASTM D4318: ATTERBERG LIMITS - METHOD B (ONE-POINT LL)	EA.	\$72.00
ASTM D422: PARTICLE SIZE ANALYSIS (1/4" THROUGH 200 SIEVE)	EA.	\$65.00
ASTM D422: PARTICLE SIZE ANALYSIS WITH HYDROMETER	EA.	\$115.00
ASTM D2216: MOISTURE CONTENT	EA.	\$12.00
ASTM D1140: PERCENT PASSING NO. 200 SIEVE (WET)	EA.	\$46.00
<i>CONSOLIDATION TESTING</i>		
ASTM D2435: CONSOLIDATION TESTS WITH REBOUND	EA.	\$604.00
<i>MISCELLANEOUS TESTING</i>		
ASTM D2976: PH DETERMINATION	EA.	\$31.00
ASTM D4943: ORGANIC CONTENT	EA.	\$69.00
ASTM G187: RESISTIVITY	EA.	\$230.00
ASTM D854: SPECIFIC GRAVITY	EA.	\$117.00
SHELBY TUBE SAMPLE EXTRACTION – IN LAB	EA.	\$28.00
DRY PREPARATION OF SUBGRADE SOIL SAMPLES	EA.	\$58.00
UNIT WEIGHT OF UNDISTURBED SAMPLES (W/OUT STRENGTH TESTING)	EA.	\$28.00
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 to be used for traffic control. Police Officers used for public safety shall be in accordance with DOTD's <i>Policy for Use of Police Officers in Construction/Maintenance Work Zones</i> .		
Supplies (consumables such as gloves, cement, etc.) shall be no more than 10% of the drilling costs, with receipts required.		
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.		

All requests for additional administrative or other (not listed) compensation must be pre-approved by DOTD's Pavement & Geotechnical Services Section prior to submittal to the Consultant Contract Services Section.
Any Metric projects assigned to the Consultant will be required to be reported in Metric units except for invoices, which will use English unit equivalents.
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 (meter) and is not to be included in boring access charges.
Payment for unit weight of undisturbed samples will be included in the cost for unconfined compressive strength unless compressive strength is unable to be determined due to sample condition.
Invoicing for Task Orders/services of durations less than or equal to 30 days should be on one invoice.
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.

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. 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.

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. The selected consultant must submit their QA/QC plan to the DOTD PM within 10 business days of the award notification to the consultant. 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 22 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 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**:

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 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

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
<https://www.transportation.org/>
2. AASHTO – A Policy on Geometric Design of Highways and Streets –
https://bookstore.transportation.org/collection_detail.aspx?ID=110
3. ASTM Standards – <https://www.astm.org/BOOKSTORE/BOS/index.html>
4. CyberSecurity Training –
<https://forms.gle/deZGAo5hUMWeSG4P6>
5. DOTD – Bridge Design and Evaluation Manual (BDEM) –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Bridge_Design/Pages/BD_EM.aspx
6. DOTD – Complete Streets –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Highway_Safety/Complete_Streets/Pages/default.aspx
7. DOTD – Construction Contract Administration Manual –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Pages/Engineering_Docs.aspx
8. DOTD – Consultant Contract Services Manual –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/CCS/Manuals/CCS%20Manual%20rev%20Dec%202020.pdf

9. DOTD – Hydraulics Manual –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Public_Works/Hydraulics/Documents/Hydraulics%20Manual.pdf
10. DOTD – Location and Survey Manual –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/LocationSurvey/Manuals%20and%20Forms/Location_and_Survey_Manual.pdf
11. DOTD – Addendum “A” to the Location & Survey Manual –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/LocationSurvey/Manuals%20and%20Forms/Location%20and%20Survey%20Manual%20-%20Addendum%20A.pdf
12. DOTD – Louisiana Standard Specifications for Roads and Bridges –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Standard_Specifications/Pages/Standard%20Specifications.aspx
13. DOTD – Materials Sampling Manual –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Materials_Lab/Pages/Menu_MSM.aspx
14. DOTD – Minimum Design Guidelines –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Road_Design/Memoranda/Minimum%20Design%20Guidelines.pdf
15. DOTD – Off-System Highway Bridge Program Guidelines –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Bridge_Design/Manuals/Other%20Manuals%20-%20Guidelines/2019%20Federal%20Aid%20Off-System%20Highway%20Bridge%20Program%20Guidelines.pdf
16. DOTD – Roadway Design Procedures and Details Manual –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Road_Design/Pages/Road-Design-Manual.aspx
17. DOTD – Stage 1 Planning/Environmental Manual of Standard Practice –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Environmental/Pages/Stage_1.aspx
18. DOTD – Testing Procedures Manual –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Materials_Lab/Pages/Menu_TPM.aspx
19. DOTD – Traffic Engineering Manual –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Traffic_Engineering/Misc%20Documents/Traffic%20Engineering%20Manual.pdf
20. DOTD – Traffic Engineering Process and Report –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Traffic_Engineering/ManualsPublications/Pages/TEPR.aspx
21. DOTD – Traffic Signal Manual –
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Traffic_Engineering/Traffic%20Control/Traffic%20Signal%20Manual%20V3%20-%20207.1.20.pdf

22. e-CFR – Electronic Code of Federal Regulations (all applicable) –
<https://ecfr.io/>
23. FHWA – Bridge Inspector’s Reference Manual (BIRM) –
website: <https://www.fhwa.dot.gov/bridge/nbis.cfm>
manual: <https://www.fhwa.dot.gov/bridge/nbis/pubs/nhi12049.pdf>
24. FHWA – Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) –
<http://mutcd.fhwa.dot.gov/>
25. National Electrical Safety Code (NESC) –
<https://standards.ieee.org/products-services/nesc/index.html>
26. NFPA 70 – National Electrical Code (NEC) –
<https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=70>
27. NEPA – National Environmental Policy Act –
<https://www.epa.gov/nepa>

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: http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/CCS/Pages/Advertisements.aspx.

DISADVANTAGED BUSINESS ENTERPRISE REQUIREMENT

This advertised contract has a Disadvantaged Business Enterprise (DBE) goal of **2%** 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 MARCH 1, 2022, 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.

The DOTD Form 24-102 should be identified with **contract numbers 4400024650, 4400024651, 4400024652, 4400024653, 4400024654, 4400024655, 4400024656 and 4400024657**, and must be received by DOTD via email **no later than 3:00 p.m. CST on Tuesday, June 28, 2022**.

ATTACHMENT A – SCOPE OF SERVICES

The project time is **typical**.

The route classification is **NHS**.

GEOTECHNICAL INVESTIGATION

The consultant may perform geotechnical investigations consisting of soil borings, laboratory testing, optional 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:

- 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);
- Reporting water table readings;
- 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 relevant 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;
- Digital submittal of all test data in the DOTD's standard format; and
- Submittal of Geotechnical Data Reports.

1.1 Field Investigation - Deep/Bridge Soil Borings

The field investigation may consist of traditional soil borings with laboratory testing, or a combination of that along with Cone Penetrometer Testing (ASTM D3441, ASTM D5778). Cone Penetrometer Testing may be proposed in lieu of a portion of the soil borings, but shall not be utilized where the geology does not permit the CPT rig to acquire data to the depth needed to perform foundation design for the bridge. It is the consultant's responsibility to conduct a desk study prior to commencing fieldwork in order to determine the adequacy of the proposed fieldwork for that particular site.

1.1.1 Sampling

Soil borings shall be made using wet/mud rotary methods below the water table, with solid-stem augering (ASTM D1452) permissible above the water table. Sampling shall consist of pushing thin-walled Shelby tubes in cohesive soils (ASTM D1587) and Standard Penetration Testing (SPT) in cohesionless soils (ASTM D1586). Continuous sampling shall be performed within the upper 10 feet, followed by either:

- Sampling at 5-foot centers in cohesive soils, or
- Sampling at 3-foot centers in cohesionless soils.

Shelby tube sampling in cohesionless soils and SPT sampling in cohesive soils will not be allowed, except on a case-by-case basis where Shelby tubes cannot be pushed into hard cohesive soils. When a Shelby tube is retrieved with no recovery, the hole shall be cleaned out and a SPT shall be performed directly below the previous sampling interval.

1.1.2 Water Level

Water level observations shall be made in all soil borings. If the field investigation requires multiple days to complete, at least one long-term (24-hour) water level observation shall be made. Final boring locations and elevations shall be surveyed.

1.1.3 SPT Hammer Calibration

All SPT hammers used shall have been calibrated within the past 2 years using methods described in ASTM D4633.

1.1.4 Borehole Abandonment

Boreholes and CPT soundings shall be backfilled in accordance with all local, State, and Federal regulations. Refer to the *Construction of Geotechnical Boreholes and Groundwater Monitoring Systems Handbook* for State regulations in the making of boreholes.

1.1.5 Sample Storage and Transport

The following practices shall be observed during transport and storage of the samples:

- Cohesive samples may be extruded in the field provided they are stiff enough to be wrapped and transported, otherwise, samples shall be extruded at the laboratory;
- Shelby tubes not extruded in the field shall be sealed using expansion packers to prevent moisture loss and disturbance;
- Samples shall be extruded using a continuous pressure hydraulic ram. Extrusion by any other method, such as water pressure, is prohibited;
- Samples shall be extruded directly onto a sample trough, not caught by the hand; and
- Samples shall be transported vertically in the same orientation that they were sampled.

Follow ASTM D4220 for sample transportation except as noted herein.

1.1.6 Field Logs

Soil borings shall be logged in the field or in the laboratory and shall use the visual-manual method for classification (ASTM D2488). Pocket penetrometer readings shall be made on representative portions of the samples.

1.2 Field Investigation – Subgrade Soil Survey

A subgrade soil survey boring shall be made within 100 feet of each bridge end. Subgrade soil survey borings can be made utilizing continuous-flight augers, pneumatic, or direct-push sampling. The depth of each boring should be at least 8 feet below the finished roadway elevation or natural ground, whichever is greater, with additional sampling and testing requirements for areas of cut/fill greater than 10 feet. In cases of excessive cut/fill heights, deep soil borings may be more appropriate.

1.3 Laboratory Testing

All laboratory testing shall conform to applicable ASTM test designations. Alternative test methods may be proposed on a case-by-case basis. Dry preparation methods shall only be used when performing tests for subgrade soil survey (pavement) borings or when requested by DOTD.

1.1.1 Bridge Boring Testing

The following laboratory tests shall be performed, at a minimum:

- Moisture content (ASTM D2216) – all samples;
- Unconsolidated-undrained Triaxial compressive strength (ASTM D2850) – 75% of all cohesive samples;
- Atterberg Limits (ASTM D4318) – 75% of all cohesive samples; and
- Grain size testing (ASTM D1140 and ASTM D6913) – 50% of all samples or more as needed.

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

1.1.2 Extrusion Logs

While extruding soil samples from deep borings in the lab, an extrusion log shall be made using the visual-manual classification method. New pocket penetrometer readings shall be made on representative portions of the samples.

1.1.3 Subgrade Soil Survey Testing

The soil stratigraphy shall be identified every foot or stratum break at the discretion of the lab engineer of record using the AASHTO classification system (ASTM D3282, AASHTO M 145) and the following tests:

- Atterberg Limits (ASTM D4318) – 100% of all cohesive samples;
- Moisture content (ASTM D2216) – all samples;

- Grain size testing (ASTM D1140 and ASTM D6913) – as needed to classify granular soils;
- Hydrometer tests (ASTM D7928) – 75% of samples;
- Percent Organics (ASTM D2974) – as needed; and
- pH (ASTM G51) and resistivity (AASHTO T 288) – as needed, at applicable pipe crossings.

Dry preparation methods (ASTM D421) shall be used for applicable testing of shallow subgrade soil survey samples.

GEOTECHNICAL DELIVERABLES

The following items shall be submitted upon completion of the project:

1.4 Geotechnical Data Report

For each project with a subsurface investigation, the consultant shall furnish a final Geotechnical Data Report (GDR) detailing the results of the subsurface investigation. The GDR will be included in the bid documents and shall contain only factual information and no opinions or engineering recommendations. The GDR shall include, at a minimum:

- 1) Cover letter with executive summary describing the subsurface investigation;
- 2) Table of contents;
- 3) Report Body containing the following sections, at a minimum:
 - a. Project Description;
 - b. Summary of subsurface investigation, including description of methods and standards used; and
 - c. Summary of laboratory testing performed, including description of methods and standards used.
- 4) Appendix containing the following items, at a minimum:
 - a. Boring plan;
 - b. General bridge plan & profile sheet used to establish the boring locations;
 - c. Soil boring logs;
 - d. Plots of grain size distribution curves and consolidation tests, as applicable; and
 - e. Laboratory test data sheets, including extrusion logs, stress vs. strain plots for triaxial testing, consolidation test deformation vs. time plots (when applicable), Atterberg Limit worksheets, etc.

1.5 Geotechnical Interpretation Report (Geotechnical Design Report)

For each project where design is performed, the consultant shall furnish a final Geotechnical Interpretation Report (GIR) detailing assumptions, design methodologies, and final recommendations. The report shall be signed and sealed by a Professional Civil Engineer registered in the State of Louisiana, and shall include the following items, at a minimum.

Additional deliverables are discussed in the subsection for each type of engineering analysis and design element.

- 1) Cover letter with executive summary describing the structure type, loads, and recommended foundation lengths. All plan-related notes, quantities, and tables shall be provided in the cover letter;
- 2) Table of contents;
- 3) Report Body containing the following sections, at a minimum:
 - a. Project Description:
 - i. Summary of structure type; and
 - ii. Summary of geotechnical investigation performed.
 - b. Subsurface Conditions:
 - i. Generalized subsurface profile; and
 - ii. Summary of groundwater conditions.
 - c. Foundation Analyses:
 - i. Summary of design codes and specifications followed;
 - ii. Description of analysis method(s) used as well as any relevant assumptions;
 - iii. Discussion of the evaluation of various LRFD resistance factors, field verification methods, and associated costs;
 - iv. Recommended foundation tip elevations/lengths;
 - v. Brief construction recommendations, identification of potential difficult installation conditions, etc.
 - d. Slope Stability Recommendations including assumptions and design methods used (if applicable);
 - e. Embankment Settlement Recommendations including assumptions and design methods used (if applicable);
 - f. Earth Retaining Structures Recommendations including assumptions and design methods used (if applicable);
- 4) Appendix containing the following items, at a minimum:
 - a. Any documents revised since the GDR, such as boring plans or soil boring logs;
 - b. Plots of relevant soil data versus elevation including the interpreted design profile for each design site;
 - c. Nominal foundation resistance versus elevation plots for each design site and pile size/type;
 - d. Pile/shaft data table; and
 - e. Input and output from settlement, slope stability, and ERS analysis software.

1.5.1 Plan Sheets & Special Provisions

Note that the 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, 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.

1.5.2 Cost-Benefit Analysis

The resistance factor selection and associated field verification (where applicable) are generally at the discretion of the Consultant. However, these should be selected practically, considering cost of the field testing and the value of the testing relative to the engineering uncertainty of the subsoil parameters. Recent bid histories for estimating the costs of the various resistance factor scenarios may be found at: http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Project_Management/Pages/Cost_Estimating_Tools.aspx

The Consultant shall conduct a cost-benefit analysis for the applicable resistance factors for all deep foundation designs. The Consultant shall coordinate with DOTD when selecting resistance factors for design that require the consultant to perform field testing (PDA, static load testing, etc.). DOTD does not provide construction phase testing for Consultant designed projects.

1.5.3 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.

1.6 Report Format

Each report shall be submitted in electronic format as a searchable .pdf file with bookmarks denoting the various sections of the report. Report body, charts, and figures shall be generated directly from the source applications in order to minimize file size. Documents scanned as raster images shall only be used when no other option exists for their inclusion into the report. All pages shall print to either 8.5" x 11" or 11" x 17" without scaling or adjustment.

1.7 Soil Boring Logs

Soil boring logs shall be presented in the GDR adhering to either the standard DOTD boring log format, or the Consultant's own 8.5" x 11" format.

1.7.1 Deep/Bridge Borings

At a minimum, the following results must be displayed on the boring logs in the specified units:

- Scales for Elevation and Depth Below Ground Surface (ft);
- Graphical representation of Soil Stratigraphy and Sample Type;

- Stratigraphy classified according to the Unified Soil Classification System (USCS) (ASTM D2487), including observations such as soil consistency/strength, color, inclusions such as seams, nodules, organics, etc.;
- Graphical and text representation of Groundwater Table;
- Sample Identification;
- Wet Density (pcf);
- Moisture Content and Atterberg Limits (%);
- Percent Passing the No. 200 Sieve (%);
- Compressive Strength (tsf), Triaxial Cell Pressure (psi), and Failure Mode;
- SPT results for each 6-inch increment, reported N Value (blows/ft), and SPT Termination Code;
- Date of Boring;
- Crew Chief, Drill Rig Model, SPT Hammer Type & Efficiency;
- Drilling Method, Hole Diameter, and Backfill Type;
- Latitude, Longitude, Elevation, and other relevant location information;
- Bridge Recall Number; and
- Other relevant notes describing observations made during drilling or laboratory testing.

1.7.2 Cone Penetrometer Test Soundings

Cone penetrometer test soundings shall be presented in the GDR on logs adhering to either the standard LADOTD CPT log format or the Consultant's own 8.5" x 11" format. The standard format presents tip resistance, side friction, pore water pressure, and classification based on the Zhang and Tumay method. Examples of boring logs and CPT logs can be furnished upon request.

1.7.3 Shallow Subgrade Soil Surveys

Shallow Subgrade soil survey borings shall be presented in a tabular format containing all test results and classified using the AASHTO soil classification method.

1.7.4 Plan Sheets

In addition to including boring logs in the GDR, the logs shall also be furnished on full-size plan sheets (22"x34") submitted in .pdf format. Boring logs included on the plan sheets may be the Consultant's own format pasted onto a plan sheet, or the standard DOTD boring log format.

1.8 Geotechnical Data

All geotechnical data shall be furnished to DOTD in a gINT file cloned from DOTD's standard gINT file. 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.

2.0 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. 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.

2.1 Embankments & Slopes

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

2.1.1 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.).

2.1.2 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.

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.

2.2 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.

2.2.1 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;
- $\phi = 0.65$: 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.

2.2.2 *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.

2.2.3 *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.

2.3 **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.

Plan sheets shall include pile data tables and appropriate notes in accordance with LADOTD Bridge Design Technical Memorandum 32.3. Any special instrumentation details 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.

2.3.1 LRF Design

The load and resistance factor design (LRF) 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 LRF 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 LRF Design of Drilled Shafts (Abu-Farsakh et al., 2010) to determine appropriate locally calibrated resistance factors for static design methods without load testing.

2.3.2 Other Considerations

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

2.4 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 LRF 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.

2.5 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.

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.

2.5.1 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.

2.5.2 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.

2.5.3 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.

2.6 Culverts

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

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.

3.0 Construction Monitoring

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

3.1 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.

3.2 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.

3.3 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.

4.0 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.

4.1 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.

5.0 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).

5.1 DOTD Reports and Forms "Latest Editions"

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

1. AASHTO LRFD Bridge Design Specifications, latest edition and supplements;
2. Standard Specifications;
3. Bridge Design Manual;
4. Road Design Manual;
5. Hydraulics Manual;
6. Drilled Shaft Foundation Construction Inspection Manual;
7. Drilled Shaft Construction Logs;
8. MSEW Design Guide, Geotechnical Engineering Design Guide (G.E.D.G.) No. 8;

9. LTRC “PILECPT” Software;
10. Pile and Driving Equipment Data Form;
11. LADOTD Geotechnical Design Manual (In Progress)

5.2 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
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GEOTECHNICAL EXPLORATION AND LABORATORY REQUIREMENTS

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 team 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
D 1140	Standard Test Methods for Determining the Amount of Material Finer than 75- m (No. 200) Sieve in Soils by Washing
D 2216	Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
D 2435	Standard Test Methods for One-Dimensional Consolidation Properties of Soils Using Incremental Loading
D 2850	Standard Test Method for Unconsolidated-Undrained Triaxial Compression Test on Cohesive Soils
D 4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

The prime consultant or sub-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.**

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

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. 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.

Consultant shall apply patches to CAD Standard Resources and install incremental updates of software as needed or required. 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 Consultant to purchase additional software. Prior to proceeding with plan development, 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. Consultant is responsible for contacting the Project Manager should questions arise.

Consultant shall upload (or check in) electronic deliverables directly into the DOTD ProjectWise repository at each plan delivery milestone. 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 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. 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.

SPECIFIC SOFTWARE AND / OR EQUIPMENT DESIRED

All geotechnical data shall be furnished by DOTD adhering to DOTD’s standard gINT schema.

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 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.
4. At least one (1) laboratory manager shall have a minimum of five (5) years of experience in geotechnical laboratory testing.
5. At least one (1) field crew driller/supervisor shall have a minimum of ten (10) years of experience; with at least five (5) years 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 3 may be met by the same person.

MPR No. 5 may be satisfied through the use of a sub-consultant(s).

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

- 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.

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.