

**City of Shreveport, Louisiana**

Department of Public Works

Office of the City Engineer



**SOUTHFIELD ROAD IMPROVEMENTS**

**PROJECT NUMBER C25013**

**SPECIFICATIONS**



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**PART 40**

**GENERAL**  
**REQUIREMENTS**

**SECTION 4010**

**SUMMARY OF WORK**

**PART I GENERAL**

**I.01 LOCATION OF WORK**

- A. The work of this Contract is located at
  - I. Southfield Road from west of Camellia Lane to Gilbert Drive.

**I.02 SCOPE OF WORK**

- A. Furnish all labor, materials, equipment, appurtenances, supplies and incidentals required construct and install:
  - I. Southfield Road roadway removal and reconstruction consisting of asphalt roadway replacement, concrete curb & gutter, sidewalk, ADA ramps, installation of storm sewer infrastructure, street lighting, and water line relocation.
- B. The Work includes, but is not necessarily limited to, the following:

Southfield Roadway Rehabilitation

- 1. Removal of Structures and Obstructions (Existing Storm Pipe) [302.1.1]
- 2. Removal of Structures and Obstructions (Existing Water Main) [302.1.2]
- 3. Removal of Structures and Obstructions (Existing Catch Basins) [302.1.3]
- 4. Removal of Pavement Base and Surface (Asphalt Pavement) [302.7.1]
- 5. Removal of Pavement Base and Surface (Concrete Pavement) [302.7.2]
- 6. Removal of Concrete Walks & Driveways [302.8]
- 7. Roadway Excavation [303.1]
- 8. Temporary Hay or Straw Bales [310.2]
- 9. Crushed Aggregate Base Course (8" Thick) [403.4]
- 10. Sand Base Course [403.6]
- 11. Tack Coat [502.1]
- 12. Prime Coat [503.1]
- 13. Asphalt Concrete (1.5" Thick) (Binder Course) [507.3.1]
- 14. Asphalt Concrete (1.5" Thick) (Wearing Course) [507.3.2]
- 15. Portland Cement Concrete Pavement (8" Thick) [509.1]
- 16. Single Curb Inlet (5' Cast-In-Place) [601.5]
- 17. 3' X 3' Concrete Junction Box [601.10.1]

18. 4' X 4' Concrete Junction Box [601.10.2]
19. Concrete Curb & Gutter (Mountable) [605.1.1]
20. Concrete Curb & Gutter (Barrier) [605.1.2]
21. Sidewalks (4" Thick) [605.4]
22. Driveways (6" Thick) [605.5]
23. Handicap Curb Ramp (All Types) [605.6]
24. Pipe Line In Place (12" HDPE) [1001.1.1]
25. Pipe Line In Place (15" CPPPDW) [1001.1.2]
26. Pipe Line In Place (18" CPPPDW) [1001.1.]
27. Sod Lawn (Match Native Type) [1201.8]
28. Mobilization [1202.1]
29. U-Channel Post [1301.21]
30. Trenching and Backfilling (1 1/2" C) [1302.1]
31. Temporary Signs & Barricades [1306.1]
32. Manhole Rehabilitation (Raise Frame and Cover) [2210.1]
33. 6" Water Main [3000.1]
34. Testing, Flushing, and Sterilization of Water Mains [3100.1]
35. Relocate Fire Hydrant [3300.1]
36. Relocate Butterfly Valve [3400.2]
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39. Mailboxes (Plastic) (Relocate) [S-3]
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41. Reconnecting Existing Yard Drains [S-5]
42. Sawcutting [S-6]
43. As-Builts [S-7]
44. Construction Layout [S-8]
45. Nyloplast Drain Basin (12") [S-9]
46. Bi-Axial Geogrid [S-10]
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49. 600V Cable - #8 AWG [S-13]
50. 600V Cable - #10 AWG [S-14]
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62. Miscellaneous Construction Items [S-26]

**I.01 WORK SEQUENCE**

- A. Southfield Road roadway reconstruction as shown in the Contract Documents and Plans will be installed in a way that will allow for continuous operation of the existing roadway without disruption. The proposed construction shall be done in a way that will reduce the impact to the existing site. Contractor will be required to coordinate with residents to reduce impact to driveway access.

**I.02 CONTRACTOR'S USE OF PREMISES**

- A. Contractor will not have complete and exclusive use of the premises for the performance of the Work. Contractor shall coordinate the use of servitudes and right-of-way with the City as applicable. Refer to Section 108 Contractor's Responsibilities for additional requirements related to use of the premises.
- B. Contractor shall limit the use of the premises for its Work and for storage to allow for:
  1. Work by other contractors.
  2. City occupancy
  3. Public use.
- C. Contractor shall assume full responsibility for security of all its subcontractors' materials and equipment stored on the site.
- D. Obtain and pay for use of additional storage or work areas if needed to perform the Work.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 4010**

**SECTION 4025**

**MEASUREMENT AND PAYMENT**

**PART I GENERAL**

**I.01 SCOPE**

- A. This Section includes requirements for the measurement and payment of various elements of the Work which are not already specified in the Standard Specifications.

**I.02 MISCELLANEOUS CONSTRUCTION ITEMS**

- A. Miscellaneous Construction Items, if indicated in the Bid Form, is considered a provisional amount to be used only if needed. Miscellaneous Construction Items are exclusive of work indicated in the Contract Documents for which payment is included under other items in the Bid Form. No work may be performed under Miscellaneous Construction Items without prior written approval of the City Engineer.
- B. Prior to final payment, the original amount provided for Miscellaneous Construction Items will be adjusted to actual costs by deductive Change Order, adjusting the Contract Amount, accordingly.
- C. The Contractor shall make no claim, nor receive any compensation, for anticipated profits, loss of profit, damages, or any extra payment due to any unexpended portion of the Miscellaneous Construction Items.
- D. Work authorized by the City under Miscellaneous Construction Items may be performed as a lump sum (negotiated before the fact), unit prices (when applicable), or time and material. For work performed under time and material, Contractor shall submit detailed verification (breakdown) of all costs, subject to the approval of the Engineer.

**PART 2 PRODUCTS – NOT USED**

**PART 3 EXECUTION**

**3.01 CONTRACT ITEMS**

**SOUTHFIELD ROAD IMPROVEMENTS**

- A. ITEM S-1 MAILBOXES (METAL) (RELOCATE)
  - 1. Measurement
    - a. Measurement for this item shall be on an Each basis.
  - 2. Payment
    - a. Payment for this item shall be an Each item and include labor, tools, and materials required to re-install permanent mailbox structures to match existing mailboxes.
- B. ITEM S-2 MAILBOXES (BRICK) (RECONSTRUCT SAME MATERIAL)
  - 1. Measurement
    - a. Measurement for this item shall be on an Each basis.
  - 2. Payment

- a. Payment for this item shall be an Each item and include labor, tools, and materials required to re-install permanent mailbox structures to match existing mailboxes.

C. ITEM S-3 MAILBOXES (PLASTIC) (RELOCATE)

1. Measurement

- a. Measurement for this item shall be on a Each basis.

2. Payment

- a. Payment for this item shall be an Each item and include labor, tools, and materials required to re-install permanent mailbox structures to match existing mailboxes.

D. ITEM S-4 PROOF ROLLING EXISTING SUBGRADE

1. Measurement

- a. Measurement for this item shall be on a Lump Sum basis.

2. Payment

- a. Payment for this item shall be a Lump Sum item and include labor, inspection, materials, and tools required to proof roll the existing subgrade.

E. ITEM S-5 RECONNECTING EXISTING YARD DRAINS

1. Scope of Work

- a. The contractor shall locate all existing yard drains that discharge into the existing roadside ditch within project limits.
- b. Document the location, pipe size, material, and condition of each yard drain.
- c. Reconnect each approved yard drain to the new storm drain system using Inserta-Tee fittings or approved equal.
- d. Maintain positive drainage from yard drains to new storm drain system.
- e. Ensure all connections are watertight and properly aligned to prevent backflow or blockage.
- f. Contractor shall coordinate with property owners as needed to locate and access yard drain locations.

2. Measurement

- a. Measurement for this item shall be a Lump Sum item.

3. Payment

- a. Payment for this item shall and include labor, materials, and tools required to locate and reconnect all existing yard drains to the new storm drain system. No separate payment will be made for individual connections, fittings, pipe extensions, or restoration. All costs shall be included in the lump sum bid.

F. ITEM S-6 SAWCUTTING

1. Measurement

- a. Measurement for this item shall be on a Linear Foot basis.

2. Payment

- a. Payment for this item shall be a Linear Foot item and include labor, materials, and tools required to sawcut existing pavement as shown and specified in the construction plans.

G. ITEM S-7 AS-BUILTS

1. Measurement

- a. Measurement for this item shall be on a Lump Sum basis.

2. Payment

- a. Payment for this item will be made under item S-7 as a Lump Sum item per Section 4720.

H. ITEM S-8 CONSTRUCTION LAYOUT

1. Measurement

- a. Measurement for this item shall be on a Lump Sum basis.

2. Payment

- a. Payment for this item will be made under item S-8 as a Lump Sum item and include, labor, tools and materials required.

I. ITEM S-9 NYLOPLAST DRAIN BASIN (12")

1. Measurement

- a. Measurement for this item shall be on an Each basis.

2. Payment

- a. Payment for this item will be made under item S-9 as an Each item and include, labor, tools and materials required to raise existing utilities flush with finished pavement.

J. ITEM S-10 BI-AXIAL GEOGRID

1. Measurement

- a. Measurement for this item shall be on a Square Yard basis.

2. Payment

- a. Payment for this item will be made under item S-10 as a Square Yard item and include, labor, tools and materials required to install bi-axial geogrid per manufacturer's instructions and as indicated in the construction drawings.

K. ITEM S-11 SCHEDULE 40 PVC DUCT – 1 1/2" C

1. Measurement

- a. Measurement for this item shall be on a linear foot basis.

2. Payment

- a. Payment for this item will be made under item S-11 as a linear foot item and include, labor, tools and materials required.
- L. ITEM S-12 600V CABLE - #1 AWG
  - 1. Measurement
    - a. Measurement for this item shall be on a Linear Foot basis.
  - 2. Payment
    - a. Payment for this item will be made under item S-12 as a Linear Foot item and include, labor, tools and materials required.
- M. ITEM S-13 600V CABLE - #8 AWG
  - 1. Measurement
    - a. Measurement for this item shall be on a Linear Foot basis.
  - 2. Payment
    - a. Payment for this item will be made under item S-13 as a Linear Foot item and include, labor, tools and materials required.
- N. ITEM S-14 600V CABLE - #10 AWG
  - 1. Measurement
    - a. Measurement for this item shall be on a Linear Foot basis.
  - 2. Payment
    - a. Payment for this item will be made under item S-14 as a Linear Foot item and include, labor, tools and materials required.
- O. ITEM S-15 GROUND RODS- 5/8" X 8'
  - 1. Measurement
    - a. Measurement for this item shall be on an Each basis.
  - 2. Payment
    - a. Payment for this item will be made under item S-15 as an Each item and include, labor, tools and materials required.
- P. ITEM S-16 PEDESTAL ENCLOSURE
  - 1. Measurement
    - a. Measurement for this item shall be on an Each basis.
  - 2. Payment
    - a. Payment for this item will be made under item S-16 as an Each item and include, labor, tools and

materials required.

Q. ITEM S-17 PEDESTAL

I. Measurement

a. Measurement for this item shall be on an Each basis.

2. Payment

a. Payment for this item will be made under item S-17 as an Each item and include, labor, tools and materials required.

R. ITEM S-18 PEDESTAL BASE

I. Measurement

a. Measurement for this item shall be on an Each basis.

2. Payment

a. Payment for this item will be made under item S-18 as an Each item and include, labor, tools and materials required.

S. ITEM S-19 MAIN CIRCUIT BREAKER – 100A

I. Measurement

a. Measurement for this item shall be on an Each basis.

2. Payment

a. Payment for this item will be made under item S-19 as an Each item and include, labor, tools and materials required.

T. ITEM S-20 SURGE PROTECTION DEVICE

I. Measurement

a. Measurement for this item shall be on an Each basis.

2. Payment

a. Payment for this item will be made under item S-20 as an Each item and include, labor, tools and materials required.

U. ITEM S-21 LIGHTING CONTACTOR

I. Measurement

a. Measurement for this item shall be on an Each basis.

2. Payment

a. Payment for this item will be made under item S-21 as an Each item and include, labor, tools and materials required.

V. ITEM S-22 BRANCH CIRCUIT BREAKER – 15A

1. Measurement

- a. Measurement for this item shall be on an Each basis.

2. Payment

- a. Payment for this item will be made under item S-22 as an Each item and include, labor, tools and materials required.

W. ITEM S-23 INTERIOR PANELS

1. Measurement

- a. Measurement for this item shall be on an Each basis.

2. Payment

- a. Payment for this item will be made under item S-23 as an Each item and include, labor, tools and materials required.

X. ITEM S-24 DECORATIVE CONCRETE POLE AND FIXTURE

1. Measurement

- a. Measurement for this item shall be on an Each basis.

2. Payment

- a. Payment for this item will be made under item S-24 as an Each item and include, labor, tools and materials required.

Y. ITEM S-25 LIGHT POLE FOUNDATION

1. Measurement

- a. Measurement for this item shall be on an Each basis.

2. Payment

- a. Payment for this item will be made under item S-25 as an Each item and include, labor, tools and materials required.

Z. ITEM S-26 MISCELLANEOUS CONSTRUCTION ITEMS

1. Measurement

- a. Measurement for this item shall be on a Lump Sum basis.

2. Payment

- a. Payment for this item will be made under item S-26 as a Lump Sum item and include, labor, tools and materials required.

**END OF SECTION 4025**

## **SECTION 4026**

### **PAY ESTIMATES**

#### **PART I GENERAL**

##### **I.01 REQUIREMENTS INCLUDED**

- A. Pay Estimates will be prepared by the Contractor and submitted to the Engineer for review and acceptance. Supporting documentation and other items shall also be provided by the Contractor.
- B. Unit Price Work will be measured for payment as specified in Standard Specification Section 111.
- C. Stockpiled or Stored Material will be measured for payment as specified in Standard Specification Section 111. Refer to Standard Specification Section 111.7 for minimum storage period, maximum percentage of contract price, and other requirements.
- D. The accepted Schedule of Values, specified in Technical Specifications Section 4370, will be used as the basis of payment for Contract Items measured by lump sum.

##### **I.02 PREPARATION OF PAY ESTIMATES**

- A. Weekly quantity reports will be prepared by the Contractor each week, listing quantities of Unit Price Work and percentages of work items in the Schedule of Values completed each week. Each weekly report will be signed by Engineer and Contractor, to acknowledge agreement on completed Work every week.
- B. The cutoff date for pay estimates is the last day of each month. The Contractor will prepare the Pay Estimate based on a summary of completed work items recorded on the agreed to weekly reports each month.

##### **I.03 DOCUMENTATION ASSOCIATED WITH PARTIAL PAYMENTS**

- A. Prepare and furnish additional documentation to coincide with each partial payment. The value of each item of required documentation on a monthly basis, established in the approved Schedule of Values or in respective Contract Items, will be included in partial payments whenever the respective item is provided in a timely manner.
- B. After receipt of the first partial payment and prior to receipt of subsequent payments, certify in writing that all subcontractors and suppliers have been paid for work and materials from previous partial payments received (less any retainage) by the Contractor.
- C. On a monthly basis, furnish a completed Monthly Subcontractor Payment and Utilization Report – FSC Form 5 for first-tier and second-tier subcontractors.
- D. Furnish an updated construction schedule as required in Technical Specification Section 4310.
- E. Provide photographs in accordance with Technical Specification Section 4322.

#### **PART 2 PRODUCTS (NOT USED)**

#### **PART 3 EXECUTION (NOT USED)**

#### **END OF SECTION 4026**

**SECTION 4035**

**CHANGE ORDER PROCEDURES**

**PART I GENERAL**

**1.01 REQUIREMENTS INCLUDED**

- A. Promptly implement change order procedures.
  - 1. Provide full written data required to evaluate changes.
  - 2. Maintain detailed records of work done on a time-and-material/ force account basis.
  - 3. Provide full documentation to Engineer on request.
  - 4. Upload documentation of written changes in work to the Department of Public Works.
- B. Designate in writing the member of Contractor's organization:
  - 1. Who is authorized to accept changes in the Work.
  - 2. Who is responsible for informing others in the Contractor's employ of the authorization of changes in the Work.
- C. City will designate in writing the persons who are authorized to sign Field Orders, Miscellaneous Construction Authorizations, Work Change Directives, and Change Orders.

**1.02 RELATED REQUIREMENTS**

- A. Standard Specification Section 100 Definitions and Abbreviations
- B. Standard Specification Section 103 Scope of Work
- C. Standard Specification Section 105 Changes in Work.

**1.03 FIELD ORDER**

- A. Engineer may issue a Field Order for Contractor to proceed with a minor change which does not involve a change in Contract Amount or Contract Time.
- B. Field Order will describe interpretations or clarifications of Contract Documents, order minor changes in the work, and/or memorialize trade-off agreements. Field Order will describe changes in the Work, both additions and deletions, with attachments as necessary to define details of the change.

**1.04 CONTRACT CHANGE REQUEST**

- A. City may initiate changes to plans, specifications, character of work, or quantity of work by submitting a Change Proposal Request to Contractor. Request will include:
  - 1. Detailed description of the Change, Products and location of the change in the project.
  - 2. Supplementary or revised Drawings and Specifications.
  - 3. The projected time span for making the change and a specific statement as to whether overtime work is, or is not, authorized.
  - 4. A specific period of time during which the requested price will be considered valid.
  - 5. Such request is for information only and is not an instruction to execute the changes, nor to stop work in progress.

- B. Contractor may initiate changes in specified methods of construction and changes to plans and specifications which do not materially affect the Work, and which can be made at a reduction in cost or at no additional cost to the City, by submitting a written Change Proposal to the Engineer, containing:
  - 1. Description of the proposed changes.
  - 2. Statement of the reason for making the changes.
  - 3. Statement of the effect on the Contract Amount and the Contract Time.
  - 4. Documentation supporting any change in Contract Amount or Contract Time, as appropriate.

**I.05 DOCUMENTATION OF PROPOSALS AND CLAIMS**

- A. Support each quotation for a lump-sum proposal and for each unit price which has not previously been established, with sufficient substantiating data to allow Engineer to evaluate the quotation.
- B. On request, provide additional data to support time and cost computations
  - 1. Labor required.
  - 2. Equipment required.
  - 3. Products required.
    - a. Recommended source of purchase and unit cost.
    - b. Quantities required.
  - 4. Taxes, insurance and bonds.
  - 5. Credit for work deleted from Contract, similarly documented.
  - 6. Overhead and profit.
  - 7. Justification for any change in Contract Time.
- C. Support each claim for additional costs and for work done on a time-and-material/force account basis, with documentation as required in Standard Specification Section 105.3.2 Payment.
- D. Document requests for Substitutions for Products as specified in Section 4630.

**I.06 AUTHORIZATION OF CONTRACT CHANGES**

- A. City may authorize changes or extra work that involves changes to Contract Price or Contract Time with a Miscellaneous Construction Authorization, a Work Change Directive, or a formal Change Order.
- B. City may issue a Miscellaneous Construction Authorization to authorize changes or extra work with payment from the Miscellaneous Construction Items, if indicated on the Bid Form, and changes to Contract Time. Authorization will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change. It will designate the amount of payment and any change in Contract Time. A Miscellaneous Construction Authorization does not change the Contract Amount or the Contract Time. Authorized changes to Contract Time will be included in a subsequent Change Order.

- C. City may issue a Work Change Directive for Contractor to proceed with a change for subsequent inclusion in a Change Order, either with or without initiating a change by first submitting a Change Proposal Request. Authorization will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change and will designate the method of determining any change in the Contract Amount and any change in Contract Time. A Work Change Directive does not change the Contract Amount or the Contract Time. Changes to the Contract Amount and the Contract Time will be included in a subsequent Change Order.
- D. A formal Change Order is the only document that can change the Contract Amount and the Contract Time. City may issue a Change Order to change the Contract Time as authorized in a Miscellaneous Construction Authorization, to change the Contract Amount and Contract Time as designated in a Work Change Directive, and to authorize extra work and changes initiated by the City.

#### **1.07 METHODS OF COMPENSATION FOR CHANGES**

- A. Content of Lump Sum/Fixed Price changes will be based on
  - 1. Engineer's Change Proposal Request and Contractor's responsive Change Proposal as mutually agreed between City and Contractor
  - 2. Contractor's Change Proposal, as recommended by the Engineer
- B. Content of Unit Price changes will be based on
  - 1. Engineer's definition of the scope of the changes
  - 2. Contractor's Change Proposal, as recommended by the Engineer
  - 3. Survey of completed Work
- C. Unit Prices will be those stated in the Contract or those mutually agreed upon between the City and the Contractor.
- D. When the price for changes or extra work cannot be agreed upon, City will issue a Work Change Directive directing Contractor to proceed on the basis of time and materials/force account.
- E. At the end of each day, submit itemized accounting and supporting data as provided in Standard Specification Section 105.3.2.2. Engineer will determine the allowable cost of such work.

#### **1.08 ALLOWABLE COSTS FOR CHANGES**

- A. Allowable labor costs consist of payroll costs in the direct employ of the Contractor in the performance of the Work under schedules of job classifications agreed upon by the City and the Contractor. Such employees shall include superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by the Contractor, whether at the Site or in the Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedules of job classifications, are excluded from allowable labor costs. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expense

of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, may be included in the above to the extent authorized by the City.

- B. Allowable material costs consist of the cost of materials furnished and incorporated into the work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to the Contractor. All trade discounts, rebates, and refunds and returns from sale of surplus materials shall accrue to the City, and the Contractor shall make provisions so that they may be obtained.
- C. Allowable labor costs for Subcontractors are the same as specified for the Contractor.
- D. Allowable equipment costs for owned or rented equipment shall be paid by the following conditions.
  - 1. Allowable rates for owned equipment shall be the estimated cost reimbursement rates included within the original bid prices. If the Contractor's established original bid rates are not available, the allowable rates shall not exceed those shown in the Rental Rate Guide Book for Construction Equipment (Blue Book) Volumes 1, 2, or 3 as applicable. If Blue Book rates are used, reimbursement will not be made for owned service trucks or other support equipment and vehicles, since their costs are normally included in equipment operating costs.
  - 2. Owned pickups, if directly used in the performance of extra work, are eligible for reimbursement at the flat rate of \$50.00 per day. If used by a superintendent or used primarily for transportation of employees, their costs are included in overhead and separate reimbursements will not be made.
  - 3. Payment for owned equipment will be made for the actual hours used in the extra work. Payment will not be made for time lost for breakdowns, repairs, or time after equipment is no longer needed for the extra work. If equipment is used intermittently while dedicated to the extra work, payment will be made for the duration that the equipment is dedicated to the extra work, but not more than 8 hours per day. While actually working during second and third shift work, payment will be made at one half the Blue Book ownership costs plus the estimated hourly operating costs. No reimbursement will be made while not actually working.
  - 4. If ordered held available for extra work, idled owned equipment will be paid for at an hourly standby rate computed as one half of the agreed working rate per hour, excluding operating costs. Reimbursement for standby will not be paid when the equipment would normally be idle, such as Saturdays, Sundays, holidays, days when weather conditions prevent working, during breakdowns or servicing, or when the equipment has actually worked or been paid for 8 or more hours in the day or 40 or more hours in the week. No payment will be made for equipment downtime other than for time specifically ordered for extra work by the City.
  - 5. Rental rates for rented or leased equipment shall be as paid by the Contractor. The allowable reimbursement for rented equipment shall be the agreed invoice cost. The invoice shall be marked "PAID" and initialed or signed by the Contractor. Allowable reimbursement for operating costs shall be as agreed between the City and Contractor.

#### **1.09 ALLOWABLE MARKUP FOR CHANGES**

- A. The Contractor's fee for overhead and profit (markup) for changes shall be a fee based on the markup provided in Standard Specification Section 105.3.2.3.

**I.10 CHANGE OF CONTRACT TIME**

- A. The Contract Time may only be changed by a Change Order. Changes to Contract Time identified in a Miscellaneous Construction Authorization or a Work Change Directive is evidence that City and Contractor expect that the change will be incorporated into a subsequently issued Change Order.
- B. Where Contractor is prevented from completing any part of the Work within the Contract Time due to delay beyond control of the Contractor, the Contract Time will be extended in an amount equal to the time lost due to such delay.
- C. If anyone for whom the City is responsible delays, disrupts, or interferes with the performance or progress of the Work, then the Contractor will be entitled to an equitable adjustment in the Contract Amount or the Contract Time or both. The Contractor's entitlement to an adjustment is conditioned on such adjustment being essential to the Contractor's ability to complete the Work within the Contract Time.
- D. If the Contractor is delayed in performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under control of the City, or other causes not the fault of and beyond control of City and Contractor, then the Contractor will be entitled to an equitable adjustment in Contract Time, if such adjustment is essential to the Contractor's ability to complete the Work within the Contract Time. Such an adjustment shall be the Contractor' sole and exclusive remedy for the delays described in this paragraph.
- E. For the purpose of this specification, a delay extends the duration of critical path. With any request for changes to Contract Time, the Contractor shall furnish the Engineer with sufficient documented evidence of the impact of a delay to the critical path. Documentation shall include identifying work activities affected by the delay, demonstrating that the affected work activities are critical path activities, and the impact to the critical path.
- F. With any request for changes to Contract Time for delays related to abnormal weather conditions, the Contractor shall furnish the Engineer with sufficient documented evidence to demonstrate the difference between normal and abnormal weather conditions for the Project location.

**I.11 CORRELATION WITH CONTRACTOR'S SUBMITTALS**

- A. Periodically revise Schedule of Values to record each change as a separate item of work, and to record the adjusted Contract Amount.
- B. Periodically revise the Construction Schedule to reflect each change in Contract Time.
  - I. Revise subschedules to show changes for other items of work affected by the changes.
- C. Upon completion of work under a Change Order, enter pertinent changes in As-Built Drawings.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 4035**

## SECTION 4038

### REQUESTS FOR INFORMATION

#### **PART I GENERAL**

##### **1.01 DESCRIPTION OF REQUIREMENTS**

- A. This Section specifies the general methods and requirements of Requests for Information (RFIs).

##### **1.02 REQUESTS FOR INFORMATION**

- A. When the Contractor believes that additional information or clarification of a contract requirement is needed, they may initiate an RFI.
- B. The RFI process shall be limited to the clarification of technical and/or administrative matters. While the response to an RFI might lead to a change in the contract scope, cost or time, RFIs are not a substitute to the notification requirements stipulated in the Contract Documents.
- C. A response to an RFI is not an authorization to perform any additional work that would require a change order or written amendment to the contract. If the Contractor believes the response an RFI requires a change to the Contract, Contractor shall promptly provide written notice to the Engineer in accordance with the General Provisions.
- D. RFIs are not a substitute for the Submittals process specified elsewhere.

#### **PART 2 PRODUCTS – NOT USED**

#### **PART 3 EXECUTION**

##### **3.01 ORIGINATION**

- A. Subcontractors and suppliers shall use the form appended to this section for submitting an RFI to the Contractor for subsequent origination of the RFI. RFIs submitted directly to the Engineer by subcontractors or suppliers will not be accepted.
  - 1. RFIs are to numbered in ascending order from the first submittal date. In the event that an answered RFI results in a follow-up inquiry, a new RFI must be originated and the RFI's may be linked.
  - 2. Enter a short description of the question as the Title. For Reference Documents, include Specification Section(s), Drawing(s), or Submittal ID for which information is requested.
  - 3. Attach drawings, sketches, photographs or other relevant information.
  - 4. Indicate the date by which the Contractor requests a reply.
  - 5. Enter the question. If the question concerns an interpretation of the Contract Documents, enter the Contractor's interpretation.

##### **3.02 PROCESSING**

- A. Contractor shall submit all RFIs to the Engineer for processing.
- B. All RFIs will be reviewed and answered by the Engineer.

- C. The Engineer will generally respond to RFIs within seven calendar days of receipt depending on the complexity of the inquiry.
- D. The RFI Log will be maintained, including the Status, Creation Date, and Due Date.

**3.03      RESPONSES**

- A. If the RFI contains sufficient clarity, the Engineer will insert a response and “SUBMIT FOR ACKNOWLEDGEMENT”. The Contractor shall “CLOSE” the RFI to indicate receipt.
- B. If the RFI does not contain sufficient clarity, the Engineer may request additional information from the Contractor.
- C. If the Contractor does not agree with the answer from a RFI, then the Contractor shall create a new RFI and link it to the original RFI.

**END OF SECTION 4038**

(RFI Form for Subcontractors and Vendors follows)

## Request for Information for Subcontractors & Vendors

RFI Title:	RFI No.:	
Project:	Date Response Required by:	
Project No.:	Date Submitted:	
<b>Reference Documents</b>		
Submittal ID:	Drawing No:	
Specification Section:	Other:	
Attachments:		
<u>QUESTION:</u>		
Contract Interpretation or Proposed Solution		
Cost Impact? Y/ N	Cost Impact Notes:	
Estimated Cost:		
Schedule Impact? Y/N	Sched Impact Notes:	
Est Impact (Days):		
Submitted By:	Date:	
Company:		

*Submit form to Contractor for entry*

## SECTION 4050

### SURVEY CONTROLS

#### **PART I GENERAL.**

##### **I.01 SCOPE OF WORK.**

- A. Provide and pay for field engineering services required for project; including but not limited to:
  - 1. Survey work required for project controls and layout.
- B. Retain the services of a qualified individual licensed in the state of Louisiana to:
  - 1. Identify existing control points and property line corners indicated on the Drawings.
  - 2. Verify and record the locations and elevations of all proposed pipes, structures and facilities.

##### **I.02 SUBMITTALS.**

- A. Submit, to the Engineer, the name and qualifications of individuals performing construction layout or cadastral surveying.
- B. On request of the Engineer, submit documentation to verify accuracy of field engineering work.
- C. Submit copies of all cut sheets for information.

##### **I.03 QUALIFICATIONS OF SURVEYOR.**

- A. Individuals performing construction layout or cadastral surveying shall meet the qualifications established by the laws and rules of the Louisiana Professional Engineering and Land Surveying Board.

##### **I.04 SURVEY REFERENCE POINTS.**

- A. The City will provide reference points which in the Engineer's judgment are necessary to enable the Contractor to proceed with the Work.
- B. Locate and protect reference points prior to starting site work and preserve all permanent reference points during construction.
  - 1. Make no changes or relocations without prior written notice to and approval by the Engineer.
  - 2. Report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
  - 3. Require the surveyor to correctly replace project control points which may be lost or destroyed. Establish replacements based on original survey control.

**1.05 PROJECT SURVEY REQUIREMENTS.**

- A. Establish a minimum of two temporary benchmarks on site, referenced to data established by survey control points.
  - 1. Record locations, with horizontal and vertical data.
  - 2. Temporary benchmarks shall be installed and spaced for convenient reference and used at locations along roadways, pipeline routes, and/or on the Site.

**PART 2 PRODUCTS. (NOT USED)**

**PART 3 EXECUTION.**

**3.01 RECORDS.**

- A. Maintain a complete, accurate log of all control and survey work as it progresses.

**END OF SECTION 4050**

**SECTION 4110**

**STORM WATER PERMITTING PROCEDURES**

**PART I GENERAL**

**I.01 SCOPE OF WORK**

- A. Furnish all labor and professional services necessary to prepare an Erosion Control Plan or Storm Water Pollution Prevention Plan (SWPPP) for use in compliance with storm water permit requirements.
  - 1. Prepare an Erosion Control Plan for Work where less than one acre of land will be disturbed by construction activities.
  - 2. Prepare a SWPPP for Work where one or more acres of land will be disturbed by construction activities.
  - 3. Prepare a Notice of Intent (NOI) where 5 or more acres of land will be disturbed by construction activities, and submit the NOI to the State prior to commencing land-altering activities. Prepare and submit a Notice of Termination (NOT) to the State after Final Acceptance of the Work.
- B. Determine the area of disturbance based on the overall length of the project and the construction methods utilized for the Work, regardless of sequencing. Use a minimum width of 12 feet along the length of open trench excavation for measuring disturbance. Determine additional width based on depth of excavation, dimensions of pipe and manholes, and specific methods of construction.
- C. Refer to Standard Specification Section 310 for requirements to construct and maintain temporary erosion control features.

**I.02 APPLICABLE REGULATIONS**

- A. Comply with all applicable Federal, State and local laws and regulations concerning storm water permitting.
  - 1. City of Shreveport Code of Ordinances Article IV – Erosion and Sediment Control
  - 2. LAC 33:IX.251 I.B.15 (for ground disturbance area 1 acre to less than 5 acres)
  - 3. LAC 33:IX.251 I.B.14.j (for ground disturbance area 5 acres or more)
  - 4. Title 40 CFR 123.5(a)(9), 122.26(a), 122.26(b)(14)(x) and 122.26(b)(15)

**I.03 SUBMITTALS**

- A. Submit the Erosion Control Plan or SWPPP to the City before commencing land-altering activities including clearing, grading, excavating and filling.
- B. Submit copies of the NOI and the NOT to the City for information.

**I.04 EROSION CONTROL PLAN**

- A. The Permit Application and Erosion Control Plan shall satisfy requirements of Shreveport Code of Ordinances Section 34-123.

- B. The Permit Application and Erosion Control Plan shall include the following items.
  - 1. Grading and drainage plan showing
    - a. Date, scale, north arrow, and property lines
    - b. Location, type of use, and total percentage of existing and proposed improvements
    - c. Existing and proposed topographic features
    - d. Locations of all temporary and permanent runoff detention basins, along with any constructed and/or altered drainage systems
  - 2. Erosion Control Plan showing
    - a. Description of temporary and permanent structural controls
    - b. Temporary and final stabilization
  - 3. Schedule providing for site inspections at least every 2 weeks and after each rain event of ½ inch or more
  - 4. List of measures to minimize offsite tracking of sediment on vehicles
  - 5. Sequence of scheduled activities
  - 6. The 100-year floodplains and/or floodways with related elevations
- C. The Erosion Control Plan shall indicate the use of appropriate items specified in Section 310, Section 1201, Section 1203; shown on Standard Plans 310-I through 310-II, and shown on the Drawings. Coordinate the plan with scheduling of ground disturbance activities.

**I.05 STORMWATER POLLUTION PREVENTION PLAN**

- A. The SWPPP shall satisfy requirements of Louisiana DEQ Storm Water General Permit for Small Construction Activities or Louisiana DEQ General Permit for Discharges of Storm Water From Construction Activities 5 Acres or More.
- B. The SWPPP shall include the following contents as described in the respective General Permit.
  - 1. Site Description
  - 2. Controls
  - 3. Maintenance
  - 4. Inspections
  - 5. Non-Storm Water Discharges
  - 6. Certification and Signature
- C. The SWPPP shall indicate the use of appropriate items specified in Section 310, Section 1201, Section 1203; shown on Standard Plans 310-I through 310-II, and shown on the Drawings. Coordinate the plan with scheduling of ground disturbance activities.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 STORM WATER POLLUTION PREVENTION PLANS**

- A. Post a notice near the main entrance to the construction site with the following information.
  - 1. The LPDES permit number and effective date of the permit
  - 2. The name and telephone number of a local contact person
  - 3. A brief description of the project
  - 4. Location of the SWPPP if the site is inactive or does not have an on-site location to store the plan
  
- B. Make the SWPPP available on request to LDEQ, local government officials, and the operators of a municipal separate storm sewer receiving discharges from the site.
  
- C. Amend the SWPPP as described in the respective General Permit whenever:
  - 1. there is a change in design, construction, operation, or maintenance, which has a significant effect on the discharge of pollutants to the waters of the State and which has not otherwise been addressed in the SWPPP.
  - 2. inspections or investigations indicate the SWPPP is proving ineffective or otherwise not achieving the general objectives of controlling pollutants in storm water discharges associated with construction activity
  - 3. a new contractor or subcontractor will implement a measure of the SWPPP
  - 4. measures are necessary to protect endangered and threatened species or historic properties.

**END OF SECTION 4110**

**SECTION 4200  
PROJECT MEETINGS**

**PART I GENERAL**

**I.01 REQUIREMENTS INCLUDED**

- A. The Engineer will schedule and administer pre-construction meeting, periodic progress meetings and specially called meetings throughout progress of the Work.
  - 1. Prepare agenda for meetings.
  - 2. Make physical arrangements for meetings.
  - 3. Preside at meetings.
  - 4. Record the minutes; include significant proceedings and decisions.
  - 5. Meeting minutes must be transmitted to the Department of Public Works within 2 working days after each meeting.
  - 6. Reproduce and distribute copies of minutes within 5 working days after each meeting.
    - a. To participants in the meeting.
    - b. To parties affected by decisions made at the meeting.
- B. Representatives of Contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C. Attend meetings to ascertain that work is expedited consistent with Contract Documents and construction schedules.

**I.02 PRE-CONSTRUCTION MEETING**

- A. Attend a preconstruction meeting.
- B. Location: A central site, convenient for all parties, designated by the Engineer.
- C. Attendance
  - 1. Engineer and his/her professional consultants.
  - 2. Resident Project Representative.
  - 3. Contractor.
  - 4. Major Subcontractors.
  - 5. Major suppliers.
  - 6. Utilities
  - 7. Others as appropriate.
- D. Suggested Agenda Items
  - 1. Introduction of key project personnel

2. Lines of communication/procedures
3. Preconstruction submittal requirements
4. Key contract dates
5. Correspondence routing and distribution
6. Payment procedures
7. Submittal and shop drawing procedures
8. Project progress meetings
9. Project progress reports
10. City requirements and special project procedures
11. RPR duties, responsibilities, and limitations of authority
12. Permits and coordination with local building officials
13. Safety procedures
14. QM procedures
15. Construction work schedule (days, hours, holidays, overtime)
16. Control of work requirements
17. Fair Share reporting requirements (Form 5)
18. Material storage requirements
19. Contractor's staging area
20. Field Offices
21. Coordination with utilities
22. Homeowner/business notification and citizen complaints
23. Construction photographs and record drawings
24. Testing laboratory procedures
25. Conformed documents

**I.03 PROGRESS MEETINGS**

- A. Attend construction progress meetings every two weeks and periodic meetings at regular intervals determined by the Engineer.
- B. Attend called meetings as required by progress of the Work.
- C. Location of the meetings: Project field office of Contractor or Engineer, or City Hall, or another location identified by the Engineer.
- D. Attendance
  - I. Engineer and his/her professional consultants as needed.

2. Subcontractors as appropriate to the agenda.
  3. Suppliers as appropriate to the agenda.
  4. Others as appropriate.
- E. Suggested Agenda Items
1. Review, approval of minutes of previous meeting.
  2. Review of work progress since previous meeting.
  3. Submittals
  4. RFI's
  5. Field Orders, Work Change Directives, Change Orders
  6. Field observations, problems and conflicts.
  7. Current Construction Schedule.
  8. Progress, schedule, during succeeding work period.
  9. Coordination of work activities.
- F. Attend progress meetings and study previous meeting minutes and current agenda items, in order to be prepared to discuss pertinent topics such as deliveries of materials and equipment, progress of the Work, etc.
- G. Provide a current submittal log at each progress meeting.
- H. Provide a 4-week look-ahead schedule of anticipated working days and hours for the Engineer's use in planning work by the Resident Project Representative.
- I. Provide an updated and accurate project schedule of work to be performed in the next 30 days. Remittance of partial pay estimates are dependent on submittal and approval of an updated monthly construction progress schedule.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 4200**

## SECTION 4300

### SUBMITTALS

#### **PART I GENERAL**

##### **I.01 SCOPE OF WORK**

- A. This Section includes the requirements for compiling, processing and transmitting submittals required for execution of the project.
- B. The Contractor shall prepare and submit shop drawings, working drawings, fabrication details, mix designs, control diagrams, manufacturer information, installation manuals and guides, and product and material data as required in the Contract Documents.

All submittals and supporting data, catalogs, schedules, etc., shall be submitted as the instruments of the Contractor, who shall be responsible for their accuracy, completeness, and coordination. Such responsibility shall not be delegated, in whole or in part, to subcontractors or suppliers. These submittals may be prepared by the Contractor, subcontractors, or suppliers, but the Contractor shall confirm that materials, dimensions, catalog numbers, technical data and performance criteria meet all of the requirements of the Contract Documents, while conforming to structural, space, and access conditions at the point of installation. Designation of work "by others," if shown in submittals, shall mean that the Work will be the responsibility of the Contractor rather than the subcontractor or supplier who prepared the submittals. The Engineer will not accept receipt of submittals directly from subcontractors or vendors.

The Contractor shall ensure that there is no conflict with other submittals and notify the Engineer in each case where its submittal may affect the work of another Contractor of the City. The Contractor shall ensure coordination of submittals among the related crafts and subcontractors.

Submittals shall be prepared in such form that data can be identified with the applicable specification. The data shall clearly demonstrate compliance with the Contract Documents and shall relate to the specific equipment or piece of work to be furnished. Where manufacturer's standard drawings and catalog sheets are employed, they shall be marked clearly to show what portion of the data is applicable to this project.

- C. Variances - Notify the Engineer in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents. Notify the Engineer in writing, at the time of re-submittal (resubmission), of all deviations from previous submissions of that particular submittal, except those deviations which are the specific result of prior comments from the Engineer.
- D. All deliverables shall include submittal registry and major milestone list.
- E. Submittals are categorized into two types: Action Submittals and Informational Submittals, as follows:
  - 1 Action Submittal: Written and graphic information submitted by the Contractor that requires the Engineer's approval. The following are examples of action submittals:
    - a. Shop drawings.
    - b. Product data.

- c. Samples.
- d. Traffic Control Plan
- e. Work Plans
- f. As-Built Drawings

2 Informational Submittal: Information submitted by the Contractor that does not necessarily require the Engineer's technical review and acceptance. The following are examples of informational submittals:

- a. Submittal Registry.
- b. Construction Progress Schedule.
- c. Schedule of Values
- d. Statements of Qualifications.
- e. Daily Reports
- f. Construction Photography and Videography.
- g. Certifications.
- h. Warranties and Bonds.
- i. Contract Close-out documents.

**I.02 ACTION SUBMITTALS.**

**A. Shop Drawings**

- 1. Shop drawings may include, but are not necessarily limited to, custom prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shop work manufacturing instructions, custom templates, valve schedules, wiring diagrams, coordination drawings, equipment inspection and test reports, and performance curves and certifications, as applicable to the work.
- 2. Contractor shall verify all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and coordinate each item with other related shop drawings and the Contract requirements.
- 3. All details on shop drawings shall clearly show the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted.
- 4. Submittal of all Shop Drawings shall be maintained up to date and transmitted to the Department of Public Works.

- B. Maintenance of Traffic Plans: Prepare and submit maintenance of traffic plans where and when required by the Contract Documents and by local ordinances or regulations.
- C. Product Data: Product data include, but are not limited to, the manufacturer's standard prepared data for manufactured products (catalog data), such as the product specifications, installation instructions, availability of colors and patterns, rough-in diagrams and templates, product photographs (or diagrams), wiring diagrams, performance curves, quality control inspection and reports, certifications of compliance (as specified or otherwise required), mill reports, product operating and maintenance instructions, recommended spare parts and product warranties, as applicable.
- D. Samples.
  - 1. Furnish samples required by the Contract Documents for the Engineer's approval. Samples shall be delivered to the Engineer as specified or directed. Materials or equipment for which samples are required shall not be used in the work unless and until approved by the Engineer.
  - 2. Samples specified in individual Specification Sections, include, but are not limited to: physical examples of the work (such as sections of manufactured or fabricated work), small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and other specified units of work.
  - 3. Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any Contract Requirements.
  - 4. Approved samples not destroyed in testing shall be sent to the Engineer or stored at the site of the work. Approved samples of the hardware in good condition will be marked for identification and may be used in the work. Materials and equipment incorporated in Work shall match the approved samples. Samples which fail testing or are not approved will be returned to the Contractor at his expense, if so requested at time of submission.
- E. Contractor's Certification - Each submittal and sample shall have affixed to it the following Certification Statement:

"Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved submittals and all Contract requirements."
- F. Project work, materials, fabrication, and installation shall conform to approved shop drawings, product data and applicable samples.
- G. No portion of the work requiring a submittal or sample shall be started, nor shall any materials be fabricated or installed before approval of such item. Procurement,

fabrication, delivery or installation of products or materials that do not conform to approved submittals shall be at the Contractor's risk. Furthermore, such products or materials delivered or installed without approved submittals, or in non-conformance with the approved submittals will not be eligible for payment until such time as the product or material is approved or brought into compliance with approved submittals. Engineer will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

- H. **As-Built Drawings:** Before Final Completion, submit a record of all changes during construction as specified in Section 4720 As-Built Drawings.
- I. **Work Plans:** For Work in public rights-of-way and servitudes, prepare and submit work plans to indicate the number of simultaneous work sites, the planned sequence of construction, temporary street closures, and to demonstrate to the Engineer that Contractor has adequately planned the means and methods of construction to minimize unnecessary inconvenience to the public. Furnish updated work plans every two weeks or at the frequency designated by the Engineer.
- J. **Change orders** shall follow formal submittal procedures to be transmitted to the Department of Public Works.

### **I.03 INFORMATIONAL SUBMITTALS**

- A. **Submittal Registry:** Prepare and submit a submittal registry as specified in this section.
- B. **Construction Schedule:** Prepare and submit construction schedules and progress status reports as specified in Section 4310 Construction Schedules. Formal submittal of a lien free certificate transmitted to the Department of Public Works prior to 45 days of final completion.
- C. **Schedule of Values:** On projects consisting of lump sums (in whole or in part) submit a proposed schedule of values providing a breakdown of lump sum items into reasonably small components – generally desegregated by building, area, and/or discipline. The purpose of the schedule of values is for processing partial payment applications. If requested by the Engineer, provide sufficient substantiation for all or some items as necessary to determine the proposed schedule of values is a reasonable representation of the true cost breakdown of the Work. The schedule of values shall not be unbalanced to achieve early payment or over-payment in excess of the value of work or any other inequitable distribution of the costs. If, in the opinion of the Engineer, the schedule of values is unbalanced, Contractor shall reallocate components to achieve a balanced schedule acceptable to Engineer.
- D. **Statements of Qualifications:** Provide evidence of qualification, certification, or registration, as required in the Contract Documents, to verify qualifications of licensed land surveyor, professional engineer, materials testing laboratory, specialty subcontractor, technical specialist, consultant, specialty installer, and other professionals.
- E. **Daily Reports:** Contractor to supply electronic daily reports to the Engineer or upload documentation for daily reports transmitted to the Department of Public Works.
- F. **Construction Photography and Videography:** Provide periodic construction photographs and videography as specified in Section 4322.
- G. **Storage of Materials on Private Property:** If private property is used for storage purposes, furnish copies of written permission from owner and lessee as specified in Section 106.9.

- H. Outage Requests: Provide sufficient notification of any outages required (electrical, flow processes, etc.) as may be required to tie-in new work into existing facilities. Unless specified otherwise elsewhere, a minimum of seven calendar days' notice shall be provided.
- I. Test Records and Reports: Provide copies of all test records and reports as specified in the various technical specifications.
- J. Certifications - Provide various certifications as required by the specifications. Such certifications shall be signed by an officer (of the firm) or other individual authorized to sign documents on behalf of that entity. Certifications may include, but are not limited to:
  - 1. Material Testing reports furnished by an independent testing firm
  - 2. Certifications from manufacturer(s) for specified factory testing
- K. Warranties and Bonds: Assemble a booklet or binder of all warranties and bonds as specified in the various technical specifications and in accordance with the specification on Warranties and Bonds; and provide two originals to the Engineer.
- L. Contract Close-Out Documents: Submit Contract documentation as indicated in the specification for Contract Closeout.
- M. Lien free certificate from Clerk of Court, Caddo Parish, LA shall be submitted in accordance with Section 111.8.

**PART 2 PRODUCTS (NOT USED).**

**PART 3 EXECUTION.**

**3.01 SUBMITTAL PROCEDURES**

- A. Contractor's Responsibilities
  - 1. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work of other related Sections, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required). Coordinate with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. Extensions to the Contract Time will not be approved for the Contractor's failure to transmit submittals sufficiently in advance of the Work.
  - 2. Prepare and transmit submittals sufficiently in advance of construction requirements to allow for possible need of re-submittals, including the specified review time for the Engineer.
  - 3. Engineer will be allowed a reasonable time within which to evaluate submittals and O&M manuals that require review by more than one engineering discipline. Resubmittals will be subject to the same review.
  - 4. Submittals of operation and maintenance data shall be provided within 30 days of approval of the related submittal(s).
  - 5. Before submission to the Engineer, review submittals as follows:

- a. make corrections and add field measurements, as required
  - b. identify and describe each and every deviation or variation from Contract documents or from previous submissions, except those specifically resulting from a comment from the Engineer on a previous submission
  - c. include the required Contractor's Certification statement
  - d. provide field measurements (as needed)
  - e. coordinate with other submittals
  - f. indicate relationships to other features of the Work
  - g. highlight information applicable to the Work and/or delete information not applicable to the Work
6. If Contractor considers any correction indicated on the submittals to constitute a change to the Contract Documents, provide written notice thereof to the Engineer immediately; and do not release for manufacture before such notice has been received by the Engineer.
  7. Contractor shall notify the Engineer 10 days prior to final inspection
  8. The Contractor shall transmit documents to the Department of Public Works for any formal submittal to the City.
- B. Engineer's Responsibilities
1. Engineer will not review submittals that do not include the Contractor's approval stamp and required certification statement. Such submittals will be returned to the Contractor, without action, for correction.
  2. Partial submittals will not be reviewed. If, in the opinion of the Engineer, a submittal is incomplete, that submittal will be returned to the Contractor for completion. Such submittals may be returned with comments from Engineer indicating the deficiencies requiring correction.
  3. If submittals meet the specified requirements, Engineer will forward copies to appropriate reviewer(s). Otherwise, noncompliant submittals will be returned to the Contractor without action.
  4. Submittals which are transmitted in accordance with the specified requirements will be reviewed within [14] calendar days for original submittals and ten (10) calendar days for resubmittals. The time for review will commence upon receipt of the submittal.
  5. Engineer may elect not to respond to Contractor regarding informational submittals meeting the Contract requirements. If an informational submittal does not comply with the Contract requirements, Engineer will respond accordingly to the Contractor within [14] calendar days. Thereafter, the Contractor shall perform the required corrective action, including retesting, if needed, until the submittal, in the opinion of the Engineer, is in conformance with the Contract Documents.
- C. Review of Submittals
1. The review of shop drawings, working drawings, product data and samples will be for general conformance with the design concept and Contract

Documents. They shall not be construed:

- a. as permitting any departure from the Contract requirements
  - b. as relieving the Contractor of responsibility for any errors, including details, dimensions, and materials
  - c. as approving departures from details furnished by the Engineer, except as otherwise provided herein
2. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
  3. If the submittals describe variations and indicate a deviation from the Contract requirements that, in the opinion of the Engineer are in the interest of the City and are so minor as not to involve a change in Contract Price or Contract Time, the Engineer may return the reviewed submittals without noting an exception.
  4. Submittals will be returned to the Contractor with one of the following codes.
    - a. "ACCEPTED" – This code is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the material for manufacture.
    - b. "ACCEPTED AS NOTED" - This code is assigned when a confirmation of the notations and comments IS NOT required. The Contractor may release the material for manufacture; however, all notations and comments must be incorporated into the final product.
    - c. "ACCEPTED AS NOTED/CONFIRM" - This combination of codes is assigned when a written confirmation of the notations and comments is required. The Contractor may release the material for manufacture; however, all notations and comments must be incorporated into the final product. Written confirmation shall specifically address each notation and comment. Confirmation shall be furnished to the Engineer within [14] calendar days of the date of the Engineer's transmittal requiring the confirmation.
    - d. "ACCEPTED AS NOTED/RESUBMIT" - This combination of codes is assigned when a written confirmation of the notations and comments is required and are extensive enough to require a resubmittal of the entire package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal shall be furnished to the Engineer within [30] days of the date of the Engineer's transmittal requiring the resubmittal.
    - e. "NOT ACCEPTED" – This code is assigned when the submittal does not meet the intent of the contract documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor.

- f. "COMMENTS ATTACHED" – This code is assigned where there are comments attached to the returned submittal, which provide additional information to aid the Contractor.
  - g. "RECEIPT ACKNOWLEDGED (Not subject to Engineer's Review or Approval)" – This code is assigned to acknowledge receipt of a submittal that is not subject to the Engineer's technical review and approval, and is being filed for informational purposes only. This code is generally used in acknowledging receipt of means and methods of construction work plans, field conformance test reports, and health and safety plans.
5. Repetitive Reviews: Submittals will be reviewed no more than [2] times at the City's expense. All subsequent reviews will be performed at the Contractor's expense. Reimburse the City for all costs invoiced by Engineer for the [third] and subsequent reviews.

**3.02 SUBMITTAL LOG:**

- 1. Contractor shall maintain the submittal registry for the duration of the work, showing current status of all Submittals and Distributees at all times. Contractor shall make the Submittal registry available to the Engineer for its review on request, and shall bring a copy of the Submittal registry to all Progress Meetings.

**END OF SECTION 4300**

**SECTION 4310****CONSTRUCTION SCHEDULING****PART I GENERAL****I.01 REQUIREMENTS INCLUDED**

- A. The Contractor shall prepare and submit to the Engineer for review, a schedule that clearly shows the sequence and interdependencies of activities required for complete performance of the Work required for this project, on a per asset basis (Upstream MH\_Downstream MH), showing the order in which the Contractor and its Subcontractors propose to carry on the Work. The construction schedule shall be a critical path method (CPM) network presented in a time-scaled graphic (print-out). The critical path is defined as the path of activities with the longest continuous duration, which defines the earliest completion of the project.
- B. The construction schedule shall, in general, determine the order in which the Work is to proceed. The schedule shall include activities to be performed by Subcontractors and shall demonstrate coordination of the Work. The Engineer will review the Contractor's approach to meet the specific requirements of the Project.
- C. Develop a schedule to achieve Final Completion within the Contract Time and furnish sufficient forces and construction equipment as may be necessary to complete the Work in accordance with the schedule.
- D. Designate the individual or an authorized representative who is responsible for development and maintenance of the schedule and reports. This individual or representative shall have direct project control and complete authority for updating and maintaining the schedule.
- E. Contract Time on a Working Day Basis or a Calendar Day Basis extends from the date of Notice to Proceed through the date of Final Completion. All Work, including activities such as testing, training, O&M Manuals, startup, training, performance testing, As-Built Drawings, site restoration, etc. must be completed within the Contract Time. All Work shall be identified in the baseline schedule to be completed within the Contract Time.
- F. If the latest version of Oracle Primavera P6 or Microsoft Project are not being used, submit the qualifications of the scheduling software proposed as an alternative. Engineer will review the alternative for use on the project.

**I.02 CONTENT OF SCHEDULES**

- A. The schedule shall be organized by Work Breakdown Structure (WBS).
- B. The duration of each Construction Activity may be no longer than two weeks.

Level of Effort (LOE) and procurement activities may have longer durations.

- C. Construction Activities shall include submittal review and approval, and procurement of materials, plant and equipment.
- D. Specifically identify activities on a per asset basis (Upstream MH\_Downstream MH) for the following list of structures or items, in addition to other structures or items as necessary.
  - 1. Pavement Removal
  - 2. Sidewalk/Ramp Removal
  - 3. Obstruction Removal
  - 4. Drainage Installation
  - 5. Utility Relocations
  - 6. Concrete Construction
  - 7. Ramp Construction
  - 8. Preliminary Site Restoration
  - 9. Final Site Restoration
  - 10. Delivery of As-Built Drawings
- E. Include and explain the approach to allow for adverse weather interruptions that are normal for the project location. Normal weather shall mean seasonally average weather conditions, as recorded by NOAA.
- F. The default calendar used shall be 5 days a week excluding City Holidays. Alternative calendars may only be used with justification that is accepted by the Engineer.
- G. Include plan for all long lead items and materials.
- H. Show the interdependencies of work that needs to be done by others under separate contract with the City or by other private/public utilities before the work on this Contract can be completed.

### **I.03 FORMAT OF SCHEDULES**

- A. Prepare CPM schedules in the form of a Time Scale Logic Diagram (TSLD) including the following:
  - 1. Show each activity within each WBS or item.
  - 2. Include columns of information for:
    - a. Activity ID.
    - b. Activity Description.
    - c. Original Duration.

- d. Early Start and Finish.
  - e. Late Start and Finish.
  - f. Total Float.
- 3. Include a horizontal time scale by month or smaller units as appropriate. The Baseline Schedule shall show utilizing the entire Contract Time starting with the date of NTP.
  - 4. Minimum font size is 10 points.
  - 5. Sheet size: 11 inches x 17 inches., 1 sided, color
- B. TSLD should be sorted by WBS, Item, and Early Start

**1.04 SUBMITTAL TYPES DEFINED:**

- A. Submit a Baseline Schedule and Narrative Report within 14-days after notice- to-proceed (NTP). The baseline schedule for each project will be developed by applying the critical path method and utilizing the latest version of Primavera P6 or Microsoft Project scheduling software.

The Baseline Schedule is the formal planning document that reflects the approved strategy of the Project Team. The Baseline Schedule is the primary reference point for schedule and project performance and will be referred to throughout the life of the project.

All changes to the Baseline Schedule will be in accordance with the Standard Specifications, and formal re-baselines will be captured and identified in P6 as “Current Approved Project Baseline – MM/DD/YYYY” and documented accordingly. Major changes to the baseline (re-baselining) will only be required if the project scope and/or strategy changes to the extent that the current baseline is not attainable or applicable for tracking purposes and must follow the formal change management process in order to formally change. Simple modifications can be made to the baseline schedule in order to maintain the link between the progress schedule and the baseline schedule. Simple modifications are defined as those that do not cause any change to the budget or the critical path.

- B. Provide both PDF and electronic data files for each Baseline Schedule submittal. The Engineer will review and comment for incorporation into the Baseline Schedule. Incorporate review comments and resubmit the Baseline Schedule and Narrative Report for approval.
- C. Once the Baseline Schedule and Narrative Report have been approved, prepare and submit revised monthly progress schedules and updated monthly narrative reports.

**1.05 SUBMITTAL REQUIREMENTS**

- A. The Narrative Report shall consist of a written report providing an overview of the schedule, specific to each submittal. The Narrative Report for the Baseline Schedule submittal shall describe the Contractor’s approach to executing the Work. The updated Narrative Reports provided with monthly updated schedules shall include the items specified in Paragraph 1.06.

- B. The Narrative for the Baseline Schedule shall:
1. Explain key activities and assumptions on which the schedule is based.
  2. Describe the Critical Path.
  3. Discuss key deliveries that might adversely affect the project schedule.
  4. Explain the Contractor's approach to adverse weather interruptions.
  5. Show the interdependencies of work that needs to be done by others under separate contract with the City or by other private/public utilities before the work on this Contract can be completed. Explain the approach to coordinating with the City and private and public utilities.
  6. Time constraints should be kept to a minimum and the use of any time constraints must be explained why they were used or required.
- C. The following reports are required for Baseline Submittal, with both PDF and electronic data files.
1. Activity – a report listing all activities, sorted only by Activity ID.
  2. Early Start – a report listing all activities, sorted only by Early Start date.
  3. Total Float – a report listing all activities, sorted by Total Float (ascending from low to high).
  4. Predecessor/Successor – a report of all activities, sorted by ActivityID that lists the predecessor and successor activities for each activity.

## **1.06 PROGRESS REVISIONS**

- A. The construction schedule shall be kept up-to-date and the current updated schedule with both PDF and electronic data files shall be submitted to the Engineer monthly. If the Contractor fails to furnish a complete updated schedule submittal, the Engineer may withhold a portion of payment until the submittal is reviewed and approved.
- B. Include the Physical Percent Complete – the Contractor's estimated physical percent complete for each activity as of the data date for the respective report.
- C. Each month, indicate progress of each activity to data date of submission. Show
- D. changes occurring since previous submission of schedule:
1. Major changes in scope.
  2. Activities modified since previous submission.
  3. Revised projections of progress and completion.
  4. Other identifiable changes.
- E. Provide an updated Narrative Report with each monthly status report describing:
1. Any changes to the critical path subsequent to the previous status

- report
  - 2. Any changes to the CPM relationships
  - 3. Loss or gain in the Total Float, with explanation of the main cause of such loss or gain (Variance Report)
  - 4. Problem areas, anticipated delays, and the impact on the schedule.
  - 5. Remedial actions or recovery steps that will be employed to arrest and/or recover from delays
  - 6. Schedule presentation of Look Back over update period and Look Ahead to next 2 update cycles.
  - 7. Schedule report showing variance to Baseline.
  - 8. Provide a list of all activities added, deleted, or modified since the last update
- F. Provide an updated version of each report required for the Baseline Submittal, with both PDF and electronic data files.
- 1. Activity – a report listing all activities, sorted only by Activity ID.
  - 2. Early Start – a report listing all activities, sorted only by Early Start date.
  - 3. Total Float – a report listing all activities, sorted by Total Float (ascending from low to high).
  - 4. Predecessor/Successor – a report of all activities, sorted by Activity ID that lists the predecessor and successor activities for each activity.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION**

**3.01 RESPONSIBILITY FOR SCHEDULE COMPLIANCE**

- A. The Contractor agrees that whenever it becomes apparent from the current monthly schedule that delays to the critical path have resulted, and hence, that the contract completion date will not be met or when so directed by the Engineer, he will take some or all of the following actions at no additional cost to the City, submitting to the Engineer for approval, a written statement of the steps he intends to take to remove or arrest the delay to the critical path in the approved schedule.
- 1. Increased construction manpower in such quantities and crafts as will substantially eliminate, in the judgment of the Engineer, any delays to critical path or construction completion.
  - 2. Increase the number of working hours per shift, shifts per working days per week, the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate, in the judgment of the Engineer, any delays to critical path or

construction completion.

3. Reschedule activities to achieve maximum practical concurrency of accomplishment of activities, and comply with the revised schedule to eliminate delays to the Critical Path and construction completion date.

### **3.02 ADJUSTMENT OF CONTRACT SCHEDULE AND COMPLETION TIME**

- A. If the Contractor desires to make changes which affect the approved schedule, he shall notify the Engineer in writing stating what changes are proposed and the reason for the change. If the Engineer takes no exception to these changes, the Contractor shall revise, without additional cost to the City, all of the affected portion of the schedule.
- B. The contract completion time will be adjusted only for causes specified in this contract. In the event the Contractor requests an extension of any contract completion date, he shall furnish such justification and supporting evidence as the Engineer may deem necessary for a determination as to whether the Contractor is entitled to an extension of time under the provisions of this contract. Engineer will, after receipt of such justification and supporting evidence make findings of fact and will advise the Contractor in writing thereof. If the Engineer finds that the Contractor is entitled to any extension of any contract completion date under the provisions of this contract, the Engineer's determination as to the total number of days extension shall be based upon the currently approved schedule and on all data relevant to the extension. Such data shall be included in the next monthly updating of the schedule. The Contractor acknowledges and agrees that actual delays in activities which, according to the schedule, do not affect any contract completion date shown by the critical path in the schedule do not have any effect on the contract completion date or dates, and therefore, will not be the basis for a change therein.
- C. From time to time, it may be necessary for the contract schedule and/or completion time to be adjusted to reflect the effects of job conditions, weather, technical difficulties, strikes, unavoidable delays on the part of the City or its representatives, and other unforeseeable conditions which may indicate schedule adjustments and/or completion time extension. Under such conditions, the Contractor shall reschedule the work and/or contract completion time to reflect the changed conditions, and shall revise its schedule accordingly. It is specifically pointed out that the use of available float time in the schedule may be used by the City, as well as by the Contractor. Float time is defined as the amount of time between the early start date, and the late start date, or the early finish date and the late finish date, of any of the activities in the schedule.
- D. Total Float in the approved CPM network is for the mutual benefit of the Project, i.e. either the City or the Contractor may take advantage of available Total Float. Therefore, without obligation to extend either the overall completion date or any intermediate completion dates set out in the schedule, the City may initiate changes to the Work that absorb float time. Contractor-initiated changes that reduce the project total float time identified in the approved schedule may be accomplished with the Engineer's concurrence.

**3.03 COORDINATING SCHEDULES WITH OTHER CONTRACT SCHEDULES**

- A. Where work is to be performed under this contract concurrently with and/or contingent upon work performed on the same facilities or area under other contracts, the Contractor's schedule shall be coordinated with the schedules of the other contracts. The Contractor shall obtain the schedules of the other appropriate contracts from the Engineer for the preparation and updating of his schedule and shall make the necessary changes in his schedule when indicated by changes in corresponding schedules.

**END OF SECTION 4310**

**SECTION 4322**

**PHOTOGRAPHIC DOCUMENTATION**

**PART I GENERAL.**

**I.01 SCOPE OF WORK**

- A. Furnish all labor, materials, equipment and incidentals required to provide photographic and video preconstruction surveys of the Project as specified herein. No direct payment will be made for Work specified in this Section.

**I.02 SUMMARY.**

- A. Section includes administrative and procedural requirements for the following:
  - 1. Preconstruction photographs.
  - 2. Preconstruction video recordings.

**I.03 SUBMITTALS.**

- A. Qualification Data: For photographer and videographer
- B. Digital Files: Submit digital photographs and video recordings on external hard drives or USB drives that are formatted for all computers with a minimum space to contain all documentation in one (1) device. Recordable discs and other storage media are not acceptable. Transfer of image files by electronic mail is not acceptable. Package external drive in a plastic case. Affix self-adhesive labels to the drive and the case with the Project Number, Project Name and Contractor's name similar to the following example.

Project – [Project Number]  
[Name of Project]  
[Name of Contractor]

- C. Submit digital files within 30 days of taking photographs and video recordings.
- D. Arrange digital file directory by assets. File directory for roadway projects shall be arranged by stationing starting from the beginning station labeled like shown in the following example.

Construction Station [Station Number] [View Direction]  
Pictures  
[Description of Photo]  
Video  
[Description of Video]

**I.04 QUALITY ASSURANCE.**

- A. Videographer Qualifications: An individual who has been regularly engaged as a professional videographer of infrastructure projects for not less than three years.
- B. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of infrastructure projects for not less than 3 years.

**PART 2 PRODUCTS.**

**2.01 DIGITAL PHOTOGRAPHS.**

- A. Provide digital photographs produced by a dedicated, fixed-lens or interchangeable-lens digital camera or aerial drone. Images produced by a smart device shall be permitted but shall contain information listed in 2.01 (C).
- B. Digital Camera shall have a minimum image resolution of 15 megapixels, and produce images in JPEG (.JPG) format with image dimensions of not less than 3200 X 2400 pixels.
- C. At least 4 (four) photographs shall be taken at each major station along the project length looking to the ROW in both directions, up station, and down station. There shall be no limit on the number of photographs taken of the project site during construction activities.
- D. Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation or modifications using image-editing software. Provide the following information on each photograph.
  - 1. Project Number and Project Name
  - 2. Contractor's Name
  - 3. Street Address
  - 4. Description of image
  - 5. Time and Date that photograph was taken

**2.02 DIGITAL VIDEO RECORDINGS.**

- A. Provide video recordings made with a dedicated digital video camera specifically made for video recordings. Video recordings made with webcams, and wearable cameras are not acceptable. Video cameras must be mounted to a tripod while taking survey. Surveys taken while video camera is handheld are subject to being rejected.
- B. Digital Video Camera shall have a minimum resolution of 720p (1280 x 720, progressive) and produce video recordings in either .MP4 or .WMV digital format. The minimum resolution of all video files shall be 720p (1280 X 720, progressive).

**PART 3 EXECUTION.**

**3.01 PRECONSTRUCTION DOCUMENTATION.**

- A. Engage qualified individuals as specified in Quality Assurance Section 1.04.
- B. Organize documentation by alignment station from start station to end station. Document conditions on both sides of a roadway, alley or servitude. Accurately record physical conditions on both sides of roadways, alleys and servitudes including adjacent structures, landscaping and other features of adjoining property. Include areas where materials may be temporarily stored and where Contractor's vehicles and equipment may be parked during work activities.

- C. General: Take photographs that clearly show pre-existing conditions including apparent defects, damage or areas of concern in the project area. Exhibit correct exposure and focus, accurate color balance, maximum depth of field, minimal optical distortion, and minimal noise. Photographs that, in the Engineer's opinion, do not meet these quality criteria will not be accepted and shall be re-taken at no additional cost to the City.

**3.02 PHOTOGRAPHS.**

- A. Take photographs that clearly show pre-existing conditions including apparent defects, damage or areas of concern in the project area. Exhibit correct exposure and focus, accurate color balance, maximum depth of field, minimal optical distortion, and minimal noise. Photographs that, in the Engineer's opinion, do not meet these quality criteria will not be accepted and shall be re-taken at no additional cost to the City.

**3.03 VIDEO RECORDINGS.**

- A. Produce bright, clear, sharp pictures with accurate colors and free from distortion, excessive shake, or any other form of picture imperfection. The audio track of each video recording shall have proper volume, clarity and freedom from distortion and interference. Video recordings that, in the Engineer's opinion, do not meet these quality criteria will not be accepted and shall be re-recorded at no additional cost to the City.
- B. Mount camera on tripod during all recording. At the beginning and end of each video recording, record the following:
  - 1. Date & Time
  - 2. Project name, project number
  - 3. Contractor's name
  - 4. Street Address
  - 5. Description of Video

**END OF SECTION 4322**

**SECTION 4370**

**SCHEDULE OF VALUES**

**PART I GENERAL**

**1.01 REQUIREMENTS INCLUDED.**

- A. Submit a Schedule of Values allocated to the various portions of the Work, as specified in Section 4300.
- B. Upon request of the Engineer, support the values with data which will substantiate their correctness.
- C. The accepted Schedule of Values shall be used only as the basis for the Contractor's Pay Estimates.

**1.02 FORM AND CONTENT OF SCHEDULE OF VALUES.**

- A. Submit Schedule of Values in a format acceptable to the City. Contractor's standard forms and automated printout will be considered for approval by the Engineer upon Contractor's request. Identify schedule with:
  - 1. Title of Project and location.
  - 2. Project number.
  - 3. Name and Address of Contractor.
  - 4. Contract designation.
  - 5. Date of submission.
- B. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction.
- C. For each major line item list sub-values of major products or operations under the item.
- D. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
- E. The sum of all values listed in the schedule shall equal the total Contract Amount.

**PART 2 PRODUCTS (NOT USED).**

**PART 3 EXECUTION (NOT USED).**

**END OF SECTION 4370**

**SECTION 4400**

**QUALITY CONTROL**

**PART I GENERAL**

**I.01 SCOPE OF WORK.**

- A. This Section includes requirements of a general nature related to the Contractor's responsibility for quality control involving inspections, tests, certifications, and reports. Refer to Section 4410 Testing and Testing Laboratory Services for additional requirements related to quality control.
- B. Unless otherwise indicated in the Specifications, only new materials shall be incorporated in the Work. All materials furnished by the Contractor to be incorporated in the Work shall be subject to the inspection and approval of the Engineer. No material shall be processed for, or delivered to the Site without prior approval by the Engineer.

**I.02 INSPECTIONS.**

- A. The Engineer shall have the right to inspect all materials at all stages of collection and processing, and shall be allowed access to the site and to the Contractor's and supplier's facilities to conduct such inspections. Onsite work shall be subject to continuous inspection. Inspection by the Engineer shall not release the Contractor from responsibility or liability with respect to material.
- B. When local codes or laws require approval and inspection of the work by other agencies or organizations the Contractor shall obtain such approval and submit one signed original and three copies of the approval to the City.

**I.03 QUALITY ASSURANCE – CONTROL OF INSTALLATION.**

- A. The Contractor shall monitor quality control over suppliers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. The Contractor shall comply with manufacturers' instructions, including each step in sequence.
- C. The Contractor shall examine the areas and conditions where Work is to be performed and notify the Engineer of conditions detrimental to the proper and timely completion of the Work. The Contractor shall not proceed with the Work until unsatisfactory conditions have been corrected by the Contractor in a manner acceptable to the Engineer.
- D. The Contractor shall request clarification from Engineer if manufacturers' instructions conflict with Contract Documents, and shall not proceed with the affected Work before receiving clarification.
- E. The Contractor shall comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- F. Work shall be performed by persons qualified to produce workmanship of specified quality.

**I.04      REFERENCES.**

- A.      The Contractor shall comply with the reference specifications and standards at a minimum.
- B.      For products or workmanship specified by association, trade, or other consensus standards, the Contractor shall comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- C.      The Contractor shall be familiar with applicable standards, and shall obtain copies of these standards where required by product specification sections.
- D.      The contractual relationship, duties, and responsibilities of the parties in Contract shall not be altered from the Contract Documents by mention or influence otherwise in any reference document.

**I.05      INSPECTING AND PHYSICAL TESTING LABORATORY SERVICES.**

- A.      Laboratory will be provided by the City as specified in Section 4410.

**I.06      REPORTS.**

- A.      The Contractor may, in lieu of the specified tests and at the option of the Engineer, submit for review a Certificate of Compliance in the form of a letter from the manufacturer. The Certificate shall state the following:
  - 1.      Manufacturer has performed all required tests.
  - 2.      Materials supplied meet all test requirements.
  - 3.      Tests were performed within six months of submittal of the Certificate.
  - 4.      Materials that were tested are the same type, quality, manufacture, and make as those specified.
  - 5.      Include identification of the materials.
- B.      Reports shall be submitted in accordance with Technical Specification Section 4300 Submittals.

**PART 2 PRODUCTS (NOT USED).**

**PART 3 EXECUTION (NOT USED).**

**END OF SECTION 4400**

## **SECTION 4410**

### **TESTING AND TESTING LABORATORY SERVICES**

#### **PART I GENERAL**

##### **I.01 REQUIREMENTS**

- A. The requirements of this section are related to a testing laboratory provided by the City. The City will employ and pay for the services of an independent testing laboratory (Laboratory) in accordance with the requirements of Standard Specification Section 106.6. Employment of the Laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract.
- B. Cooperate with the Laboratory to facilitate the execution of its required services.

##### **I.02 RELATED REQUIREMENTS**

- A. Contractor shall employ and pay for an independent testing laboratory where specified in other sections.

##### **I.03 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY**

- A. Laboratory is not authorized to:
  - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
  - 2. Approve or accept any portion of the work.
  - 3. Perform any duties of the Contractor.

##### **I.04 CONTRACTOR'S RESPONSIBILITIES**

- A. Cooperate with Laboratory personnel, provide access to Work and to manufacturer's operations.
- B. Secure and deliver to the Laboratory adequate quantities of representational samples of materials proposed for use in the Work and which require testing.
- C. Provide to the Laboratory the proposed mix designs for Portland cement concrete, asphaltic cement concrete, flowable fill and other materials which require control by the Laboratory.
- D. Materials and equipment used in the performance of Work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard requirements for quality and workmanship are indicated in the Contract Documents. The Engineer may require the Contractor to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the Contractor, and no extra charge to the City shall be allowed on account of such testing and certification.

- E. Furnish incidental labor and facilities:
  - 1. To provide access to work to be tested.
  - 2. To obtain and handle samples at the project site or at the source of the product to be tested.
  - 3. To facilitate inspections and tests.
  - 4. For storage and curing of test samples.
  
- F. Notify the Engineer at least 48 hours in advance of operations to allow for laboratory assignment of personnel and scheduling of tests. When tests or inspections cannot be performed after such notice, reimburse City for Laboratory personnel and travel expenses incurred due to Contractor's negligence.
  - i When such inspections do not take place, the Contractor is AT RISK of having uninspected work reconstructed / removed and payments not processed until proper inspection and or testing can be successfully completed.
  
- G. Employ and pay for the services of the same or a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required for the Contractor's convenience.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

MATERIAL SAMPLING PLAN								
MATERIAL	PURPOSE	METHOD	TESTED BY	MIN. FREQ.	MIN. QUANTITY	SMALL QUANTITY	REMARKS	
					CONTAINER			
SOIL	Density	Quality Control	S 401	CONTRACTOR	See Remarks	-	-	Shall check sufficient to ensure specifications are met.
		Accept.	S 401	LAB	1 / 1,000 LF / 2-lane rdwy / lift	-	-	
	Embankment lift	Quality Control	-	CONTRACTOR	See Remarks	-	-	Shall check sufficient to ensure specifications are met.
		Accept.	-	LAB	1 / 1,000 LF / 2-lane rdwy / lift	-	-	PE to check lift thickness during placement & thickness of top layer during preparation.
	Moisture content @ time of compaction	Quality Control	-	CONTRACTOR	See Remarks	-	-	Shall check sufficient to ensure specifications are met.
		Accept.	S 401	LAB	1 / 1,000 LF / 2-lane rdwy / lift	-	-	Test taken during or just prior to compaction operation.
Soil on Cut Slope (for pH and PI)	Accept.	S 401	LAB	1 / 1,000 LF / slope / soil type	1 full sample sack	-	To determine the need for plastic soil blanket or soil modification option.	
LIME	Hydrated or Quick Lime	Accept.	-	LAB	1 / shipment	-	-	
		Verif.	S 102	LAB	1 / project / source	1 gal friction top can	-	Not required if sample under another item.
PRELIMINARY SOIL SURVEY	In Place	Verif.	S 401	LAB	1 / project	1 / 2 sample sack	-	Min. 10 lb required for test.
HAY BALES		Accept.	S 601	LAB	-	-	-	Visual inspection by PE.
SILT FENCE (WIRE SUPPORTED)	Livestock Wire	Accept.	S 602	LAB	-	-	-	Visual inspection by PE Sample only if questionable.
	Geotextile Fabric	Accept.	S 603	LAB	-	3 LF of full width of fabric roll	-	Visual inspection by PE Sample only if questionable. Sample a minimum of 18 SF.
	Burlap	Accept.	S 604	LAB	-	3 LF of full width of fabric roll	-	Visual inspection by PE Sample only if questionable. Sample a minimum of 18 SF.
	Jute Fabric	Accept.	S 605	LAB	-	-	-	Visual inspection by PE Sample only if questionable.
SILT FENCE (SELF SUPPORTED)	Geotextile Fabric	Accept.	S 606	LAB	-	3 LF of full width of fabric roll	-	Visual inspection by PE Sample only if questionable. Sample a minimum of 18 SF.
EPOXY RESIN SYSTEMS	Specified Type & Grade	Accept.	S 601	LAB	1 / lot	1 qt each component friction top can or cartridge / tube system	50 LF of joint	Visual inspection by PE Sample only if questionable.
		Verif.	S 601	LAB	1 / lot or shipment	1 qt each component friction top can or cartridge / tube system	1 gallon	
GGEOTEXTILE FABRIC		Accept.	S 601	LAB	1 / type / source / shipment	3 LF / roll width of fabric	150 SY of fabric	Sample a minimum of 18 SF.
JOINT FILLERS	Preformed Polyurethane Foam	Accept.	S 601	LAB	1 / 5000 LF / type	36 in. length	2,000 SY PCCP	-
	Wood	Accept.	S 601	LAB	1 / 5000 LF	36 in. length	2,000 SY PCCP	-
JOINT FORMER/ SEALER (COMBINATION)	Preformed Joint Former/ Sealer	Accept.	S 601	LAB	1 / 5000 LF	6 ft. length	2,000 SY PCCP	-
JOINT SEALANT (EXTRUDED)	Silicone Polymer (single or two-component rapid cure)	Batch Cert	S 611	LAB	1 / batch or shipment	1 gal friction top can	-	
		Accept.	S 611	LAB	1 / shipment	1 gal friction top can	2,000 SY PCCP	Sample only if questionable.
		Accept. *	S 611	LAB	1 / batch or shipment	1 gal friction top can	2,000 SY PCCP	
JOINT SEALANT (HOT Poured)	Rubberized Asphaltic Type	Batch Cert	S 611	LAB	1 / batch or shipment	One container	-	
		Accept.	S 611	LAB	1 / shipment	One container	2,000 SY PCCP	-
		Accept. *	S 611	LAB	1 / batch or shipment	One container	2,000 SY PCCP	
JOINT SEALANT (BACKING MATERIAL)	Rods	Accept.	-	LAB	-	-	-	For use with polyurethane silicone polymer joint seals. Visual inspection by PE.
	Rods (Heat Resistant)	Accept.	-	LAB	-	-	-	For use with Hot poured joint sealants. Visual inspection by PE.
JOINT SEALANTS (PRIMER)		Accept.	-	LAB	-	-	-	For use with polyurethane silicone polymer joint seals. Visual inspection by PE.
JOINT SEAL (PREFORMED)	Elastomeric Compression	Accept.	S 601	LAB	1 / lot* or shipment	8 ft. length	2,000 SY PCCP	
REINFORCEMENT	Dowel Bars	Accept.	S 501	LAB	1 / shipment	2 bars (See remarks)	2,000 SY PCCP	For mechanical placement, only one dowel bar required. Basket assemblies checked for dimensional conformance by PE.
	Tie Bars	Accept.	S 501	LAB	1 / size / grade / 150,000 lb / source	2 bars	2,000 SY PCCP	Sample if questionable.

MATERIAL SAMPLING PLAN CONT.								
MATERIAL	PURPOSE	METHOD	TESTED BY	MIN. FREQ.	MIN. QUANTITY	SMALL QUANTITY	REMARKS	
					CONTAINER			
AGGREGATES (PAVEMENT)	Fine & Coarse	Quality Control	S 101	CONTRACTOR	1 / day / plant for moisture 2 / day / plant for gradation	1 full sample sack	-	Gradation results are plotted on control charts which are required for documentation.
		Accept.	S 101	LAB	1 / pavement lot* 1 / 5 days production or 400 CY of aggregate**	1 full sample sack	50 CY	Check gradation and foreign matter. *For paving and concrete produced from non-dedicated stockpiles. **For pavement patching when each patch is designated as a pavement lot
		Verif.	S 101	LAB	1 / 1,000 CY / dedicated stockpile	1 full sample sack	-	Sample as stockpile is being built.
AGGREGATES (PAVEMENT)	Fine & Coarse	Quality Control	S 101	CONTRACTOR	1 / lot	1 full sample sack	-	Gradation and moisture content to be run. Lot to be identifiable pour up to 200 CY max of concrete. Gradation results shall be plotted on control charts which are required for documentation.
		Accept. (non-dedicated stockpiles)	S 101	LAB	1 / every 5 days of production or 400 CY of aggregate	1 full sample sack	50 CY	Check gradation and foreign matter.
		Accept. (dedicated stockpiles)	S 101	LAB	1 / 1,000 CY / dedicated stockpile	1 full sample sack	50 CY	Sample as stockpile is being built.
CEMENT (HYDRAULIC)	Cement & Blended Cement	Accept.	-	LAB	1 / shipment	1 gal friction top can	50 CY	Visual inspection by PE. Sample only if questionable.
		Verif.	S 102	LAB	1 / 400 tons / source	1 gal friction top can	50 CY	-
CONCRETE (MINOR STRUCTURE)	Compressive Strength	Accept.	S 301	LAB	3 cyl / 50 CY	6 in. x 12 in. or 4 in. x 8 in. cylinder mold	-	-
	Mix Design	Design/Accept.	-	LAB/ CONTRACTOR	1 / type or class / plant	-	-	The contractor shall submit to the lab engineer the standard Mix Design form indicating the intended source of all materials and the mix design. Acceptance by the lab engineer is required prior to starting work.
	Slump and Air	Accept.	S 301	LAB	1 / 50 CY	0.5 CF	-	Not required for High Early Strength Concrete.
CONCRETE (PAVEMENT)	Entrained Air	Quality Control	S 301	CONTRACTOR	2 / half day	0.25 CF	-	Air test results shall be plotted on control charts which are required for documentation.
		Accept.	S 301	LAB	1 / half day	0.25 CF	-	Not required for High Early Strength Concrete.
	Mix Design	Design/Accept.	-	LAB/ CONTRACTOR	1 / type or class / plant	-	-	The contractor shall submit to the lab engineer the standard Mix Design form indicating the intended source of all materials and the mix design. Acceptance by the lab engineer is required prior to starting work.
	Mix Temperature	Quality Control	S 301	CONTRACTOR	See Remarks	-	-	When temperature control is needed, testing must be sufficient to prevent exceeding appropriate limits.
	Slump	Quality Control	S 301	CONTRACTOR	2 / half day	0.5 CF	-	Slump test results shall be plotted on control charts which are required for documentation.
		Accept.	S 301	LAB	1 / half day	0.5 CF	-	Not required for High Early Strength Concrete.
	Unit Weight	Quality Control	S 301	CONTRACTOR	See Remarks	1.5 CF 0.5 or 1 CF yield bucket	-	Unit weight will be run as necessary.
GROUT		Accept.	S 601	LAB	1 / Lot	1 full sack	-	Sample shall be submitted in an unbroken moisture proof sack.
CONCRETE (STRUCTURAL)	Entrained Air	Quality Control	S 301	CONTRACTOR	2 / Lot	0.25 CF	-	Air test results shall be plotted on control charts which are required for documentation.
		Accept.	S 301	LAB	1 / Lot	0.25 CF	-	Not required for High Early Strength Concrete.
	Compressive Strength & Surface Resistivity	Accept.	S 301	LAB	3 cyl / batch 2 batches / lot	Cylinder molds	-	A lot is an identifiable pour not to exceed 200 CY. If used for curbs only, frequency is 3 cyl / 50 CY.
	Mix Design	Design/Accept.	-	LAB/ CONTRACTOR	1 / mix class / material source / plant	-	-	The contractor shall submit to the lab engineer the standard Mix Design form indicating the intended source of all materials and the mix design. Acceptance by the lab engineer is required prior to starting work.
	Mix Temperature	Quality Control	S 301	CONTRACTOR	-	-	-	When temperature control is needed, testing must be sufficient to prevent exceeding appropriate limits.
	Slump	Quality Control	S 301	CONTRACTOR	2 / lot	0.5 CF	-	Slump test results shall be plotted on control charts which are required for documentation.
		Accept.	S 301	LAB	1 / lot	0.5 CF	-	Not required for High Early Strength Concrete.
Unit Weight	Quality Control	S 301	CONTRACTOR	-	1.5 CF 0.5 or 1 CF yield bucket	-	Unit weight will be run as necessary.	
WATER		Accept.	S 301	LAB	1 / source	1 qt plastic bottle	50 CY	Visual, sample if questionable, if not potable.

END OF SECTION 4410

## SECTION 4560

### RESTORATION OF PROPERTY

#### **PART I GENERAL.**

##### **I.01 SCOPE OF WORK.**

- A. The requirements of this section apply to public and private property directly or indirectly disturbed by construction activities. Technical requirements for providing various features of property restoration including pavement, landscaping, fences, erosion control are specified separately. Measurement and payment for installation of various features will be made as specified in the respective Pay Item. This section specifies requirements for timely completion of various features of property restoration. One objective of these requirements is to minimize the duration of inconvenience to occupants of property and users of streets and sidewalks adjacent to construction activities.
- B. Property restoration includes ancillary work related to construction of underground infrastructure whether incidental or measured for direct payment.
- C. Vehicular access and fencing restoration shall be per Section 108.3.

##### **I.02 AREA CLASSIFICATIONS.**

- A. For the purpose of this specification, different portions of public and private property are classified in areas with different priorities for completion of property restoration.
  - 1. Street – The area in this classification is the actual street or roadway from back of curb to back of curb or edge of pavement to edge of pavement.
  - 2. Right-of-Way – The area in this classification is between the back of curb or edge of pavement and the adjacent property line. Common features in this area include sidewalks, driveways, culverts, ditches, water meters and landscaping.
  - 3. Servitude – The areas in this classification are servitudes, alleys and any temporary encroachment on adjacent property. Common features in this area include fences, driveways and landscaping. Private property used for storage with written permission of the owner and lessee as specified in Section 106.9 is not included in this classification.

##### **I.03 RELATED WORK.**

- A. Restoration of property includes the following types of Work.
  - 1. Pavement and Base
  - 2. Curb and Gutter
  - 3. Mailbox Installation
  - 4. Sidewalks and Driveways
  - 5. Fences
  - 6. Landscaping (sod, seeding, topsoil)

**PART 2 PRODUCTS. (NOT USED)**

**PART 3 EXECUTION.**

**3.01 TIME MEASUREMENT.**

- A. Unless otherwise indicated in Paragraph 3.01.C, the Engineer will designate appropriate sections of the Work for measurement of time to complete restoration of property. Length of designated sections may vary as appropriate for the type of infrastructure installed and the method of installation.
- B. Unless otherwise indicated in Paragraph 3.01.C, if any stage of restoration in a designated area is not completed within the specified time, the City will have the right to withhold any or all partial payments after written non-conformance notice. Should restoration not be completed within 7 days of the schedule outlined in paragraphs below, the City will have the right to stop all work on the project with no delay claim allowed by the Contractor. Should restoration not be completed within 30 days of the schedule outlined in the paragraphs below, the City will have the right to perform the remaining work in that stage of restoration in that area. Quantities of Pay Items related to work performed by the City, if applicable, will be eliminated. The difference between the value of eliminated work and the City's actual cost to perform the Work will be deducted from the total contract value. The deduction will be made from pending pay requests or subsequent pay requests until the City is reimbursed for its costs. . If the difference is negative, no deduction will be made and no reimbursement for the difference will be made.
- C. Complete the following on a daily basis:
  - 1. Restore water and sewer service connections to each property.
  - 2. Provide and maintain temporary walkways for public access through the Site where sidewalks are removed or blocked.
  - 3. Provide and maintain temporary aggregate surface or steel plates at driveways and parking areas.
  - 4. Provide and maintain suitable temporary controls to prevent public access to unattended, open excavations.
  - 5. Install compacted backfill material to final grade or subgrade
  - 6. Provide steel plates over excavated areas as necessary to restore temporary traffic overnight.
  - 7. Provide and adjust appropriate temporary traffic control devices and configurations for the current traffic pattern.

**3.02 STREET AREA.**

- A. Initial restoration includes providing and maintaining a reasonably satisfactory surface for vehicular traffic. Install compacted backfill material to 3 inches below final subgrade and

install a 3 inch temporary binder course or cold patch to final subgrade in a smooth even condition in accordance with Section 507, remove temporary barricades or traffic control devices and open the roadway to traffic. Complete initial restoration of designated sections within 7 days after installation of final backfill in excavations. Maintain temporary surface in a smooth condition without holes or bumps. Temporary binder course or cold patch shall not be paid for separately and shall be included in the cost of other pay items.

- i. Temporary aggregate or steel plates may be used for initial restoration at driveways and in parking areas. Temporary aggregate and steel plates shall not be paid for separately and shall be included in the cost of other pay items.
- B. Final restoration includes removal of temporary surface, providing base, pavement, curbs and gutters as specified, removal of temporary barricades or traffic control devices, installation of (temporary or permanent) pavement markings and traffic striping and permanently opening the roadway to traffic at each location. Complete final restoration of designated sections within 60 days after installation of final backfill and initial restoration.

### **3.03 RIGHT-OF-WAY AREA.**

- A. Initial restoration includes providing a surface for safe and reasonable use by pedestrians and occupants of adjacent property. Remove waste materials, debris and rubbish. Install compacted backfill to final grade or subgrade. Provide easy access to water meters and a smooth, even surface for pedestrian traffic to safely traverse the site. Install culverts where specified and restore ditch flowlines. Complete initial restoration of designated sections within 7 days after installation of final backfill in excavations.
- B. Intermediate restoration includes installation of permanent sidewalks, driveways and fences at each location. Remove forms, temporary barricades and unused materials, and complete fine grading of the surface. Complete permanent reinstallation or replacement of fences which were removed during previous construction activities. Complete intermediate restoration of designated sections within 30 calendar days after installation of final backfill in excavations.
- C. Final restoration includes completion of all remaining work visible at the surface. Complete final grading, install the specified landscaping, establish permanent erosion control, remove temporary erosion control materials and remaining waste materials. Complete final restoration of designated sections within 45 days after installation of final backfill in excavations. In designated sections adjacent to a Street Area, complete final restoration within 14 days after final restoration of the adjacent Street Area.
- I. Protective measures for existing landscaping, including shrubbery, trees, and sodding, shall be exercised during the construction period unless otherwise specified to be removed on construction documents. Slab sodding that must be replaced due to construction activities shall be replaced during the final restoration period at no direct pay.
    - To ensure root establishment, newly established slab sodding shall be watered weekly for a period of 30 days after completion of construction activities with a minimum required water volume of 15 gallons/sq. yard.

### **3.04 SERVITUDE AREA.**

- A. Initial restoration includes providing a surface for safe and reasonable use by pedestrians and occupants of the adjacent property. Remove waste materials, debris and rubbish. Install compacted backfill to final grade or subgrade. Provide a smooth, even surface for pedestrian traffic to safely traverse the site. Complete initial restoration of designated sections within 7 days after installation of final backfill in excavations.
- B. Final restoration includes completion of all remaining work visible at the surface. Complete

final grading, install the specified landscaping, establish permanent erosion control, remove temporary erosion control materials and remaining waste materials. Complete reinstallation or replacement of fences which were removed during previous construction activities. Complete final restoration of designated sections within 45 days after installation of final backfill in excavations.

- I. Protective measures for existing landscaping, including shrubbery, trees, and sodding, shall be exercised during the construction period unless otherwise specified to be removed on construction documents. Slab sodding that must be replaced due to construction activities shall be replaced during the final restoration period at no direct pay.
  - To ensure root establishment, newly established slab sodding shall be watered weekly for a period of 30 days after completion of construction activities with a minimum required water volume of 15 gallons/sq. yard.

**END OF SECTION 4560**

**SECTION 4562**  
**DUST CONTROL**

**PART 1 GENERAL**

**1.01 SCOPE OF WORK**

- A. Perform dust control operations, in an approved manner, whenever necessary or when directed by the City, even though other work on the project may be suspended.
- B. Dust control shall be generally accomplished by cleaning, sweeping, and sprinkling with water. The use of water resulting in mud will not be permitted as a substitute for sweeping or other methods. Calcium chloride may be used when necessary to control dust nuisance.
- C. Methods of controlling dust shall meet all air pollutant standards as set forth by Federal and State regulatory agencies.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Calcium chloride shall conform to AASHTO M144, Type I except the requirements for "total alkali chlorides" and other impurities shall not apply.

**2.02 SWEEPING EQUIPMENT**

- A. When identified in the contract documents, furnish and operate a self-loading motor sweeper with spray nozzles at least once each working day to keep paved areas acceptably clean wherever construction, including restoration, is incomplete.

**PART 3 EXECUTION**

**3.01 MAINTENANCE**

- A. Abate dust nuisance throughout all phases of construction until final acceptance of the Project.

**END OF SECTION 4562**

**SECTION 4600**  
**DELIVERY, STORAGE AND HANDLING**

**PART I GENERAL**

**I.01 SCOPE OF WORK**

- A. This Section specifies the general requirements for the delivery, handling, storage and protection for all items and materials required in the construction of the Work. Refer to Section 106 for related general provisions. Specific requirements, if any, are identified in separate specifications for the related item.
- B. Refer to Section 106 for general provisions related to storage and handling of materials.
- C. Refer to Section 108 for general provisions related to storage of equipment and materials in streets.
- D. Refer to Section 2000 and Section 3000 for specific requirements related to stringing pipe materials at the Site.

**I.02 TRANSPORTATION AND DELIVERY**

- A. Transport and handle items in accordance with manufacturer's instructions.
- B. Coordinate delivery from Suppliers with construction schedule to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.
- C. Deliver products in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.
- D. Provide necessary equipment and personnel to unload and handle all items and materials.
- E. Promptly inspect shipment to assure that products comply with requirements, quantities are correct and items are undamaged.
- F. If any item has been damaged, such damage shall be repaired at no additional cost to the City.

**I.03 STORAGE AND PROTECTION**

- A. Store items and materials at an offsite laydown area until they are they are ready for delivery to the Site. Coordinate delivery to the Site with the installation schedule.
- B. Store and protect products in accordance with the manufacturer's instructions, with seals and labels intact and legible. Storage instruction shall be studied by the Contractor and reviewed with the Engineer. Carefully follow storage instructions and maintain written documentation of compliance. Arrange storage to permit access for inspection.
- C. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- D. All paint and other coating products shall be stored in areas protected from the weather. Follow all storage requirements set forth by the paint and coating manufacturers.

**I.04      STORAGE AT THE SITE**

- A.    All items and materials delivered to the Site shall be unloaded and placed in a manner which will not hamper the Contractor's normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.
  
- B.    Unless otherwise specified in separate sections, items and materials may not be stored at the Site for more than 5 days without specific approval from the Engineer.

**END OF SECTION 4600**

**SECTION 4630**

**SUBSTITUTIONS AND PRODUCT OPTIONS**

**PART I GENERAL**

**I.01 REQUIREMENTS INCLUDED**

- A. The requirements of this Section apply to proposed Substitute Items. If in the sole discretion of the Engineer an item of material or equipment proposed by the Contractor does not qualify as an “or-equal” item, it will be considered a proposed Substitute Item. This Section includes supplementary requirements to those in the General Provisions.
- B. The requirements of this Section do not apply to potential Suppliers or Bidders. Proposed Substitute Items will be accepted only from the Contractor.

**I.02 SUBMITTALS**

- A. In order for proposed Substitute Items to be considered, the Contractor shall submit, within 30 days of Notice to Proceed, complete data as set forth herein to permit complete analysis of all proposed Substitute Items identified on the list. Proposed substitutions will not be considered unless the Contractor provides all of the required information within the 30 day period.
- B. Furnish a separate submittal for each proposed Substitute Item. Each submittal shall include the following information.
  - I. Complete data substantiating compliance of the proposed Substitute Item with requirements stated in Contract Documents:
    - a. Product identification, including manufacturer's name and address.
    - b. Manufacturer’s literature; identify:
      - i Product description.
      - ii Reference standards.
      - iii Performance and test data.
      - iv Operation and maintenance data.
    - c. Samples, as applicable.
    - d. Name and address of similar projects on which product has been used, and date of each installation.
  - 2. Itemized comparison of the proposed Substitute Item with product specified. List significant variations. Substitution shall not change design intent and shall perform to same intent or better of that specified.
  - 3. Data relating to impact on construction schedule occasioned by the proposed substitution.
  - 4. Any effect of substitution on separate contracts.
  - 5. List of changes required in other work or products.

6. Accurate cost data comparing proposed substitution with product specified.
  - a. Amount of any net change to Contract Amount.
7. Designation of required license fees or royalties.
8. Designation of availability of maintenance services, sources of replacement materials.

**I.04 EVALUATION OF PROPOSED SUBSTITUTE ITEMS**

- A. Substitutions will not be considered for acceptance when:
  - a. They are indicated or implied on shop drawings or product data submittals
  - b. They are requested directly by a Subcontractor or Supplier.
  - c. Acceptance will require substantial revision of Contract Documents.
- B. Requests for substitutions which are not included on the list of proposed Substitute Items will not be considered unless evidence is submitted to the City that all of the following circumstances exist:
  - a. The specified product is unavailable for reasons beyond the control of the Contractor. Such reasons shall consist of strikes, bankruptcy, discontinuance of manufacturer, or acts of God.
  - b. The Contractor placed, or attempted to place, orders for specified products within 30 days after Notice to Proceed
  - c. Request for substitution is made in writing to the Engineer within 10 days of the date on which the Contractor ascertains that it cannot obtain the specified item.
  - d. Complete data as set forth herein to permit complete analysis of the proposed substitution is submitted with the request.
- C. The Engineer's decision regarding evaluation of substitutions shall be considered final and binding. Requests for time extensions and additional costs based on submission of, acceptance of, or rejection of substitutions will not be allowed. All approved substitutions will be incorporated into the Contract by Change Order.

**I.06 CONTRACTOR'S REPRESENTATION**

- A. In making formal request for substitution, Contractor represents that:
1. It has investigated proposed product and has determined that it is equivalent to or superior in all respects to that specified.
  2. It will provide same warranties or bonds for substitution as for product specified.
  3. It will coordinate installation of accepted substitution into the Work, and will make such changes as may be required for the Work to be complete in all respects.
  4. It waives claims for additional costs caused by substitution which may subsequently become apparent.
  5. Cost data is complete and includes related costs under his/her Contract, but not:
    - a. Costs under separate contracts.
    - b. City's costs for redesign or revision of Contract Documents.

**I.07 ENGINEER DUTIES**

- A. Review Contractor's requests for substitutions within 14 calendar days.
- B. Notify Contractor, in writing, of decision to accept or reject requested substitution.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 4630**

## **SECTION 4700**

### **CONTRACT CLOSEOUT**

#### **PART I GENERAL**

##### **1.01 SCOPE OF WORK**

- A. This Section specifies administrative, verification and procedural requirements for project closeout, including but not limited to:
  - 1. Final cleaning (Section 4710).
  - 2. As-Built Construction Schedule (Section 4310).
  - 3. As-Built Drawings (Section 4720).
  - 4. Warranties, guarantees, and bonds (Section 4740).
  - 5. Reconciliation of final accounting and summary change order.
  - 6. Confirmation that all issues related to impacted properties have been addressed
  - 7. Letter of Final Completion.
  - 8. Final Acceptance and Payment.

##### **1.02 RELATED WORK**

- A. Completion (Standard Specification Section 110.12).
- B. Acceptance and Final Payment (Standard Specification Section 111.8).

##### **1.03 FINAL COMPLETION**

- A. Complete all Work, correct all deficiencies, and furnish all deliverables as specified, prior to Final Completion. The following list is not intended to be comprehensive, but includes examples of services and documentation which are part of the Work.
  - 1. Field services by material suppliers and manufacturers
  - 2. As- Built Drawings
  - 3. As-Built Construction Schedule
  - 4. Warranties, guarantees, and bonds
  - 5. Final cleaning and site restoration
  - 6. Removal of project signs, temporary traffic control devices, and temporary facilities
  - 7. Establish permanent erosion control and remove temporary erosion control items

- B. Furnish submittals to Engineer that are required by governing or other authorities having applicable jurisdiction including but not limited to permit close out information, certificates of occupancy, etc.
- C. When the construction as specified in the Contract is Substantially Complete the Contractor shall notify the City Engineer in writing and that the work will be ready for inspection on a definite date. The notice shall bear the signed concurrence of the Engineer having charge of inspection and construction and shall be given at least ten (10) days prior to the date stated for the inspection. If the City determines that the work is as represented, it will make arrangements to have the substantial completion inspection commenced on the date stated in such notice, or as soon thereafter as practical. If the project is found to be substantially complete, the Engineer will notify the Contractor and will issue a certificate of Substantial Completion. Said certificate shall be dated as of the date of the inspection. If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of same, and the Contractor shall immediately comply with and execute such instructions.
- D. When the Contractor determines that the incomplete or unsatisfactory Work identified during the substantial completion inspection is complete, it shall notify the City Engineer in writing that the Work will be ready for final inspection on a definite date. The notice shall bear the signed concurrence of the Engineer having charge of inspection and construction and shall be given at least 10 days prior to the date stated for final inspection. If the City determines that the Work is as represented, it will make arrangements to have final inspection commenced on the date stated or as soon thereafter as practical.
- E. If the final inspection discloses any Work as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction. Upon correction of the Work, another inspection will be made, and will constitute the final inspection if the Work has been satisfactorily completed.
- F. When the Work is found to be complete, the City will notify the Contractor and issue a Letter of Final Completion. The Contractor shall record the Letter of Final Completion with the Clerk of Court in Caddo Parish no later than 45 days after the date of Final Completion. The recording date begins the "45 day lien free period" which is the last 45 days during which anyone may file a lien against the contract.
- G. The date of Final Completion is the end of accrual of Contract Time and Liquidated Damages. The following date is the beginning of time for warranties, guarantees, and the maintenance and repair period.

**I.04 FINAL ACCEPTANCE AND PAYMENT**

- A. If necessary to reconcile estimated and actual quantities of Contract Items, the City will prepare and execute a summary change order.
- B. Contractor shall furnish all releases or waivers on buildings, wells, utilities, and railroads, as well as any maintenance bonds, certificates from the Health Department, tracings, brochures, or other items required by the Contract before Final Payment.
- C. The City will acknowledge Final Acceptance of the Work and make final payment to the Contractor within 45 days following receipt of a clear lien certificate.
- D. For a paving assessment project, the City Council must approve and accept the Work and authorize final payment.

**PART 2 PRODUCTS (NOT USED)**

**PART 3 EXECUTION (NOT USED)**

**END OF SECTION 4700**

## SECTION 4710

### CLEANING

#### **PART 1 GENERAL.**

##### **1.01 SCOPE OF WORK.**

- A. Maintain the Site clean and free from rubbish and debris, including existing rubbish and debris identified in the Contract Documents to be removed. Execute cleaning of components of the Work during construction until final completion of the Project. No direct payment will be made for Work specified in this Section.

##### **1.02 DISPOSAL AND CLEANING.**

- A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations and anti-pollution laws.

#### **PART 2 PRODUCTS.**

##### **2.01 MATERIALS.**

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by manufacturer of surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by manufacturer of the cleaning material.
- D. Earth dams will not be permitted at catch basin openings, local depressions, or elsewhere, except in time of emergency. Temporary dams of sand bags, asphaltic concrete, or other acceptable material may be permitted when necessary to protect the Work, provided their use does not create a hazard or nuisance to the public. Such dams shall be removed from the Site as soon as their use is no longer necessary.

#### **PART 3 EXECUTION.**

##### **3.01 PRIOR TO CONSTRUCTION.**

- A. Remove all existing waste material, rubbish and windblown debris identified in the contract documents from the work site prior to construction.

##### **3.02 DURING CONSTRUCTION.**

- A. Execute periodic cleaning to keep the Work, the Site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish.
- C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the Site.
- D. Remove materials and equipment from the Site as soon as they are no longer necessary.

- E. Remove excess materials from excavation of catch basins and similar structures immediately. Sufficient materials which meet the specified requirements for backfill may remain.
- F. Remove forms and form lumber from the Site as soon as practicable.
- G. Engineer may direct the Contractor to perform cleaning if Engineer determines that cleaning is inadequate or not being done frequently enough. Contractor shall immediately clean affected area identified by the Engineer at no additional cost to the City. The City reserves the right to clean or utilize a third-party to clean the site if after written notification to the Contractor that cleaning is inadequate or not being done frequently and action is not taken by the Contract to clean the identified area within one calendar day. Costs incurred by the City for cleaning will be reimbursed by the Contractor or back charged and withheld on pay requests.

**3.03 DUST CONTROL.**

- A. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

**3.04 FINAL CLEANING.**

- A. Employ skilled workmen for final cleaning.
- B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels and other foreign materials from sight-exposed interior and exterior surfaces.
- C. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.
- D. Prior to final completion or City occupancy, conduct an inspection of sight-exposed interior and exterior surfaces and all Work areas, to verify that the entire Work is clean.

**END OF SECTION 4710**

## SECTION 4720

### AS-BUILT DRAWINGS

#### **PART I GENERAL.**

##### **1.01 SCOPE.**

- A. The Contractor shall keep and maintain, at the job site, a copy of the Drawings, marked up and annotated to indicate all changes made during the course of a project, as specified herein.
- B. The Contractor shall keep and maintain, at the job site, a copy of Point-to-Point Wiring Diagrams for control systems, marked up and annotated to indicate all changes made during the course of a project, as specified herein.

##### **1.02 REQUIREMENTS INCLUDED.**

- A. Contractor shall maintain an as-built copy of the following documents, marked up to indicate all changes made during the course of a project:
  - 1. Drawings
  - 2. [Point-to-Point Wiring Diagrams]
  - 3. [Panelboard Circuit Directories]
- B. Measure and record coordinates representing the horizontal and vertical locations of all buried pressure pipelines 4 inches in diameter or larger. Measure horizontal and vertical locations of all fittings, valves, manholes and changes in horizontal direction and record the coordinates that these locations represent.
- C. Measure and record coordinates representing the horizontal locations of each corner of new, major structures including [list specific structures].
- D. Utilize equipment with sufficient horizontal positional accuracy to measure horizontal coordinates of each point so that the specific locations can be subsequently marked. The specific location of a pipeline is defined as an area not wider than the width of the pipeline plus 18 inches on either side. Measure and record the elevation of pipelines at each specific location to the nearest whole foot. [The specific location of a structure corner is defined as an area within an 18-inch radius of the actual corner.]
- E. Measure and record coordinates based on the Louisiana Coordinate System of 1983 North Zone. Measure and record elevations in Mean Sea Level datum.

F. AS-BUILT DRAWINGS

1. The Contractor shall annotate (mark-up) the Drawings to indicate all project conditions, locations, configurations, and any other changes or deviations that vary from the original Drawings. This requirement includes, but is not limited to, buried or concealed construction, and utility features that are revealed during the course of construction. Special attention shall be given to recording the locations (horizontal and vertical) and material of all buried utilities that are encountered during construction – whether or not they were indicated on the Drawings. The as-built information added to the drawings may be supplemented by detailed sketches, if necessary, clearly indicating, the Work, as constructed.
2. These annotated Drawings constitute the Contractor's As-Built Drawings and are actual representations of as-built conditions, including all revisions made necessary by change orders, design modifications, requests for information and field orders.
3. As-Built Drawings shall be accessible to the Engineer at all times during the construction period.

**PART 2 PRODUCTS (NOT USED).**

**PART 3 EXECUTION.**

**3.01 MAINTENANCE OF AS-BUILT DRAWINGS.**

- A. Store As-Built Drawings in Contractor's field office apart from documents used for construction. Provide files and racks for storage of the As-Built Drawings.
- B. Maintain documents in a clean, dry, legible, condition and in good order. Do not use record documents for construction purposes.
- C. Make documents available for inspection by the Engineer at all times.

**3.02 MARKING METHOD.**

- A. Use the color Red (indelible ink) to record information on the Drawings.
- B. Label each document "AS-BUILT" in neat large printed letters.
- C. Unless otherwise specified elsewhere, notations shall be affixed to hardcopies of documents.
- D. Record information contemporaneously with construction progress.
- E. Legibly mark drawings with as-built information:
  1. Elevations and dimensions of structures and structural elements.
  2. All underground utilities (piping and electrical), structures, and appurtenances
    - a. Changes to existing structure, piping and appurtenance locations.
    - b. Record horizontal and vertical locations of underground structures, piping, utilities and appurtenances, referenced to permanent surface improvements.

- c. Record actual installed pipe material, class, size, joint type, etc
- d. Record specific locations of buried pressure pipelines 4 inches in diameter or larger and corners of new, major structures in tabular form. Reference each specific location on the annotated Drawings.

**3.03 AS-BUILT INFORMATION COMPILATION.**

- A. Do not conceal any work until the required information is acquired.
- B. Items to be recorded include, but are not limited to:
  - 1. [Location of internal utilities and appurtenances concealed in the construction – referenced to visible and accessible features.]
  - 2. Field changes of dimensions and/or details
    - a. [Interior equipment and piping relocations.]
    - b. [Architectural and structural changes, including relocation of doors, windows, etc.]
    - c. [Architectural schedule changes.]
  - 3. Changes made by Field Order or Change Order
  - 4. Clarifications made from RFI's
  - 5. Details not indicated on the original Drawings
  - 6. [Notes regarding liners installed or other trenchless pipeline rehabilitation or repair]
  - 7. Coordinates of pipelines, manholes, bends, valves, horizontal changes in direction, and vertical changes in direction.

**3.04 SUBMITTAL.**

- A. Prior to Final Completion of the Work, the Contractor shall finalize and deliver a complete set of As-Built Drawings to the Engineer conforming to the construction records of the Contractor. The set of drawings shall consist of corrected and annotated drawings showing the recorded location(s) of the Work. As-Built Drawings shall be in the form of a set of prints with annotations carefully and neatly superimposed on the drawings in red.
- B. The information submitted by the Contractor into the As-Built Drawings will be assumed to be correct. The Contractor shall be responsible for the accuracy of such information, and shall bear the costs resulting from the correction of incorrect data.
- C. Delivery of As-Built Drawings to the Engineer will be a prerequisite to Final Completion.

**END OF SECTION 4720**

**END OF PART 40**

**PAVEMENT RECOMMENDATIONS  
SOUTHFIELD ROAD IMPROVEMENTS  
SHREVEPORT, LOUISIANA**

**PROJECT NUMBER: DRGeoES 24103G**

*DATE: DECEMBER 9, 2024.*

***PREPARED FOR:  
HALFF ASSOCIATES, INC***

***PREPARED BY:***



*12.9.24*

***DAVE RAMBARAN, P.E.***



*P.O. Box 8812 • Shreveport, LA 71148 •  
www.DRGeosciences.com*



December 9, 2024

Halff Associates, Inc.  
401 Market St. Sr. #650  
Shreveport, LA 71101

Attention: Mr. Marcus Taylor, P.E.

Re: Pavement Recommendations Overlay  
Southfield Road Improvements  
Shreveport, LA  
Project No. DRGeoES 24103G

Dear Mr. Taylor:

Dave Rambaran Geosciences, LLC (DRGeoES) has completed the authorized geotechnical engineering evaluation for the above referenced pavement. Our services were performed in substantial accordance with our Proposal Number 24103G.

The purpose of our evaluation was to determine the general subsurface conditions at the site, perform an analysis to establish the potential impact these conditions will have on the site preparation and pavement design. The recommendations in this report are based on a physical reconnaissance of the site, performed on November 11, 2024, as well as observation and classification of samples obtained from test borings conducted at the site. Confirmation of the anticipated subsurface conditions during construction is an essential part of geotechnical services.

We appreciate the opportunity to provide consultation services for the proposed development. If you have any questions regarding the information in this report or need any additional information, please call us.

Respectfully Submitted,  
**DAVE RAMBARAN GEOSCIENCES, LLC**

A handwritten signature in blue ink, appearing to read "D. Rambaran".

Dave Rambaran, P.E.  
Sr. Geotechnical Engineer

A handwritten signature in blue ink, appearing to read "V. Nagelli".

Varun Kumar Nagelli  
Project Manager



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## APPENDIX

Vicinity Map
Boring Location
Boring Logs
CBR Logs
Key
About Geotechnical Report



## **1.0 PROJECT DESCRIPTION**

As directed, DRGeoES performed 2 borings and provided geotechnical boring logs and CBR logs with field correlation CBR profiles for this site. This report includes a summary of the field exploration procedures and site conditions encountered. After reviewing the field information, the design team's pavement section recommendations are presented in the following sections of this report.

The pavement was observed to have cracks and is highly weathered. It appears that residential traffic with limited heavy trucks travel this street. As requested the pavement was analyzed for 2 inches of asphalt overlay of existing pavement. Reflective cracking will occur over time based on the minimal overlay thickness. Industry standard of reflective cracking migration is estimated at 1 inch of new pavement will retard reflective cracking for about 1 year.

In some areas grinding and levelling may be necessary prior to placement of the 2 inches overlay. Also, ruts in the existing pavement subgrade shall be repaired prior to overlaying with the new asphalt. If excessive ruts or potholes are encountered, they shall be over excavated and replaced with a stone base prior to asphalt placement.

The geotechnical recommendations presented in this report are based on the available project traffic information and the subsurface materials described in this report. If any of the noted information is incorrect, DRGeoES should be informed in writing so that we may amend the recommendations presented in this report, if appropriate and desired by the client. DRGeoES will not be responsible for the implementation of report recommendations when not notified of changes in the project and not engaged to monitor construction.

Based on the two borings performed approximately 8 inches of asphalt was found in place with some minimal clayey silty sand with gravel directly under the pavement approximately 2 to 3 inches. It appears that the traffic on this street is limited to residential only.

## **2.0 PAVEMENT RECOMMENDATIONS**

The general pavement design information presented in this report is based on information published by the City of Shreveport, AASHTO and the Portland Cement Association, as well as experience in this area. The published information was utilized in conjunction with the available field and laboratory test data to develop general pavement recommendations. Field Dual Mass Cone Penetrometer Testing with CBR correlations were performed on the existing subgrade. Based on DCP readings an average CBR value of 3 was achieved within the upper 2 feet of the existing subgrade.



The “City of Shreveport, Louisiana Standard Specification for Infrastructure Improvements & Standard Plans for Infrastructure Improvements” should be followed in conjunction with this report.

The pavement is located on Southfield Road from Camellia Lane to Gilbert Drive and will be rehabilitated and improved with an asphalt overlay of 2 inches.

**Existing Section:** Weathered asphalt pavement was encountered to a depth of approximately 8 inches in the two borings performed. The estimated structural number (SN) of the existing pavement section is SN 1.70; however, based on the CBR value of the subgrade the estimated ESALs for the existing pavement section is about 2,200 mainly due to the low CBR values of the subgrade.

**Table I**

<b>MATERIAL AASHTO</b>	<b>STRUCTURAL EQUIVALENCY COEFFICIENT</b>
<b>Surface/Intermediate Course</b>	
Hot Mix Asphalt Wearing	0.20 - 0.44
<b>Base Course Existing</b>	
Hot Mix Asphalt	0.20 - 0.30
Existing Concrete Base	0.15
Sub-Base Existing Weathered Brick	0.10
Crushed Stone	0.12
Crushed Stone Base & Clay	0.05

The performance of pavements depends upon several factors, including:

- (1) the characteristics of the supporting soils,
- (2) surface and subsurface drainage,
- (3) the magnitude and frequency of wheel load applications,
- (4) quality of construction materials,
- (5) the contractor’s placement and workmanship abilities,
- (6) the implementation of long-term maintenance plans,
- (7) the desired period of design life.

**Table II**

<b>TITLE</b>	<b>LaDOTD SPECIFICATION SECTION</b>
Aggregate for Aggregate Base	301 / 1003.03 B or C
Asphaltic Concrete Pavement Wearing	502
Portland Cement Concrete Pavement	601
Lime Treatment Base or Subbase	304 / Type B
In-Place Cement Stabilized & Treated Base	303



All subgrade, base, and pavement construction operations should meet minimum requirements of the Louisiana Department of Transportation (LaDOTD), *Standard Specifications for Highway Construction*, dated 2006. The applicable sections of the specifications are identified above.

## **2.1 FLEXIBLE PAVEMENT**

To achieve the calculated EASL's, the asphaltic pavement layer has to be placed on a stable subgrade normally with a CBR value equivalent to "6" or better. For the above referenced section, the CBR value was 3 within the upper 2 feet of the existing subgrade. If the assumptions presented are not suitable for the subject site, then upon notification we will evaluate the recommendation as additional information is made available to us.

**Table III**

<b>DESIGN CRITERIA</b>	<b>STANDARD</b>
Terminal Serviceability	2.00
Reliability Flexible	95%
Initial Serviceability (Flexible)	4.2
Overall Deviation (Flexible)	0.49
CBR	3
Drainage Coefficient /Well Drained	1

The asphalt pavement sections described herein were designed using the "AASHTO Guide for Design of Pavement Structures, 1993". Alternative pavement sections were designed by establishing the structural numbers used for the AASHTO design system and substituting materials based upon structural equivalency as follows:

**Table IV**

<b>MATERIAL</b>	<b>STRUCTURAL EQUIVALENCY COEFFICIENT</b>
Asphalt Concrete Type D	0.44
Asphalt Concrete Type B	0.40
Crushed Stone Base	0.12

Estimated 100 cars per day; 2 Buses per day; 4 Delivery Trucks per day; 1 trash truck per week; 1 Tandem Axil Truck (80kips) every other week for **20 years** is equivalent to 21,123 ESAL for the life of the pavement.

**Table V**

<b>Pavement Materials</b>	<b>FLEXIBLE PAVEMENT Recommended Minimum</b>	
	<b>Medium Duty</b>	<b>ESALs</b>
<b>Asphaltic Concrete Surface</b>	2.0	28,000
<b>Existing Asphalt</b>	8	
<b>Existing Clay Gravel Base</b>	2	

The flexible pavement sections are based on the design parameters and presented in the table as shown above.

Note: All asphaltic concrete pavements to meet LaDOTD Section 502.

### **3.0 PAVEMENT MAINTENANCE**

Proper maintenance of the pavement should be implemented to protect the pavement. The maintenance should include sealing of the cracks that may appear over time. Cracking due to heave will occur and sealing of these cracks will be necessary.

The performance of pavements will be directly affected by the subgrade conditions at the time of paving, rainwater runoff, and traffic. The subgrade and base course should both be placed and compacted as discussed in the “Site Preparation” and “Structural Fill” sections of this report. This is very important for the long-term performance of the pavement. The thickness of all pavement components should not be deficient by more than ¼ inch.

Surface runoff should not be allowed to seep beneath pavements from landscaped areas behind curbs. This may require special grading in the areas adjacent to pavements to direct runoff away from the pavement.



#### **4.0 CLOSING**

This report was prepared for Halff Associates and their design team for specific application to this project. The information in this report is not transferable. The analyses, conclusions, and recommendations presented in this report are based upon the preceding project information and the results of the investigation. The data collected is representative of the locations tested. Variations are likely to occur at other locations throughout the site.

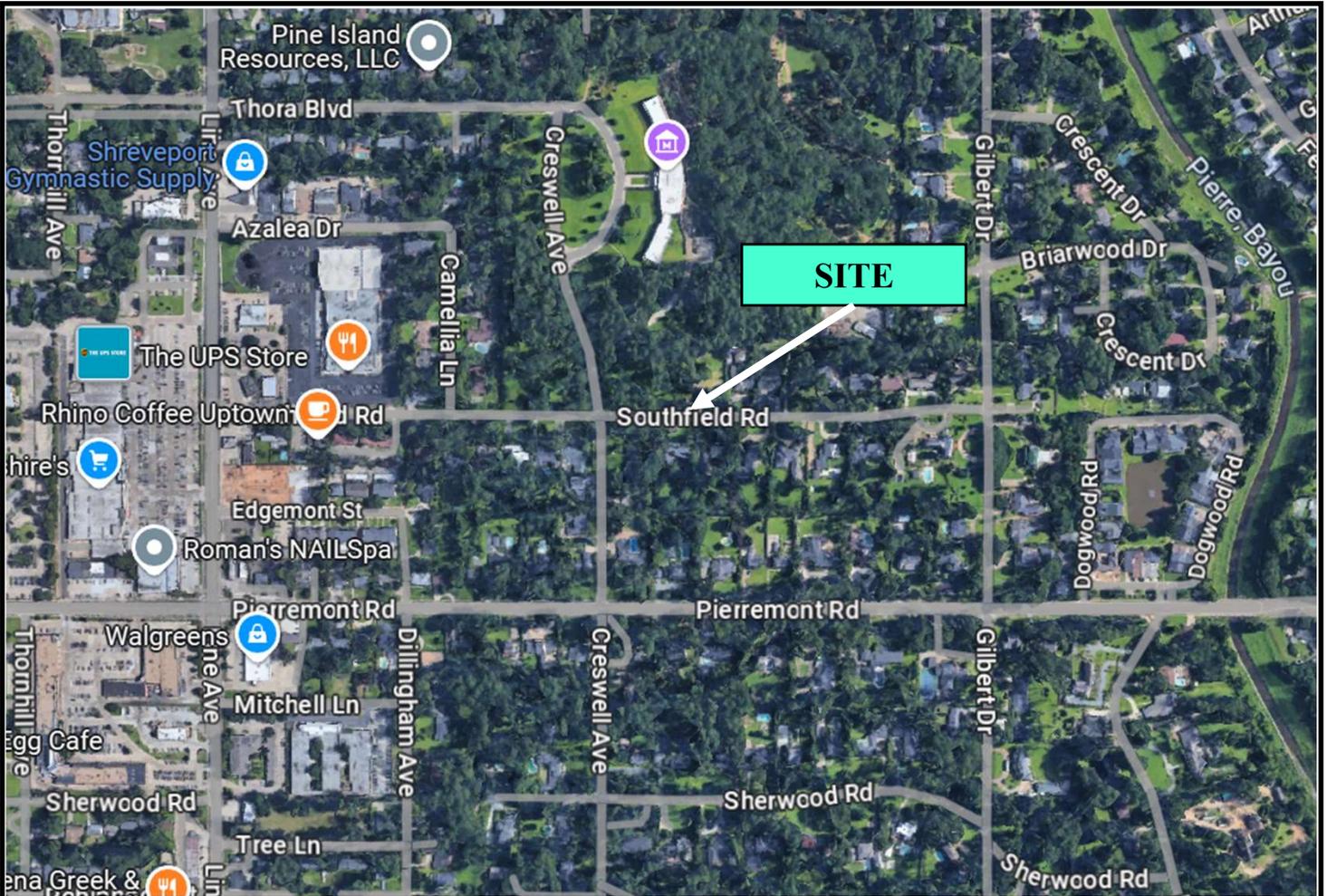
This report should not be used for a different development on the same property without first being evaluated by the engineer. This report is intended for use during design and preparation of specifications and may not address all conditions at the site during construction. Contractors reviewing this information should acknowledge that this document is for design information only.

This report has been prepared in accordance with generally accepted standards of geotechnical engineering practice. No other warranty is expressed or implied.



*P.O. Box 8812 • Shreveport, LA 71148 • Ph: (318) 780-8292 / [www.DRGeosciences.com](http://www.DRGeosciences.com)*

# **APPENDIX**



Source: Site Map provided by Client.  
Estimated Boring Location -----



Southfield Road  
Improvements  
Shreveport, LA

Scale: NTS

Project Number: DRGeoES 24103G



Source: Site Map provided by Client.  
Estimated Boring Location ----- 



Southfield Road  
Improvements  
Shreveport, LA

Scale: NTS

Project Number: DRGeoES 24103G

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DRGeoES, LLC  
 9053 Mansfield Rd, Suite A  
 Shreveport, LA - 71118  
 Telephone: 318-671-1760  
 Email: contactus@drgeosciences.com

# BORING NUMBER B1

**CLIENT** Half and Associates  
**PROJECT NUMBER** 24103G  
**DATE STARTED** 11/11/24 **COMPLETED** 11/11/24  
**DRILLING CONTRACTOR** Dave Rambaran Geosciences, LLC  
**DRILLING METHOD** Auger Boring  
**LOGGED BY** RS **CHECKED BY** VN  
**NOTES** \_\_\_\_\_

**PROJECT NAME** Southfield Road Improvements  
**PROJECT LOCATION** Shreveport, LA  
**GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** 4 inches  
**GROUND WATER LEVELS:**  
**AT TIME OF DRILLING** --- None Encountered  
**AT END OF DRILLING** ---  
**AFTER DRILLING** ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0		Approximately 8 inches of Asphalt											
1		Approximately 2 inches of Clayey Silty Sand with Gravel											
1		Silty Sand (SM); MEDIUM DENSE, Brown	SS 1		10-10 (20)		98	8					21
2		Clayey Sand (SC); MEDIUM DENSE, Red Grey	SS 2		9-9-10 (19)			16			30	10	25
4		MEDIUM DENSE, Red Grey	SS 3		10-10-10 (20)		96	16					
5													
6													

Bottom of borehole at 6.0 feet.

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DRGeoES, LLC  
 9053 Mansfield Rd, Suite A  
 Shreveport, LA - 71118  
 Telephone: 318-671-1760  
 Email: contactus@drgeosciences.com

# BORING NUMBER B2

**CLIENT** Half and Associates **PROJECT NAME** Southfield Road Improvements

**PROJECT NUMBER** 24103G **PROJECT LOCATION** Shreveport, LA

**DATE STARTED** 11/11/24 **COMPLETED** 11/11/24 **GROUND ELEVATION** \_\_\_\_\_ **HOLE SIZE** 4 inches

**DRILLING CONTRACTOR** Dave Rambaran Geosciences, LLC **GROUND WATER LEVELS:**

**DRILLING METHOD** Auger Boring **AT TIME OF DRILLING** --- None Encountered

**LOGGED BY** RS **CHECKED BY** VN **AT END OF DRILLING** ---

**NOTES** \_\_\_\_\_ **AFTER DRILLING** ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0		Approximately 8 inches of Asphalt											
		Approximately 2 inches of Clayey Silty Sand with Gravel											
1		Clayey Sand (SC); MEDIUM DENSE, Red Brown	SS 1		5-8 (13)			14			20	9	43
2		MEDIUM DENSE, Red Brown	SS 2		6-6-6 (12)		98	22					
3													
4		MEDIUM DENSE, Red Brown	SS 3		6-6-6 (12)			23			46	21	26
5													
6													

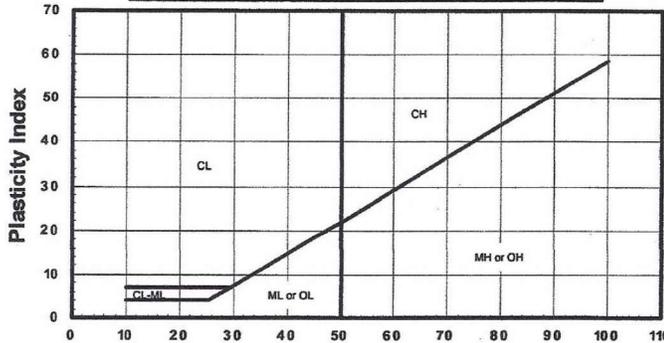
Bottom of borehole at 6.0 feet.

# KEY TO TERMS & SYMBOLS USED ON BORING LOG

## ABBREVIATIONS

N	- STANDARD PENETRATION RESISTANCE (ASTM D-1586)	SS	- SPLIT SPOON SAMPLE
M%	- PERCENT NATURAL MOISTURE CONTENT	RQD	- ROCK QUALITY DESIGNATION
Qp	- POCKET PENETROMETER	REC	- RECOVERY
LL	- LIQUID LIMIT	PL	- PLASTIC LIMIT
PI	- PLASTICITY INDEX	∇	- WATER LEVEL
Tv	- Torvane Undrained Shear Strength	ST	- SHELBY TUBE

**UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D 2487**



**CONSISTENCY OF COHESIVE SOILS**

CONSISTENCY	N-VALUE (Blows/Foot)	SHEAR STRENGTH (tsf)	HAND PEN VALUE (tsf)
Very Soft	0 to 2	0 to 0.125	0 to 0.25
Soft	2 to 4	0.125 to 0.25	0.25 to 0.5
Medium Stiff	4 to 8	0.25 to 0.5	0.5 to 1.0
Stiff	8 to 15	0.5 to 1.0	1.0 to 2.0
Very Stiff	15 to 30	1.0 to 2.0	2.0 to 4.0
Hard	>30	> 2.0	4.0 +

## Liquid Limit

**UNIFIED SOIL CLASSIFICATION SYSTEM**

COARSE-GRAINED SOILS <50% coarse fraction passes #200 sieve	GRAVELS <5% passes #200 sieve	GW	Well-graded gravel, gravel-sand mixtures, little or no fines
	GRAVELS GP/GM 5-12 % passes #200 sieve	GRAVELS GP/GM 5-12 % passes #200 sieve	GP
GRAVELS GM >12% passes #200 sieve		GM	Silty gravels, poorly-graded gravel-sand-silt mixture
SANDS >50% coarse fraction passes #4 sieve	SANDS GC <5% passes #200 sieve	GC	Clayey gravels, poorly-graded gravel-sand-clay mixture
	SANDS SW <5% passes #200 sieve	SW	Well-graded sand, gravelly sands, little or no fines
	SANDS SP 5-12 % passes #200 sieve	SP	Poorly- graded sand, gravelly sands, little or no fines
	SANDS SM 5-12 % passes #200 sieve	SM	Silty sands, poorly-graded sand-gravel-silt mixture
	SANDS SC >12% passes #200 sieve	SC	Clayey sands, poorly-graded sand-gravel-clay mixture
FINE-GRAINED SOILS >50% passes #200 sieve	SILTS & CLAYS Liquid Limit < 50	ML	Inorganic silts & very fines sands, silty or clayey fine sands, clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clay
		OL	Organic silts & clays of low plasticity
	SILTS & CLAYS Liquid Limit > 50	MH	Inorganic silts, micaceous or distomaceous fine sand or silt
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic silts & clays of medium to high plasticity
HIGHLY ORGANIC SOILS	PT	Peat, humus, swamp soils with high organic content	

**DEGREE OF PLASTICITY OF COHESIVE SOILS**

DEGREE OF PLASTICITY	PLASTICITY INDEX	SWELL POTENTIAL
NONE or SLIGHT	0 to 4	NONE
LOW	4 to 20	LOW
MEDIUM	20 to 30	MEDIUM
HIGH	30 to 40	HIGH
VERY HIGH	>40	VERY HIGH

**MOISTURE CONDITION COHESIVE SOILS**

DESCRIPTION	CONDITION
Absence of moisture, dusty, dry to touch	DRY
Damp but no visible water	MOIST
Visible free water	WET

**RELATIVE DENSITY - GRANULAR SOILS**

APPARENT DENSITY	SPT (Blows/Foot)	CALIFORNIA SAMPLER (Blows/Foot)	MODIFIED CA. SAMPLER (Blows/Foot)	RELATIVE DENSITY (%)
Very Loose	0 to 4	0 to 5	0 to 4	0 to 15
Loose	4 to 10	5 to 15	5 to 12	15 to 35
Medium Dense	10 to 30	15 to 40	12 to 35	35 to 65
Dense	30 to 50	40 to 70	35 to 60	65 to 85
Very Dense	>50	>70	>60	85 to 100

# SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
<p><b>COARSE GRAINED SOILS</b></p> <p>MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE</p>	<p><b>GRAVEL AND GRAVELLY SOILS</b></p>	<p>CLEAN GRAVELS</p> <p>(LITTLE OR NO FINES)</p>		<b>GW</b>	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		<p>GRAVELS WITH FINES</p> <p>(APPRECIABLE AMOUNT OF FINES)</p>		<b>GP</b>	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		<p>GRAVELS WITH FINES</p> <p>(APPRECIABLE AMOUNT OF FINES)</p>		<b>GM</b>	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
	<p><b>SAND AND SANDY SOILS</b></p>	<p>CLEAN SANDS</p> <p>(LITTLE OR NO FINES)</p>		<b>SW</b>	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				<b>SP</b>	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		<p>SANDS WITH FINES</p> <p>(APPRECIABLE AMOUNT OF FINES)</p>		<b>SM</b>	SILTY SANDS, SAND - SILT MIXTURES
			<b>SC</b>	CLAYEY SANDS, SAND - CLAY MIXTURES	
	<p><b>FINE GRAINED SOILS</b></p> <p>MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE</p>	<p><b>SILTS AND CLAYS</b></p> <p>LIQUID LIMIT LESS THAN 50</p>		<b>ML</b>	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				<b>CL</b>	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			<b>OL</b>	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
<p><b>SILTS AND CLAYS</b></p> <p>LIQUID LIMIT GREATER THAN 50</p>			<b>MH</b>	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
			<b>CH</b>	INORGANIC CLAYS OF HIGH PLASTICITY	
			<b>OH</b>	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
<p><b>HIGHLY ORGANIC SOILS</b></p>				<b>PT</b>	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

# DCP TEST DATA B-1

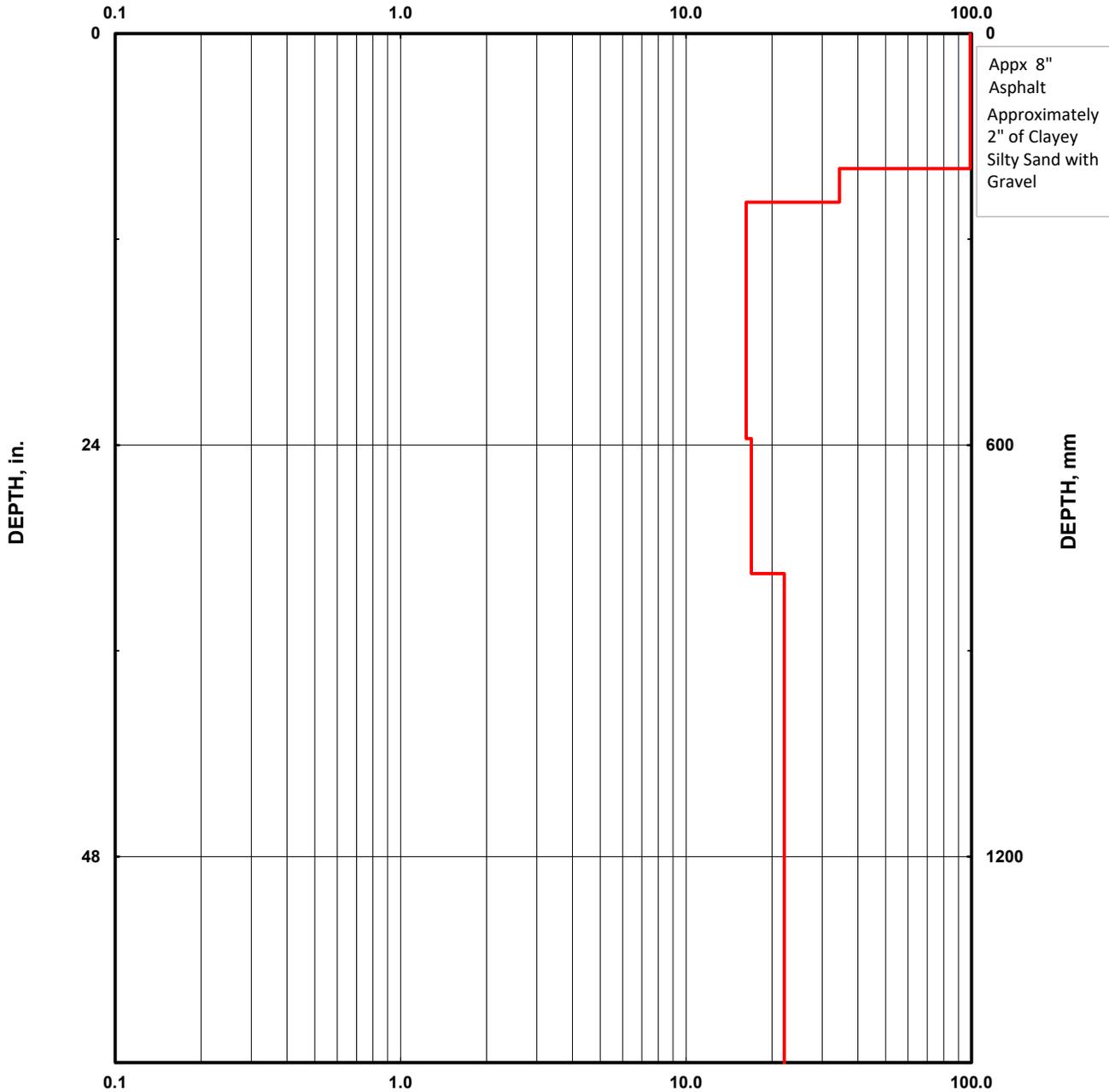
**Project:** 24103G Southfield Road Improvements  
**Location:** Shreveport, LA

**Date:** November 11, 2024  
**Soil Type(s):** CL

**Hammer**  
 10.1 lbs.  
 17.6 lbs.  
 Both hammers used

**Soil Type**  
 CH  
 CL  
 All other soils

## CBR



# DCP TEST DATA B-2

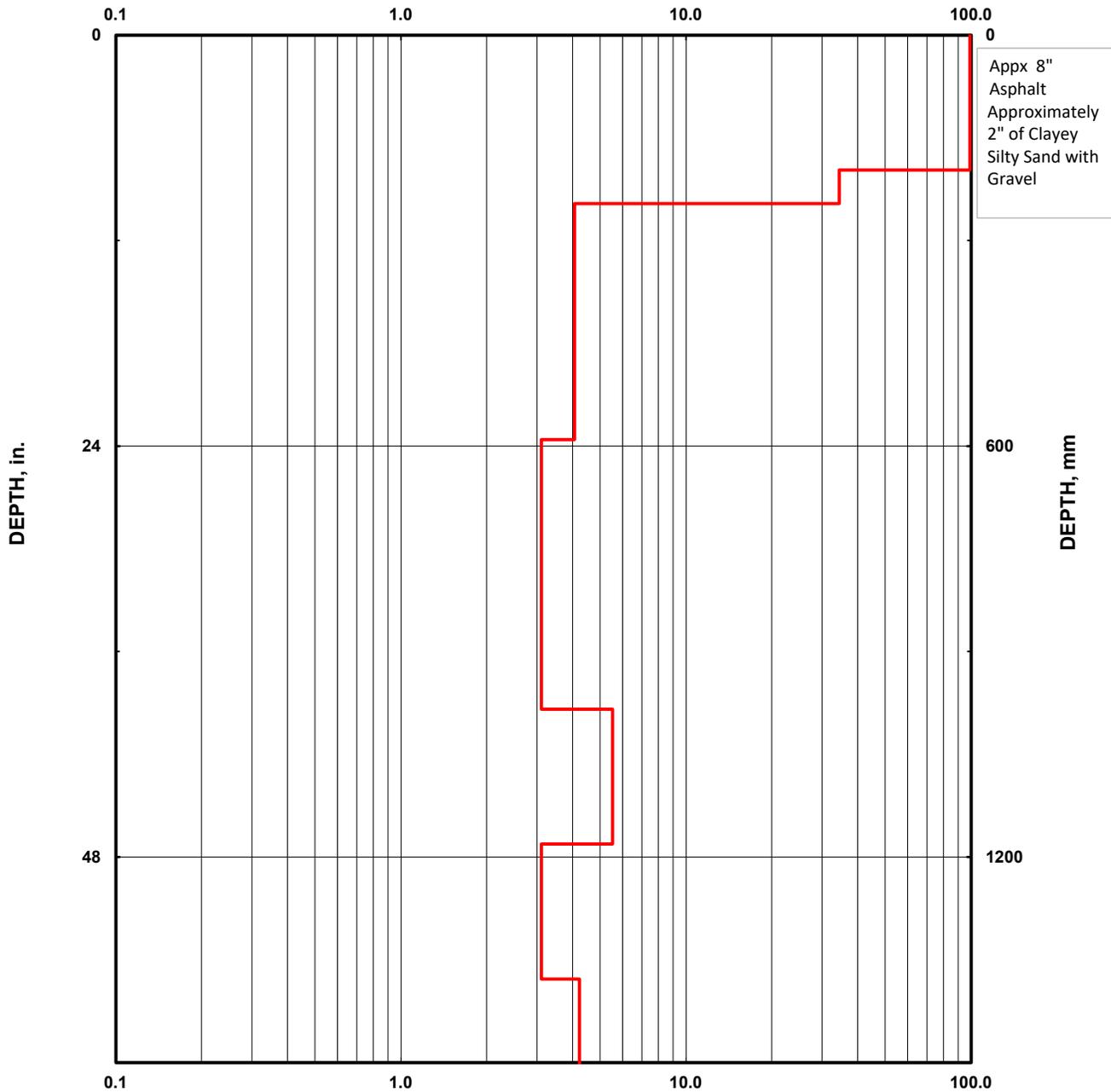
**Project:** 24103G Southfield Road Improvements  
**Location:** Shreveport, LA

**Date:** November 11, 2024  
**Soil Type(s):** CL

**Hammer**  
 10.1 lbs.  
 17.6 lbs.  
 Both hammers used

**Soil Type**  
 CH  
 CL  
 All other soils

## CBR



### **LABORATORY ANALYSIS**

After the soil samples are visually classified, specific samples are selected by the geotechnical engineer for laboratory analysis. The laboratory analysis may consist of moisture profiles of the natural moisture content, #200 washes, and Atterberg limits tests determinations. The results of the laboratory analysis are presented on the boring logs in the Appendix of this report. A brief description of the laboratory tests performed is provided in the following sections. Tests follow the general procedures of ASTM.

#### **DESCRIPTION OF SOILS (VISUAL-MANUAL PROCEDURE) (ASTM D 2488)**

The soil samples were visually examined by our engineer and soil descriptions were provided. Representative samples were then selected and tested in accordance with the aforementioned laboratory-testing program to determine soil classifications and engineering properties. This data was used to correlate our visual descriptions with the Unified Soil Classification System (USCS).

#### **NATURAL MOISTURE CONTENT (ASTM D 2216)**

Natural moisture content (M%) was determined on selected samples. The natural moisture content is the ratio, expressed as a percentage, of the weight of water in a given amount of soil to the weight of solid particles. The results are indicated on the boring logs and table in the Appendix of this report.

#### **ATTERBERG LIMITS (ASTM D-4318)**

The Atterberg Limits test was performed to evaluate the soil's plasticity characteristics. The soil Plasticity Index (PI) is representative of this characteristic and is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL). The Liquid Limit is the moisture content at which the soil will flow as a heavy viscous fluid. The Plastic Limit is the moisture content at which the soil is between "plastic" and the semi-solid stage. The Plasticity Index ( $PI = LL - PL$ ) is a frequently used indicator for a soil's potential for volume change. Typically, a soil's potential for volume change increases with higher plasticity indices. The results of Atterberg limit testing are presented on the boring logs and summary table in the Appendix of this report.

#### **WASH #200 TEST (ASTM D 422)**

Grain-size tests were performed to determine the partial soil particle size distribution. The amount of material finer than the openings on the No. 200 sieve (0.074 mm) was determined by washing soil over the No. 200 sieve. The results of wash #200 tests are presented on the boring logs included in the Appendix of this report.

#### **POCKET PENETROMETER**

Pocket penetrometer tests were performed on cohesive soil samples. The pocket penetrometer provides a consistency classification and an estimate of the soil's unconfined compressive strength. The pocket penetrometer data are presented as  $Q_p$  in units of tons per square foot (tsf) on the logs in the Appendix.

#### **STANDARD TEST METHOD FOR FIELD VANE SHEAR TEST ASTM D4767 – 04 ASTM D2573 - 08**

The vane shear test is an in-situ geotechnical testing methods used to estimate the undrained shear strength of fully saturated clays without disturbance. The test is relatively simple, quick, and provides a cost effective way of estimating the soil shear strength; therefore, it is widely used in geotechnical investigations. Under special condition, the vane shear test can be also carried out in the laboratory on undisturbed soil specimens; however, the use of the vane shear test in in-situ testing is much more common.

## IMPORTANT INFORMATION ABOUT YOUR

# Geotechnical Engineering Report

*Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.*

*While you cannot eliminate all such risks, you can manage them. The following information is provided to help.*

### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one -not even you-* should apply the report for any purpose or project except the one originally contemplated.

### Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

### A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

### Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report whose adequacy may have been affected by:* the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

### Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

### A Report's Recommendations Are Not Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

## **A Geotechnical Engineering Report Is Subject to Misinterpretation**

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

## **Do Not Redraw the Engineer's Logs**

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

## **Give Contractors a Complete Report and Guidance**

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

## **Read Responsibility Provisions Closely**

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

## **Geoenvironmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

**Obtain Professional Assistance To Deal with Mold** Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.*