Engineering

Local Public Agency (LPA) Appendix

2012

Table of Contents

Agreements

Local Public Agency (LPA) Manual Appendix

2011

Entity-State Agreements

An Entity-State Agreement is prepared for each project that receives funding through the Louisiana Department of Transportation and Development (DOTD), and it covers all phases of work involved in the project. This agreement is between the Local Public Agency and DOTD. Its purpose is to ensure that the funds provided through DOTD are spent in accordance with all applicable state and federal laws and regulations.

Federal funds may be used for the following project stages/project number phases*, depending on the program:

A. Planning/Feasibility – Stage 0, (Phase 1)
B. Preliminary Engineering for Project Development and Environmental Studies – Stage 1, (Phase 2)
C. Funding – Stage 2 (N/A to LPA projects)
D. Right of Way Acquisition – Stage 3, (Phase 3)
E. Utility Relocation – Stage 3, (Phase 4)
F. Design – Stage 3, (Phase 5)
G. Construction – Stage 5, (Phase 6)

*NOTE: Stages refer to project development and the Project Development Manual. Phases refer to the funding.

All phases must conform to Federal Law if Federal Funds are used for ANY phase. The LPA should carefully consider the procedures required by the funding types for each phase of project development when developing project schedules. *Example*: Using Federal funds in any phase may require additional work or activities in prior work phases or require certain commitments or compliance in later work phases. The documentation required for the authorization of federal funds varies by work phase. A written Notice to Proceed (NTP) is required from your Project Manager to begin any reimbursable phase of a project.

The agreement addresses the following information applicable to a project:

- Project Description
- Funding
- Conceptual Plans and Environmental Decision
- Consultant selection
- Pre-construction engineering
- Transfer of property if applicable
- Bid/Construction
- Right-of-way Acquisition and Relocation

- Utility Relocation
- Construction Administration and Inspection
- Subcontracting
- DBE Requirements
- Incidental Costs
- Cost Disbursement Procedures
- Cost Records
- Cancellation
- Project Responsibility
- Civil Rights
- Public Liability
- Final Inspection and Maintenance
- Contractual Obligations of the State
- House Bill 1 Compliance if applicable

The federal participation ratios are identified in the agreements. For projects with multiple funding sources, any fixed federal amounts are identified, any fixed sponsor amounts are identified and the funds that are required to be spent first are identified. If the federal aid participation ratio entered in the agreement is not the full cost of the project, then the participation ratio entered becomes the limit of funding allowed.

No costs are eligible for federal aid disbursement/reimbursement until a written Notice to Proceed (NTP) is sent by DOTD. **This Notice to Proceed document is separate from the agreement.**

At the time of each phase's Notice to Proceed, all funds necessary to complete the scope of work for that phase must be secured.

ENTITY/STATE AGREEMENT REQUEST INFORMATON

IN ORDER TO PROCESS AN AGREEMENT THE FOLLOWING INFORMATION IS NEEDED FROM THE ENTITY.

1. Project Name (& Route if applicable) (Must conform to DOTD's naming convention. The total space allowed for project names is 40 characters.)

2. Project Description

3. The correct and official name of the signatory party for the Entity or Contracting Party, telephone number, FAX number, address, email address and DUNS number.

4. The name, telephone number and email address of contact person (if different from signatory party).

5. Entity providing/selecting/funding the following services:

    a. Design/Pre-Construction
    b. Construction
    c. R/W
    d. Utility Relocation
    e. Construction Engineering/Technical Administration
        i. Field Inspection
        ii. Laboratory Inspection
    f. Environmental Assessment

6. Funding provisions – types of funding (% breakdown, identify fixed amount (if applicable) and/or a specific funding source is required to be used first)

    a. Design/Pre-Construction
    b. Construction
    c. R/W
    d. Utility Relocation
    e. Construction Engineering/Technical Administration
        i. Field Inspection
        ii. Laboratory Inspection
    f. Environmental Assessment

7. Maintenance Responsibilities

8. Liability

9. State Routes: Items that the entity is responsible to fund, maintain or accept liability on a state route.

   ❒ Sidewalks

   ❒ Bike paths

   ❒ Lighting

   ❒ Landscaping

   ❒ Other _____

Responsibilities of Entity & DOTD for

STP >200K and STP <200K Projects

Entity	DOTD
Project Initiation	
• Works with MPO to create the Stage 0 report	• Receives approved Stage 0 from DOTD's Planning Section • Sends to Environmental Section for Document Determination
• Processes Entity State Agreement timely	• Request Entity State Agreement
Engineering	
• Provides a schedule & budget • Updates during life of project in agreement with the MPO	• Updates the DOTD project system
• Ensures project stays within terms of contract – scope/schedule/budget, requests any required contract time extensions	• DOTD processes invoice requests and time extensions requests timely
1. Federal Money in Design	
• Submits scope of services & man-hours • Contract Executed in timely manner, Issues NTP	• Reviews scope & man-hours • Requests project advertisement • Sends notification for entity to issue NTP
2. Pre-design	
• Completes pre-design form	• Schedules & Chairs Pre-design meeting • Sends out minutes

3. Submittals	
• Turns in submittals that were agreed upon at pre-design meeting • Transmits plans to utility companies & within entity as appropriate	• Distributes plans to DOTD (& FHWA) personnel as needed.
4. Field Review	
• Submits plans to utilities • Schedules location if requested • Distributes meeting plans internally	• Schedules & Chairs P/H • Sends out comments/notes • Distributes plans to DOTD (& FHWA personnel as needed)
5. Final plans	
• Turns in submittals that were agreed upon at pre-design meeting • Transmits plans to utility companies & other entities as appropriate • Transmits stamped, signed & dated plans, opinion of probable costs, calculations report and final drainage calculations to DOTD • If Non-Standard (NS) items need to be created, the entity is responsible for completing NS request form and submitting to DOTD PM • If a design exception is required, the entity is responsible for completing design exception request form and submitting to DOTD PM • Coordinates any TIP changes with MPO if estimate is different from TIP	• Distributes plans to DOTD (& FHWA personnel) as needed • Reviews cost estimate • Prepares submittal for letting in DOTD's system
6. Letting	

• Reviews estimate for anomalies • Formally responds to DOTD request for concurrence • Awards & signs contract timely	• Emails the entity & MPO of apparent low bid • Requests informal concurrence
Construction	
7. Preconstruction	
• Entity or Consultant schedules pre-construction conference	• Attends pre-construction meeting
8. Closeout	
• Closes engineering contracts in a timely manner • Closes construction contracts within terms of entity state agreement and contract terms in a timely manner • Issues final acceptance letter on Entity's behalf • Submits all documents required for DOTD's audit	• Issues final acceptance letter on DOTD's behalf • Audits project
9. Environmental – non state routes	
• Prepares environmental document	• Processes & requests FHWA approval
10. Permits	
• Obtains all permits • Sends a copy of all permits to PM	• Receives copies of permits and processes accordingly • Ensures permits are acquired prior to requesting federal authorization
11. Utilities	
• Keeps utility companies involved throughout the project • Coordinates and receive all utility	• Ensures utilities are cleared prior to requesting federal authorization

clearance/certification letters • Sends completed utilities forms to the District Utility Specialist (DUS) and include all correspondence from Utility companies in submittals	
12. Right-of-way	
• Ensures that 60% R/W maps are created for Joint Plan Review (JPR) • Makes corrections from JPR & submit final R/W maps • Purchases R/W upon receipt of notice to proceed from DOTD • Ensures that the r/w is purchased within all state & federal guidelines subject to DOTD's audit	• Sends out maps for review • Schedules, chairs and sends out JPR comments • Requests authorization for purchase of R/W from FHWA • Notifies entity in writing when authorized. • Audits R/W & clear project for authorization • Ensures right-of-way is acquired prior to requesting federal authorization for construction
13. Railroad Permit	
• Coordinates & obtains RR permit • Submits to DOTD	• DOTD ensures all proper paperwork is obtained prior to requesting federal authorization

Responsible Charge for Federal-Aid Projects

In accordance with Federal Regulation 23 CFR 635.105 the Local Public Agency must provide a full time employee of the Local Public Agency to be in "responsible charge" of the project. This person does not need to be an engineer. This person is required even when consultants have been retained by the LPA to manage the entity's engineering activities, including design and construction engineering and inspection services. Identified below is the information and duties required of this employee.

Project No. _____

Project Name _____

Entity: _____

Responsible Person In Charge Name _____

Contact Information:

Address: _____

Phone: _____ Cell Phone: _____

E-mail: _____

NOTE**:** The regulation does not preclude the sharing of the duties and functions among a number of public agency employees or one employee having responsible charge of several projects. **If these duties are shared during the design and construction of the project, please identify ALL of the employees responsible for the project and THEIR responsibilities.**

Duties:

- This person acts as the primary point of contact for the Entity with the DOTD Project Manager.
- Oversees project activities; cost, time adherence to contract requirements, design and construction quality and scope
- Ensures the contract is properly recorded
- Directs project staff, agency or consultant, to carry out project administration and contract oversight including proper documentation

- Is aware of the qualifications, assignments and on-the-job performance of the agency and consultant staff at all stages of the project
- Makes or participates in decisions about changed conditions or scope changes that require change orders or supplemental agreements
- Reviews financial processes, transactions and documentation to ensure that safeguards are in place to minimize fraud, waste and abuse
- Maintains familiarity of day to day project operations & safety issues
- Visits and reviews the project on a frequency that is proportionate with the magnitude and complexity of the project.
- Attends all project related meetings. (It is understood that if the person in Responsible Charge is not in attendance, the meeting will be cancelled.)

_____

Name of Signatory Party for the Local Public Agency

_____

Signature of Signatory Party for the Local Public Agency

NOTE: It is the Entity's responsibility to notify the Project Manager if the Responsible Person in Charge changes during any phase or duty.

FHWA Memorandum

INFORMATION: "Responsible Charge" Date: August 4, 2011

In Reply Refer To: HIPA-10

From: David A. Nicol
Director, Office of Program Administration

To: Director of Field-Service
Federal Lands Highway Division Engineers
Division Administrators

The issue of "responsible charge" of Federal-aid construction projects has been raised on several occasions; most recently as it relates to Federal-aid projects that are administered by local public agencies. The following attachment provides guidance on the requirements and duties of the person designated to be in "responsible charge".

If you have any questions about the memorandum and attachment, please contact Mr. Bob Wright as Robert.wright@dot.gov .

Attachment

Attachment

Defining “Responsible Charge” in the Federal-aid Highway Program

Regulation:

The key regulatory provision, 23 CFR 635.105 – *Supervising Agency*, provides that the State Transportation Agency (STA) is responsible for construction of Federal-aid projects, whether it or a local public agency (LPA) performs the work. The regulation provides that the STA and LPA must provide a full time employee to be in “responsible charge” of the project.

Requirements of Position:

For projects administered by the STA, the regulation requires that the person in “responsible charge” be a full-time employed state engineer. This requirement applies even when consultants are providing construction engineering services.

For locally administered projects, the regulation requires that the person in “responsible charge” be a full time employee of the LPA. The regulation is silent about engineering credentials. Thus, the person in “responsible charge” of LPA administered projects need not be an engineer. This requirement applies even when consultants are providing construction engineering services.

Duties:

Regardless of whether the project is administered by the STA or another agency, the person designated as being in "responsible charge" is expected to be a public employee who is accountable for a project. This person should be expected to be able to perform the following duties and functions:

- Administers inherently governmental project activities, including those dealing with cost, time, adherence to contract requirements, construction quality and scope of Federal-aid projects;
- Maintains familiarity of day to day project operations, including project safety issues;
- Makes or participates in decisions about changed conditions or scope changes that require change orders or supplemental agreements;
- Visits and reviews the project on a frequency that is commensurate with the magnitude and complexity of the project;
- Reviews financial processes, transactions and documentation to ensure that safeguards are in place to minimize fraud, waste, and abuse; and
- Directs project staff, agency or consultant, to carry out project administration and contract oversight, including proper documentation.

- Is aware of the qualifications, assignments and on-the-job performance of the agency and consultant staff at all stages of the project.

The regulations do not restrict an agency's organizational authority over the person designated in "responsible charge," and the regulations do not preclude sharing of these duties and functions among a number of public agency employees. The regulations also do not preclude one employee from having responsible charge of several projects and directing project managers assigned to specific projects.

Affect on Laws Regulating Licensure:

The term "responsible charge" is used here in the context intended by the above regulation. It may or may not correspond to its usage in state laws regulating licensure of professional engineers

Project Numbers

Local Public Agency (LPA) Appendix

2012

Project Numbers

DOTD numbering system assigns one number to track all phases of a project. The first two numbers refer to the type of project. There are two applicable numbers for LPA projects. The first is “construction”, “H.00”. This is used for any project when tracking throughout the multiple phases is required. For “single activity projects”, “H.97” is used. Single activity projects such as research programs, equipment purchase, signalization inventory or pooled fund studies do not require multi-phase tracking.

The next four numbers are job counts that are sequentially assigned when the requests are made. The decimal number indicates the phase of the project. The following are the descriptions of the decimal phases.

6 phase:

H.xxxxxx	(DOTD) Project
H.xxxxxx.1	Feasibility
H.xxxxxx.2	Environmental
H.xxxxxx.3	Right of Way
H.xxxxxx.4	Utility Relocation
H.xxxxxx.5	Design (Engineering)
H.xxxxxx.6	Construction

Understanding Large DOTD Project Processes

Local Public Agency (LPA) Appendix

2012

Understanding Large DOTD Project Processes

Design Overview

All projects generally follow similar phases of development once the projects have been added to their respective program. These phases may overlap for some types of projects. The major phases required before a project can be advertised for bid are:

Stage 0 – Planning & Programming
Stage 1 - Environmental clearance
Stage 2 – Funding
Stage 3 - Survey & Preparation of Plans
Stage 4 - Preparation of Contract Documents
Stage 5 - Construction

Once a project is programmed, the type of environmental clearance required will control the extent to which surveys and plans can be developed. For projects requiring only a Categorical Exclusion (CE), the survey can usually be requested and plans developed prior to obtaining the clearance.

Larger projects that will have an impact (widening from two-lanes to four or five-lanes, construction on new location, etc) will usually require full environmental clearance before plan development can begin. For such projects, only the survey data required for environmental clearance and, in some cases, line and grade study can be collected before clearance is obtained.

Preparation of preliminary plans includes approval of all horizontal and vertical geometrics, right-of-way impacts and issues are identified and addressed, preparation of preliminary road and bridge plans, and all hydraulic analysis and design required for the project. All basic design decisions and recommendations are made and included in the plans. Utility conflicts are noted and coordinated with the respective utility companies.

The field inspection (plan-in-hand) is generally held when preliminary plan development is 95 percent complete. This is normally the stage when all basic design decisions, or recommendations, have been made and are shown on the plans. The field inspection serves two primary purposes. First, it permits the inspection party to evaluate the plans in relation to existing field conditions and note any topography changes that might affect the plans. Second, it provides an opportunity for various sections and agencies to discuss the project and make recommendations.

Finalizing the design, calculating quantities, providing a cost estimate and creating special provisions are the focus of final plan submittals. When plans are considered “final” (advanced check prints), copies of these items are sent to the affected sections for comments.

Once all advance check print (ACP) review comments have been addressed, and the plans are complete, the engineer(s) in charge of the work signs and stamps the plans. A final construction cost estimate and draft proposal with any special provisions is also prepared. The original, stamped tracings, draft proposal and the final estimate are sent to the Project Manager. The Project Manager transmits these documents to the Contracts and Specifications Section for their use in preparing the contract and proposal for bidding. The proposal, estimate and stamped plans are transmitted to the Chief Engineer for approval.

Final signed and approved plans are transmitted to the DOTD General Files Section where the plans are scanned and made available to contractors to bid the project. The original plans are stored in General Files until construction is complete and the Department accepts the work.

FHWA approval (authorization) is obtained on all projects receiving federal funding. This step is almost always completed before DOTD can accept bids on the project.

Bids for the project construction are received and opened on the “Letting Date.” The project is typically awarded within 60 days to the contractor submitting the lowest acceptable bid.

When the contract is awarded and construction has begun, the point of contact for all daily activities relating to the project are handled through the Construction Section. Any plan changes made after the contract is awarded are initiated by the Project Engineer for Construction Inspection who will coordinate with the Construction Section and Program Manager.

When the construction of the project is completed to the satisfaction of DOTD, the project is given final acceptance.

Design Plan Review Quick Reference

Local Public Agency (LPA) Appendix

2012

DESIGN PLAN REVIEW QUICK REFERENCE

Below are requirements for the large DOTD project. Programs that have small projects may require fewer reviews. Please check with your program manager for the requirements of a specific program.

Preliminary Plans

Kickoff Meeting

30% Preliminary Submittal (pre-design criteria established, horizontal & vertical alignment set, typical section)

60% Preliminary Submittal (Hydraulic Design, Geometric Details, Cross Sections, General Bridge Plan, Typical Bridge Sections, Preliminary design of substructure & foundation analysis, Recommended Utility relocations)

90% Pre-field inspection (60% Review Comments incorporated, Required Right-of-Way set, Preliminary Cost Estimate, Bridge Quantities and General Notes)

95% Field Inspection (Plan-in-Hand)

100% Submittal – (Incorporate Field Inspection Comments, Revised Cost Estimate, Right-of-Way lines finalized, Permit Sketches)

Final Plans

30% Final Submittal (Final Typical Section, General Bridge Plan, Framing Plan and Superstructure Design)

60% Final Submittal (Final Drainage Design, Superstructure details, Substructure design, Foundation layout, Lighting & Signing Design)

90% Final Submittal (Pre-Advance Check Print for review prior to distribution)

95% Final Submittal (Advance Check Print distribution, Cost Estimate)

98% Final Submittal (ACP comments addressed, Final Cost Estimate, Original Plan Sheets, Draft Proposal including Special provisions)

100% Final Submittal (Final Stamped Tracings, Specifications & Estimate – PS&E)

Detailed information on the required tasks can be found in chart 1-7, Preliminary Plan Payment Milestones, in the Road Design Manual on the following DOTD website

LPA Location & Survey and Right-of-Way Maps

Local Public Agency (LPA) Manual - Appendix

2012

Topographic Survey

CAD Conform Standards – If a LPA chooses a project on a state route, the survey must be in the DOTD CAD Conform Standards (MicroStation). If a LPA project is on a local route, they have the option of using AutoCad.

A letter is required from the design consultant prior to beginning the design plans stating the survey is complete and sufficient for the scope of the project to continue with design. This letter must be transmitted to DOTD by the Entity.

Right-of-Way Maps

Issues

1. No property should be acquired prior to Right-of-Way (R/W) Maps being reviewed. ***Problem***: Right-of-Way Maps are sent after the property has been acquired for review by DOTD
2. No property should be acquired prior to Right-of-Way Map approval. ***Problem***: Purchase of property with incomplete maps. Entities cannot acquire property until maps are accepted as complete by DOTD. Entities must wait for letter from DOTD to proceed with acquisition.
3. **All** R/W maps need to be submitted to DOTD at 60% preliminary plans for Joint Plan Review (JPR) whether or not federal reimbursement is sought for acquisition.
4. Every project that requires right-of-way must have a Joint Plan Review.
5. The Location and Survey Section notifies the DOTD Project Manager when the JPR can be scheduled
6. Right-of-way maps must match the design plans. If changes are made to the design plans they **must** be reflected on the right-of-way maps.
7. Limits of construction **must** be within required right-of-way or servitude.

8. Revisions to the R/W maps must be made according to the standards. See Location and Survey Manual Page 3-4. For questions contact the DOTD Location and Survey Section.

9. There can only be one original set of right-of-way maps. When right-of-way maps are revised, a complete revision history is required on the sheet. Multiple originals are **not** permitted.

10. Apparent Right-of-Way is not acceptable. Existing Right-of-Way must be verified through documentation or survey.

11. Separate clearing and grubbing project procedure – Original right-of-way maps are placed in the clearing and grubbing plans. A duplicate copy shall be inserted in the construction plans and labeled “For Information Purposes Only”. The right-of-way taking lines in the construction plans will remain labeled as “Required Right-of-Way”.

12. Legal descriptions and a CogoWin “.IN” file are required for all state route parcels located on the DOTD Preconstruction website below under forms for Location and Survey Section.
http://www.dotd.la.gov/highways/project_devel/locationsurvey/manualsforms.asp

COMMON MISTAKES ON RIGHT OF WAY MAPS

A. Project Information (beginning and ending stations, State Project and F.A.P. numbers)
    a. Not in concurrence with Construction Plans.
    b. Not in concurrence on Title Sheet, body of map or Residual Sheets.
    c. Not shown in standard manner and with left margin.

B. Control Section alignments (centerlines) not in concurrence with Construction Plans.

C. Failure to show Equations on the R/W map that are given on the construction plans or equations shown on map that are not in concurrence with Construction plans.

D. Ties
    a. Failure to show station offsets at all breaks in Req'd R/W or Station offset data of required R/W that is not in concurrence with Construction data.
    b. Parcel ties not in correct form. Parcels must be tied on an extension of their bearings, using dashed lines with dimension arrows.
    c. Existing R/W ties of intersecting streets not in correct form. These also must be tied on a skew as above.
    d. Insufficient ties where Existing R/W intersects the Centerline (CL). In addition, the following must be shown:
        1. A station at the intersection of Existing and CL
        2. A Station offset at the next or preceding bearing break.
        3. A distance and bearing between those two.

E. Title information (Job Name, Route, Parish, State Project numbers) on Title Sheet and Title Blocks that is not in concurrence.

F. Failure to show Y and X coordinates at the beginning and end of the job, at critical curve data coordinates (point of curvatures (PC's), point of intersections (PI's), point of tangent (PT's)) and at beginning and end of each sheet.

G. Acquisition Block:
    a. Parcel numbers not in ascending order.
    b. Acquisition data not in tabular form.

H. Failure to match owners' names throughout entirety of map. Frequent spelling errors, parts of names omitted, etc.

I. Failure to indicate continuous ownership with Land Hooks on lot lines and on Section lines where relevant.

J. Failure to dimension from CL to required R/W (at ends of sheets) if they are parallel.

K. Section Lines:
    a. Using Section Line symbology alone to show a property boundary between diverse owners. (A property line consistent with other property lines must be shown. Heavy weight section lines can be indicated over a portion of the property line)
    b. Failure to differentiate Section Line symbology from lot lines. (Section lines should be extended heavyweight dashes as opposed to lot line's short lightweight dashes.)

L. Scale of residual maps too large to accommodate complete outline of properties.

M. Omissions in residual maps such as incomplete centerline and project information, owners' names and R.A.'s

N. Maps congested with unnecessary lines that obstruct text and arrows.

O. Leader lines are overlapping and confusing.

P. Lettering through lines.

60% RIGHT OF WAY MAP CHECKLIST

Preliminary Information

North Arrow		Centerline Stationing	
Land District		Equations	
Township and Range		Centerline Curve Data	
Section		Tic Marks	
Centerline Bearing		Centerline State Project No.	

1. The alignment **Must Match** on the R/W Maps and on the Construction Plans.
2. Beginning & Ending Stations **Must Match** on R/W Sheets and agree with Construction Plans.
3. P.C., P. I., and P. T. Station Breaks **Must Match** on R/W Maps and Construction Plans.

Title Block

State Project No.		Sheet No.	
State Project Name		Route No.	
F.A.P. No. (if applicable)		Parish	
Scale			

Acquisition Block

Parcel No.		Approximate Parcel Area	
Property Owner Name (name must match on map sheets and residual)			

Right of Way Information

Property Owner Names		Subdivision Names	
Land Hooks		Remaining Areas (approximate)	
Parcel No.		Label Section lines	
Street Width		Label Township and Range	
Street Names		Label Existing R/W	
Lot Numbers		Label Required R/W	
Label Existing C. of A.		Label Construction Servitude	
Label Required C. of A.		Label Limits of Construction	
Label Drainage Servitude		* Approximate Topography	

1. Ties to adopted project centerline at all breaks in taking lines & Existing R/W.

* This includes all major improvements within 50 feet of the Required Right of Way Line, such as buildings, out sheds, historical trees, business signs, decorative fencing, etc., this however does not include normal trees, bushes, utilities, ditches, etc., unless used to determine parcel line location.

Real Estate Information

Local Public Agency (LPA) Manual - Appendix

2012

Right of Way Guidelines for Local Public Agency Projects

1. The Real Estate Section has a detailed manual, entitled the “LPA Real Estate Manual”, that will assist Entities (whether parish, city, municipality, etc.) in either performing the necessary acquisition functions, or in going through the proper steps to get outside help in performing these functions, and thereby maintaining eligibility for Federal assistance. The Manual is also intended to assist DOTD personnel in understanding their responsibilities in regards to those Local Public Agency projects.

2. It is important to remember that, while this guide attempts to cover most possibilities regarding who is responsible for the various acquisition functions on Local Public Agency projects that the Entity is responsible for all property and property rights being acquired in accordance with Federal and State regulations and requirements. The Entity is subject to DOTD oversight and approval thereby enabling Federal participation.

3. It is necessary for the Entity to always check with DOTD Real Estate personnel before acting in any phase of acquisition where Federal participation might be jeopardized. There are steps in the funding, appraisal, negotiation, acquisition, and relocation process that the Entity must follow. It is the responsibility of the Entity to be aware of these steps from review of the Manual and maintaining contact with the DOTD Real Estate Section for direction in the process. No action should be taken without written authorization of DOTD Project Manager.

4. Non-compliance with Federal DOTD appraisal, negotiation, acquisition and relocation will cause any federal funds spent on the project to be returned and future federal funds to be withdrawn from the project.

Utility Relocation

Local Public Agency (LPA) Manual - Appendix

2012

UTILITY RELOCATION PROCEDURES
FOR LOCAL PUBLIC AGENCY (LPA) PROJECTS

I. Projects located on State Highways

Must be handled by DOTD and will follow normal DOTD utility relocation process

II. Non-state Routes – Entity Responsible for Utility Relocation

Rules and Regulations

The Entity is to follow all Federal, State and Local Rules and Regulations as they pertain to their agreements, the LPA and the project.

1.) Laws and Regulations
- a.) Louisiana Administrative Code, Title 70, Part II Utilities, Chapter 5
  1. Including sections 501, 503, 505, 511, 513, 515, 527, 529, 535, 537
  2. Note: Eligible Reimbursement Amount
     - Actual Cost any amount
     - Maximum $25,000 lump sum per eligible agreement

- b.) 23 Code of Federal Regulations (CFR) 172

- c.) 23 CFR 635.410 “Buy America”

- d.) 23 CFR 645 subpart A

- e.) 23 CFR 645 subpart B
  F:\Electronic Code of Federal Regulations.mht

- f.) 23 United States Code (USC) 101, 109, 111, 116, 123 and 315

2.) DOTD Utility Manuals
- a.) “Standards Manual for Accommodating Utilities, Driveways and Other Facilities on Highway Right-of-Way”

3.) Other Publications

- a.) FHWA Utility Program Guide: Utility Relocation and Accommodation on Federal-Aid Highway Projects

- b.) AASHTO publication “A Guide for Accommodating Utilities Within Highway Right-of-Way”

- c.) AASHTO publication “Roadside Design Guide”

Definitions

Agreements - At 100% Preliminary Plans (approximately mid-way), the Entity can start finalizing agreements if the right-of-way is determined. The agreements between the Entity and Utility Operator contain the principle office of the company, the name and title of the official representing the company, the estimated number of **CALENDAR DAYS** (not working days) and the method by which the costs will be developed ($25,000 maximum lump sum per eligible agreement for federal projects or actual cost)

Approved Drawings Letter - When the relocation cost of a utility line is 100%, the Utility Operator's liability, articles of agreement and a cost estimate is not required. However, the Utility Operator must submit drawings showing their existing line and the proposed relocation of the utility line and a Statement of Work. The Utility Operator also sends a letter that acknowledges the relocation is 100% their cost and the number of calendar days necessary to relocate their line.

Audit - The Entity is responsible for providing the audit for all compensable interest payments. For Entity owned utilities an independent audit is required.

Betterment - Any upgrading of the facility being relocated that is not attributable to the highway construction and is made solely for the benefit of and at the election of the utility. Betterment is not a reimbursable cost.

Cost Estimate or Estimate of Cost - The Estimate of Cost should clearly show how the cost of the relocation is developed (Note that the final invoice must be in the same format as the estimate.) The estimate should be developed under the following applicable Sections:

a. Preliminary Engineering
b. Right-of-Way
c. Temporary Construction
d. Permanent Construction
e. Removal Costs
f. Betterment
g. Supervision and Overhead

Each Section should show the costs by items, unit hours, man-hours, contract unit prices, etc. in the same manner as the actual costs will be charged or that would support a lump sum estimate. A summary recap of the sections shown above must be included.

Compensable Interest & Cost Distribution for Reimbursement - Compensable interest is to be set in accordance to all Federal, State and Local Regulations. The percentage for each party needs to be specified in the written agreement between the Entity and the Utility Operator. (Proof of prior rights, a franchise agreement, local law or other documents that would justify compensation is required from the Entity before funds can be authorized for reimbursement.) The cost estimate from the utility with a letter from the Entity's legal representative justifying compensation is sent to the DOTD District Utility Specialist (DUS). It must be provided for any compensation and approved by the FHWA through DOTD prior to the agreement execution. Written notification from DOTD is required prior to incurring any reimbursable expenditure.

Entity Owned Utility - The Entity is responsible to provide a Statement of Work and Plan Drawings showing the existing location of their utilities and any proposed relocation of their utilities. The Entity is to send either an agreement or a letter from the Entity stating their intention of which of their utility relocations are to be included in the construction plans (any utility work the project contractor is expected to perform). When reimbursement is being requested, the Entity is to provide a separate cost estimate for each Entity owned utility.

Entity Responsibility - It is the Entity's responsibility to ensure that their agreements with the Utility Operators and the percentages of compensable interest are in accordance with all applicable Federal, State and Local Laws and Regulations. The Entity is responsible for reviewing the plans/drawings submitted by the Utility Operators to ensure that the relocation of all utility lines are not in conflict with other utility lines or in conflict with proposed construction. (This includes review of relocation elevations with plan elevations; ditches, catch basins, roadway grade, etc.)

Meeting Notifications - The Entity is responsible for contacting the Utility Operators and inviting them and the DUS to the following meetings:

1.) Pre-Design
2.) Plan-in-Hand
3.) Preconstruction

No Conflict Letter - When a Utility Operator decides their line is not in conflict with the proposed construction, the Utility Operator sends a statement or letter stating "no conflict".

Notification of Utility Operators - Utility Operators shall be identified and contacted by the Entity. The Entity is responsible for providing the Utility Owner plans throughout the project development.

Statement of Work - When the Utility Operator has to relocate, the Utility Operator is to provide a "Statement of Work" to the Entity. The "Statement of Work" is to include a short narrative of the work to be performed, a more complete narrative of individual relocations which would not follow a routine relocation, a statement that the work will be performed by company forces, continuing contract, competitive bids or other method, an explanation of betterments if included in the relocation, estimated number of **CALENDAR DAYS** to complete the adjustments (show breakdown of: time to order material, design, and construction), justification for removal or abandonment of existing facilities, followed by documentation with estimate if necessary.

Utility Clear Date - A project is not considered delivered until all utility documentation (utility agreements/letters and the Utility Certification Letter) have been submitted and reviewed by the DOTD. This does not mean that the utilities have been physically moved.

Utility Documentation - It is the Entity's responsibility to provide all required utility documentation to the DUS two months prior to the Utility Clear Date in order to have it reviewed, processed and any corrections made. The documentation includes the *Utility Certification Letter, Agreements between the Entity and the Utility Operators, Approved Drawings Letters, Waiver of Relocation Drawings Letters, and No-Conflict Letters*

Utility Plans - The Entity must give each Utility Operator a set of useable plans for the project. Each Utility Operator is to indicate on the provided plans or on their own set of plans* their existing and proposed lines. These marked up plans are given to the Entity for approval prior to the written agreement being executed. *Note: If using their own plans, the plans must use the same benchmarks and stations in the design plans.

Utility Relocation Notice to Proceed (NTP) - The Entity issues the NTP. This can be issued when the right-of-way has been acquired and the utilities can be moved. The Entity should issue a NTP at the earliest possible date.

Waiver of Relocation Drawings Letter - When a utility line is located on a pole owned by another operator, the Utility Operator sends a letter that they will relocate on the other operator's poles and state the number of calendar days needed to relocate their line.

Note – Any changes the Entity makes to the design can affect the utilities. After the utilities have been moved, any new relocation required because of plan errors or changes will be at the Entity's cost.

When it is the responsibility of the Entity for handling utility adjustments, the following procedure is to be followed: ***Shaded tasks should either have a completion date or a N/A***

ENTITY CHECKLIST	
Task	***Completion Date***
PRE-DESIGN	
Entity invites each Utility Operator and DOTD District Utility Specialist (DUS) to Pre-Design Meeting	
PRELIMINARY PLANS	
90% Preliminary Plan - Plans are ready for Plan-in-Hand Meeting (field inspection)	
Entity - notifies each Utility Operator prior to Plan-in-Hand Meeting that a written agreement is needed for the Utility Operator to relocate their line	
Entity sends list of Utility Operators to DUS	
Entity sends plans to Utility Operators	
95% Preliminary Plans - Field Inspection	
Entity invites to the Plan-in-Hand Meeting each Utility Operator and DUS	
Entity - provides date to DUS that Entity will have all required utility documentation to the DUS	
Entity sends plans to Utility Operators	
DOCUMENTATION REQUIRED FOR ALL PROJECTS	
1. Utility Certification Letter (Must be on Entity letterhead, signed by an authority of the Entity. It lists all utilities in the area that DOTD includes in the construction contract and must be provided even if there are no conflicts with any of the utilities.)	
a. Total reimbursable cost of relocating the utility lines for the project	

b. Names of each Utility Operator	
c. Company address of each Utility Operator	
d. Number of CALENDAR DAYS each Utility Operator required to complete their adjustments, including any entity owned utility	
e. A statement that the Entity has received up-to-date design plans from all Utility Operators	
f. A statement from Entity that they have received letters from each Utility Operator stating that arrangements have been made to adjust their facilities to accommodate the project	
g. A statement that the Entity will relocate their own lines that are not included in the construction plans	
2. Utility Reimbursement Request Letter (Must be on Entity letterhead signed by an authority of the Entity.) In this letter the Entity expresses whether or not they are requesting reimbursement from the program for utility relocation costs. (Only costs that are proven to be the Entity's liability will be considered.)	
ADDITIONAL DOCUMENTATION REQUIRED IF REIMBUSEMENT REQUESTED	
1. Supporting documentation of the Entity's compensable interest – Proof of prior rights and letter from the Entity legal representative verifying	
2. Agreements between Entity & Utility Operators	
a. Principal office of the company of the Utility Operator	
b. Name & Title of the official representing the company	
c. Estimated number of CALENDAR DAYS (not working days)	
d. Method by which the costs will be developed (lump sum or actual cost) & Cost Estimate	
e. Amount of the agreement with a breakdown of amount owed by Entity and Utility Operator	
f. Break down of Cost Liabilities between Entity and Utility Owner	

g. Signature of Utility Owner's company official, with witnesses	
h. Street address of location of the Utility Owner where records may be audited	
i. Cost Estimate	
3. Utility Plans - The plans/drawings from each Utility Operator showing their existing & proposed lines	
4. Statement of Work from the Utility Operators	
a. A short narrative of the work to be performed	
b. A more complete narrative of individual relocations which would not follow a routine relocation	
c. A statement that the work will be performed by company force, continuing contract, competitive bid or other method	
d. An explanation of betterment if included in the relocation	
e. Estimated number of CALENDAR DAYS to complete the adjustments	
f. Justification for removal or abandonment of existing facilities, followed by documentation, if estimate is necessary	
5. Cost Estimate from the Utility Operators detailing the cost to relocate the utility line	
6. Plans/drawings from the Utility Operators showing their existing and proposed lines	
7. Entity Owned Utilities Documentation	
a. Statement of Work	
b. Plans/drawings showing the existing and proposed lines	
c. Cost Estimate breakdown for each entity owned utility on the project	
ADDITIONAL DOCUMENTATION IF NO REIMBURSEMENT REQUIRED	
1. Approved Drawings / Letters	

a.) Includes the plans/drawings from the Utility Operators showing their existing and proposed lines	
b.) Statement of Work	
2. Waiver of Relocation Drawings Letters	
3. No-Conflict Letters	
FINAL PLANS	
Tasks beginning from 60% Final Plans (Approximately mid way through final plans) through letting	
Entity provides an estimated date of submittal of all utility agreements (Utility Clear Date).	
Entity provides monthly status updates of agreements to DUS	
Entity finalizes agreements if final right-of-way taking lines are established.	
Entity issues NTP to Utility Operator	
AFTER LETTING	
Entity invites each Utility Operator and DUS to Pre-Construction Meeting	

Traffic Management Plan (TMP)

Local Public Agency (LPA) Appendix

2012

Transportation Management Plan (TMP)

What is a Transportation Management Plan (TMP)?

A TMP is more comprehensive approach to managing Work Zone (WZ) safety and mobility. A TMP is a design document to show how a project will be built and how transportation safety and mobility will be managed during the project construction. A TMP lays out a set of coordinated transportation management strategies and describes how they will be used to manage the work zone impacts of a road project. A TMP is included in a set of construction plans. Transportation management strategies for a work zone include:

1. Temporary traffic control measures and devices (Temporary traffic control plans (TTC))*
2. Public information and outreach
3. Operational strategies (e.g., travel demand management, signal retiming, traffic incident management, etc.).

The scope, content, and level of detail of a TMP may vary based on the State or local transportation agency's work zone policy and the anticipated regional and project level work zone impacts of the project.

TMPs are necessary because WZ management is increasingly complex. There are increasing traffic volumes using the same roads that agencies need to maintain and rehabilitate. To address this problem the required traffic management efforts are beyond just the Temporary Traffic Control (TTC) plans for some projects. The key issues are safety, mobility, and accessibility.

The benefits of having a well thought-out approach to managing traffic during a construction project are numerous. A good plan considers the stakeholders **(**contractors, motorists, property owners, project owners, businesses, environment, event organizers, etc.). It can address safety and mobility impacts of work zones at corridor and network levels. It can promote efficient and effective construction phasing and staging, minimize contract duration, and control costs. A proficient plan improves safety for workers and road users while minimizing traffic and mobility impacts of the work zone. Other benefits include the potential of minimizing the impacts of circulation, access, and mobility to local communities and businesses and minimizing complaints from road users, businesses, and communities and improvement of intra- and inter-agency coordination and public awareness.

A TMP requires using scheduling, construction strategies, contracting strategies & transportation management strategies to help improve safety, reduce traffic and mobility impacts, and promote coordination in and around the work zone at the project and corridor level

**NOTE: A TMP for some projects may just be a TTC detail or TTC plan. Only major projects will require a more comprehensive TMP.*

Who is responsible for developing and implementing the TMP?

A TMP must be developed for every Federal-aid project. The components of the TMP will vary based on the project scope. All public agencies that receive Federal-aid highway funding for projects are affected and need to implement the policies and procedures required by the federal regulations. Some local public agencies may already have their own work zone policies and procedures in place. If a local public agency uses its own policies and procedures, it is recommended that the State and local public agency work together to ensure their policies and procedures do not conflict.

Federal Requirements

23 CFR Section 630 Part J & K of Oct 2007 requires the development and implementation of TMPs for all Federal Aid highway projects. The amount of content that is required in the plan depends on significance of the project. A significant project is one that is expected to cause a relatively high level of disruption. All projects must have a Temporary Traffic Control (TTC) Plan. For significant projects defined by DOTD's EDSM No. VI.1.1.4, TMPs must also have a Traffic Operations (TO) component and a public information and outreach (PI) component.

TMP vs. TTCP

A Temporary Traffic Control Plan (TTCP) is for handling traffic through the work zone with the use of traffic control devices.
A TMP is more comprehensive from a TTCP. It incorporates the broader issues of public awareness, mobility and safety impacts, operational concerns and stakeholder involvement. If a project is not "Significant", then the TMP can equal the TTCP.

When is a TMP Developed?

TMP development should begin during planning (Stage 0) and progress through design. Beginning a TMP analyses early in the project development process helps to ensure traffic impacts are addressed in planning and preliminary engineering, and the TMP development and implementation costs are included in the project budget. The data needed for TMP analysis is collected early in the project development. During the design phase the WZ impacts are considered in evaluating and selecting design alternatives. All alternatives considered shall be documented in the TMP. For some projects it may be possible to choose a design alternative that alleviates many WZ impacts. The assessments of the WZ impacts should affect the choice of the best construction/staging option(s), the most suitable design and contracting approach and the most appropriate WZ traffic management strategies. The provisions for implementing the TMP strategies shall be in the project's **Plans, Specifications, and**

Estimates (PS&Es) or the agency will commit to implementing the TMP strategies with their own forces.

What should it include?

For all projects, the federal regulations require that the TMP include a Temporary Traffic Control (TTC) plan that addresses traffic safety and control through the work zone. If a project is expected to be **significant**, the TMP for that project must also contain both transportation operations and public information components. However, agencies are encouraged to consider transportation operations and public information strategies for all projects. When developing a TMP, agencies should develop and implement the plan in consultation with relevant stakeholders (**e.g.**, other transportation agencies, railroad agencies/operators, transit providers, freight movers, utility suppliers, police, fire, emergency medical services, schools, business communities, and regional transportation management centers).

Implementation

Both the agency and the contractor must designate a trained person at the project level who "has the primary responsibility and sufficient authority for implementing the TMP and other safety and mobility aspects of the project". Having a responsible person from both the agency and the contractor will ensure that effective transportation management is planned, executed, and maintained. Effective management will minimize the causes for litigation. Neither party is immune from litigation. The agency's contract provisions will retain review, approval and any changes to the TMP elements.

Prospective TMP Components for Significant Projects

- Project Description
- Existing and Future Conditions
- Work Zone Impacts Analysis and Assessment (Safety, Mobility and Accessibility)
- Work Zone Traffic Management Strategies (TTC Plan, Traffic Operations Plan, Public Information Campaign)
- TMP Monitoring Requirements
- Contingency Plans
- Implementation Costs
- Agencies should coordinate with appropriate **stakeholders** in developing a TMP
- Provisions for a TMP shall be in the project's **Plans, Specifications, and Estimates** (PS&Es)
- The LPA and the contractor shall each designate a **responsible person** for implementing the TMP at the project-level that is appropriately trained, has primary responsibility and has sufficient authority for implementing the TMP and other safety and mobility aspects of the project
- The plan should address the concerns of stakeholders
- The plan should use a multidisciplinary approach and define roles

- It should have a set of coordinated strategies implemented to manage the WZ impacts of a project
- The plans should be scale-able – projects with more expected impacts may need more analysis and more strategies

Pavement Design for LPA Programs

Local Public Agency (LPA) Appendix

2012

Pavement Design For LPA Programs

Overlays

LPA is required to submit corings with samples taken approximately every 1000 feet to a depth of 4 feet below the existing roadway and no less than two feet below the bottom of the base course, whichever is greater. The different layers of the soil strata shall be identified every foot or strata break at the discretion of the lab engineer of record using the AASHTO classification system and the following tests: Atterberg limits, sieve analysis, hydrometer tests, percent organics, moisture content, as well as pH and resistivity when applicable.

New Construction

LPA is required to submit a subgrade soil survey with samples taken approximately every 1000 feet along the new roadway alignment. The depth of each boring should be at least 8 feet below the finished roadway elevation or natural ground, whichever is greater, with additional testing requirements for areas of cut/fill greater than 10 feet. Allowable sampling methods include undisturbed Shelby tube sampling, as well as disturbed auger and direct-push sampling methods. The different layers of the soil strata shall be identified every foot or strata break at the discretion of the lab engineer of record using the AASHTO classification system and the following tests: Atterberg limits, sieve analysis, hydrometer tests, percent organics, moisture content, as well as consolidation testing, pH and resistivity when applicable.

Settlement/Slope Stability Study

In cut areas, the material to be removed shall be tested and sampled with an emphasis on silt content, with the boring terminating at least 8 feet below the finished roadway elevation. In fill areas, the boring should be continuously sampled to at least two and up to three times the maximum fill height, with consolidation testing being necessary as the fill heights approach 10 feet.

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
DATA COLLECTION AND ANALYSIS SECTION
P. O. BOX 94245
BATON ROUGE, LOUISIANA 70804-9245
(225) 379-1925

TRAFFIC ASSIGNMENT

DATE:	12-Sep-11
PROJECT NO.	H.001370 (061-08)
NAME:	S. Jct. La. 43 - E. Jct. La. 441
DESCRIPTION:	
ROUTE:	US 10
FUNCTIONAL CLASS:	Rural Minor Arterial
PARISH:	St. Helena

2012 ADT =	5,600	ANN. GROWTH	2.0%
2022 ADT =	6,900		

D =	55%
K =	10%
T =	14%

AXLE DISTRIBUTION

VEHICLE TYPE	PERCENT	2012 ADT	2022 ADT	MEDIAN YEAR
1 MOTORCYCLES	0.20%	11	14	13
2 PASSENGER CARS	58.10%	3,254	4,009	3,631
3 2A-4T SINGLE UNIT	27.50%	1,540	1,898	1,719
4 BUSES	0.50%	28	35	31
5 2A-6T SINGLE UNIT	4.70%	263	324	294
6 3A SINGLE UNIT	1.10%	62	76	69
7 4A SINGLE UNIT	0.10%	6	7	6
8 4A SINGLE TRAILER	2.10%	118	145	131
9 5A SINGLE TRAILER	4.90%	274	338	306
10 6A SINGLE TRAILER	0.50%	28	35	31
11 5A MULTI-TRAILER	0.10%	6	7	6
12 6A MULTI-TRAILER	0.10%	6	7	6
13 7A MULTI-TRAILER	0.10%	6	7	6
TOTALS		5,600	6,900	6,250

The above traffic data is an estimate based on data available at the time of preparation.

SUBMIT TO:	Charles Robertston	DISTRICT:	62
COPY TO:	Jeff Lambert	SECTION:	67
	Mark Chenevert	SECTION:	41
PREPARED BY:	Dan Broussard/ John Spragio		

R:\Overlay Projects\061-08-0021 (H.001370)\17-borings.dgn

25-OCT-2011

ROADWAY DESIGN INFORMATION

Project No. 061-08-0021 Total Length 3.04 mi Route LA 10

CSLM	DIST./SIDE	PAVEMENT			BASE (1)			BASE (2)			BASE (3)			SHOULDER (1)			SHOULDER (2)			SHOULDER (3)			SHOULDER (4)		
	CL	TYPE	DEPTH	WIDTH	TYPE	DEPTH	TYPE	DEPTH	TYPE	DEPTH	TYPE	DEPTH	TYPE	DEPTH	WIDTH	TYPE	DEPTH	TYPE	DEPTH	TYPE	DEPTH	TYPE	DEPTH	TYPE	DEPTH
0.03	5' LTCL	HMAC	0.0" -	24'	STAB	6.0" -	S-1	16.0" -					HMAC	0.0" -	10'	S-1	4.0" -								
			6.0"			16.0"		24.0"						4.0"			24.0"								
0.28	9' RTCL	HMAC	0.0" -	24'	STAB	5.0" -	S-1	15.5" -					HMAC	0.0" -	10'	S-1	6.0" -								
			5.0"			15.5"		24.0"						6.0"			24.0"								
0.70	7' LTCL	HMAC	0.0" -	24'	STAB	5.0" -	S-1	15.0" -					HMAC	0.0" -	10'	S-1	6.5" -								
			5.0"			15.0"		24.0"						6.5"			24.0"								
1.54	6' RTCL	HMAC	0.0" -	24'	STAB	4.0" -	S-1	14.0" -					HMAC	0.0" -	8'	STAB	3.5" -	S-1	9.5" -						
			4.0"			14.0"		24.0"						3.5"			9.5"		24.0"						
2.38	5' LTCL	HMAC	0.0" -	24'	STAB	4.0" -	S-1	14.0" -					HMAC	0.0" -	8'	STAB	3.0" -	S-1	9.0" -						
			4.0"			14.0"		24.0"						3.0"			9.0"		24.0"						
3.22	4' LTCL	HMAC	0.0" -	24'	STAB	4.0" -	S-1	14.0" -					HMAC	0.0" -	8'	STAB	3.0" -	S-1	9.0" -						
			4.0"			14.0"		24.0"						3.0"			9.0"		24.0"						

Ave. 4.5"

S-1 - SDY CLY GRVL

STATE OF LOUISIANA
CLAY GOTTSCHALCK
License No. 32481
PROFESSIONAL ENGINEER IN CIVIL ENGINEERING

DISTRICT LABORATORY ENGINEER — DATE 7/21/11

21-July-2011

DESIGN DETAIL — BORINGS

NO.	DATE	REVISION DESCRIPTION	BY

DESIGNED MJS | DETAILED CHECKED MJS | CHECKED AAS | DATE | SHEET

PARISH ST. HELENA | CONTROL SECTION 061-08 | STATE PROJECT H.001370

SHEET 17 OF

State Project No.	Parish	Sheet No.
137-02-0018	Vernon	
	Date: 3/30/2010	

ROUTE NO. LA 465

LOCATION STATION (LOG MILE)	PATCHING TYPE	THICK (inches)	WIDTH (ft)				PAVEMENT LAYER TYPE	THICK (inches)	WIDTH (ft)	BASE TYPE	THICK (inches)	LL	PI	SUBBASE Soil Group Classification	LL	PI	NMC % Org	% Silt pH	Sample ID
15+00 RT CL							H.M.	2.50		SC	7.50	NP		A-2-4(00) Gray Sdy Lm	NP		10.5 2	16 9.2	SVP-01
25+00 LT CL							H.M.	4.25		SCG	8.00	NP		(SVP-03)					
35+00 RT CL							H.M.	8.50		No Base				A-4(00) Dark Brown Sdy Lm	NP		6.7 2	29 7.0	SVP-03
45+00 LT CL							H.M.	7.75		SCG	1.75	NP		(SVP-03)					
55+00 RT CL							H.M.	2.00		SCG	9.00	NP		(SVP-01)					
65+00 LT CL							H.M.	3.50		SCG	7.50	NP		(SVP-03)					
75+00 RT CL							H.M.	3.00		SCG	8.00	NP		A-4(00) Lt Brown Sdy Lm	NP		8.3 1	28 7.2	SVP-07
85+00 LT CL							H.M.	3.25		SCG	9.00	NP		(SVP-09)					
95+00 RT CL							H.M.	4.00		SCG	8.00	NP		A-4(00) Red/Brown Sdy Lm	NP		8.0 1	24 7.1	SVP-09
105+00 LT CL							H.M.	4.25		SCG	6.00	NP		A-4(00) Red Sdy Lm	21 7		12.7 2	25 6.9	SVP-10
115+00 RT CL							H.M.	3.00		SCG	8.00	NP		A-2-4(00) Gray Grav Sdy Lm	NP		6.3 2	23 7.4	SVP-11
125+00 LT CL							H.M.	3.25		SCG	8.75	NP		(SVP-09)					
135+00 RT CL							H.M.	3.50		SCG	8.00	NP		A-4(00) Gray Lm	20 5		12.1 2	45 6.6	SVP-13
Thick & Width Averages																			

KEY

HM	HOT MIXED ASPHALT CONCRETE	Org	ORGANIC
SC	SOIL CEMENT	Sty	SILTY
PCC	PORTLAND CEMENT CONCRETE	Sdy	SANDY
SCG	SAND CLAY GRAVEL	Cl	CLAY
ST	SURFACE TREATMENT	Lm	LOAM
NMC	NATURAL MOISTURE CONTENT	SA	SAND
LL	LIQUID LIMIT	NP	NON PLASTIC
PI	PLASTIC INDEX		

NOTES: ORIGINAL SENT PREVIOUSLY AS SHEET 1 OF 2

Kim M. Bealmyer 6/24/10
DISTRICT LAB ENGINEER

SHEET NO. 1 OF 3

DISTRICT LAB INVESTIGATIONS

Z:\03Lab\Jacques\Design Info\216-01\DESIGN INFORMATION 216-01 SHEET 1.dgn 01-APR-2011 07:50

Design Information

Project Number or Control Section 216-01 **Total Length** 7.00 Miles **Route Number** LA 339

C.S.L.M.	Location	Pavement Type	Pavement Depth	Pavement Width	Base Type	Base Depth	Subbase Type	Subbase Depth
NOTE: C.S.L.M.'s are approximate.								
NOTE: Borings began at Lafayette Parish Line (CSLM 6.81), thence southerly along LA 339 to (New) LA 14 Bypass (CSLM 0.00), thence southerly along LA 339, and ends at Jct. of (Old) Business) LA 14 a total distance of approximately 7 miles.								
6.364	SB LN	AC	0"-8 1/4"	24'3"	GSM^	?		
NOTE: The typical section appears to change in S-curve which is located at approximately C.S.L.M. 6.290 - 6.156. The parish line location is believed to have been located in this S-curve at some time in the past, but to have been relocated to its current location 0.5 miles N. of the S-Curve.								
5.806	SB LN	AC	0"-2"	23'8"	SC*	2"-9"		
NOTE: Bridge Structure at C.S.L.M. 5.306 - 5.302 (Structure No. 2160105521)								
5.190	SB LN	AC	0"-1 1/2"	23'10"	SC*	1 1/2"-7 3/4"		
4.806	SB LN	AC	0"-1 3/4"	24'0"	SC*	1 3/4"-7 1/2"		
4.345	SB LN	AC	0"-1 1/2"	24'1"	SC*	1 1/2"-9 1/4"		
NOTE: Jct. of LA 338 at C.S.L.M. 4.217.								
3.848	SB LN	AC	0"-2"	24'8"	SC*	2"-8"		
3.370	SB LN	AC	0"-2"	24'1"	SC*	2"-9"		
2.803	SB LN	AC	0"-1 3/4"	24'1"	SC*	1 3/4"-7 3/4"		
2.346	SB LN	AC	0"-3 1/2"	24'8"	SC*	3 1/2"-8 1/2"		
1.812	SB LN	AC	0"-3"	24'3"	SC*	3"-8 1/2"		
1.362	SB LN	AC	0"-2 1/4"	24'6"	SC*	2 1/4"-8 1/2"		
NOTE: Bridge Structure at C.S.L.M. 1.286 - 1.279 (Structure No. 2160101501)								
0.805	SB LN	AC	0"-2 1/2"	24'2"	SC*	2 1/2"-9 1/2"		
NOTE: Bridge Structure at C.S.L.M. 0.441 - 0.437 (Structure No. 2160100651)								
0.257	SB LN	AC	0"-2"	24'3"	SC*	2"-8 1/2"		
NOTE: (New) LA 14 Bypass ends at C.S.L.M. 0.00. A section of LA 339 continues southerly past (New) LA 14 to Jct. of (Old)(Business) LA 14. This section is approximately 0.187 miles long. The Jct. of LA 14 from concrete edge to concrete edge including turnouts at the intersection of (New) LA 14 and LA 339 is approximately 0.07 miles long. This length combined with the length of LA 339 from (New) LA 14 to (Old) LA 14 is approximately 0.257 miles. The total length of job includes 6.81 miles North of (New) LA 14 and the 0.257 miles for a total combined length of approximately 7 miles.								
NOTE: The following boring was taken on LA 339 between (Old) LA 14 and (New) LA 14. The Log Mile for the boring starts from the Jct. of (Old) LA 14 and LA 339.								
0.095	SB LN	AC	0"-2 1/4"	24'2"	SC*	2 1/4"-9 1/2"		
CORE #1								
6.593	NB LN	AC	See NOTE 1					

Describe project beginning and ending locations in this space: Erath (Jct. LA 14 Near E. City Limits) and ends at Lafayette Parish Line (N. of Erath).

AC - Asphaltic Concrete
GSM - Gravel Soil Mixture
SC - Soil Cement
^ - Base does not react with phenolphthalein solution.
* - Gravelly
? - Depth could not be determined
NOTE 1 - Core crumbled apart during coring operations and no measurement could be obtained.
NOTE 2 - All asphaltic pavement is visibly brittle from field observations.

STATE OF LOUISIANA
JACQUES S DEVILLE
License No. 0035120
PROFESSIONAL ENGINEER
CIVIL
4/1/11

Sheet 1 of 1

District 03 Lab Information

DISTRICT 03 | DESIGN INFORMATION | NO. | DATE | REVISION DESCRIPTION | BY | DESIGNED KT | CHECKED JSD | DETAILED | CHECKED | DATE 3/30/11 | PARISH LAFAYETTE | CONTROL SECTION 216-01 | STATE PROJECT | SHEET NO.

Z:\03Lab\Jacques\Design Info\216-02\DESIGN INFORMATION 216-02 SHEET 1.dgn

01-APR-2011 07:44

Design Information

Project Number or Control Section 216-02 **Total Length** 0.59 Miles **Route Number** LA 339

C.S.L.M.	Location	Pavement Type	Pavement Depth	Pavement Width	Base Type	Base Depth	Subbase Type	Subbase Depth
NOTE: C.S.L.M.'s are approximate.								
NOTE: Borings began at Jct. LA 734 (CSLM 0.59), thence southerly along LA 339 to Vermilion Parish Line (N. of Erath) (CSLM 0.000).								
0.423	SB LN	AC	0"-7 1/4"	24'2"	GSM*			
NOTE: Bridge Structure at C.S.L.M. 0.296-0.292 (Structure No. 2160200401)								
0.183	SB LN	AC	0"-9"	24'1"	GSM*			
Core #1								
0.229	NB LN	AC	0"-8 1/2"					

C.S.L.M.	Location	Pavement Type	Pavement Depth	Pavement Width	Base Type	Base Depth	Subbase Type	Subbase Depth	Width

Describe project beginning and ending locations in this space: Project begins at Vermilion Parish Line (N. of Erath) and ends at Jct. LA 734 (4.2 miles SW of Youngsville).

AC- Asphaltic Concrete

GSM- Gravel Soil Mixture

* - Base does not react with phenolphthalein solution.

NOTE: Asphaltic pavement is visibly brittle from field observations.

NOTE: Numerous patches on roadway.

STATE OF LOUISIANA
JACQUES S DEVILLE
License No. 0035120
PROFESSIONAL ENGINEER
Jacques S. Deville
CIVIL ENGINEERING
4/1/11

Sheet 1 of 1

District 03 Lab Information

DISTRICT 03 | DESIGN INFORMATION | NO. | DATE | REVISION DESCRIPTION | BY

DESIGNED KT | CHECKED JSD | DETAILED CHECKED | DATE 3/30/11 | PARISH LAFAYETTE | CONTROL SECTION 216-02 | STATE PROJECT | SHEET NO.

Z:\03Lab\Jacques\Design Info\828-11\DESIGN INFORMATION 828-11 SHEET 1.dgn

01-APR-2011 07:44

Design Information

Project Number or Control Section 828-11 **Total Length** 3.54 Miles **Route Number** LA 339

C.S.L.M.	Location	Pavement Type	Pavement Depth	Pavement Width	Base Type	Base Depth	Subbase Type	Subbase Depth
NOTE: Borings began at Jct. LA 92 (C.S.L.M. 3.54), thence southerly along LA 339 to Jct. LA 734 (C.S.L.M. 0.00).								
NOTE: C.S.L.M.'S are approximate.								
3.216	SB LN	AC	0"-6 1/4"	24'1"	SC*			
2.773	SB LN	AC	0"-5"	23'10"	SC			
2.251	SB LN	AC	0"-5 1/4"	27'0"	SC			
1.750	SB LN	AC	0"-4 3/4"	23'7"	SC*			
1.243	SB LN	AC	0"-4 3/4"	23'6"	SC*			
0.744	SB LN	AC	0"-5 1/4"	24'0"	SC*			
0.244	SB LN	AC	0"-4 1/2"	23'10"	SC*			
NOTE: Patching is present in the outside wheel paths of both NB & SB lanes.								
NOTE: Cross drains are located at C.S.L.M. 0.252, 0.669, & 1.312.								
NOTE: Cores were taken at C.S.L.M. 1.750 & 2.712 in the NB lane, and both cores crumbled during coring operations.								

C.S.L.M.	Location	Pavement Type	Pavement Depth	Pavement Width	Base Type	Base Depth	Subbase Type	Subbase Depth	Width

Describe project beginning and ending locations in this space: Project begins at Jct. LA 734 (4.2 miles SW of Youngsville) and ends at Jct. LA 92 (New Flanders)

AC- Asphaltic Concrete

SC- Soil Cement

* - Base appears to be soil cement. Base does not react with phenolphthalein solution.

NOTE: All asphaltic pavement is visibly brittle from field observations.

NOTE: Numerous patches on roadway.

STATE OF LOUISIANA
JACQUES S DEVILLE
License No. 0035120
PROFESSIONAL ENGINEER
Jacques S. Deville
CIVIL ENGINEERING
4/1/11

Sheet 1 of 1

District 03 Lab Information

DISTRICT 03 | DESIGN INFORMATION | NO. | DATE | REVISION DESCRIPTION | BY

DESIGNED KT | CHECKED JSD | DETAILED CHECKED | DATE 3/30/11 | PARISH LAFAYETTE | CONTROL SECTION 216-01 | STATE PROJECT | SHEET NO.

Z:\03Lab\Jacques\Design Info\828-12\DESIGN INFORMATION 828-12 SHEET 1.dgn

01-APR-2011 07:45

Design Information

Project Number or Control Section 828-12 **Total Length** 5.59 Miles **Route Number** LA 339

CSLM	Location	Pavement Type	Pavement Depth	Pavement Width	Base Type	Base Depth	Base Width	Subbase Type	Subbase Depth	Subbase Width
NOTE: C.S.L.M. locations are approximate.										
NOTE: Borings begin at Jct. LA 182 (W. Pinhook Rd.) at concrete pavement at C.S.L.M. 5.59, then proceed southerly along LA 339 (Verot School Rd.) and end at Jct. LA 92 at C.S.L.M. 0.00.										
2 NB Travel Lanes, 2 SB Travel Lanes, 1 Contin.Turn Lane, 1 Right Turn Lane										
5.510	NB Outside LN	AC	0"-6"		SC					
2 SB Travel Lanes (~24'0"), 2 NB Travel Lanes (~23'10"), 1 Contin.Turn Lane (~14'3")										
5.480	SB Inside LN	AC	0"-7"	~62'0" *	SC					
5.400	Contin. Turn LN	AC	0"-7"		SC					
5.389	NB Inside LN	AC	0"-7 1/2"		SC					
5.342	SB Outside LN	AC	0"-7 1/4"	61'11"	SC					
5.301	NB Outside LN	AC	0"-7 1/2"		SC					
NOTE: Severe rutting occurring in all wheel paths of all travel lanes in multi-lane area.										
NOTE: Multi-lane roadway ends and 2 lane roadway begins at C.S.L.M. 5.180. Fairly new overlay for turning lane at S. Beadle Rd. begins at C.S.L.M. 4.899 and ends at C.S.L.M. 4.555										
1 SB Travel Lane, 1 NB Travel Lane, 1 Left Turn Lane										
4.752	SB LN	AC	0"-7 1/2"	36'0"	LS					
4.744	LT TN LN @ S. Beadle Rd.	AC	0"-~9 1/4"		SC **					

C.S.L.M.	Location	Pavement Type	Pavement Depth	Pavement Width	Base Type	Base Depth	Base Width	Subbase Type	Subbase Depth	Subbase Width
NOTE: Fairly new overlay for Rue Louis XIV begins at CSLM 4.228 & ends at C.S.L.M. 3.936										
1 SB Travel Lane, 1 NB Travel Lane, 1 Right Turn Lane										
4.168	SB Travel LN	AC	0"-~8 3/4"	40'3" *	SC					
4.164	SB Travel LN	AC	0"-~10 1/4"		SC					
NOTE: Fairly new overlay for Camellia Blvd. begins at C.S.L.M. 3.931 and ends at 3.475 and 2 lanes begin.										
1 SB Travel Lane, 1 NB Travel Lane, 1 Contin. Turn Lane										
4.156	Contin.Turn LN	AC	0"-~9 1/4"		SC					
4.130	Contin. Turn LN	AC	0"-~9 1/2"		SC					
4.144	Contin. Turn LN	AC	0"-~8"		SC					
3.866	Contin. Turn LN	AC	0"-~14+"		SC					
1 SB Travel Lane, 1 NB Travel Lane, 1 Contin. Turn Lane, 1 Right Turn Lane										
3.748	SB LN	AC	0"-~13 1/2"	49'11" *	SC					
NOTE: 2 lane roadway ends and new overlay with turn lanes at Digby Ave. for Comeaux H.S. begins at C.S.L.M. 3.290. Digby Ave. located at C.S.L.M. 3.105.										
1 SB Travel Lane, 1 NB Travel Lane, 1 Right Turn Lane										
3.184	SB LN	AC	0"-~9 1/2"		SC					

Describe project beginning and ending locations in this space: Project begins at New Flanders (Jct. LA 92) and ends at Pilette (Jct. LA 182) a distance of 5.59 miles.

AC- Asphaltic Concrete
SC- Soil Cement
LS- Limestone
~ - Approximate
* - Total Width
** - Base appears to be soil cement. Base does not react with phenolphthalein solution.

STATE OF LOUISIANA
JACQUES S DEVILLE
License No. 0026100
PROFESSIONAL ENGINEER
4/7/11

Sheet No. 1 of 2
District 03 Lab Information

DISTRICT 03

DESIGN INFORMATION

NO.	DATE	REVISION DESCRIPTION	BY

DESIGNED	KT	PARISH	LAFAYETTE
CHECKED	JSD		
DETAILED		CONTROL SECTION	828-12
CHECKED			
DATE	3/30/11	STATE PROJECT	

SHEET NO.

Z:\03Lab\Jacques\Design Info\828-12\DESIGN INFORMATION 828-12 SHEET 2.dgn

01-APR-2011 07:46

Design Information

Project Number or Control Section 828-12 **Total Length** 5.59 Miles **Route Number** LA 339

C.S.L.M.	Location	Pavement Type	Pavement Depth	Pavement Width	Base Type	Base Depth	Base Width	Subbase Type	Subbase Depth	Subbase Width
1 SB Travel Lane, 1 NB Travel Lane, 1 Left Turn Lane										
2.135	LT TN LN @ La Neuville Rd.	AC	0"-3 1/2"	35'2"*	SC					
NOTE: Severe surface cracking on pavement in NB & SB travel lanes in overlay for La Neuville Road at approximately 2.135.										
1.832	SB LN	AC ^	0"-5 3/4"	24'0"	SC					
NOTE: Bridge Structure (8281201551) located at C.S.L.M. 1.526 -1.507.										
1.240	SB LN	AC ^	0"-5 3/4"	23'11"	SC ^^					
0.688	SB LN	AC ^	0"-5 1/2"	23'4"	SC **					
0.315	SB LN	AC ^	0"-5 1/2"	24'6"	SC **					
NOTE: Borings end at Jct. LA 92 at C.S.L.M. 0.000.										
NOTE: New overlay for Digby Ave. ends & 2 lanes begin at CSLM 2.925 (Transition from 3 to 2 lanes).										
NOTE: 2 lane roadway ends and new overlay for Ambassador Caffery (LA 3073) begins at CSLM 2.802. PCC pavement at Ambassador Caffery begins at CSLM 2.585 and ends at 2.342. Intersection of Ambassador Caffery and Verot School Road (LA 339) at CSLM 2.505.										
NOTE: New overlay for turning lane at La Neuville Rd. begins at C.S.L.M. 2.232. Overlay ends and 2 lane roadway begins at C.S.L.M. 2.026.										

C.S.L.M.	Location	Pavement Type	Pavement Depth	Pavement Width	Base Type	Base Depth	Base Width	Subbase Type	Subbase Depth	Subbase Width

Describe project beginning and ending locations in this space: Project begins at New Flanders (Jct. LA 92) and ends at Pilette (Jct. LA 182) a distance of 5.59 miles.

AC- Asphaltic Concrete

SC- Soil Cement

* - Total Width

^ - Pavement consists of Asphaltic Surface Treatment over Asphaltic Concrete. Total depth of AST and AC is shown.

** - Base appears to be soil cement. Base does not react with phenolphthalein solution.

^^ - Base appears to be soil cement. Base reacts with phenolphthalein solution.

STATE OF LOUISIANA
JACQUES S DEVILLE
License No. 0035120
PROFESSIONAL ENGINEER
CIVIL
4/1/11

Sheet No. 2 of 2

District 03 Lab Information

DISTRICT 03

DESIGN INFORMATION

NO.	DATE	REVISION DESCRIPTION	BY

DESIGNED	KT	PARISH	LAFAYETTE
CHECKED	JSD		
DETAILED		CONTROL SECTION	828-12
CHECKED			
DATE	3/30/11	STATE PROJECT	

SHEET NO.

SUBGRADE SOIL SURVEY RESULTS

SAMPLE NUMBER	LOCATION	CLASSIFICATION	DEPTH (FT)	SOIL GROUP	LIQUID LIMIT	PLASTICITY INDEX	SILT %	ORG %	MC %	% RET. (4)	% RET. (10)	% RET. (40)	% RET. (200)
S-1	EAST OF CENTER OF INTERSECTION 100 JONELA DR. & 1400 W. PINHOOK RD.	SLTY CLAY & ORG	0.00'-3.00'	A-6(15)	37	14	64	3	27.8	0	0	0	1
S-2	EAST OF CENTER OF INTERSECTION 100 JONELA DR. & 1400 W. PINHOOK RD.	SLTY CLAY LOAM	3.00'-6.00'	A-6(12)	35	11	74	2	27.8	0	0	0	0
S-3	220' WEST OF CENTER OF INTERSECTION 1500 COLLEGE DR. & 1200 W. PINHOOK RD.	SLTY CLAY & ORG	0.00'-3.00'	A-4(09)	32	9	68	3	28.5	0	0	1	1
S-4	220' WEST OF CENTER OF INTERSECTION 1500 COLLEGE DR. & 1200 W. PINHOOK RD.	SLTY CLAY LOAM	3.00'-6.00'	A-6(13)	35	12	74	2	28.7	0	0	0	0
S-5	120' WEST OF CENTER OF INTERSECTION 100 CALCO BLVD. & 1400 W. PINHOOK RD.	SLTY CLAY	0.00'-3.00'	A-7-6(20)	41	18	65	2	27.7	0	0	0	0
S-6	120' WEST OF CENTER OF INTERSECTION 100 CALCO BLVD. & 1400 W. PINHOOK RD.	SLTY CLAY LOAM	3.00'-6.00'	A-4(10)	34	9	74	2	27.5	0	0	0	0

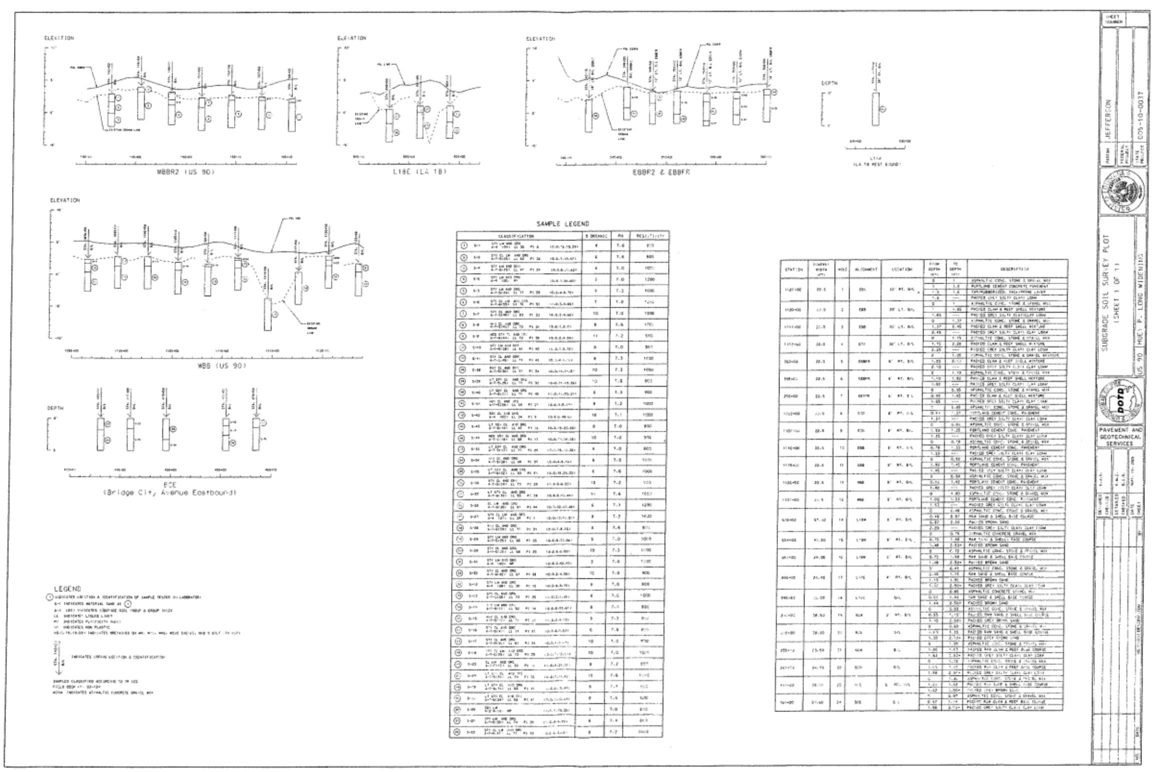
	BENDEL ROAD	0.00"-6.00"	ASPHALTIC CONCRETE
	BENDEL ROAD	6.00"-13.00"	SOIL CEMENT
	MAJORIE BLVD.	0.00"-3.75"	ASPHALTIC CONCRETE
	MAJORIE BLVD.	3.75"-9.50"	SOIL CEMENT
*	CALCO BLVD.	0.00"-5.00"	ASPHALTIC CONCRETE
*	CALCO BLVD.	5.00"-13.25"	RAW SAND SHELL
**	JONELA DRIVE	0.00"-4.25"	ASPHALTIC CONCRETE
**	JONELA DRIVE	4.25"-11.25"	SOIL CEMENT

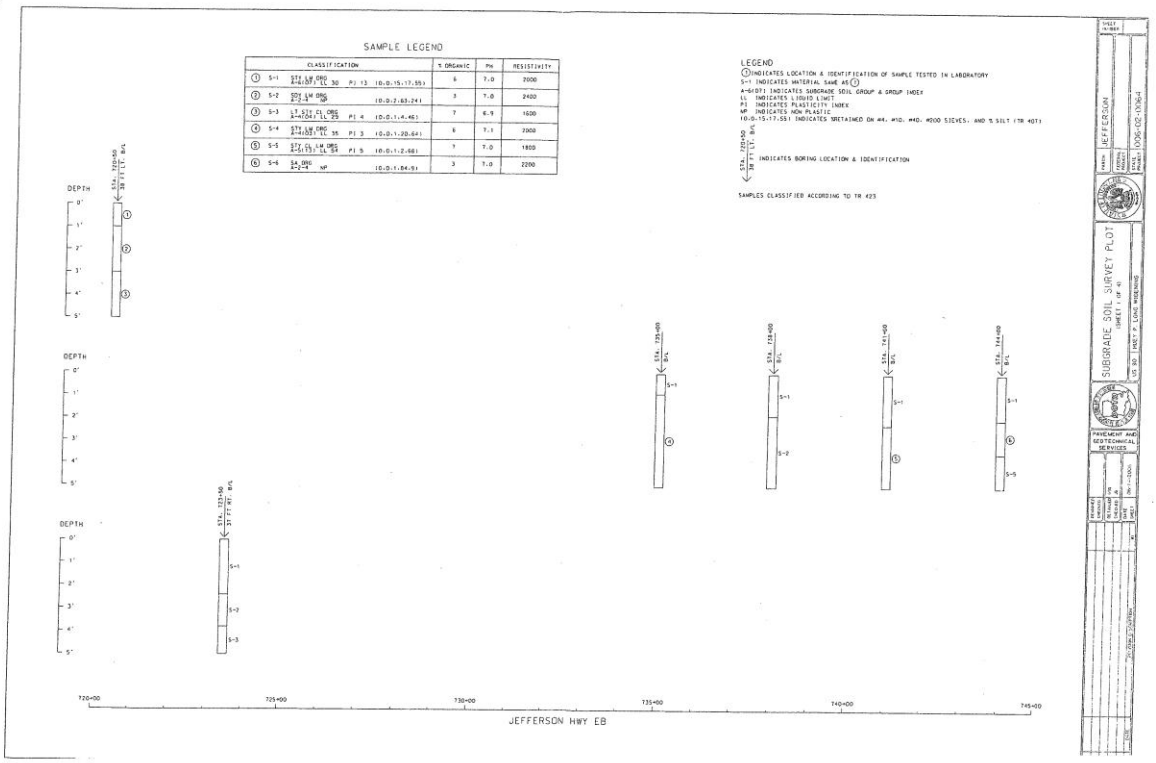
* BORING TAKEN APPROX. 30' FROM CONCRETE TURNOUT - A.C. IS VERY HARD

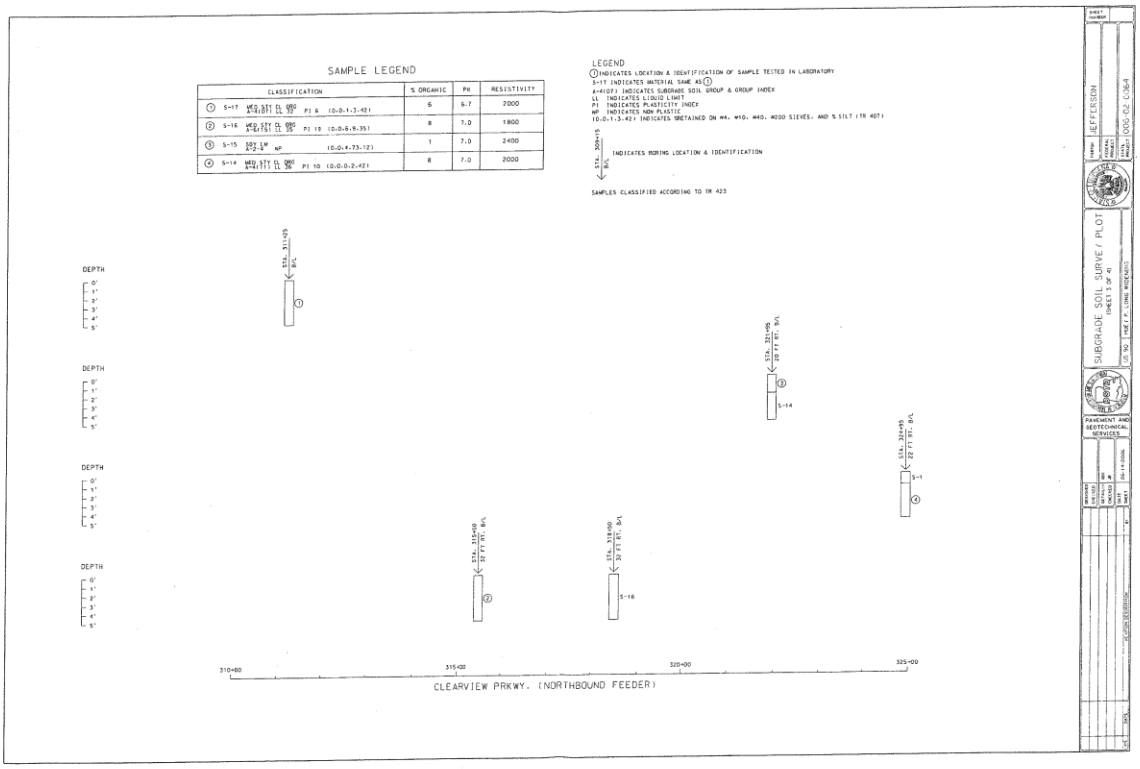
** POSSIBLY A CONCRETE PIPE @ 11.25"

SAMPLE NUMBER	LOCATION	CLASSIFICATION	DEPTH (FT)	SOIL GROUP	LIQUID LIMIT	PLASTICITY INDEX	SILT %	ORG %	PH	RESISTIVITY	% RET. (4)	% RET. (10)	% RET. (40)	% RET. (200)
S-1	543+44 50' LEFT OF CENTERLINE	SAND	0.00'-3.00'	A-2-4(00)	0	NP	7	0	8.4	15000	0	0	22	66
S-2	543+44 50' LEFT OF CENTERLINE	SAND	3.00'-6.00'	A-3(00)	0	NP	3	0	9.5	30000	0	0	23	71
S-3	537+75 56' RIGHT OF CENTERLINE	SLTY CLAY	0.00'-3.00'	A-6(13)	35	13	64	2	7.6	2800	0	0	1	4
S-4	537+75 56' RIGHT OF CENTERLINE	SLTY CLAY	3.00'-6.00'	A-6(15)	36	15	67	2	7.4	4000	0	0	0	2
S-5	538+06 180' RIGHT OF CENTERLINE	SLTY CLAY	0.00'-3.00'	A-4(10)	31	10	67	2	8.4	3000	0	0	2	1
S-6	538+06 180' RIGHT OF CENTERLINE	SLTY CLAY	3.00'-6.00'	A-6(14)	36	13	69	2	8.3	3000	0	0	0	0
S-7	541+88 42' RIGHT OF CENTERLINE	SLTY CLAY	0.00'-3.00'	A-6(14)	35	14	62	2	8.6	2900	0	0	2	3
S-8	541+88 42' RIGHT OF CENTERLINE	SLTY CLAY	3.00'-6.00'	A-6(13)	35	12	68	2	8.2	3000	0	0	0	1
S-9	545+44 48' RIGHT OF CENTERLINE	SLTY CLAY	0.00'-3.00'	A-6(12)	35	11	65	2	6.1	5400	0	0	0	0
S-10	545+44 48' RIGHT OF CENTERLINE	SLTY CLAY LOAM	3.00'-6.00'	A-6(14)	36	13	74	2	6.5	4600	0	0	0	0

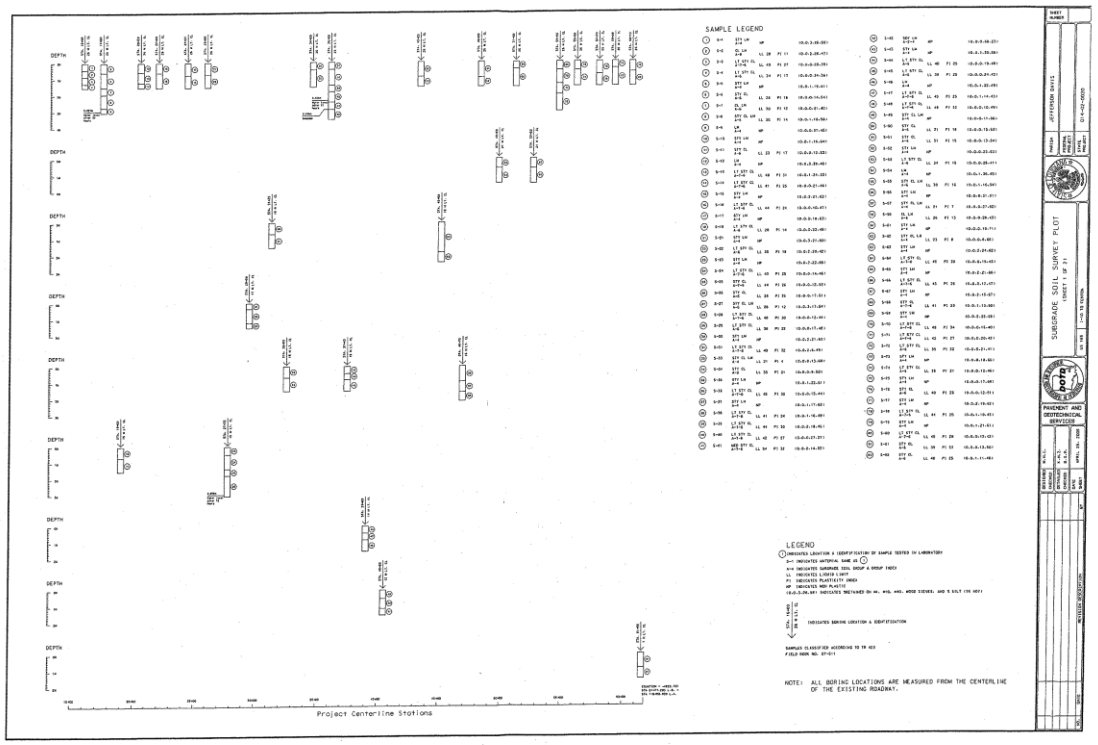
PARISH LAFAYETTE
STATE PROJECT 004-01-0039
SUBGRADE SOIL SURVEY PLOT
LA 182 @ BENDEL ROAD
SHEET 1 OF 1
LA 182
PAVEMENT AND GEOTECHNICAL SERVICES

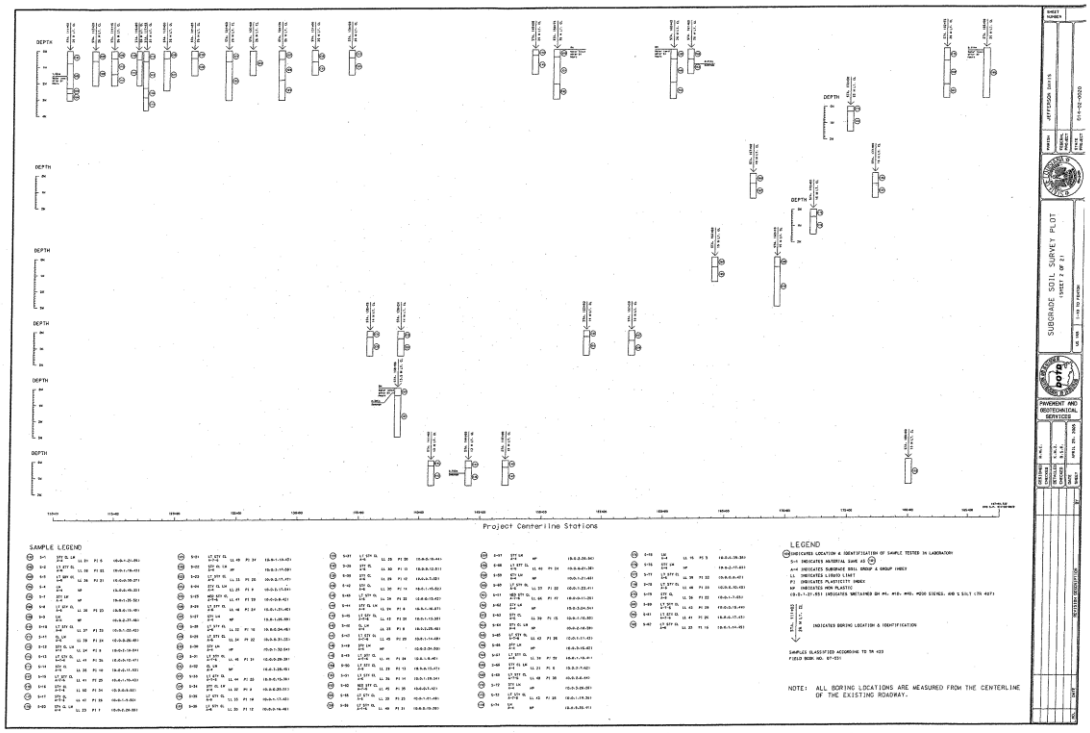



SAMPLE LEGEND
CLASSIFICATION
% ORGANIC
PH
RESISTIVITY
LEGEND
INDICATES LOCATION & IDENTIFICATION OF SAMPLE TESTED IN LABORATORY
INDICATES BORING LOCATION & IDENTIFICATION
SAMPLES CLASSIFIED ACCORDING TO TR 423
DEPTH
JEFFERSON HWY EB
720+00
725+00
730+00
735+00
740+00
745+00
SUBGRADE SOIL SURVEY PLOT
JEFFERSON
PAVEMENT AND GEOTECHNICAL SERVICES


SAMPLE LEGEND
CLASSIFICATION
% ORGANIC
PH
RESISTIVITY
LEGEND
INDICATES LOCATION & IDENTIFICATION OF SAMPLE TESTED IN LABORATORY
INDICATES BORING LOCATION & IDENTIFICATION
SAMPLES CLASSIFIED ACCORDING TO TR 423
DEPTH
CLEARVIEW PRKWY. (NORTHBOUND FEEDER)
310+00
315+00
320+00
325+00
SUBGRADE SOIL SURVEY PLOT
JEFFERSON
PAVEMENT AND GEOTECHNICAL SERVICES

Example Sheets
Pavement Design





Geotechnical Information

Local Public Agency (LPA) Appendix

2012

Geotechnical Information

A review of the Geotechnical Investigation Proposals by the *DOTD Pavement and Geotechnical Section* is recommended prior to plan implementation.

LPA projects –

- The LPA or their consultant performs the work.
- *The Pavement and Geotechnical Section* will perform a cursory review.
- Calculations are to be submitted in pdf
- Note: DOTD does not perform the pile design analysis if they do not design it.

The typical section must have justification for thickness & pavement type. Traffic data is required for the calculations.

LPA projects – Bridge Design will only give Shop Drawings a cursory review and only provide *recommendations*.

All bridges must have a structural bridge rating submitted to DOTD. New bridges must also have a structural bridge rating submitted to DOTD. It must include any changes in the field or shop drawings on the as built plans.

Geotechnical Engineering Analysis and Design

All geotechnical engineering is required to be performed in accordance with present design requirements and standard engineering practice. These services include but are not limited to:

- slope stability (embankment & excavation)
- embankment settlement
- bridge foundations
    - piles
    - drilled shafts
- other foundations
- pile supported approach slab design data
- bridge foundation static and dynamic load test program
- earth retaining structures
- culverts
- geotechnical analysis & design recommendations report
- geotechnical instrumentation

Geotechnical Exploration and Investigations

SLOPE STABILITY (Embankment & Excavation):

The Objective of a Slope Stability Analysis is to determine the factor of safety of the proposed embankment or excavation on the project subsurface soils and make appropriate Engineering Design Recommendations. A maximum resistance factor of 0.75 is considered adequate for embankment side and end slopes. For cut sections, a maximum resistance factor of 0.65 is desirable. For short term draw-down conditions, a maximum resistance factor of 0.85 is considered adequate.

Standard Procedure: The embankment/excavation slope stability analysis shall consist of:

(1) Modeling the appropriate boring logs to define the critical embankment/excavation geometry (cross-section) with subsurface soils
(2) Interpreting the shear strength test data to determine drained and/or un-drained shear strength design parameters
(3) Performing the stability analysis utilizing the Bishop, Spencer, and/or sliding block method deemed appropriate by the engineer. PCSTABL4 or newer version is recommended
(4) Determining the maximum resistance factors for both long and short-term conditions at the critical fill heights at each bridge end, along the approach embankment (intermediate fill height) and in critical cut sections. Maximum resistance factor should also be taken into consideration for rapid drawdown conditions when applicable
(5) Analyzing different methods for mitigating possible stability problems and if necessary, make recommendations for geotechnical instrumentation to monitor stability performance,
(6) Defining areas of highly erodible materials and analyzing erosion control measures,
(7) Preparing a report with all the above information and engineering recommendations,
(8) Interpret slope stability data from all geotechnical instrumentation monitoring devices and make appropriate recommendations during construction

Deliverables of Slope Stability Analysis shall include the following:

- Printout of critical stability circle and/or block for each design case.
- Geotechnical models (cross-sections) and design input parameters.
- Summary table with critical fill heights and resistance factors, or critical excavation cross-sections with resistance factors.
- Certification that the modeled embankments meet the required long and short-term resistance factors required.
- Summary of alternatives for mitigating possible stability problems with resistance factors and estimated costs.
- Specifications for slope stability mitigation measures.
- Geotechnical Instrumentation Plan (if recommended).
- Recommended erosion control measures.

- Construction Slope Stability notes for the Bridge General Notes Sheet.
- Graphical presentation of lateral movements obtained from Geotechnical Instrumentation data during construction monitoring.

EMBANKMENT SETTLEMENT:

The Objective of a Consolidation/Settlement Analysis is to determine the amount of settlement in inches/feet, and the time required for this settlement to take place in days/months/years when the proposed embankment is constructed on the project subsurface soils, and make appropriate Engineering Design Recommendations.

Standard Procedure of the embankment settlement analysis:

(1) Model the appropriate boring logs to define the critical embankment geometry (cross-section) with subsurface soils
(2) Interpret the consolidation test data to determine design consolidation soil parameters
(3) Perform a settlement analysis for the critical bridge end fill heights and for intermediate fill heights (as needed)
(4) Determine the predicted total consolidation settlement, the predicted 90% consolidation settlement and the time periods for the predicted settlement to occur
(5) Make recommendations to reduce the amount of consolidation settlement and/or to accelerate the settlement through the use of lightweight fills, surcharge placement, wick drains or other methods determined by the engineer if the predicted time for 90% of the settlement to occur is excessive (greater than 5 months)
(6) Provide all analyses and information including special provisions relating to surcharge quantities and limits, wick drain information and layouts and settlement monitoring instrumentation details if mitigation is required
(7) Assess the impact of predicted settlement and recommended mitigation on pavement, culverts, retaining walls and bridge abutments
(8) Prepare a report with all the above information and engineering recommendations
(9) Interpret settlement data from all monitoring geotechnical instrumentation devices and make recommendations for surcharge removal or other geotechnical related construction activity during construction

Deliverables of Consolidation/Settlement Analysis shall include the following:

- Geotechnical models (cross-sections) with design input parameters.
- Printout of settlement analysis for each design case.
- Presentation of settlement analysis in graphical form (Settlement vs. Time of consolidation Curves) with clear indications of total predicted settlement, 90% predicted settlement, and the effect of surcharging and/or placing wick drains. (Hand calculations should be included.)

- Assessment of the potential impact of predicted settlement and any recommended mitigation on pavement, culverts, retaining walls and bridge abutments.
- Wick Drain Design Sheets
- Specifications for recommended settlement mitigation measures (surcharge, wick drains, etc.)
- Geotechnical Instrumentation Plan with Drawings and Specifications if recommended
- Graphical output of actual field settlement data obtained from Geotechnical Instrumentation during construction monitoring.
- Construction Settlement notes for the Bridge General Notes Sheet.

BRIDGE FOUNDATIONS:

PILES:

The Objective of a Pile Design Analysis is to determine the pile type, pile capacity, lateral load requirements, and pile length for the project subsurface soils considering pile set-up, down-drag (negative skin friction), potential scour, and other project related factors.

Standard Procedure: The Pile Foundation Design Scope of work:

(1) Model the appropriate deep boring logs and/or Cone Penetration (CPT) sounding data to define the project subsurface soil profile
(2) Obtain Standard Penetration Test (SPT) N-values and interpret the laboratory test data to determine pile design soil parameters
(3) Perform pile static analyses to determine pile type, pile capacity and plan pile tip elevation or length
(4) Estimate foundation settlement and “down-drag” loads
(5) Perform lateral load analyses
(6) Estimate scour depths
(7) Perform wave equation analyses to determine pile drivability and hammer approval
(8) Assess constructability issues such as installation sequencing, heave and/or lateral pile movement, installation aids (jetting or augering), etc.
(9) Perform analyses to develop test pile recommendations (feasibility, location, test pile tip elevation, etc.), and pile driving analyzer (PDA) recommendations.

Deliverables for Pile Foundation Design Analysis shall include the following:

- Design spreadsheets or calculations indicating the geotechnical design parameters utilized for each boring log, including scour elevations if applicable, for the pile type selected
- Graphical or tabulated representation of the pile capacity vs. tip elevation (not depth of penetration)
- If the FHWA software Driven 1.2 is used, include an electronic copy of the data file generated along with a hard copy of the input and output

- Lateral load analyses
- Recommended plan pile tip elevations for all bents (Shown in the pile data sheet.)
- Feasibility study for utilizing a test pile (static resistance factors vs. dynamic resistance factors)
- Drivability recommendations
- Pile installation criteria with discussion of installation issues
- Pile Driving Analyzer (PDA) recommendations
- Hammer approval method recommendations
- Necessary pay items and corresponding quantities for test piles, indicator piles, and monitor piles
- Special Provisions for Dynamic Monitoring and Dynamic Analysis, if recommended for project
- Special Provision for Static Load Test, if recommended for project
- Considerations for “down-drag” effects on piles
- Considerations for pile “set-up”
- Uplift Capacity of Group Piles if required by project conditions
- Pile notes for the Bridge General Notes Sheet

DRILLED SHAFTS:

The Objective of a Drilled Shaft Analysis Design is to determine the diameter, tip elevation and installation procedure for the project subsurface soil conditions.

Standard Procedure: The Drilled Shaft Foundation Design Scope of work:

(1) Model the appropriate deep boring logs and/or Cone Penetration (CPT) sounding data to define the project subsurface soil profile
(2) Obtain Standard Penetration Test (SPT) N-values and interpret the laboratory test data to determine drilled shaft design soil parameters
(3) Select appropriate design equations for the project soil types to determine ultimate base and side resistance and select appropriate resistance factor
(4) Perform axial and lateral load analyses to determine drilled shaft diameter and tip elevation
(5) Perform analyses to determine appropriate Construction Method for project soil conditions

Deliverables for Drilled Shaft Foundation Analysis and Design shall include the following:

- Design spreadsheets or calculations indicating the geotechnical design parameters utilized for each boring log including scour elevations if applicable.
- Graphical or tabulated representation of the drilled shaft capacity vs. tip elevation for each diameter.
- Lateral load analyses.
- Considerations for “down-drag”.
- Recommended plan drilled shaft diameters and tip elevations for all bents. (Shown in the Drilled Shaft data sheet.)

- Recommended Construction Method with discussion of installation issues.
- Recommendations for Construction Quality Control.
- Drilled Shaft notes for the Bridge General Notes Sheet.
- Special Provision for Integrity Testing if required for project.
- Special Provision for drilled shaft Load Test if required for project.

OTHER FOUNDATIONS:

If other types of foundation 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.

PILE SUPPORTED APPROACH SLAB DESIGN DATA:

The DOTD normally uses a timber pile supported approach slab to minimize differential settlement in the transition zone between the approach embankment and the bridge abutment.

Deliverables for Pile Supported Approach Slabs:

- Layout showing pile locations.
- Pile diameter and length.
- Drivability Recommendations

BRIDGE FOUNDATION LOAD TEST PROGRAM:

If the project subsurface conditions are difficult and if significant uncertainties exist in the Foundation Design and if cost savings can be predicted, a Foundation Load Test Program may be appropriate. Depending on project conditions, a Foundation Load Test Program may be included either in the Design or in the Construction phase.

Deliverables for the Foundation Load Test Program shall include the following:

- Location and Type of Load Test Proposed.
- Design of Test Foundation (pile, drilled shaft, or other).
- Dynamic Test Procedures and Schedules
- Load Increment Requirements.
- Maximum Test Load.
- Instrumentation Requirements.
- Load Test Layout and Design Sheets for Plans.
- Special Provision for Construction of Test Foundation and Conduct of Load Test.
- Interpretation of Load Test Results and Recommendations.
- Foundation Load Test Report.

EARTH RETAINING STRUCTURES:

General Considerations:

A Retaining Wall is normally required if adequate space (right-of-way) is not available for a Slope. The DOTD has used Mechanically Stabilized Earth (MSE) Walls, Gravity Concrete Walls, Sheet Pile Walls, plus other types for transportation projects. The selection of the most appropriate Retaining Wall type for the specific project requirements and site and subsurface conditions can have profound effects on the project cost and constructability.
Every Retaining Wall type has a unique design procedure and generally requires the services and coordination of a Geotechnical Engineer and a Structural Engineer. The following criteria are generally required for analysis and design of all Retaining Wall types:

Deliverables (minimum) for all Retaining Wall Analyses and Designs:

- Earth Pressure Distributions.
- Bearing Capacity of the foundation soil or rock.
- Analyses for Sliding and Overturning and Mitigation Recommendations.
- Settlement and Tilt (Rotation) Analyses and Mitigation Recommendations.
- Drainage Recommendations
- Global Stability Analyses and Mitigation Recommendations.
- Backfill Properties.
- Wall Components/Materials.
- Wall Construction Procedures.
- Wall Layout with plan view, elevation view, typical sections and details.
- Quantities Table with applicable General Notes.
- Design Life.
- Special Provisions.

MECHANICALLY STABILIZED EARTH (MSE) WALLS:

The AASHTO LRFD Bridge Specifications, latest edition as well as all supplements shall be followed for analysis and design of all MSE Walls. The DOTD developed “MSEW Design Guide, G.E.D.G. No.8” dated Oct.1, 1999 may be used as a reference.

Additional Deliverables for MSE Walls shall be as outlined in the DOTD MSEW Design Guide and as required to identify the MSE specific design and construction requirements:

- Type and Size of Facing Element.
- Type, Size and Design Length of Reinforcement Elements.
- Type of Connections.
- Minimum embedment requirements.
- Backfill Material Requirements.
- If TEMPORARY WALL, identify specific requirements.

CONCRETE WALLS:

Cast-In-Place Concrete Gravity or Cantilever Walls are now generally limited to small applications or specialized situations because of the development of more economical wall types. Standard design and construction procedures are well documented in many geotechnical books and other publications.

Deliverables for Concrete Walls are same as outlined under General Considerations above.

SHEET PILE WALLS:

The resistance factors from the AASHTO Bridge Design Specifications, latest edition, shall be used to design sheet pile walls. The DOTD's "Preliminary" Design Guide titled "DOTD CANTILEVER SHEET PILE DESIGN GUIDELINES" dated 10/26/00 may be used as a reference.

Additional **Deliverables for Sheet Pile Walls** shall be as outlined in the DOTD Guidelines:

- Sheet Pile Section and Type
- Minimum Section Modulus
- Minimum Depth of Penetration
- Moment of Inertia Requirements
- Estimated long and short term Deflections
- Anchor Loads
- Long and short term Stability including Drawdown and Liquefaction
- Complete Design Details of sheet piling, Backfill, Drainage, and Connections
- Corrosion Protection Measures
- Construction Constraints

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.

CULVERTS:

The geotechnical design review of the culvert locations shown in the plans shall consist of earth pressure calculations, bearing capacity analyses, settlement analyses and a constructability review of the culvert. Recommendations for bedding material,

foundation supported options, insitu bearing improvements and construction procedures should be addressed.

Deliverables for Culverts shall include the following:

- Earth Pressure calculations and Recommendations.
- Bearing Capacity calculations and Recommendations.
- Settlement and Differential Settlement Estimates with design parameters.
- Recommendations for bedding material and/or other foundation support options.
- Any Specialized Construction Procedures and Recommendations.

GEOTECHNICAL ANALYSIS & DESIGN RECOMMENDATIONS REPORT:

No standard report format is required and the Consulting Firm may use its own format. However, the GEOTECHNICAL ANALYSIS & DESIGN RECOMMENDATIONS REPORT shall contain a Background Description of THE PROJECT such as location, geological irregularity, if exists, engineering features and requirements, etc. and shall include all the items listed under Deliverables above that are a part of THE PROJECT.

CONSTRUCTION MONITORING:

BRIDGE FOUNDATIONS:

PILES:

The Pile foundation construction scope of work shall consist of providing the following Geotechnical services during the construction phase of the project:

- Hammer approval utilizing the Wave Equation Analyses (if alternate hammer approval method is not specified).
- Field monitoring the installation of test piles, monitor piles, indicator piles and/or production piles with the Pile Driving Analyzer (PDA).
- Analysis of PDA data utilizing CAPWAP AND GRLWEAP.
- Generating bearing capacity graphs (Inspector's Charts).
- Recommending pile driving criteria.
- Recommending final pile tip elevations based on the results of Load Tests or Dynamic Analyses.

The **Deliverables for Construction Monitoring of Piles** shall include the following:

- Hammer approval documentation.
- PDA Testing and Analysis Report with (1) PDA plots of pile capacity, driving stresses and energy transfer, (2) CAPWAP Pile Capacity Summary Table, and (3) Inspector's Charts.
- Final Pile Tip Elevations and Order Length Recommendations to the Structural Fabrication Engineer.

DRILLED SHAFTS:

The Drilled Shaft foundation construction scope of work shall include the construction monitoring items outlined in the DOTD Guide titled "Drilled Shaft Foundation Construction Inspectors Manual" dated 1/08/02 plus any special considerations specified in the Plan Notes.

The **Deliverables for Construction Monitoring of Drilled Shafts** shall include those required in the Guide Manual and the following:

- Comments/Recommendations on Contractor's "Drilled Shaft Installation Plan".
- Drilled Shaft Soil/Rock Excavation Logs.
- Drilled Shaft Concrete Placement Log.
- Theoretical Concrete Volume vs. Actual Concrete Volume Graph.
- Interpreted Shaft Diameter vs. Depths (Elevations).
- Excavation Rate and Concrete Placement Rate vs. Depths (Elevations)
- Inspection Report with (1) description of drilling method, clean-out methods, bottom inspection methods and findings and concrete placement and effectiveness, (2) If slurry–displacement method is used, Record of slurry properties, (3) description of difficulties encountered.

- Integrity Testing (Cross-hole Sonic Logging or other) Interpretation and Recommendations.

Other Foundations:

The scope of work for Other Foundations and the Deliverables shall be as recommended in the Geotechnical Analysis & Design Recommendations Report.

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 (1) Slope Inclinometers, Piezometers, and Settlement Devices. The “Geotechnical Analysis & Design Recommendations Report” should have an Instrumentation Layout plus recommended Frequency of Readings.

The Deliverables for Geotechnical Instrumentation shall include the following:

- 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.
- Interpretation of other Instrumentation data as recommended in the “Geotechnical Analysis & Design Recommendations Report” and Action Recommendations.

Tools / Considerations for Geotechnical Investigations, Sampling and Testing Services

- Field Reconnaissance (including rights of entry, utility locations, access, etc.)
- Mobilization/demobilization
- Deep and Shallow Soil borings
- CPT soundings (ASTM D5778)
- Water table elevations with duration of reading
- GPS Latitude and Longitude of borings to within 10 ft (3 m) accuracy
- Sealing boreholes in accordance to LA Water Well and DEQ Regulations
- Standard Penetration Tests and Split-Barrel Sampling of Soils (AASHTO T 206)
- Unconfined Compressive Strength of Cohesive Soils (AASHTO T 208)
- Specific Gravity of Soils (AASHTO T 100)
- Laboratory Determination of Moisture Content of Soils (AASHTO T 265)
- Triaxial Compression Tests, Unconsolidated, Undrained (AASHTO T 296)
- Triaxial Compression Tests, Consolidated Drained 3-point (AASHTO T 297)
- Atterberg Limits (DOTD TR 428)
- Consolidation Tests with Rebound (AASHTO T 216)
- Organic Content (DOTD TR 413)
- Classification of Soils
    - Deep borings (ASTM D 2487 (USCS method))
    - Shallow borings (ASTM D 3282(AASHTO method))
- Drafting of boring logs
- Drafting of subgrade soil surveys
- Traffic Control

The deep soil borings shall be made by the wet rotary drilling method. In each deep boring, undisturbed samples of cohesive or semi-cohesive material shall be obtained from each distinct soil stratum that is penetrated or 5 ft (1.5 m) interval, whichever is less, using a 3 in. (76 mm) diameter Shelby tube sampling barrel as per AASHTO D 207. When cohesionless soils are encountered at any depth, a split spoon sampler shall be used in conjunction with Standard Penetration Tests (SPT) at 3 foot (1 m) intervals. In the case of massive dense sands being encountered, the Project Manager may be contacted in order to relax the sampling interval, on a case-by-case basis.

DOTD does not accept boring logs which show evidence of SPT's in cohesive soils or tube samples in cohesionless soils.

Transport of samples from the field to the laboratory shall conform to ASTM D4220, Group C. Samples may not be extruded at the worksite. Sample tubes shall be transported vertically in the same orientation as they were sampled, with care taken to avoid excessive temperature variation, vibration, or any other sample disturbance. They shall be extruded in the laboratory in accordance by means of 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, and shall not be caught with the hands.

A soil mechanics laboratory testing shall be performed on at least 75 percent of all samples obtained from the borings. UU Triaxial compression and Atterberg limit testing shall be performed on at least 75 percent of the extruded cohesive samples.

If designated as required for the boring, consolidation tests shall be performed according to AASHTO T 216, and results shall be reported as graphs of "Void Ratio vs. Log of Pressure" and "Coefficient of Consolidation vs. Log of Pressure". Both plots may be shown on the same graph, if adequately labeled. Any sample from a clay layer that shows signs of being over-consolidated must be subjected to a load/rebound/re-load cycle during the consolidation testing, as per AASHTO T 216. Any sample selected for consolidation testing shall also have the specific gravity determined according to AASHTO T 100, and the Atterberg Limits determined according to DOTD TR 428, and with supporting results reported. Laboratory classification of soils from deep borings shall be in accordance with ASTM D 2487. All other sampling and testing shall be performed in accordance with current AASHTO test procedures, unless otherwise noted.

Shallow soil borings for subgrade soil surveys can be made utilizing either hollow-stem or continuous-flight augers. Due to the unique nature of each subgrade project, sampling and testing requirements for each project requiring shallow borings should be project specific.

The CPT rigs shall be capable of providing up to 20 tons reaction. Pore pressure measurements shall be obtained using U2 location, unless otherwise specified. Dissipation tests shall be performed until at least 50 percent of the excess pore water pressure has been dissipated. All CPT probes and equipment utilized shall have been calibrated within the previous year or within a period specified by the project manager.

The natural ground in elevation at the location of each borehole shall be determined to within 6 in. (0.15 m). These elevations maybe determined utilizing elevations of existing structures for landmarks that may be shown on the plans supplied.

It is the responsibility of the Entity/Consultant to obtain consent from the respective landowners in order to enter onto private property.

Deliverables

Geotechnical exploration results should be on 3 or 4 mil polyester double matte film. The lettering used on the profiles shall be of such size and clarity that the legibility of data can be maintained when reduced to fifty (50) percent of its original size. Soil profiles shall be grouped on the plan sheets according to the Construction Project Number(s).

All reported test results, including each profile sheet, shall be sealed and manually signed and dated by the Professional Engineer in responsible charge of testing.

Construction Monitoring and Problem Resolution

Dynamic pile testing may be required during test pile program or production pile driving. The dynamic pile testing includes supplying all equipment, strain gages, and accelerometers to collect data. The data collected for potential pile damages and providing pile driving assistance will be analyzed and interpreted to determine the pile resistance.

Drilled shaft installations may require monitoring for trial and test shafts perform cross-hole sonic logging tests and interpret shaft inspection device results.

Sonic echo/impact response tests may and interpretation of the results may be required.

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.la.gov) or at the FHWA Bridge/Geotechnical web site (www.fhwa.dot.gov/bridge).

DOTD Reports and Forms:

- AASHTO LRFD Bridge Design Specifications, latest edition and supplements
- Standard Specification, latest edition
- Bridge Manual
- Road Design Manual
- Hydraulics Manual
- Materials Sampling Manual
- Materials Testing Procedures Manual
- Drilled Shaft Foundation Construction Inspection Manual (1/08/02)
- "Preliminary" DOTD Sheet Pile Design Guidelines (10/26/00)
- MSEW Design Guide, Geotechnical Engineering Design Guide (G.E.D.G.) No. 8 (10/01/1999)
- LTRC "PILECPT" Software
- Pile and Driving Equipment Data Form (06/19/06)
- Deep Soil Boring Request and Field & Laboratory Request Form (1/03/02) (in one sheet)
- Wick Drain Design Sheets
- DOTD Testing Procedures Guidelines For Standard Format

Other Technical References:

The 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.

- Subsurface Investigations Manual, Publication No. FHWA HI-97-021, Nov. 1997
- Manual On Subsurface Investigations, Published by AASHTO, 1988
- AASHTO Standard Specifications for Transportation Materials and Methods of Sampling and Testing, PART I – SPECIFICATIONS and PART II – TESTS, current edition
- ASTM Procedures and Regulations, current edition
- Earth Retaining Structures, Reference Manual (Draft), FHWA-NHI, May 1998
- Earth Retaining Systems, Geotechnical Engineering Circular No. 2, Publication No.FHWA-SA-96-038, February 1997
- MSE Walls and Reinforced Soil Slopes (update of DP 82 Manual), Publications No. FHWA NHI-00-043, and FHWA-NHI-00-044, March 2001
- Geotechnical Instrumentation Manual, Publication No. FHWA HI-98-034, October 1998
- Drilled Shafts: Construction Procedures and Design Methods Manual, Publication No. FHWA-IF-99-025, August 1999
- Soils and Foundations Workshop Manual, Publication No. FHWA NHI-00-045, August 2000
- Geosynthetic Design and Construction Guidelines Manual, Publication No. FHWA HI-95-038, April 1998
- Ground Improvement Technical Summaries, DP 116, Publication No. FHWA-SA-98-086
- Design and Construction of Driven Pile Foundations, Volumes 1 & 2, Publications No. FHWA-HI-97-013 and FHWA-HI-97-014, December 1996
- Soil Slope and Embankment Design, Reference Manual, FHWA-NHI, 2003
- Manual for Design & Construction Monitoring of Soil Nail Walls, Publication No. FHWA-SA-96-069, November 1996
- Soil Nailing Field Inspectors Manual, (DP 103), Publication No. FHWA-SA-93-068, April 1994
- NAVFAC Design Manuals, DM 7.1, DM 7.2 and DM7.3, May 1982