

**CONTRACT DOCUMENTS
AND
TECHNICAL SPECIFICATIONS**

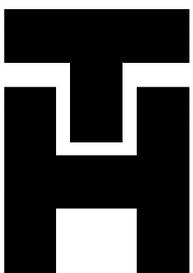
FOR

**ROADWAY IMPROVEMENTS TO
CENTERLINE ROAD**

**PREPARED FOR
BERKELEY COUNTY, SOUTH CAROLINA**

NOVEMBER, 2015

J – 25644.1005



Prepared by:

THOMAS & HUTTON

www.thomasandhutton.com

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TECHNICAL PROVISIONS

All Roadway Construction shall be in accordance with the latest revision of South Carolina Department of Transportation (SCDOT) Standard Specifications.

INVITATION TO BID

Legal Notice

Sealed Proposals will be received by Berkeley County, South Carolina, in the office of Berkeley County Council, (Room 101), Berkeley County Administration Building, 1003 Highway 52, Moncks Corner, South Carolina, 29461, up to 3:00 p.m. local time on Monday, November 30th, and immediately thereafter publicly opened and read aloud, in County Council Assembly Room (Room 125) for the furnishing of labor, material, and equipment for:

Roadway Improvements to Centerline Road

The work includes earthwork, grading, aggregate base, asphaltic concrete surface course, and drainage facilities for a total approximate roadway length of 4.5 miles.

A non-mandatory pre-bid conference will be held at 3:00 p.m. local time on Monday, November 16th, 2015, at the Berkeley County Supervisor's Conference Room (Room 118), Berkeley County Administration Building, 1003 Highway 52, Moncks Corner, South Carolina, 29461. Final questions must be provided by 12:00 p.m. local time on Tuesday, November 17th, 2015. Questions can be emailed to Mr. Brad Sanderson at sanderson.b@thomasandhutton.com.

Contract Documents will be available on or about November 3rd and may be examined at the office of the County Engineer. Copies of the Contract Documents may be obtained by contacting Amanda Morelli (803.451.6789) for a non-refundable cost of three hundred dollars (\$300.00) per set, including next day delivery. An electronic copy of the AutoCAD files and SWPPP will be provided upon payment and receipt of Electronic Release Form. Checks should be made payable to THOMAS & HUTTON ENGINEERING CO. The Columbia office is at 1501 Main Street, Suite 760, Columbia, South Carolina 29201; telephone no. 803-451-6789. Credit cards cannot be accepted.

Proposals shall be accompanied by a bond or certified cashier's check in an amount not less than 10% of the base proposal as a guarantee that, if the Proposal is accepted, the required Agreement will be executed. All bonds shall be by a surety company licensed in South Carolina with an "A" minimum performance rating and a financial strength of at least five times the contract price as listed in the most current publication of "Best's Key Rating Guide Property Liability." Performance and Payment Bonds, each in an amount equal to 100% of the contract price shall be required of the successful bidder if contract is awarded. Each Bond shall be accompanied by a "Power of Attorney" authorizing the attorney-in-fact to bind the surety and certified to include the date of the bond.

Berkeley County reserves the right to waive any informalities in bidding and to reject all Bids if it is in the County's best interest to do so. Unless all bids are rejected, award will be made by Berkeley County Council.

Christy Davis, CPPB
Berkeley County Director of Procurement

END OF REQUEST FOR PROPOSALS

DOCUMENT 00110

INSTRUCTIONS TO OFFERORS

INTENTION: It is intended the Instructions to Offerors, General Conditions, Supplementary Conditions, Technical Specifications and Construction Drawings shall cover the complete work to which they relate.

ARTICLE 1 **DEFINED TERMS:** In addition to the terms defined in the General Conditions, (EJCDC C-700)(2007), additional terms used in these Instructions to Offerors have the meanings indicated below which are applicable to both the singular and plural thereof.

- 1.1. **Offeror** – One who submits a Proposal directly to Owner as distinct from a sub-offeror, who submits a proposal to an Offeror.
- 1.2. **Successful Offeror** – The lowest, responsible, and responsive Offeror to whom Owner (based on Owner's evaluation as hereinafter provided) makes an award.
- 1.3. **Proposal** – A complete and properly signed offer to execute work for the prices stipulated in Proposal Form and submitted in accordance with the Proposal Documents.
- 1.4. **Addenda** – Graphic or written documents issued by Engineer prior to the opening of Proposals issued to clarify, revise, add to, or delete information in the original proposal documents or in previous addenda.

ARTICLE 2 **PROPOSAL FORM:** All Proposals must be made upon the Proposal Forms hereto annexed, and shall state the amount proposed for each item shown, and all Proposals must be for materials and work called for in the specifications. **Deposits for plans and specifications are not refundable.**

- 2.1 The Proposal Form is included with the Proposal Documents; additional copies may be obtained from Engineer.
- 2.2 All blanks on the Proposal Form must be completed by printing in black ink or by typewriter.
- 2.3 Proposals by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.
- 2.4 All names must be typed or printed in black ink below the signature.
- 2.5 The Proposal shall contain an acknowledgment of receipt of all Addenda (the numbers of which must be filled in on the Proposal Form.)

- 2.6 The address and telephone number for communications regarding the Proposal must be shown.

ARTICLE 3 QUALIFICATIONS OF OFFERORS:

- 3.1 To demonstrate qualifications to perform the Work, each Offeror must be prepared to submit within five days after Proposal opening upon Owner's request detailed written evidence such as financial data, previous experience, present commitments, and other such data as may be necessary to assist Owner in determining Contractor's qualifications.
- 3.2 Each Proposal must contain evidence of Contractor's authority to conduct business in the state where the Work is to be performed. State Contractor license number, if applicable, must also be shown on the proposal Form.

ARTICLE 4 COPIES OF PROPOSAL DOCUMENTS:

- 4.1 Complete sets of Proposal Documents must be used in preparing proposals; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Proposal Documents.
- 4.2 Owner and Engineer in making copies of Proposal Documents available for a non-refundable deposit do so only for the purpose of obtaining Proposals for the Work and do not confer a license or grant for any other use.

ARTICLE 5 EXAMINATION OF PROPOSAL DOCUMENTS, OTHER DATA, AND SITE:

- 5.1 It is the responsibility of each Offeror before submitting a proposal:
- 5.1.1 To examine and study thoroughly the Proposal Documents and other related data identified in the Proposal Documents;
- 5.1.2 To visit the work site to ascertain by inspection pertinent local conditions such as location, character and accessibility of the site including existing surface and subsurface conditions in the work area; availability of facilities, location and character of existing work within or adjacent thereto, labor conditions, etc.
- 5.1.3 To become familiar with and satisfy Offeror as to all federal, state, and local Laws and Regulations that may affect cost, progress, or performance of the Work;
- 5.1.4 To obtain and carefully study (or assume responsibility for doing so) all addition or supplementary examination investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, an Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance or the Work or which relate any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Offeror, including any specific means, methods,

techniques, sequences, and procedures of construction expressly required of the proposal documents, and safety precautions and programs incident thereto;

- 5.1.5 To study and carefully correlate Offeror's knowledge and observations with the Proposal Documents and such other related data; and
 - 5.1.6 To promptly notify Engineer of all conflicts, errors, ambiguities or discrepancies which Offeror has discovered in or between the Proposal Documents and such other related documents;
 - 5.1.7 to agree at the time of submitting its Proposal that no further examinations, investigations, explorations, tests, studies or data are necessary for the determination of its Proposal for performance of the Work at the price proposed and within the times and in accordance with the other terms and conditions of the Proposal Documents;
 - 5.1.8 To become aware of the general nature of the work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Proposal Documents;
 - 5.1.9 To determine that the Proposal Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.
- 5.2 The Owner shall make available to all prospective offerors, previous to receipt of proposals, information that it may have as to sub-soil conditions and surface topography at the work site. Such information shall be given as the best factual information available without being considered as a representation of the Owner.
- 5.3 The submission of a Proposal will constitute an incontrovertible representation by Offeror that Offeror has complied with every requirement of this Article 5, that without exception, the Proposal is premised upon performing and furnishing the Work required by the Proposal Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Proposal Documents, that Offeror has given ENGINEER written notice of all conflicts, errors, ambiguities, and discrepancies that Offeror has discovered in the Proposal Documents and the written resolutions thereof by ENGINEER are acceptable to Offeror, and that the Proposal Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 6 PRE- PROPOSAL CONFERENCE: A pre-Proposal conference will be held at 3:00 p.m. on November 11, 2015 at Berkley County offices. Representatives of OWNER and ENGINEER will be present to discuss the Project. Offerors are encouraged to attend and participate in the conference. ENGINEER will transmit to all prospective Offerors of record such Addenda as ENGINEER considers necessary in

response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7 INTERPRETATIONS AND ADDENDA:

- 7.1 All questions about the meaning or intent of the Proposal Documents are to be directed to Engineer. The person submitting the request shall do so in writing and be responsible for its prompt delivery. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Proposal Documents. Questions received less than ten days prior to the date for opening of Proposals may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.2 Addenda may also be issued to modify the Proposal Documents as deemed advisable by Owner or Engineer.

ARTICLE 8 PROPOSAL SECURITY:

- 8.1 Each Proposal must be accompanied by Proposal security made payable to Owner in an amount of ten percent of Offeror 's maximum Proposal price and in the form of a certified or bank check or a Proposal Bond (on form attached, if a form is prescribed) issued by a surety company licensed in **South Carolina** with an "A" minimum rating of performance and a financial strength of at least five times the contract price as listed in the most current publication of "Best's Key Rating Guide Property Liability."
- 8.2 The Proposal security of Successful Offeror will be retained until such Offeror has executed the Agreement, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Proposal security will be returned. If the Successful Offeror fails to execute and deliver the Agreement and furnish the required contract security within fifteen days after the Notice of Award, Owner may annul the Notice of Award and the Proposal security of that Offeror will be forfeited. The Proposal security of other Offerors whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the seventh day after the Effective Date of the Agreement or the sixty-first day after the Proposal opening, whereupon Proposal security furnished by such offerors will be returned. Proposal security with Proposals that are not competitive will be returned within seven days after the Proposal opening.

- ARTICLE 9 CONTRACT COMPLETION TIME:** The number of days within which, or by which the Work is to be (a) Substantially Completed and (b) also completed and ready for final payment are set forth in the Agreement. Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 10 SUBSTITUTE AND "OR-EQUAL" ITEMS:

- 10.1 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Proposal Documents, or those substitute or "or-equal" materials and equipment approved by ENGINEER and identified by Addendum. The materials and equipment described in the Proposal Documents establish a standard of required type, function and quality to be met by any proposed substitute or "or equal" item. No item of material or equipment will be considered by ENGINEER as a substitute or "or equal" unless written request for approval has been submitted by Offeror and has been received by ENGINEER at least 15 days prior to the date for receipt of Proposals. Each such request shall conform to requirements of paragraph 6.05 of the General Conditions. The burden of proof of the merit of the proposed item is upon Offeror. ENGINEER's decision of approval or disapproval of a proposed item will be final. If ENGINEER approves any proposed item, such approval will be set forth in an Addendum issued to all prospective Offerors. Offerors shall not rely upon approvals made in any other manner.

ARTICLE 11 SUBCONTRACTORS, SUPPLIERS, AND OTHERS:

- 11.1 Each proposal must be accompanied by a list of Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity. If OWNER or ENGINEER, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, OWNER or ENGINEER may, before the Notice of Award is given, request apparent Successful Offeror to submit a substitute, without an increase in the Proposal.
- 11.2 If apparent Successful Offeror declines to make any such substitution, OWNER may award the Contract to the next lowest Offeror proposing to use acceptable Subcontractors, Suppliers, individuals, or entities. Declining to make requested substitutions will not constitute grounds for forfeiture of the Proposal security of any Offeror. Any Subcontractor, Supplier, individual, or entity so listed and against which OWNER or ENGINEER makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to OWNER and ENGINEER subject to revocation of such acceptance after the Effective Date of the Agreement as provided in paragraph 6.06 of the General Conditions.
- 11.3 CONTRACTOR shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom CONTRACTOR has reasonable objection.

ARTICLE 12 SUBMITTAL OF PROPOSALS: Proposals shall be submitted at the time and place indicated in the Request for Proposals and shall be enclosed in a sealed opaque envelope, marked with the project title, and name and address of Offeror, and accompanied by the Proposal security and other required documents. If the Proposal is sent through the mail or other delivery system, the sealed envelope

shall be enclosed in a separate envelope with the notation "PROPOSAL ENCLOSED" on the face of it. Contractor license number(s) shall be written on the face of the proposal envelope.

Each Offeror is responsible for seeing their Proposal is received by the Owner not later than the advertised time set for the opening of Proposals.

ARTICLE 13 MODIFICATION AND WITHDRAWAL OF PROPOSALS:

13.1 Proposals may be modified or withdrawn by an appropriate document duly executed (in the manner a Proposal must be executed) and delivered to the place where Proposals are to be submitted at any time prior to the opening of proposals.

13.2 If, within twenty-four hours after Proposals are opened, any Offeror files a duly signed, written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner there was a material and substantial mistake in the preparation of its Proposal, Offeror may withdraw its Proposal and the Proposal security will be returned. Thereafter, Offeror will be disqualified from further proposals on the Work to be provided.

ARTICLE 14 OPENING OF PROPOSALS: Proposals will be opened and (unless obviously non-responsive) read aloud publicly at the place where Proposals are to be submitted. An abstract of the amount of the base Proposals and major alternates (if any) will be made available to Offerors after the opening of Proposals.

ARTICLE 15 ACCEPTANCE OF PROPOSALS: Proposals may not be withdrawn (except as noted in Paragraph 13) after the time set for the opening of Proposals. Proposals will remain subject to acceptance for 60 days after the day of the Proposal opening, but the Owner may, in its sole discretion, release any Proposal and return the Proposal security prior to expiration of the acceptance period.

ARTICLE 16 AWARD OF CONTRACT:

16.1 Owner reserves the right to reject any or all Proposals, including without limitation, the rights to reject any or all nonconforming, nonresponsive, unbalanced or conditional Proposals and to reject the Proposal of any Offeror if Owner believes it would not be in the best interest of the Project to make an award to a Offeror, whether because the Proposal is not responsive, or the Offeror is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by the Owner.

16.2 Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Offeror. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

Discrepancies between words and figures will be resolved in favor of the words.

- 16.3 In evaluating Proposals, Owner will consider the qualification of Offerors, whether or not the Proposals comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Proposal Form or prior to the Notice of Award.

The Owner will also consider whether the Offeror involved:

- a) Maintains a permanent place of business;
- b) Has adequate plant and equipment to do the work properly and expeditiously;
- c) Has suitable financial status to meet obligations incidental to the work;
- d) Has appropriate technical experience.

- 16.4. Owner may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. Owner also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

- 16.5. Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any proposal and to establish the responsibility, qualifications and financial ability of Offeror, proposed Subcontractors, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

- 16.6. If the contract is to be awarded, it will be awarded to the Offeror whose evaluation by Owner indicates the award will be in the best interest of the Project.

- 16.7. If the contract is to be awarded, Owner will give Successful Offeror a Notice of Award within 60 days after the day of the Proposal opening.

ARTICLE 17 MODIFICATIONS OF QUANTITIES: If the lowest bona fide Proposal exceeds the money available for the Work, the Owner reserves the right to delete enough of the Work to bring the cost within the available funds. The Owner also reserves the right to delete whichever items or portions of items considered to be in the best interest of the Owner.

ARTICLE 18 CONTRACT SECURITY: The General Conditions and Supplementary Conditions set forth Owner's requirements as to performance and payment bonds. When the Successful Offeror delivers the executed Agreement to the Owner, it must be accompanied by the required performance and payment bonds.

ARTICLE 19 SIGNING THE AGREEMENT: When the Owner gives a Notice of Award to the Successful Offeror, it will be accompanied by the required number of unsigned

counterparts of the Agreement with all other written Contract Documents attached. Within 15 days thereafter, Contractor shall sign and deliver the required counterparts of the Agreement and attached documents to Owner with the required Bonds. Within 10 days thereafter, Owner shall deliver one fully signed counterpart to Contractor.

ARTICLE 20 LAWS AND REGULATIONS: The Contractor shall comply with local, District, County, State, and Federal laws applicable to the work.

The Contractor shall comply with the Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act of 1970 as amended through January 1, 2004 (PL 91-596) and under Section 107 of the Contract Work and Safety Standards Act (PL) 91-54). The regulations are administered by the Department of Labor and the Contractor shall allow access to the project to personnel from this Department.

ARTICLE 21 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE: Contractor shall not commence work under this contract until obtaining all the insurance required by the Supplementary Conditions.

ARTICLE 22 TERMINATION OF CONTRACT: If the Owner is made to stop construction of the work because of an order from a Court or State Department, the contract shall be terminated. Payment will be made for work completed and a proration of the work underway, materials stored, and for the overhead and profit of the completed work and work underway. Payment will not be made for anticipated profit and overhead on work not completed or underway.

DOCUMENT 00313**PROPOSAL FORM**

PROJECT IDENTIFICATION: **ROADWAY IMPROVEMENTS TO CENTERLINE ROAD**

**CONTRACT IDENTIFICATION
AND NUMBER:** **J-25644.1005**

THIS PROPOSAL IS SUBMITTED TO: **BERKELEY COUNTY COUNCIL, (ROOM 101)
BERKELEY COUNTY ADMINISTRATION BUILDING
1003 HIGHWAY 52
MONCKS CORNER, SC 29461**

1. The undersigned OFFEROR proposes and agrees, if this Proposal is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Proposal Price and within the Proposal Times indicated in this Proposal and in accordance with the other terms and conditions of the Contract Documents.
2. OFFEROR accepts all of the terms and conditions of the Advertisement or Request For Proposal and Instructions to Offerors, including without limitation those dealing with the disposition of Proposal security. This Proposal will remain subject to acceptance for 60 days after the day of Proposal opening, or for such longer period of time OFFEROR may agree to in writing upon request of OWNER.
3. In submitting this Proposal, OFFEROR represents, as more fully set forth in the Agreement, that:
 - a. OFFEROR has examined and carefully studied the Plans and Specifications for the work and contractual documents relative thereto, and has read all Technical Provisions, Supplementary Conditions, and General Conditions, furnished prior to the opening of Proposals and can fulfill the requirements of the work to be performed.
 - b. OFFEROR further acknowledges hereby receipt of the following Addenda:

ADDENDUM NO.	DATE

- c. OFFEROR has visited the site and become familiar with and is satisfied as to the general, local and site conditions possibly affecting cost, progress, performance and furnishing of the Work;
- d. OFFEROR is familiar with and is satisfied as to all federal, state, and local Laws and Regulations possibly affecting cost, progress, performance and furnishing of the

Work.

- e. OFFEROR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structure at or contiguous to the site (except underground Facilities) have been identified in the Supplementary Conditions. OFFEROR acknowledges such reports and drawings are not Contract Documents and may not be complete for OFFEROR's purposes. OFFEROR acknowledges OWNER and Engineer do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. OFFEROR has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by OFFEROR and safety precautions and programs incident thereto. OFFEROR does not consider any additional examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Proposal for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Bidding Documents.
 - f. OFFEROR is aware of the general nature of Work to be performed by Owner and others at the site relating to Work for which this Proposal is submitted as indicated in the Bidding Documents.
 - g. OFFEROR has correlated the information known to OFFEROR, information and observations obtained from visits to the site, reports and drawings identified in the Bidding Documents and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents.
 - h. OFFEROR has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies OFFEROR has discovered in the Bidding Documents and the written resolution thereof by ENGINEER is acceptable to OFFEROR. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Proposal is submitted.
 - i. This Proposal is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; OFFEROR has not directly or indirectly induced or solicited any other OFFEROR to submit a false or sham Proposal; OFFEROR has not solicited or induced any person, firm or corporation to refrain from bidding; and OFFEROR has not sought by collusion to obtain for itself any advantage over any other Offeror or over OWNER.
4. OFFEROR will complete the Work in accordance with the Contract Documents for the following price(s):

ITEM	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
1031000	MOBILIZATION	NEC	LS		
1050800	CONSTRUCTION STAKES, LINES & GRADES	NEC	LS		
1071000	TRAFFIC CONTROL	NEC	LS		
2011001	CLEARING & GRUBBING WITHIN RIGHT OF WAY (TIMBERED)	60	AC		
2011001	CLEARING & GRUBBING WITHIN RIGHT OF WAY (NON-TIMBERED)	40	AC		
2052000	NO. 57 STONE FOR BACKFILL	902	TON		
2103000	FLOWABLE FILL	450	CY		
3063120	MARINE LIMESTONE BASE COURSE (10" UNIFORM)	158,650	SY		
3069900	MAINTENANCE STONE	25,000	TON		
4011004	LIQUID ASPHALT BINDER PG64-22	2,300	TON		
4012040	FULL DEPTH ASPHALT PATCH-4" UNIF.	39,700.00	SY		
4020320	HOT MIX ASPHALT INTERMEDIATE COURSE TYPE B	19,900	TON		
4030320	HOT MIX ASPHALT SURFACE COURSE TYPE B	23,800	TON		
4030360	HOT MIX ASPHALT SURFACE COURSE TYPE E	100	TON		
6041200	BARRICADE - TYPE 3	108	LF		
6051120	PERMANENT CONSTRUCTION SIGNS (GROUND MOUNTED)	304	SF		
6051125	PERMANENT CONSTRUCTION SIGNS (BARRICADE MOUNTED)	75	SF		
609105A	PAVEMENT MARKINGS(TEMP-PAINT) 4" WHITE BROKEN LINES - TURNING LANES	12,235	LF		
609115A	PAVEMENT MARKINGS(TEMPORARY-PAINT)-4" WHITE SOLID LINES	63,805	LF		
609115B	PAVEMENT MARKINGS(TEMPORARY-PAINT)-4" YELLOW SOLID LINES	70,235	LF		
609125A	PAVEMENT MARKINGS(TEMPORARY-PAINT)-8" WHITE SOLID LINES	985	LF		
609135A	PAVEMENT MARKINGS(TEMPORARY-PAINT)-24"WHITE SOLID LINES	980	LF		
609135B	PAVEMENT MARKINGS(TEMPORARY-PAINT)-24"YELLOW SOLID LINES	1,000	LF		
609160A	PAVEMENT MARKINGS(TEMPORARY-PAINT)-WHITE SINGLE ARROW	186	EA		
609165A	PAVEMENT MARKINGS(TEMP.-PAINT)-WHITE COMBINATION ARROWS	4	EA		
609180A	PAVEMENT MARKINGS(TEMPORARY-PAINT)-WHITE WORD 'ONLY	35	EA		
6271005	4" WHITE BROKEN LINES(GAPS EXCL.)THERMOPLASTIC- 90 MIL.	1,190	LF		
6271010	4" WHITE SOLID LINES (PVT. EDGE LINES) THERMO.- 90 MIL.	63,805	LF		
6271015	8" WHITE SOLID LINES THERMOPLASTIC - 125 MIL.	985	LF		
6271025	24" WHITE SOLID LINES (STOP/DIAG LINES)-THERMO.-125 MIL	980	LF		
6271030	WHITE SINGLE ARROWS (LT, STRGHT, RT) THERMO.-125 MIL.	200	EA		
6271035	WHITE WORD MESSAGE "ONLY" -THERMOPLASTIC - 125 MIL.	35	EA		
6271040	WHITE COMBINATION ARROWS(STR&RT.OR STR<)THERMO-125MIL	4	EA		
6271074	4" YELLOW SOLID LINES(PVT.EDGE LINES) THERMO-90 MIL.	70,235	LF		
6271080	24" YELLOW SOLID LINES - THERMOPLASTIC - 125 MIL.	1,000	LF		
6301100	PERMANENT YELLOW PAVEMENT MARKERS BI-DIR.- 4"X4"	3,200	EA		
6302001	PERMANENT CLEAR/RED PAVEMENT MARKERS- BI-DIR.- 4"X4"	50	EA		
6510105	FLAT SHEET, TYPE III, FIXED SZ. & MSG. SIGN	250	SF		
6531210	U-SECTION POST FOR SIGN SUPPORTS - 3P	400	LF		
6750275	1.0" SCHEDULE 80 PVC CONDUIT	100	LF		
6750278	2.0" SCHEDULE 80 PVC CONDUIT	1,650	LF		

ITEM	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
675027C	FURNISH & INSTALL 3.0" SCHEDULE 80 PVC CONDUIT	100	LF		
6770388	NO. 14 COPPER WIRE, 4 CONDUCTOR - BLACK	1,250	LF		
6770389	NO. 14 COPPER WIRE, 4 CONDUCTOR - GRAY	2,350	LF		
6770393	NO. 14 COPPER WIRE, 8 CONDUCTOR (BLACK)	1,450	LF		
6770394	NO. 14 COPPER WIRE, 8 CONDUCTOR (GRAY)	1,550	LF		
6770413	FURNISH & INSTL NO. 14 COPPER WIRE,1-CONDUCTOR FOR LOOP WIRE	3,150	LF		
6780495	SAWCUT FOR LOOP DETECTOR	1,500	LF		
6800499	FURNISH & INSTALL ELECTRICAL SERVICE FOR TRAFFIC SIGNAL	2	EA		
6800508	FURNISH & INSTALL-12"X12"X12"D.ELEC.FLUSH UNDGRD.ENCLOS-(STR.POLY.CONC.)HD	18	EA		
6800518	FURNISH & INSTALL-13"X24"X18"D.ELEC.FLUSH UNDGRD.ENCLOS-(STR.POLY.CONC.)HD	2	EA		
6825052	FURNISH & INSTALL 13"X32' STEEL STRAIN POLE-POWDER COATED AND FOUNDATION	8	EA		
6825090	FURNISH & INSTALL 1/4" GALVANIZED STEEL CABLE	1,000	LF		
6825484	FURNISH & INSTALL 10' BREAK-AWAY ALUM PEDESTAL POLE AND BASE	7	EA		
6845511	FURNISH & INSTALL - CONTR 332/336 CABINET ASSEMBLY - BASE MOUNTED	2	EA		
6865720	FURNISH & INSTALL -12" 1-WAY-4 SECTION(RA+RA/YA.GA)VEHICHL E TRAFFIC SIG	2	EA		
6865723	FURNISH & INSTALL - 12" 1-WAY-3 SECTION(RA.YA.YAF)VEH TRAFFIC SIGNAL	14	EA		
6865781	FURNISH & INSTALL - COUNTDOWN PEDESTRIAN SIGNAL HEAD	12	EA		
6865794	F&I-PED PUSH BUTTON MICRO ASSEMBLY (9"X15") AND SIGN (R-10-3E)	4	EA		
6865834	BACKPLATE W/ RETROREFL.BORDERS FOR TRAFF. SIG.	16	EA		
6885992	TEMPORARY ADJUSTMENT OF TRAFFIC SIGNAL EQUIPMENT	1	LS		
7020201	CONSTRUCTION OF REINFORCED CONCRETE BOX CULVERT - NO. 1	1	EA		
7020202	CONSTRUCTION OF REINFORCED CONCRETE BOX CULVERT - NO. 2	1	EA		
7020203	CONSTRUCTION OF REINFORCED CONCRETE BOX CULVERT - NO. 3	1	EA		
7020204	CONSTRUCTION OF REINFORCED CONCRETE BOX CULVERT - NO. 4	1	EA		
7020205	CONSTRUCTION OF REINFORCED CONCRETE BOX CULVERT - NO. 5	1	EA		
7020206	CONSTRUCTION OF REINFORCED CONCRETE BOX CULVERT - NO. 6	1	EA		
7141113	18" RC PIPE CUL.-CLASS III	120	LF		
7141114	24" RC PIPE CUL.-CLASS III	350	LF		
7141115	30" RC PIPE CUL.-CLASS III	620	LF		
7141116	36" RC PIPE CUL.-CLASS III	360	LF		
7141117	42" RC PIPE CUL.-CLASS III	375	LF		
7141119	54" RC PIPE CUL.-CLASS III	285	LF		
7142513	18" R.C. BEV. END SECTN-CL 3	4	EA		
7142514	24" R.C. BEV. END SECTN-CL 3	25	EA		
7142515	30" R.C. BEV. END SECTN-CL 3	8	EA		
7142516	36" R.C. BEV. END SECTN-CL 3	8	EA		
7142517	42" R.C. BEV. END SECTN-CL 3	4	EA		
7142519	54" R.C. BEV. END SECTN-CL 3	4	EA		
7204900	DETECTABLE WARNING MATERIAL	90	SY		
7209000	PEDESTRIAN RAMP CONSTRUCTION	175	SY		

ITEM	DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
7225001	DESIGN, DETAIL AND CONSTRUCT PC FLOORLESS CULVERT NO. 7	1	EA		
8041010	RIP-RAP (CLASS A)	135	TON		
8041020	RIP-RAP (CLASS B)	1,125	TON		
8041030	RIP-RAP (CLASS C)	635	TON		
8048200	GEOTEXTILE FOR EROSION CONTROL UNDER RIPRAP(CLASS 2)TYPE A	2,000	SY		
8051100	STEEL BEAM GUARDRAIL STEEL BEAM GR.	2,370	LF		
8052210	END ANCHOR-TYPE B	2	EA		
8052300	END TERMINAL - TYPE T	1	EA		
8100100	PERMANENT COVER	90	ACRE		
8100200	TEMPORARY COVER	180	ACRE		
8104005	FERTILIZER (NITROGEN)	9,860	LB		
8104010	FERTILIZER (PHOSPHORIC ACID)	9,860	LB		
8104015	FERTILIZER (POTASH)	9,860	LB		
8105005	AGRICULTURAL GRANULAR LIME	197,120	LB		
8109001	SOIL TEST	2	EA		
8109901	MOWING	540	ACRE		
8151101	TURF REINFORCEMENT MATTING (TRM) TYPE 1	100	MSY		
8153000	SILT FENCE	90,960	LF		
8153090	REPLACE/REPAIR SILT FENCE	90,960	LF		
8154050	REMOVAL OF SILT RETAINED BY SILT FENCE	90,960	LF		
8156100	DITCH CHECK	1,015	TON		
8156405	AGGREGATE NO.5 FOR EROSION CONTROL (6" UNIFORM)	305	SY		
8156490	STABILIZED CONSTRUCTION ENTRANCE	5	SY		
9520305	GRADING	NEC	LS		
	PROJECT TOTAL COST				

TOTAL PROPOSAL FOR ALL ESTIMATED PRICES _____
 (Use words)

_____ (\$ _____)
 (Figures)

Unit Prices have been computed in accordance with paragraph 11.03.C of the General Conditions.

5. OFFEROR agrees the work will be completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions on February 19, 2017. Included in the contract times are 45 days for rain delay (30 per year). Time delays due to rain in excess of the above days shall be reported by the Contractor to the Engineer in writing, within 30 days of each event.
6. OFFEROR accepts provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within times specified in the Agreement.
7. The following documents are attached to and made a condition of this Proposal:
 - a. Required Proposal Security in the form of 10 percent of the Proposal Total Price.
 - b. A tabulation of Subcontractors, Suppliers and other persons and organizations required to be identified in this Proposal.
 - c. Required OFFEROR's Qualification Statement with supporting data.
8. The undersigned further agrees in case of failure on his/her part to execute the said contract and the Bond within 15 consecutive calendar days after written notice being given of the award of the contract, the check or Proposal bond accompanying this Proposal, and the monies payable thereon shall be paid into the funds of the Owner as liquidated damages for such failure, otherwise, the check or Proposal bond accompanying this proposal shall be returned to the undersigned.
9. Communications concerning this Proposal shall be addressed to:

Thomas & Hutton
 John Culbreath, P.E.
 1501 Main Street, Suite 760
 Columbia, SC 29201
 (803) 451-6782
 culbreath.j@thomasandhutton.com

- 10. Terms used in this Proposal which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions of Instructions.

SUBMITTED on _____, 2015.

CONTRACTOR'S NAME

ADDRESS:

BY: _____

State Utility Contractor License No. _____ SC

DOCUMENT 00411

BID BOND

BIDDER (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

Berkeley County, South Carolina

1003 Highway 52

Moncks Corner, SC 29461

BID

BID DUE DATE: _____

PROJECT: ROADWAY IMPROVEMENTS TO CENTERLINE ROAD

BOND

BOND NUMBER: _____ DATE: _____

(Not later than Bid Due Date)

PENAL SUM: _____

(10% of Bid Sum)

IN WITNESS WHEREOF, Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER

SURETY

(Seal)
Bidder's Name and Corporate Seal

(Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title

Attest: _____
Signature and Title

- Note:
- (1) Above addresses are to be used for giving required notice.
 - (2) Any singular reference to Bidder, Surety, Owner, or other party shall be considered plural where applicable.

PENAL SUM FORM

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Document, or
 - 3.2 All bids are rejected by Owner, or
 - 3.3 Owner fails to issue a notice of award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof.)
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of and any and all defenses based on arising out of any time extension to issue notice of award agreed to in writing by Owner and Bidder, provided that the time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from Bid Due Date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Bidder and Surety, and in no case later than one year after Bid Due Date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notice required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of the Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "bid" as used herein includes a bid, offer or proposal as applicable.

DOCUMENT 00506**STANDARD FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR**

THIS AGREEMENT is dated as of the _____ day of _____ in the year 2015 by and between Berkeley County, South Carolina (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

ROADWAY IMPROVEMENTS TO CENTERLINE ROAD

The work includes earthwork, grading, aggregate base, asphaltic concrete surface course, and drainage facilities for a total approximate roadway length of 4.5 miles.

ARTICLE 2 ENGINEER

The Project has been designed by Thomas & Hutton Engineering Co. who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 3 CONTRACT TIMES

All time limits for Substantial Completion and completion and readiness for final payment as stated in the Contract Documents are of essence to the Contract.

- 3.1 The work will be completed and ready for final payment in accordance with paragraph 14.07 of the General Conditions on February 19, 2017. Included in the contract times are 45 days for rain delay (30 per year). Time delays due to rain in excess of the above days shall be reported by the Contractor to the Engineer in writing, within 30 days of each event.
- 3.2 *Liquidated Damages.* OWNER and CONTRACTOR recognize time is of the essence for this Agreement and OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving the actual loss suffered by OWNER if the Work is not substantially complete on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree to liquidated damages for delay (but not as a penalty) the CONTRACTOR shall pay OWNER Five Hundred and 00/100 Dollars (\$500.00) for each day expiring after the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially complete. After Substantial completion, if CONTRACTOR shall

OWNER and ENGINEER, OWNER, on recommendation of ENGINEER, may determine as long as the character and progress of the Work remain satisfactory to them, there will be no additional retainage on account of Work completed, in which case the remaining progress payments prior to Substantial Completion will be in an amount equal to 100% of the Work completed.

90% of Cost of the Work (with the balance being retainage) applicable to materials and equipment not incorporated in the Work (but delivered, suitably stored and accompanied by documentation satisfactory to OWNER as provided in paragraph 14.02.A.1 of the General Conditions).

5.1.1.2 Upon Substantial Completion, in an amount sufficient to increase the total payments to CONTRACTOR to **95%** of the Cost of the Work, (with the balance being retainage), less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.02 of the General Conditions.

5.1.1.3 Upon Completion of first year of warranty period, in an amount sufficient to increase the total payments to CONTRACTOR to **97.5%** of the Cost of the Work, (with the balance being retainage), less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.02 of the General Conditions.

5.2 *Final Payment.* Upon final completion and acceptance of the Work in accordance with paragraph 14.07 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.07.

ARTICLE 6 INTEREST

All moneys not paid within thirty (30) days of the due date as provided in Article 14 of the General Conditions, shall bear interest at the rate of 6 percent annually or the minimum required by law at the place of the Project, whichever is greater.

ARTICLE 7 CONTRACTOR'S REPRESENTATIONS

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

- 7.1 CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda indicated in Article 8 hereinafter) and the other related data identified in the Bidding Documents.
- 7.2 CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions possibly affecting cost, progress, performance or furnishing of the Work.
- 7.3 CONTRACTOR is familiar with and is satisfied as to all federal, state, and local Laws and Regulations possibly affecting cost, progress, performance and furnishing of the Work.

- 7.4 CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in the General Conditions. CONTRACTOR acknowledges such reports and drawings are not Contract Documents and may not be complete for CONTRACTOR's purposes. CONTRACTOR acknowledges OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. CONTRACTOR does not consider any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.
- 7.5 CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the site relating to the Work as indicated in the Contract Documents.
- 7.6 CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- 7.7 CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

ARTICLE 8 CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

- 8.1 Invitation to Bid (Pages 00021-1 to 00021-1, inclusive)
- 8.2 Bid Proposal (pages 00313-1 to 00313-__, inclusive)
- 8.3 Bid Bond (pages 00411-1 to 00411-2, inclusive)
- 8.4 Standard Form of Agreement Between Owner and Contractor (pages 00506-1 to 00506-7, inclusive)

- 8.5 Performance Bond (pages 00611-1 to 00611-6. Inclusive)
- 8.6 Payment Bond (pages 00621-1 to 00621-6, inclusive)
- 8.7 Notice of Award (pages 00631-1 to 00631-3, inclusive)
- 8.8 Notice to Proceed (pages 00641-1 to 00641-2, inclusive)
- 8.9 General Conditions (pages 1 to 62, inclusive)
- 8.10 Special Conditions (pages 00710-1 to 00710-6, inclusive)
- 8.11 Supplementary Conditions (pages 00815-1 to 00815-4, inclusive)
- 8.12 Summary of Work (pages 01011-1 to 01011-2, inclusive)
- 8.13 Measurement and Payment (pages 01025-1 to 01025-2, inclusive)
- 8.14 Submittals (pages 01300-1 to 01300-14, inclusive)
- 8.15 Quality Control (pages 01400-1 to 01400-4, inclusive)
- 8.16 Testing Services (pages 01410-1 to 01410-6, inclusive)
- 8.17 Bonds (pages 01741-1 to 1741-2, inclusive)
- 8.18 Technical Specifications – All Roadway Construction shall be in accordance with the latest revision of South Carolina Department of Transportation (SCDOT) Standard Specifications.
- 8.19 Drawings consisting of sheets 1 through X001 – X140 with each sheet bearing the following general title:

Sheet	Description	Job No.
1	Title Sheet	25644.1005
G0.1	Index and Layout	25644.1005
G0.2	General Notes	25644.1005
G0.3	Construction Access Plan	25644.1005
TS01 – TS02	Typical Sections	25644.1005
PP01 – PP23	Plan and Profile Sheets	25644.1005
ST01 – ST02	Staging Plans	25644.1005
PM01 – PMII	Pavement Marking and Signing Sheets	25644.1005
TS1 – TS2	Traffic Signal Plan	25644.1005
S01 – S04	Roadway Structure Plans	25644.1005
EC0.1 – EC13	Erosion Control Data Sheets	25644.1005
X001 – X140	Cross Section Sheets	25644.1005

- 8.20 Addenda numbers ____ to ____, inclusive.

Exhibits to this Agreement:

- a. CONTRACTOR's Bid (page ____ through page ____ inclusive) marked "Exhibit ____."
- b. Documentation submitted by CONTRACTOR prior to Notice of Award (pages __ to __, inclusive).
- c. Any modification, including Change Orders, duly delivered after execution of Agreement.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraph 3.04 of the General Conditions.

ARTICLE 9 MISCELLANEOUS

- 9.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.
- 9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys becoming due and moneys due, may not be assigned without such consent (except to the extent the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.
- 9.4 Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision coming as close as possible to expressing the intention of the stricken provision.

ARTICLE 10 OTHER PROVISIONS

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in five counterparts. Two counterparts each have been delivered to OWNER and CONTRACTOR and one counterpart to ENGINEER. All portions of the Contract Documents have been signed, initialed or identified by Owner and Contractor or identified by ENGINEER on their behalf.

This Agreement will be effective on _____, 2015 (which is the Effective Date of the Agreement).

OWNER Berkeley County, South Carolina CONTRACTOR _____

BY (typed) _____ BY (typed) _____

BY _____ BY _____

ATTEST _____ ATTEST _____

Address for giving notices Address for giving notices

1003 Highway 52 _____

Moncks Corner, SC 29461 _____

License No. _____

CORPORATE SEAL

CORPORATE SEAL

DOCUMENT 00611

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, _____,
(Name & Address of Contractor)

hereinafter called "Principal" and _____,
(Name & Address of Surety)

_____ of _____

State of South Carolina, hereinafter called the "Surety" are held and firmly bound unto Berkeley County, South Carolina, hereinafter called the "Owner" in the penal sum of:

_____ Dollars

(\$ _____)
(Contract Sum)

lawful money of the United States of America, to be paid to OWNER, for the payment whereof well and truly to be made we do bind ourselves, our respective executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above bounden Principal has entered into a certain contract with the Owner dated the _____ day of _____, 20____ for the construction of:

Roadway Improvements to Centerline Road

which said contract is incorporated hereby by reference and made a part hereof, and is hereinafter referred to as the Construction Contract.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such, if the Principal shall promptly and faithfully perform and comply with the terms and conditions of said contract; and shall indemnify and save harmless the Owner against and from all costs, expenses, damages, injury or loss to which said Owner may be subjected by reason of any wrongdoing, including patent infringement, misconduct, want of care or skill, default, or failure of performance on the part of said Principal, its agents, subcontractors or employees, in the execution or performance of said Construction Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.

3. If there is no Owner Default, the Surety's obligations under this Bond shall arise after:
 - 3.1 The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below, the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and
 - 3.2 The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and
 - 3.3 The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a Contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.
4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense, take one of the following actions:
 - 4.1 Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or
 - 4.2 Undertake to perform and complete the Construction Contract itself, through its agents or through independent Contractors; or
 - 4.3 Obtain bids or negotiated proposals from qualified Contractors acceptable to the Owner in a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the Contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or
 - 4.4 Waive its right to perform and complete, arrange for completion, or obtain a new Contractor and with reasonable promptness under the circumstances:
 - 4.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner; or

- 4.4.2 Deny liability in whole or in part and notify the Owner citing reasons therefor.
5. If the Surety does not proceed as provided in paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:
 - 6.1 The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract:
 - 6.2 Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and
 - 6.3 Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
7. The Surety shall not be liable to the Owner or others for obligations of the Contractor unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, or successors.
8. The Surety hereby waives notice of any changes, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.
11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is this Bond shall be construed as a statutory bond and not as a common law bond.
12. DEFINITIONS:
 - 12.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 12.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto;
 - 12.3 Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.
 - 12.4 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

IN WITNESS WHEREOF, this instrument is executed in six counterparts, each one of which shall be deemed an original, on this the ____ day of _____, 20__.

CONTRACTOR AS PRINCIPAL:

Principal

(Principal) Secretary

By: _____
(Signature & Title)

(SEAL)

Address

Witness as to Principal

Address

SURETY:

Surety (Company)

(Surety) Secretary

By: _____
Attorney-in-Fact

(SEAL)

Witness as to Surety

Address

Notes:

1. Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute bond.
2. Bond must be countersigned by a South Carolina resident agent.
3. Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

DOCUMENT 00621**PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENTS, _____,
(Name & Address of Contractor)

hereinafter called "Principal" and _____,
(Name & Address of Surety)

_____ of _____

State of South Carolina, hereinafter called the "Surety" are held and firmly bound unto Berkeley County, South Carolina, hereinafter called the "Owner" in the penal sum of:

_____ Dollars

(\$ _____)
(Contract Sum)

lawful money of the United States of America, to be paid to OWNER, for the payment whereof well and truly to be made we do bind ourselves, our respective executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the above bounden Principal has entered into a certain contract with the Owner dated the _____ day of _____, 20____ for the construction of:

Roadway Improvements to Centerline Road

which said contract is incorporated hereby by reference and made a part hereof, and is hereinafter referred to as the Construction Contract.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such, if the Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and materials supplied in the prosecution of the work provided for in said Construction Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. With respect to the Owner, this obligation shall be null and void if the Contractor:
 - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants; and

- 2.2 Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. The Surety shall have no obligation to Claimants under this Bond until:
 - 4.1 Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating a claim is being made under this Bond and, with substantial accuracy, the amount of claim.
 - 4.2 Claimants who do not have a direct contract with the Contractor:
 - 4.2.1 Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was performed; and
 - 4.2.2 Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice, any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
 - 4.2.3 Not having been paid within 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.
5. Compliance shall be considered sufficient if a notice required by paragraph 4 is given by the Owner to the Contractor or to the Surety.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
 - 6.1 Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim stating the amounts undisputed and basis for challenging any amounts disputed.
 - 6.2 Pay or arrange for payment of any undisputed amounts.

7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
8. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
11. No suit or action shall be commenced by a Claimant under this bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to Sureties as a defense in the jurisdiction of the suit shall be applicable.
12. Notice to the Surety, Owner or Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by the Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in the Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is this Bond shall be construed as a statutory bond and not as a common law bond.
14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.
15. DEFINITIONS:

- 15.1 Claimant: An individual or entity having a direct contract with the Contractor or with a Subcontractor of the Contractor to furnish labor, material, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment," that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.
- 15.2 Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 15.3 Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

IN WITNESS WHEREOF, this instrument is executed in six counterparts, each one of which shall be deemed an original, on this the ____ day of _____, 20__.

CONTRACTOR AS PRINCIPAL:

Principal

(Principal) Secretary

By: _____
(Signature & Title)

(SEAL)

Address

Witness as to Principal

Address

SURETY:

Surety (Company)

(Surety) Secretary

By: _____
Attorney-in-Fact

(SEAL)

Witness as to Surety

Address

Notes:

1. Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute bond.
2. Bond must be countersigned by a South Carolina resident agent.
3. Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

SECTION 00631
NOTICE OF AWARD

Dated _____

TO: _____
(Bidder)

ADDRESS: _____

JOB NO.: _____

PROJECT: **ROADWAY IMPROVEMENTS TO CENTERLINE ROAD**

CONTRACT FOR: **ROADWAY IMPROVEMENTS TO CENTERLINE ROAD**

The work includes earthwork, grading, aggregate base, asphaltic concrete surface course, and drainage facilities for a total approximate roadway length of 4.5 miles.

You are notified your Bid dated _____, 20____, for the above Contract has been considered. You are the apparent successful bidder and have been awarded a contract for:

ROADWAY IMPROVEMENTS TO CENTERLINE ROAD

The work includes earthwork, grading, aggregate base, asphaltic concrete surface course, and drainage facilities for a total approximate roadway length of 4.5 miles.

The Contract Price of your contract is _____
_____ Dollars (\$_____).

_____ copies of each of the proposed Contract Documents (except drawings) accompany this Notice of Award.

_____ sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within 15 days of this Notice of Award, which is by _____, 20_____.

1. You must deliver to the OWNER _____ fully executed counterparts of the Agreement including all the Contract Documents. Each of the Contract Documents must bear your signature on the page (pages _____.)
2. You must deliver with the executed Agreement the Contract Security (Bonds) as specified in the Instructions to Bidders (Article 8), General Conditions (paragraph 5.01) and Supplementary Conditions.
3. (List other conditions precedent)

Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid in default, to annul this Notice of Award and to declare your Bid Security forfeited.

Within ten days after you comply with the above conditions, OWNER will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

Berkeley County, South Carolina
OWNER

By: _____

(Title)

ACCEPTANCE OF AWARD

(Contractor)

By: _____
(Authorized Signature)

(Title)

(Date)

Section 00641
NOTICE TO PROCEED

Dated: _____

TO: _____
(Bidder)

ADDRESS: _____

JOB NO.: _____

PROJECT: **ROADWAY IMPROVEMENTS TO CENTERLINE ROAD**

CONTRACT FOR: **ROADWAY IMPROVEMENTS TO CENTERLINE ROAD**

The work includes earthwork, grading, aggregate base, asphaltic concrete surface course, and drainage facilities for a total approximate roadway length of 4.5 miles.

You are notified the Contract Times under the above contract will commence to run on _____, 20____. By such date, you are to start performing your obligations under the Contract Documents. In accordance with Article 3 of the Agreement the project will be completed and ready for final payment on February 19, 2017.

Before you may start any Work at the site, paragraph 2.01 of the General Conditions provides you and OWNER must each deliver to the other (with copies to ENGINEER and other identified additional insureds) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Before you may start any Work at the site, you must have submitted the following: Certificate of Insurance, Performance Bond, and Payment Bond.

Berkeley County, South Carolina
OWNER

By: _____

(Title)

ACCEPTANCE OF NOTICE TO PROCEED

(Contractor)

By: _____
(Authorized Signature)

(Title)

(Date)

**Engineers Joint Documents Committee
Design and Construction Related Documents
Instructions and License Agreement**

Instructions

Before you use any EJCDC document:

1. Read the License Agreement. You agree to it and are bound by its terms when you use the EJCDC document.
2. Make sure that you have the correct version for your word processing software.

How to Use:

1. While EJCDC has expended considerable effort to make the software translations exact, it can be that a few document controls (e.g., bold, underline) did not carry over.
2. Similarly, your software may change the font specification if the font is not available in your system. It will choose a font that is close in appearance. In this event, the pagination may not match the control set.
3. If you modify the document, you must follow the instructions in the License Agreement about notification.
4. Also note the instruction in the License Agreement about the EJCDC copyright.

License Agreement

You should carefully read the following terms and conditions before using this document. Commencement of use of this document indicates your acceptance of these terms and conditions. If you do not agree to them, you should promptly return the materials to the vendor, and your money will be refunded.

The Engineers Joint Contract Documents Committee ("EJCDC") provides **EJCDC Design and Construction Related Documents** and licenses their use worldwide. You assume sole responsibility for the selection of specific documents or portions thereof to achieve your intended results, and for the installation, use, and results obtained from **EJCDC Design and Construction Related Documents**.

You acknowledge that you understand that the text of the contract documents of **EJCDC Design and Construction Related Documents** has important legal consequences and that consultation with an attorney is recommended with respect to use or modification of the text. You further acknowledge that EJCDC documents are protected by the copyright laws of the United States.

License:

You have a limited nonexclusive license to:

1. Use **EJCDC Design and Construction Related Documents** on any number of machines owned, leased or rented by your company or organization.
2. Use **EJCDC Design and Construction Related Documents** in printed form for bona fide contract documents.
3. Copy **EJCDC Design and Construction Related Documents** into any machine readable or printed form for backup or modification purposes in support of your use of **EJCDC Design and Construction Related Documents**.

You agree that you will:

1. Reproduce and include EJCDC's copyright notice on any printed or machine-readable copy, modification, or portion merged into another document or program. All proprietary rights in **EJCDC Design and Construction Related Documents** are and shall remain the property of EJCDC.
2. Not represent that any of the contract documents you generate from **EJCDC Design and Construction Related Documents** are EJCDC documents unless (i) the document text is used without alteration or (ii) all additions and changes to, and deletions from, the text are clearly shown.

You may not use, copy, modify, or transfer EJCDC Design and Construction Related Documents, or any copy, modification or merged portion, in whole or in part, except as expressly provided for in this license. Reproduction of EJCDC Design and Construction Related Documents in printed or machine-readable format for resale or educational purposes is expressly prohibited.

If you transfer possession of any copy, modification or merged portion of EJCDC Design and Construction Related Documents to another party, your license is automatically terminated.

Term:

The license is effective until terminated. You may terminate it at any time by destroying **EJCDC Design and Construction Related Documents** altogether with all copies, modifications and merged portions in any form. It will also terminate upon conditions set forth elsewhere in this Agreement or if you fail to comply with any term or condition of this Agreement. You agree upon such termination to destroy **EJCDC Design and Construction Related Documents** along with all copies, modifications and merged portions in any form.

Limited Warranty:

EJCDC warrants the CDs and diskettes on which **EJCDC Design and Construction Related Documents** is furnished to be free from defects in materials and workmanship under normal use for a period of ninety (90) days from the date of delivery to you as evidenced by a copy of your receipt.

There is no other warranty of any kind, either expressed or implied, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose. Some states do not allow the exclusion of implied warranties, so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

EJCDC does not warrant that the functions contained in **EJCDC Design and Construction Related Documents** will meet your requirements or that the operation of **EJCDC Design and Construction Related Documents** will be uninterrupted or error free.

Limitations of Remedies:

EJCDC's entire liability and your exclusive remedy shall be:

1. the replacement of any document not meeting EJCDC's "Limited Warranty" which is returned to EJCDC's selling agent with a copy of your receipt, or
2. if EJCDC's selling agent is unable to deliver a replacement CD or diskette which is free of defects in materials and workmanship, you may terminate this Agreement by returning EJCDC Document and your money will be refunded.

In no event will EJCDC be liable to you for any damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use or inability to use **EJCDC Design and Construction Related Documents** even if EJCDC has been advised of the possibility of such damages, or for any claim by any other party.

Some states do not allow the limitation or exclusion of liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you.

General:

You may not sublicense, assign, or transfer this license except as expressly provided in this Agreement. Any attempt otherwise to sublicense, assign, or transfer any of the rights, duties, or obligations hereunder is void.

This Agreement shall be governed by the laws of the State of Virginia. Should you have any questions concerning this Agreement, you may contact EJCDC by writing to:

Arthur Schwartz, Esq.
General Counsel

National Society of Professional Engineers
1420 King Street
Alexandria, VA 22314

Phone: (703) 684-2845
Fax: (703) 836-4875
e-mail: aschwartz@nspe.org

You acknowledge that you have read this agreement, understand it and agree to be bound by its terms and conditions. You further agree that it is the complete and exclusive statement of the agreement between us which supersedes any proposal or prior agreement, oral or written, and any other communications between us relating to the subject matter of this agreement.

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by



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AMERICAN SOCIETY OF CIVIL ENGINEERS

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A Practice Division of the

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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**STANDARD GENERAL CONDITIONS OF THE
CONSTRUCTION CONTRACT**

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.
 3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - a. does not conform to the Contract Documents; or
 - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 Delivery of Bonds and Evidence of Insurance

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 Commencement of Contract Times; Notice to Proceed

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on

Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

- A. Standards, Specifications, Codes, Laws, and Regulations
 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;
2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier shall not:
1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
 2. reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

**ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS;
HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS**

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner’s furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner’s interest therein as necessary for giving notice of or filing a mechanic’s or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 - 1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

- A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:
1. is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
 2. is of such a nature as to require a change in the Contract Documents; or
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

- B. *Engineer’s Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner’s obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer’s findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and

contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or

- c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the

consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 4.06.E.
- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also

meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

- a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:
1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
 2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
 3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
 4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
 5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
 6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors,

members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.
- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's

interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
 - 1. "*Or-Equal*" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
 - 3) it has a proven record of performance and availability of responsive service.
- b. Contractor certifies that, if approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and

- c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and
 - 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be

required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.
- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner,

Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought

by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and

shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is

required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
- b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

- a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
- b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
- c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
- d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. *Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 - 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 - 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 - 1. observations by Engineer;
 - 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 - 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 - 4. use or occupancy of the Work or any part thereof by Owner;
 - 5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
 - 6. any inspection, test, or approval by others; or
 - 7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner’s employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner’s employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor’s Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor’s Work. Contractor’s failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor’s Work except for latent defects and deficiencies in such other work.

7.02 Coordination

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.

- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents.

8.12 *Compliance with Safety Program*

A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or

continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise

or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
 - 1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 - 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 - 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data

shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
 2. approve the Claim; or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, 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 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 expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.
2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of

said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. *Costs Excluded:* The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not

limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.
- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances:*
 1. Contractor agrees that:
 - a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 - b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.
- C. *Contingency Allowance:*
 1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to

the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 - 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee*: The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or
2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or

neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the 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 the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 Notice of Defects

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 Access to Work

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
 2. correct such defective Work; or
 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.
- C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *Applications for Payments:*

- 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an

Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or

- involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or
- b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
 5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. *Reduction in Payment:*

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before

final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.
- E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the tentative list.

14.05 *Partial Utilization*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 14.04.A through D for that part of the Work.
 - 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. *Application for Payment:*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying

documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will justify termination for cause:
1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's repeated disregard of the authority of Engineer; or
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere; and
 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when

so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.
- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

- A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;
 - 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 - 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days

to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 – DISPUTE RESOLUTION

16.01 Methods and Procedures

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 - 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 Giving Notice

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

- A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

DOCUMENT 00710

SPECIAL CONDITIONS

SC-1 DESCRIPTION OF THE WORK: The work consists of earthwork, grading, aggregate base, asphaltic concrete surface course, and drainage facilities for a total approximate roadway length of 4.5 miles, and incidental construction in accordance with the plans and specifications.

SC-2 COMMENCEMENT AND COMPLETION OF WORK: The Contractor shall commence work within 10 days after Notice to Proceed is issued. Work shall be completed within 485 calendar days.

If the Contractor fails to prosecute the work with such diligence as will insure the completion of each portion of the work within the time shown on the above schedule, plus any extensions made in accordance with Article 12 of the General Conditions; and, if the Owner does not exercise reservations as set forth in Article 13 of the General Conditions, the Contractor shall continue the work in which event liquidated damages for the delay will be impossible to determine. In lieu thereof, liquidated damages in the amount of Five Hundred and 00/100 Dollars (\$500.00) per each day of delay of the work until the work is completed.

SC-3 DRAWINGS: The work shall conform to the following drawings, all of which form a part of, and are included in, these specifications and are available in the office of Thomas & Hutton Engineering Co., 50 Park of Commerce Way, Post Office Box 2727, Savannah, Georgia 31402-2727.

Sheet	Description	Job No.
1	Title Sheet	25644.1005
G0.1	Index and Layout	25644.1005
G0.2	General Notes	25644.1005
G0.3	Construction Access Plan	25644.1005
TS01 – TS02	Typical Sections	25644.1005
PP01 – PP23	Plan and Profile Sheets	25644.1005
ST01 – ST02	Staging Plans	25644.1005
PM01 – PMII	Pavement Marking and Signing Sheets	25644.1005
TS1 – TS2	Traffic Signal Plan	25644.1005
S01 – S04	Roadway Structure Plans	25644.1005
EC0.1 – EC13	Erosion Control Data Sheets	25644.1005
X001 – X140	Cross Section Sheets	25644.1005

SC-4 LAYOUT OF WORK: Control lines and master benchmarks will be furnished by the Owner. The Contractor will lay out work and will be responsible for all measurements in connection therewith.

SC-5 OBSERVATIONS AND TESTS: Before acceptance of the whole or any part of the work, it shall be subjected to observation and tests to determine it is in accordance with the plans and specifications. The Contractor will be required to maintain all work in a first class condition for a 30 day operating period after the same has been completed as a whole and the Engineer has notified the Contractor in writing the work has been finished. The Owner shall pay for all testing and shall engage a mutually acceptable laboratory or qualified individual

to conduct the tests in accordance with these specifications. No portion of the work will be accepted until tests prove it has been satisfactorily completed. The Contractor shall give the Project Engineer or Project Representative a minimum of 48 hours notice for all required observations or tests.

SC-6 BONDS: The Performance Bonds in the amount of 100% of the contract amount and Payment Bonds in the amount of 100% of the contract amounts shall be furnished in accordance with Article 5 of the General Conditions.

SC-7 CONTRACTOR'S AND SUBCONTRACTOR'S INSURANCE: The Contractor shall not commence work under this contract until obtaining all the insurance required under this paragraph and such insurance has been accepted by the Owner, nor shall the Contractor allow any Subcontractor to commence work on a subcontract until the insurance required of the Subcontractor has been so obtained and accepted.

- a. Compensation and Employer's Liability Insurance: The Contractor shall take out and maintain during the life of the contract the statutory Worker's Compensation and Employer's Liability Insurance for all of its employees to be engaged in work on the project under the contract and, in case and such work is sublet, the Contractor should require the Subcontractor similarly to provide Worker's Compensation and Employer's Liability Insurance for all the latter's employees to be engaged in such work.
- b. Bodily Injury Liability and Property Damage Liability Insurance: The Contractor shall take out and maintain during the life of the contract Bodily Injury Liability and Property Damage Liability Insurance to protect itself and any Subcontractor performing work covered by the contract from claims for damages or personal injury, including accidental death, as well as from claims for property damage, which may arise from operations under the contract, whether such operations be by the Contractor, Subcontractor, or anyone directly or indirectly employed by either of them and the amount of such insurance should be not less than:
 - (1) Bodily Injury Liability Insurance, in an amount not less than \$1,000,000.00 for injuries, including wrongful death to any one person and subject to the same limit for each person in an amount not less than \$2,000,000.00 on account of one accident. Contractual liability should be endorsed on the policy.
 - (2) Property Damage Insurance in an amount not less than \$1,000,000.00 for damages on account of any one accident, and in an amount not less than \$2,000,000.00 for damages on account of all accidents.
- c. Builder's Risk Insurance (Fire and Extended Coverage): The Contractor shall have adequate fire and standard extended coverage, with a company or companies acceptable to the Owner, in force on the project.

The provisions with respect to Builder's Risk Insurance shall in no way relieve the Contractor of its obligation of completing the work covered by the Contract.

- d. Proof of Carriage of Insurance: The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations, effective dates, and date of expiration of policies. Such certificates shall contain substantially the following statement: "The insurance covered by this certification shall not be cancelled or materially altered, except after ten (10) days written notice has been received by the Owner."

SC-8 HOLD HARMLESS CLAUSE: The Contractor agrees to hold harmless, indemnify and defend the Owner and its agents, architects, engineers and employees from and against any and all claims, losses, damages, demands, causes of action and any an all related costs and expenses, of every kind and character, growing out of, incidental to, or resulting directly or indirectly from the Contractor's performance of the work described herein, whether such loss, damage, injury, or liability is contributed to by the negligence of the Owner, its agents, architects, engineers, or employees, except the Contractor shall have no liability for damages or the costs incidental thereto caused by the sole negligence of the Owner, its agents, architects, engineers, or employees. The Contractor will require any and all subcontractors to conform with the provisions of this clause prior to commencing any work and agrees to ensure this clause is in conformity with the insurance provisions of the contract.

SC-9 CONTRACTOR'S STATUS: It is agreed the Contractor shall occupy the status of an Independent Contractor and the Contractor's employees are not employees of the Owner.

SC-10 CONTRACTOR'S AFFIDAVIT: Upon completion of the work and prior to final payment and settlement of all sums due hereunder, Contractor will furnish to Owner a Contractor's Affidavit in the usual form submitted by Contractor under the laws of the State of South Carolina to the effect all bills for labor, materials and services in connection with said contract have been paid in full, acknowledging receipt of the contract price and averring there are no outstanding claims under said contract which could become a lien on the real estate arising out of said contract.

SC-11 RESIDENT PROJECT ENGINEER: The Owner reserves the right to furnish a Resident Project Engineer as deemed necessary to insure the Project quality control and conformance to Plans and Specifications, who will act as the Owner's Representative on the Project and will have the authority of the Engineer as set forth in the Contract Documents.

SC-12 BARRICADES, DANGER AND WARNING SIGNS: The Contractor shall install and maintain barricades, suitable and sufficient lights, danger signals, signs, and other traffic control devices and shall take all necessary precautions for the protection of the work and safety of the public. Lanes closed to traffic shall be protected by effective barricades, lighted during hours of darkness. Suitable warning signs shall be provided to control, direct traffic, and warn pedestrians. Upon completion all barricades, signs and the like shall be removed.

SC-13 TOOLS, PLANT AND EQUIPMENT: If at any time before the commencement or during the progress of the work, tools, plant or equipment appear to the Engineer to be insufficient, inefficient or inappropriate to secure the quality of the work required or the proper rate of progress, the Engineer may order the Contractor to increase their efficiency, to improve their character, to augment their number, or to substitute new tools, plant, or equipment, as the case may be, and the Contractor must conform to such order; but a failure of the Engineer to demand such increase of efficiency, number, or improvement shall not relieve the Contractor of its obligation to secure the quality of work and the rate of progress necessary

to complete the work within the time required by the contract to the satisfaction of the Owner.

SC-14 ACCIDENTS: The Contractor shall provide, at the site, such equipment and medical facilities as are necessary to supply first-aid service to anyone who may be injured in connection with the work. The Contractor must report in writing to the Engineer all accidents whatsoever arising out of, or in connection with, the performance of the work, whether on or adjacent to the site, which causes death, personal injury or property damages, giving full details and statement of witnesses. In addition, if death or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone or messenger to both the Contractor and any subcontractor on account of any accident, the Contractor shall promptly report the facts to the Engineer, giving full details in writing of the claim. The Contractor shall advise its superintendent and foreman, who are on the site of the work, the name of the hospital and phone number and the name and phone number of the doctor to use in case of an accident.

SC-15 SANITARY PROVISIONS: The Contractor shall provide temporary sanitary facilities for the use of the workmen during the progress of the work. The sanitary facilities shall conform to the requirements of the County health Engineer. All facilities shall be removed at the completion of the contract.

SC-16 MODIFICATION OF QUANTITIES: The itemized quantities shall be considered by the Contractor as the quantities required to complete the work for the purpose of bidding. Should actual quantities required in the construction of the work be greater or less than the quantities shown on the items, an amount equal to the difference in quantities at the unit prices for the item will be added to or deducted from the contract price.

When itemized quantities are not given in the Proposal, the work shown on the plans or specified shall be considered by the Contractor to be included in the contract for the lump sum prices bid.

SC-17 RESPONSIBILITY REGARDING EXISTING UTILITIES AND STRUCTURES: The existence and location of underground utilities will be investigated and verified in the field by the Contractor before starting work. The Contractor shall call for underground utility locations. Underground utilities location service can be contacted at 1-888-721-7877 (SC). The location of all known interferences based on the best information available has been shown on the drawings, but this information may not be complete. Excavation in the vicinity of existing structures and utilities shall be carefully done by hand. The Contractor shall be held responsible for any damage to and for maintenance and protection of existing utilities and structures. The Contractor is responsible for coordinating with the utility companies any relocation, adjustment, or replacement of utility facilities.

SC-18 INTERRUPTION OF UTILITY SERVICE: The Contractor's operations shall be conducted to interfere as little as possible with utility services. Any proposed interruption by the Contractor must be accepted in advance by the Engineer.

SC-19 OMISSION: The drawings and specifications shall both be considered as a part of the contract. Any work and material shown in the one and omitted in the other, or described in the one and not shown in the other, or which may fairly be implied by both or either, shall be furnished and performed as though shown in both, in order to give a complete and first class job.

SC-20 MEASUREMENT AND PAYMENT: Measurement and payment shall be made for the units and at the lump sum contract prices shown on the Bid Schedule. Direct payment shall only be made for those items or work specifically listed in the proposal and the cost of any other work must be included in the contract price for the applicable items to which it relates.

SC-21 "OR EQUIVALENT," CLAUSE: Although the plans and specifications make reference to particular manufacturers and model numbers for various products, such reference is made only to establish function and quality of such products. If it is desired to use materials or equipment of trade names or of manufacturer's names that are different from those mentioned in the contract documents, information pertaining to such items must reach the hands of the Engineer at least 10 days prior to the date set for the opening of bids. The burden of proving equality of a proposed substitute to an item designated by trade name or by manufacturer's name in the contract document rests on the party submitting the request for acceptance. The written application for review of a proposed substitute must be accompanied by technical data that the party requesting review desires to submit in support of its application. The Engineer will give consideration to reports from reputable independent testing laboratories, verified experience records showing the reputation of the proposed product with previous users or any other written information that is reasonable in the circumstances. The application to the Engineer for review of a proposed substitute must be accompanied by a schedule setting forth in what respects the material or equipment submitted for consideration differs from the materials or equipment designated in the contract documents. The degree of proof required for acceptance of a proposed substitute as equivalent to a named product is the amount of proof necessary to convince the Engineer beyond all doubt. To be acceptable, a proposed substitute must, in addition, meet or exceed all express requirements of the contract documents.

If submittal is accepted by the Engineer, an addendum will be issued to all prospective bidders at least five days prior to the date set for the opening of bids.

The Engineer shall be the final judge on questions of similarity and equality.

SC-22 SAFETY AND HEALTH REGULATIONS: The Contractor shall comply with the Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act of 1970 as amended through January 1, 2004 (PL 91-596) and under Section 107 of the Contract Work and Safety Standards Act (PL 91-54). The regulations are administered by the Department of Labor and the Contractor shall allow access to the project to personnel from that Department.

SC-23 RECORD DATA AND DRAWINGS: The Contractor shall keep accurate, legible records of the locations, types, and sizes of sanitary lines, service laterals, manholes, cleanouts, water lines, fittings, valves, hydrants, drainage pipes, drainage structures, and other related work performed under this project. Where proposed and existing utilities cross, the Contractor shall measure and record the horizontal location and vertical separation between each crossing. Separation shall be measured between exteriors of pipes. On a set of project prints provided by the Owner, the Contractor shall prepare a set of "record" drawings from the data stated above. The horizontal locations of all portions of items installed on this project shall be accurately tied down to features that are physical and visible, such as property corner markers and/or permanent type structures. Invert elevations of all manholes, storm sewers and structures, sanitary sewers and lift stations shall be clearly indicated. These "record" drawings shall be kept clean and dry and maintained in a current state with the progress of the work. If at any time, a copy of this plan or portion of it is requested by the Owner, such copy shall be made available within 24 hours after the request is made.

Before final acceptance of the completed installation and final payment by the Owner, the Contractor shall deliver to the Engineer, four sets of "Record" Drawings accurately depicting the horizontal and vertical as-built data described in the above paragraph. "Record" drawings for the items installed on this project shall be certified by a licensed surveyor, other than Thomas & Hutton, registered in South Carolina. The size of the drawings shall be 24" x 36". The "Record" drawings shall have a coordinate system based on the South Carolina State Plane Coordinate System, East Zone, North American Datum of 1983 (NAD83). Elevations shall be based on the North American Vertical Datum of 1988 (NAVD 88). All measurements and coordinates shown shall use the U.S. Survey flood definition. Coordinates shall be shown on all drainage structures, sanitary sewer manholes, storm manholes/boxes, valve boxes/vaults, valve manholes, valves, fire hydrants, fittings, and all other related work performed under this contract. Vertical data including but not limited to, structure and manhole frame and inverts, pipe inverts, lift station frame, inverts, control levels, bottom, site grading, and as-built grading shall be shown. In addition to the "Record" drawings, Contractor shall deliver to Engineer electronic AutoCAD (v. 14 or later) files of all the data described above on a CD-ROM.

SC-24 PROPERTY CORNERS: The Contractor shall be responsible for restoring any property corners or monuments disturbed during construction. They shall be restored by a professional surveyor registered in the State of South Carolina.

SC-25 VIDEO: A video showing existing site conditions shall be made by the Contractor prior to start of construction. Contractor shall provide Owner and Engineer a copy of the video. Contractor is encouraged to record any existing damaged facilities that could be questioned later by property owners. A written or recorded narrative shall be provided with the video. Engineer shall be notified 72 hours in advance making the video. Contractor is responsible for all costs associated with video and shall be considered a subsidiary part of the contract.

DOCUMENT 00815

SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2007 Edition) and other provisions of the Contract Documents as indicated below. All provisions that are not so amended or supplemented remain in full force and effect.

SC-1 The terms used in these Supplementary Conditions which are defined in the Standard General Conditions of the Construction Contract (EJCDC C-700, 2007 Edition) have the meanings assigned to them in the General Conditions.

SC-2.05.A.4 Add the following new paragraph to the General Conditions after paragraph 2.05.A.3:

4. "A schedule of anticipated shipping dates for materials and equipment. It is intended that equipment and materials be so scheduled as to arrive at the job site just prior to time for installation to prevent excessive materials on hand for inventory and necessity for extensive storage facilities at the job site."

SC-5.04.B.7 Add the following new paragraph to the General Conditions after paragraph 5.04.B.6:

7. Bonding surety shall be located in the state in which the work is being performed.

The Contractor shall not commence work under this contract until it has obtained all the insurance required under this paragraph and such insurance has been accepted by the Owner, nor shall the Contractor allow any Subcontractor to commence work on its subcontract until the insurance required of the Subcontractor has been so obtained and accepted.

- a. Compensation and Employer's Liability Insurance: The Contractor shall take out and maintain during the life of the contract, the statutory Worker's Compensation and Employer's Liability Insurance for all of its employees to be engaged in work on the project under the contract and, in case such work is sublet, the Contractor should require the Subcontractor similarly to provide Worker's Compensation and Employer's Liability Insurance for all the latter's employees to be engaged in such work.
- b. Bodily Injury Liability and Property Damage Liability Insurance: The Contractor shall take out and maintain during the life of the contract, Bodily Injury Liability and Property Damage Liability Insurance. The policy shall protect Contractor and any Subcontractor performing work covered by the contract from claims for damages or personal injury, including accidental death, a well as from claims for property damage, which may arise from

operations under the contract, whether such operations be by Contractor, Subcontractor, or by anyone directly or indirectly employed by either of them and the amount of such insurance should be not less than:

- (1) Bodily Injury Liability Insurance, in an amount not less than \$1,000,000.00 for injuries, including wrongful death to any one person and subject to the same limit for each person in an amount not less than \$2,000,000.00 on account of one accident. Contractual liability should be endorsed on the policy.
- (2) Property Damage Insurance in an amount not less than \$1,000,000.00 for damages on account of any one accident, and in an amount not less than \$2,000,000.00 for damages on account of all accidents.

- c. Builder's Risk Insurance (Fire and Extended Coverage): The Contractor shall have adequate fire and standard extended coverage, with a company or companies acceptable to the Owner, in force on the project.

The provisions with respect to Builder's Risk Insurance shall in no way relieve the Contractor of its obligation of completing the work covered by the Contract.

- d. Proof of Carriage of Insurance: The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations, effective dates, and date of expiration of policies. Such certificates shall contain substantially the following statement: "The insurance covered by this certification shall not be canceled or materially altered, except after 10 days written notice has been received by the Owner."

SC-6.02.B Add the following:

The Contractor shall provide in writing any requests to work on weekends. Requests shall be submitted to the Owner and Engineer for consideration a minimum of 48 hours prior to the requested weekend.

SC-6.08 Add the following:

The Contractor shall not proceed until all encroachment permits, curb cut permits, highway crossing permits, and railroad crossing permits have been secured. Contact Owner to ascertain status of permits.

SC-6.09.D Add a new paragraph after paragraph 6.09.C of the General Conditions that reads as follows:

- "D. The Contractor shall comply with the Department of Labor Safety and Health Regulations for Construction promulgated under the Occupational Safety and Health Act of 1970 as amended through January 1, 2004 (PL

91-596) and under Section 107 of the Contract Work and Safety Standards Act (PL 91-54). The regulations are administered by the Department of Labor and the Contractor shall allow access to the project to personnel from that Department.

The Bidder's attention is directed to the fact all applicable State laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout and they will be deemed to be included in the contract the same as though herein written in full.

The Contractor shall keep fully informed of all laws, ordinances and regulations of Federal, State, City and County, in any manner affecting those engaged or employed in the work, or the materials used in the work, or in any way affecting the conduct of the work, and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over same. Contractor shall at all times, observe and comply with all such existing and future laws, ordinances, and regulations."

SC-6.12.B Add a new paragraph after paragraph 6.12.A of the General Conditions that is to read as follows:

"B. Record Data Drawings:

1. The Contractor shall keep accurate, legible records of the elevations, locations, types, and sizes of sanitary sewage lines, service laterals, manholes, cleanouts, water lines, fittings, valves, hydrants, drainage pipes, drainage structures, and other related work performed under this project. Where proposed and existing utilities cross, the Contractor shall measure and record the horizontal location and vertical separation between each crossing. Separation shall be measured between exteriors of pipes. On a set of project prints provided by the Owner, the Contractor shall prepare a set of "record" drawings from the data stated above. The horizontal locations of all portions of items installed on this project shall be accurately tied down to the State Plane Coordinate System. Invert and frame elevations of all manholes, storm sewers and structures, sanitary sewers and lift stations shall be clearly indicated. These "record" drawings shall be kept clean and dry and maintained in a current state with the progress of the work. If at any time, a copy of this plan or portion of it is requested by the Owner, such copy shall be made available within 24 hours after the request is made.
2. Before final acceptance of the completed installation and before final payment by the Owner, the Contractor shall deliver to the Engineer a completed set of "record" drawings accurately depicting the data described above. The horizontal and vertical locations as shown on the "record" drawings for the items installed on this project shall be certified by a licensed surveyor, other than Thomas & Hutton, registered in the State in which the project is located. "Record" Drawings shall be submitted on a marked up set of project construction prints or electronically. Thomas & Hutton shall prepare

original "record" drawings from the submitted data. When completed, Thomas & Hutton shall have the licensed surveyor stamp and sign the original "record" drawings before making copies available to the Owner or other appropriate agencies."

SC-6.13.A.3 Add the following:

"Safely guard the Owner's property from damages, injury, or loss in connection with this contract. Contractor shall at all times guard and protect its own work and all materials of every description both before and after being used in the work.

Contractor shall provide any enclosing or special protection from weather deemed necessary by Engineer without additional cost to the Owner. Partial payments under the contract will not relieve the Contractor from responsibility for protection of material, work, and property."

SC-9.02.C Add a new paragraph after paragraph 9.02.B of the General Conditions that is to read as follows:

"C. If at any time before the commencement or during the progress of the work, tools, plant or equipment appear to the Engineer to be insufficient, inefficient, or inappropriate to secure the quality of the work required or the proper rate of progress, the Engineer may order the Contractor to increase their efficiency, to improve their character, to augment their number, or to substitute new tools, plant or equipment as the case may be, and the Contractor must conform to such order; but a failure of the Engineer to demand such increase or efficiency, number, or improvements, shall not relieve the Contractor's obligation to secure the quality of work and the rate of progress necessary to complete the work within the time required by this contract to the satisfaction of the Owner."

SC-9.05 Add the following sentence at the end of paragraph 9.05 of the General Conditions:

"Owner and Engineer have the right to reject defective materials. Defective materials shall not be used in the work."

SC-13.03.A Add the following sentences to paragraph 13.03.A of the General Conditions:

"The Contractor will be required to maintain all work in a condition acceptable to the Engineer for a 30 day operating period after the same has been completed as a whole, and the Engineer has notified the Contractor in writing that the work has been finished. The Contractor shall give the Project Engineer or Project Representative a minimum of 48 hours notice for all required observations and tests."

END OF SUPPLEMENTARY CONDITIONS

INDEX TO
SECTION 01011
SUMMARY OF WORK

Paragraph	Title	Page
PART 1 – GENERAL		
1.1	Section Includes	01011-1
1.2	Contract Description	01011-1
1.3	Work Required	01011-1
1.4	Contract Drawings	01011-2
1.5	Contract Technical Specifications	01011-2

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

SECTION 01011
SUMMARY OF WORK

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Contract Description.
- B. Work required by Contract.
- C. Contract Drawings.
- D. Contract Technical Specifications.
- E. Owner supplied Products.
- F. Contractor use of site [and premises].
- G. Future work.
- H. Work Schedule.
- I. Owner occupancy.
- J. Definitions.

1.2 CONTRACT DESCRIPTION

- A. Contract Type: 00506 – Agreement

1.3 WORK REQUIRED

- A. Consists of Contractor furnishing all labor, materials, tools, equipment and incidentals to complete the Work generally described below:
 - 1. Earthwork, grading, aggregate base, asphaltic concrete surface course, and drainage facilities for a total approximate roadway length of 4.5 miles.
- B. All work shall be performed as shown on the Drawings and as described in the Contract Documents and Technical Specifications.
- C. All work shall comply with standards described by the Department of Labor, Occupational Safety and Health Administration, 29 CFR Part 1926, Subpart P, latest revision.

1.4 CONTRACT DRAWINGS

Sheet	Description	Job No.
1	Title Sheet	25644.1005
G0.1	Index and Layout	25644.1005
G0.2	General Notes	25644.1005
G0.3	Construction Access Plan	25644.1005
TS01 – TS02	Typical Sections	25644.1005
PP01 – PP23	Plan and Profile Sheets	25644.1005
ST01 – ST02	Staging Plans	25644.1005
PM01 – PM11	Pavement Marking and Signing Sheets	25644.1005
TS1 – TS2	Traffic Signal Plan	25644.1005
S01 – S04	Roadway Structure Plans	25644.1005
EC0.1 – EC13	Erosion Control Data Sheets	25644.1005
X001 – X140	Cross Section Sheets	25644.1005

1.5 CONTRACT TECHNICAL SPECIFICATIONS

- A. All Roadway Construction Shall be in accordance with the latest revision of South Carolina Standard Specifications.

PART 2 – PRODUCTS

Not used

PART 3 – EXECUTION

Not used

END OF SECTION

SECTION 01012

SOIL INVESTIGATION DATA FOR BIDDERS

Paragraph	Title	Page
PART 1 – GENERAL		
1.1	Description	01012-1
1.2	Soil Investigation Data	01012-1

PART 2 – PRODUCTS

See attached report.

PART 3 – EXECUTION

None in this Section

SECTION 01012**SOIL INVESTIGATION DATA FOR BIDDERS****PART 1 – GENERAL****1.1 DESCRIPTION**

- A. This section includes subsurface data logs for information only.

1.2 SOIL INVESTIGATION DATA

- A. Subsurface data logs are available for information only. Actual conditions may vary. If bidders are not satisfied with accuracy and completeness of all available data, they are at liberty to make borings or perform soil investigation work for their own use at its expense. If Contractor chooses to perform their own investigation, work shall be coordinated with the Engineer. Any results from Contractor's investigation shall be shared promptly with the Engineer. Owner reserves the right to share Contractor's investigation data with other potential bidders if information could affect bidding process.
- B. The boring logs and test results are for information of the Contractor. Owner and Engineer assume no responsibility for the information.

PART 2 – PRODUCTS

See attached report.

PART 3 – EXECUTION

None this Section.

END OF SECTION

**Geotechnical Roadway Report
Project Soter (Volvo) Roadways
Ridgeville, SC
S&ME Project No. 1413-15-064**



Prepared for:
Thomas & Hutton
1501 Main Street, Suite 760
Columbia, SC 29201

Prepared by:
S&ME, Inc.
620 Wando Park Boulevard
Mt Pleasant, SC 29464

October 30, 2015



October 30, 2015

Thomas & Hutton
1501 Main Street, Suite 760
Columbia, South Carolina 29201

Attention: Mr. John Culbreath, P.E.

Reference: **Geotechnical Roadway Report**
Project Soter (Volvo) Roadways
Ridgeville, South Carolina
S&ME Project No. 1413-15-064

Dear Mr. Culbreath:

We are pleased to submit the Geotechnical Roadway Report for the interior roadways at the Volvo project in Ridgeville, South Carolina. Our services were performed pursuant to S&ME Proposal No. 14-1500364 dated May 15, 2015.

If you or your design team has specific questions regarding any geotechnical aspects of this project, please call at any time.

Sincerely,

S&ME, Inc.

Kyle Murrell, P.E.
Project Engineer



Michael S. Ulmer, P.E.
Principal Engineer/Project Manager



Table of Contents

1.0	Introduction	1
2.0	Project Description	1
3.0	Site Description	2
4.0	Exploration and Laboratory Procedures	2
4.1	Field Exploration	2
4.2	Laboratory Testing	2
5.0	Geology, Site, and Subsurface Conditions	3
5.1	Regional Geology	3
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6.5	Embankment and Subgrade Fill	7
6.6	Use of On-site Soils.....	7
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Appendices

- Appendix I
- Appendix II
- Appendix III

1.0 Introduction

An automobile manufacturing facility is proposed for the Camp Hall site in Berkeley County. We understand the new, interior roads will be owned by Berkeley County. We have prepared this report using the SCDOT *Geotechnical Design Manual* (GDM) as a guide; however, the report is not fully compliant with the GDM because it will be a County road and portions of the GDM are not applicable. As described in Chapter 21 of the GDM, the scope of a Roadway Geotechnical Engineering Report generally includes the following:

- ◆ Review of available nearby geologic maps and geotechnical data.
- ◆ Review of roadway design plans.
- ◆ Discussion of subsurface profile observed during investigations.
- ◆ Site preparation and earthwork recommendations.
- ◆ Pavement design.

The following are GDM requirements that typically apply to bridge approaches, roadway structures, and other embankments. These analysis are not applicable to these roadway projects.

- ◆ Seismic analyses for the FEE and SEE events based on ADRS provided by SCDOT, including preliminary liquefaction screening.
- ◆ Preliminary slope stability and settlement analysis for planned roadway embankment.

2.0 Project Description

Based on the plans provided by Thomas and Hutton, Phase I of the project will comprise a roughly 2½-million-ft² manufacturing facility located on an approximately 1,600-acre parcel in the southeast portion of the Camp Hall tract. Construction will include improvements to existing dirt roads within the Camp Hall tract, construction of new roads on new alignment, improvements to SC Highway 27, improvements to the interchange of SC Highway 27 and I-26 (Exit 187), and ties to Fish Road and US 176.

Centerline Road will extended from a new interchange with I-26 along its current alignment to US Highway 176. The new road will be roughly 25,100-ft long with a five and three-lane, rural ditch cross section. At its intersection with Fish Road, right turn lanes will be added to Fish Road. At its terminus at US Highway 176, left and right run lanes will be added to Highway 176. The new vertical alignment will generally be 2 to 4 ft above the existing alignment, and an embankment up to 15 ft high and a culvert will be required to cross a stream at Station 256+50. The embankment design shows side slopes at 4:1 (horizontal to vertical). There are no structures shown on the roadway plans.

Lower Westvaco Road will extended from Centerline Road to the west along existing and new alignments to Highway 27. It will be approximately 15,761-ft long with a three-lane, rural ditch cross section. We understand the vertical alignment will be 2 to 5 ft above the existing ground surface and maximum embankment heights will be 5 ft or less. Portion of the alignment (i.e., Sta. 35+00) will require shallow cuts on one side of the roadway. There are no structures shown on the roadway plans.

The new interchange at Centerline Road and I-26 is a separate project and is not addressed in this report.

Exit 187 will see ramp widening and intersection improvements, and Highway 27 will be widened to three lanes from Exit 187 to Lower Westvaco Road. These roadway plan have not been provided to date, and this area has not been explored to date. A separate report will be submitted for the Highway 27 and Exit 187 improvements.

3.0 Site Description

The Camp Hall tract is located in the northeast quadrant of the intersection of Interstate 26 and State Highway 27 in Berkeley County, South Carolina. The majority of the property has historically been used for silvaculture. Portions are wooded, and other portions are in various stages of being clear cut, bedded, and replanted.

Numerous improved and unimproved roads traverse the property with ditches on one or both sides. The size of the ditches vary throughout the site ranging from narrow and shallow ditches to large ditches up to 10 to 15 ft wide and apparently several feet deep with standing water present. Centerline Road is the main north-south roadway and is covered with a crushed limestone base. The proposed Lower Westvaco Road follows a dirt road from Centerline Road and then new alignment through wooded areas to SC 27.

4.0 Exploration and Laboratory Procedures

4.1 Field Exploration

A total of 83 cone penetration test (CPT) soundings were pushed to define subsurface conditions along the proposed roadway alignments. Fifty-two soundings were performed on Centerline Road, and 31 soundings were performed on Lower Westvaco Road. The soundings were pushed to a depth of approximately 20 ft below the existing ground surface. Three bulk samples were collected for laboratory testing. The approximate locations of the soundings are shown on the Test Location Plans (Figures 1 through 6) in Appendix I, and the CPT sounding logs are presented in Appendix I.

The pavements at the proposed roadway intersections with US Highway 176, Fish Road, and Highway 27 were cored. Two cores were extracted from each intersection, the cores and base materials were measured and photographed, and the cores were patched with asphalt cold patch. The measurements of the cores are presented in Section 5.2.

4.2 Laboratory Testing

The bulk samples were subjected to laboratory natural moisture content, grain size distribution, Atterberg limits, standard proctor compaction, and California Bearing Ratio (CBR) testing. A summary of the laboratory testing and the individual test sheets are included in Appendix II.

5.0 Geology, Site, and Subsurface Conditions

5.1 Regional Geology

The project site is located within the Atlantic Coastal Plain Physiographic Province. The Pre-Cretaceous basement rocks are approximately 2000 to 2500 ft below land surface and are overlain by the Middendorf, Black Creek, and PeeDee Formations of the late Cretaceous period and the Black Mingo Formation, Santee Limestone Formation, and Cooper Group of the Tertiary period. All of these form a successively overlapping wedge which thickens coastward from its origin along the Fall Line.

The formations composing the Cooper Group are most significant because they are located beneath a relatively thin layer of upper sediments composed of Quaternary Period deposits of recent to Pleistocene age. These sediments generally comprise normally consolidated mixtures of sand, silt, and clay.

Geologically, the Cooper Group consists of the Ashley Formation, the Parkers Ferry Formation, and the Harleyville Formation. The different formations of the Cooper Group are associated with various depositional environments. For engineering purposes, all of the formations of the Cooper Group are referred to as the Cooper Marl. The Cooper Marl is described as a phosphatic limestone consisting of calcium carbonates (approximately 60-75%), quartz sand (approximately 5-25%), clay (10-30%), phosphatic sand and pebbles (approximately 1-5%), and small amounts of glauconite, shell hash, and mica. Its color ranges from pale green to yellowish-gray to olive brown and becomes lighter when dried. The Cooper Marl typically classifies as a lightly to moderately- overconsolidated, high plasticity, sandy silt or clay, but can also be classified as a silty sand. The Cooper Marl stratum beneath the subject site is probably in excess of 100 ft thick.

5.2 Site and Subsurface Conditions

Details of the subsurface conditions encountered by the CPT soundings are shown on the logs in Appendix I. These logs represent our interpretation of the subsurface conditions based on the test data. Stratification lines on the logs represent approximate boundaries between soil behavior types; however, the actual transition may be gradual and the thicknesses of the strata will vary across the site.

5.2.1 *Surface Materials*

The existing roadways are either bare or covered with a surface layer of crushed limestone. Beyond the limits of the roads, the ground surface was typically covered with leaf and pine straw litter in wooded areas. In open areas, the ground surface is generally covered with logging debris including tree stumps, trunks, and limbs. These materials are mixed into the upper 18 to 24 in., which corresponds to the approximate bedding depth. The soils within this surface, bedding layer are generally silty and clayey sands with relatively high fines (silt and clay) content. These soils are generally highly disturbed.

5.2.2 *Existing Pavements*

The existing pavements on US Highway 176 and SC 27 are weathered and worn but in relatively good condition. The pavements on Fish Road are worn, and there are pot holes and other distresses near the intersection with Centerline Road. Fish Road appears to have been overlaid recently, and the asphalt thickness varied significantly. The cores at Fish Road and Highway 27 generally penetrated an asphalt

surface course underlain by a sand-asphalt base. The pavement section on SC 27 was consistent between the cores. The US Highway 176 cores indicate a surface course overlaid by numerous layers of what appears to be an asphalt aggregate base. All of the cores are summarized in Table 5-1.

Table 5-1 – Asphalt Core Summary

Roadway	Core	Asphalt	Base
SC 27	C-1	4¾ in.	2¼ in.
	C-2	4¼ in.	1½ in.
Fish Road	C-1	5¼ in.	2¾ in.
	C-2	2 in.	4½ in.
US 176	C-1	2½ in.	11¾ in.
	C-2	2½ in.	10½ in.

5.2.3 Coastal Plain Soils

The exploration encountered interbedded layers of very soft to very stiff silts and clays and very loose to medium dense silty and clayey sands to a depth of approximately 20 ft. The near surface soils are generally clayey and grade to more silty soils with depth. Although the Cooper Marl was not encountered within the depth of the roadway borings, our explorations throughout the Camp Hall site indicate marl is typically encountered at depth from 25 to 40 ft below the existing ground surface.

5.3 Groundwater

Subsurface water was measured upon completion of the soundings at depths ranging from approximately 1 to 10 ft below the existing ground surface. Low-lying areas were observed throughout the site with standing water, and existing roadside ditches contained water. Subsurface water levels at the sites will fluctuate during the year due to such things as seasonal and climatic variations and with construction activity in the area.

6.0 Site Preparation and Earthwork Recommendations

The primary geotechnical consideration for site preparation will be to provide a stable roadway subgrade for long-term pavement support. All pavement subgrades must consist of at least 36 in. of well-compacted fill. Existing subgrades must be stable under proofrolling or stabilized as recommended by the Geotechnical Engineer to provide a 36-in.-thick, well-compacted pavement subgrade. Based on the performance of Centerline Road and the other haul roads to date, large quantities of undercutting and stabilization should be expected. Chemical stabilization (i.e., lime or cement) of roadway subgrades prior to fill placement should be seriously considered. The following presents our site preparation and earthwork recommendations.

6.1 Drainage Improvements and Existing Ditches

Establishing positive site drainage before construction will be very important to roadway construction. Prior to beginning mass clearing and grading, we recommend that drainage improvements be made to drain ponded water, lower the water levels, and handle rainfall runoff during construction. Site drainage

can be established by excavating gravity-drained ditches to divert water flow away from construction areas. Ditches should be excavated as deep as practical and as far ahead of general site work as possible. Existing ditches may be used. If sufficient fall is not available, ditches should be tied to sumps and pumped. Even during dry weather conditions, ditches and drainage improvements should be in place to handle any heavy rainfall that might occur during construction.

As site work progresses, large expanses of unprepared and prepared subgrades will be exposed to prevailing weather conditions for relatively long periods of time. It will be very important that the grading contractor maintains proper means and methods such as positive slopes, sealed surfaces, and ditching to prevent rainwater runoff from ponding on unprepared and prepared subgrades. Otherwise, the clayey soils at this site will deteriorate and require extensive drying and reworking or undercutting and replacement. These "good housekeeping" measures will be very important.

The new roadways will fill many of the existing roadside ditches. The ditches should be diverted and dewatered as necessary, and any organic material accumulation and soft soils should be removed from the ditch bottoms prior to backfill placement. Our experience indicates the ditch bottoms will remain soft and wet; therefore, an 18 to 24-in.-thick bridge lift of dry, granular soils or crushed stone may be necessary to stabilize the ditch bottom to allow for backfill placement and compaction. Once stable, the ditches should be backfilled with controlled fill as described in Section 6.5.

6.2 Site Preparation

Site preparation should continue with the removal of unsuitable surface materials. This should include clearing trees and vegetation, grubbing root systems, and thoroughly raking the remaining surface materials to remove all remaining roots, limbs, other organic materials larger than ¼ in. in diameter. Topsoil with an organic content of 5% or less may remain in place. Stumps and taproots should be completely removed from roadway areas, and voids created should be cleaned and backfilled with well-compacted controlled fill.

Prior to fill placement, the exposed subgrade should be thoroughly evaluated by the Geotechnical Engineer. This evaluation should include proofrolling with a heavily loaded tandem-axle dump truck or similar rubber-tired equipment under the observation of the Geotechnical Engineer. Areas that are unstable should be stabilized or undercut and replaced with well-compacted fill as recommended by the Geotechnical Engineer. All undercutting should be observed by the Geotechnical Engineer to confirm that all unsuitable materials are removed and that suitable materials are not removed. A general undercutting and mucking detail is provided in Figure 7 below.

6.3 Stabilization Measures

All pavement subgrades must consist of at least 36 in. of well-compacted fill, and the stabilization measures used will be dependent upon the depth of fill to be placed, prevailing weather conditions, and the condition of the subgrade at the time of construction. The stabilization measures used are best determined in the field at the time of construction with joint consultation between the Grading Contractor and the Geotechnical Engineer. The areas predicted to require stabilization presented below may change once construction begins and subgrades can be evaluated.

In areas where 3 ft or more of fill are required to reach the finished subgrade elevation, the area should be disked, allowed to dry, and compacted as much as possible without destabilizing the area. Sheep’s-foot type compaction equipment should be used on the clayey subgrade soils. If the subgrade is stable under a proofroll, fill should be placed and compacted as recommended in Section 6.5 of this report.

In areas where less than 3 ft of fill are required to reach the finished subgrade elevation, more extensive stabilization measures will be required. The subgrade should be undercut as necessary to allow placement of an 18-in. thick bridge lift of dry, granular soil or crushed stone, if needed, and the 3 ft of embankment fill. A geogrid or geotextile should be used if necessary. The bridge lift should be placed by end dumping the fill material at the edges of the area and spreading the fill across the pad using lightweight wide-tracked equipment. The bridge lift should be compacted with a dozer or smooth-drum roller as much as possible without destabilizing it. If a roller is used, the vibrating mechanism should not be engaged on the bridge lift since it will tend to draw moisture up into these soils. Rubber-tired equipment, particularly loaded dump trucks or similar heavy equipment, should be restricted from the weak subgrade soils. The remaining lifts should be compacted as subsequently described in Section 6.4. Based on the plans provided, the following sections of roadway are predicted to require undercutting and stabilization because less than 3 ft of new embankment fill will be required in these areas. These areas are approximate and may change once construction begins and subgrade can be evaluated. A general detail is provided on the next page.

Table 6-3 – Predicted Undercut Roadway Sections

Centerline Road Station From - Station To		Lower Westvaco Road Station From – Station To	
41+50	43+50	0+00	37+50
65+50	67+50	87+00	88+50
77+50	80+50	154+00	15+75
83+00	111+50		
114+00	138+50		
143+50	145+00		
150+50	153+50		
160+00	198+50		
219+00	254+50		
259+50	264+00		

6.4 Optional Chemical Stabilization

The SCDOT does not address lime stabilization in its *Standard Specifications for Highway Construction* or any special provisions of which we are aware. Based on the earthwork operations at the main plant site to date, we recommend contractors consider chemical stabilization *en mass* prior to new fill placement rather than proofrolling and stabilizing small areas at a time. A process of blending lime or cement with the remaining topsoil (less than 5% organic content) and the upper 12 to 18 in. of in situ clayey soils and then compacting this mixture in place has been effective at stabilizing large areas at the plant site. Chemical stabilization of the wet, clayey soils at this site can be accomplished using lime or cement using

the practices described in NCHRP W-144 "Recommended Practice for Stabilization of Subgrade Soils and Base Materials," AASHTO M 216-05, and AASHTO T 220-66, as applicable.

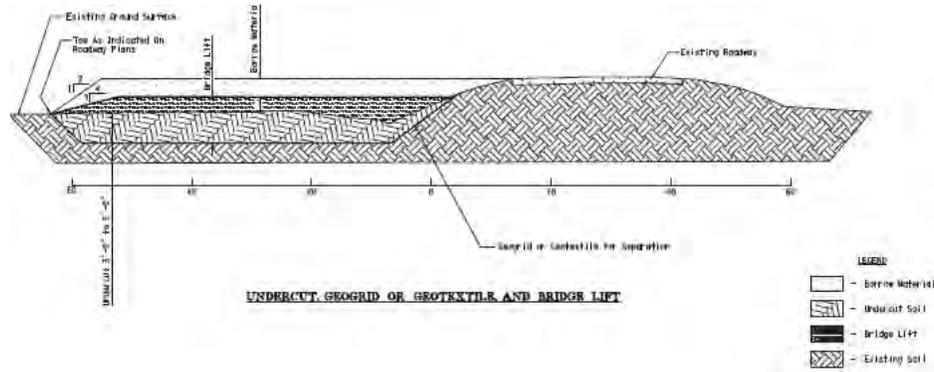


Figure 7 – General Stabilization Detail

6.5 Embankment and Subgrade Fill

Fill material used in embankments and subgrades should meet the requirements for borrow excavation in the SCDOT's *Standard Specifications for Highway Construction* (2007 edition). Embankment soils should be cohesionless soils containing no more than 15% fines (material passing the No. 200 sieve) by weight and having a maximum dry density of at least 100 pcf as determined by a laboratory standard Proctor compaction test (ASTM D698 or SC-T-29). The soil should be relatively free of organics, deleterious matter, and elongated or flat particles susceptible to degradation. All fill should be placed in uniform lifts of 8 in. or less (loose measure) and compacted to at least 95% of the standard Proctor maximum dry density.

Fill placement should be observed by a qualified engineering technician working under the direction of the Geotechnical Engineer. In addition to this visual evaluation, the technician should perform a sufficient number of in-place field density tests to confirm the contractor's equipment and methods are capable of achieving the required degree of compaction.

6.6 Use of On-site Soils

On-site soils can be used below the 36-in. depth of the roadway pavement subgrade. All on-site soils used as roadway embankment fill should be placed in uniform lifts of 8 in. or less (loose measure) and compacted to at least 95% of the standard Proctor maximum dry density. The appropriate compaction equipment should be used for the soil types being compacted (i.e., smooth-drum vibratory rollers should be used on sands and sheep's-foot rollers should be used on clayey soils).

The clayey soils at this site are moderately plastic and are moisture sensitive. When wet, these soils will become unstable and difficult to work. If grading takes place in other than hot, dry weather conditions, use of these soils as roadway embankment fill will be difficult. The use of these clayey soils will be heavily dependent on final grades; the climatic conditions during construction; the aggressiveness of the

earthwork schedule; site drainage; and the grading contractor’s experience, equipment, means, and methods. When considering the use of these soils, the measures discussed below are recommended:

- ◆ These soils will require more drying than typically expected during grading. This should be taken into consideration during the bidding phase of the project. Prevailing weather will greatly affect the use of the soils.
- ◆ Maintaining positive site drainage during construction will be very important.
- ◆ The Contractor should have equipment such as disk harrows to help dry wet soil. Spreading the soil and aerating will be needed, particularly with the more clayey soils. Sheep’s-foot compaction equipment will be required.

7.0 Roadway Embankment Settlement and Stability

The embankments for the proposed roads generally meet roadway operational classification (ROC) III, and the following service limit state (SLS) performance limits apply:

ID No.	Description	ROC III Limit
EV-01	Maximum Vertical Settlement	16 in.
EV-02	Maximum Settlement Rate after Paving	0.20 in./yr
EV-03	Maximum Vertical Differential Settlement	2.0 in. (1/300)

The new roadway embankments will be supported on very soft to very stiff silts and clays and very loose to medium dense silty and clayey sands overlying the Cooper Marl. Although some thin layers of very soft clays are present, no thick deposits of very soft clay that would be susceptible to large consolidation settlements under the mass weight of the proposed roadway embankments were identified. As such, we expect the soils to behave elastically, and we expect that most settlement will occur during construction of the embankment, with a small time-dependent portion remaining after the roadway is paved. We do not expect long-term settlements to be a concern. Our analysis indicates settlements on the order of ½ to 2 in. should be expected with the larger settlements confined to the large fill around Station 256+50 at the proposed culvert on Centerline Road. These predicted settlements are within performance limits EV-01, EV-02, and EV-03 for an ROC III embankment.

We understand that the new roadway embankments will be generally be less than 6 ft high with 4H:1V (horizontal to vertical) side slopes. In the area of Station 256+50 on Centerline Road, the embankment will be approximately 15 ft high with 4:1 side slopes. Based on the field and laboratory data our experience with similar projects, we do not anticipate static slope stability will be a concern if the embankment materials are placed and compacted as specified. The clayey soils are not liquefiable; therefore, seismically-induced settlement or lateral spreading is not anticipated, and seismic slope stability is not a concern.

8.0 Pavement Design

Pavement design has been performed using the South Carolina Department of Transportation’s (SCDOT) *Pavement Design Guide* and associated literature. We understand that a staged approach will be used during construction of the Volvo facilities. Any necessary repairs will be made, and the final surface course will be placed. The traffic information in Table 8-1 was provided by Thomas & Hutton and the SCDOT.

Table 8-1 – Traffic Information

Road	2019 ADT	2039 ADT	Road Group
Lower Westvaco Rd.	6,500	4,000	L
Centerline Road	1,500	6,500 / 27,000*	L
Fish Road	3,000	3,000	L
SC Highway 27	9,500	8,000	L
US Highway 176	4,500	8,500	L
Interior Plant Roads	3,800	11,700	2.1% / 1.3%**
* 6,500 north of Fish Road / 27,000 south of Lower Westvaco Road.			
** Percentage trucks before (2019) and after (2039) rail service.			

The provided traffic data does not include construction traffic that must use the new roadways for future development of the remaining Camp Hall tract. It is anticipated that this development will occur within the next 20 years and within the life cycle of the proposed new pavements. Therefore, it would be prudent to include this traffic in the current pavement design. The master plan in the Section 404 permit for the Volvo project predicts 10 million sq. ft of industrial space will be construction outside of the Volvo tract. Assuming all 10 million sq. ft will require at least 2 ft of imported borrow produces roughly 3,700 dump trucks over a 20-year period. This is roughly equivalent to 4,770 18-kip equivalent single axle (ESALs) loads, which evenly distributed between Lower Westvaco Road and Centerline Road north and south of Lower Westvaco Road adds roughly 1,590 18-kip ESALs per year to the traffic loads on these roads. It is our opinion that this is a reasonable assumption for construction traffic.

The laboratory testing indicates a CBR values ranging from 8 to 20% for the in situ soils at this site. However, pavement subgrades will be composed of imported controlled fill, and based on our experience with controlled fill soils in this area, we recommend that a CBR of 10% be used for design. This equates to a Soil Support Value (SSV) of 3.8.

Pavement designs for each road are presented in Table 8-2, and calculations are presented in Appendix III. Overlays for the existing pavements on Fish Road, SC 27, and US 176 are presented in Table 8.3. As stated above, a staged construction approach will be used with the new roads. The base and will be placed, and a wearing surface will be placed to seal the base material and subgrade to help protect them from water infiltration during construction. Any necessary repairs will be made and the final surface course will be placed.

All materials and workmanship should be in accordance with the SCDOT’s *Standard Specifications for Highway Construction*, 2007 Edition.

Table 8-2. Pavement Designs

Road	Final Surface B (psy)	Constr. Surface B (psy)	Interm. B (psy)	MLBC (inch)	AABC (psy)
Centerline Road North of LWV	150	150	200	8	-
Centerline Road South of LWV	150	150	250	10	-
Lower Westvaco (LWV)	150	150	250	8	-
Fish	-	150	200	8	-
SC Highway 27	-	200	200	-	500
US Highway 176	-	200	200	8	-
Interior Plant Roads	150	150	225	8	-

Table 8-3. Overlay Designs

Road	Mill (inch)	Surface B (psy)	Interm. B (psy)
Fish	1.0	200	250
SC Highway 27	1.0	200	300
US Highway 176	1.0	200	-

A stable subgrade is very important to pavement performance. Immediately prior to paving, the subgrade should be proofrolled, and any unstable areas should be repaired. The base course should be compacted to at least 100% of the maximum dry density as determined by the modified Proctor compaction test (ASTM D 1557 or SC-T-140). In-place field density tests should be performed by a qualified Materials Technician, and the area should be methodically proofrolled under their evaluation to confirm that the base course has been uniformly compacted. The thickness should not be deficient in any area by more than ½ in. The asphalt pavement thickness should not be deficient by more than ¼ in. in any area.

The performance of asphalt pavements will be dependent upon a number of factors including subgrade conditions at the time of paving, drainage, and traffic. The geometric design should provide positive drainage for the pavement surface and subgrades.

Pavement design typically has relatively low factors of safety; therefore, it will be very important that the specifications are followed closely during pavement construction. Our analysis was based on a 10/20-year design life; however, some isolated areas could require repair in a shorter period of time.

❖ Limitations of Report

This report has been prepared in accordance with generally accepted geotechnical engineering practice for specific application to this project. The conclusions and recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, express or implied, is made.



The analyses and recommendations submitted in this report are based, in part, upon data obtained from our subsurface exploration. The nature and extent of subsurface variations will not become evident until construction. If variations appear evident, then we should be given the opportunity to re-evaluate the recommendations of this report. In the event that any changes in the nature, design, or location of the proposed roadway are planned, the conclusions and recommendations contained in this report will not be considered valid unless the changes are reviewed and conclusions modified or verified in writing.

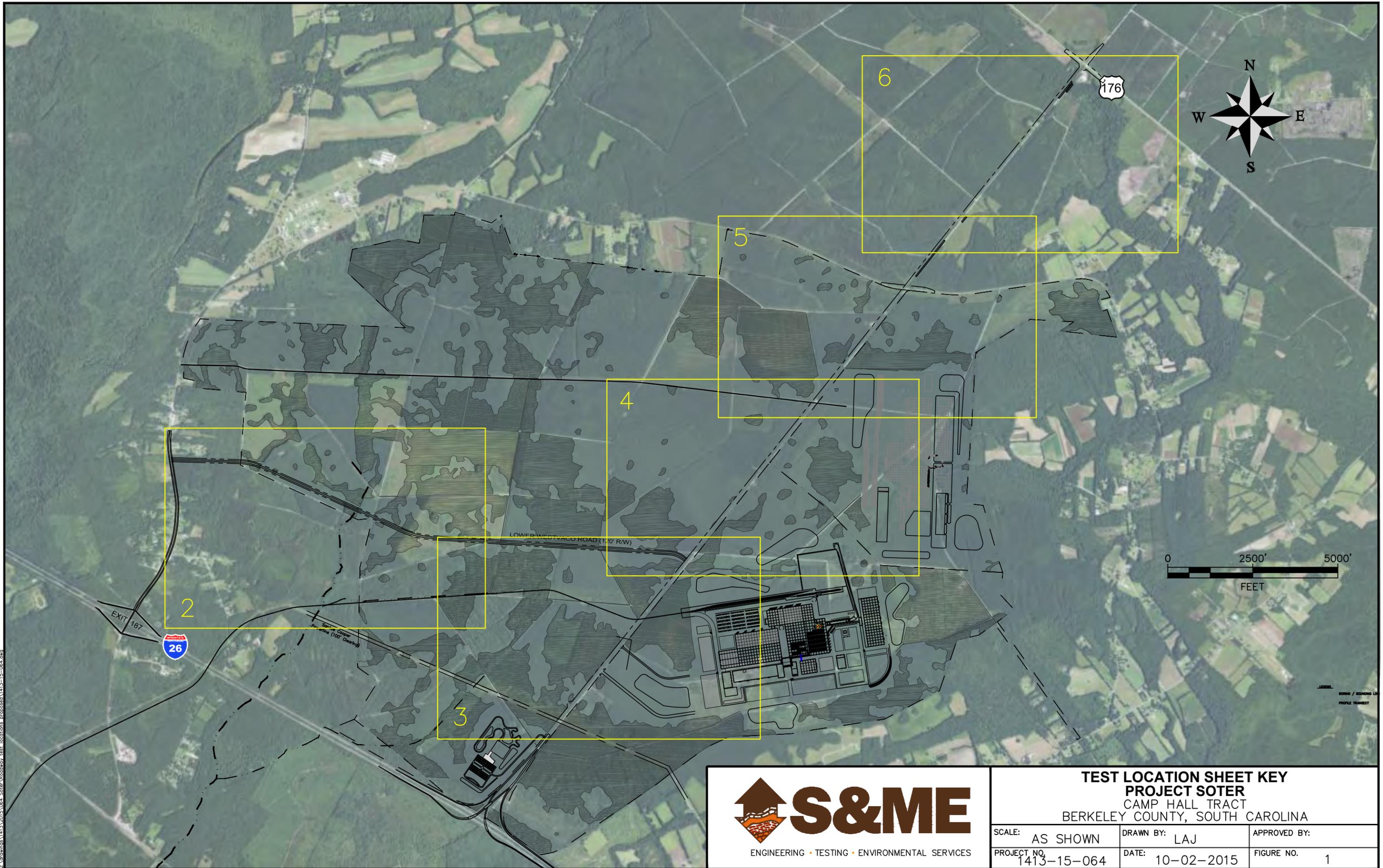
We recommend that S&ME be retained to review the final design plans and specifications to confirm that earthwork and foundation recommendations are properly interpreted and implemented.

Appendix I

Test Location Plans

CPT Sounding Logs

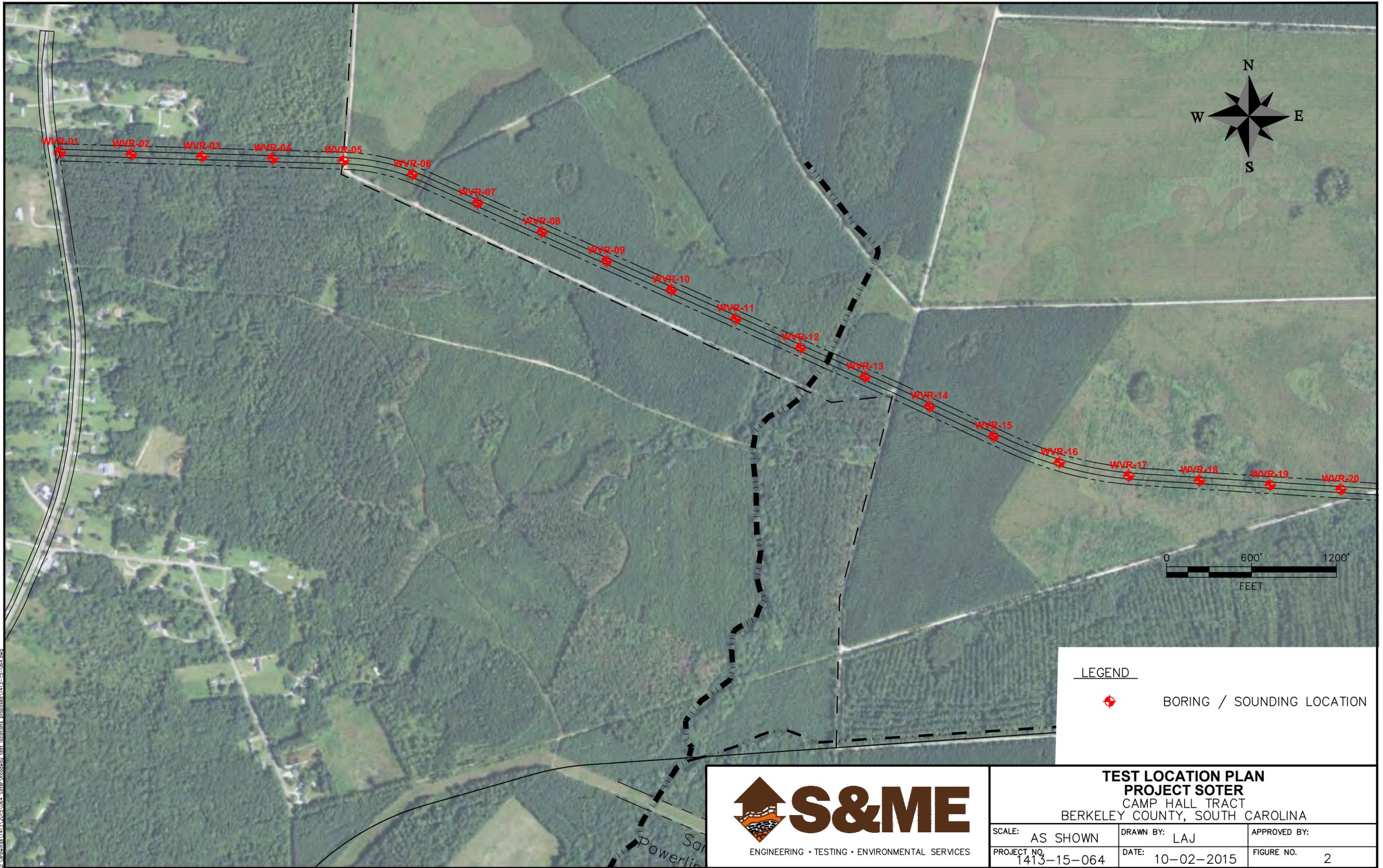
Field Testing Procedures



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TEST LOCATION SHEET KEY		
PROJECT SOTER		
CAMP HALL TRACT		
BERKELEY COUNTY, SOUTH CAROLINA		
SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY:
PROJECT NO. 1413-15-064	DATE: 10-02-2015	FIGURE NO. 1



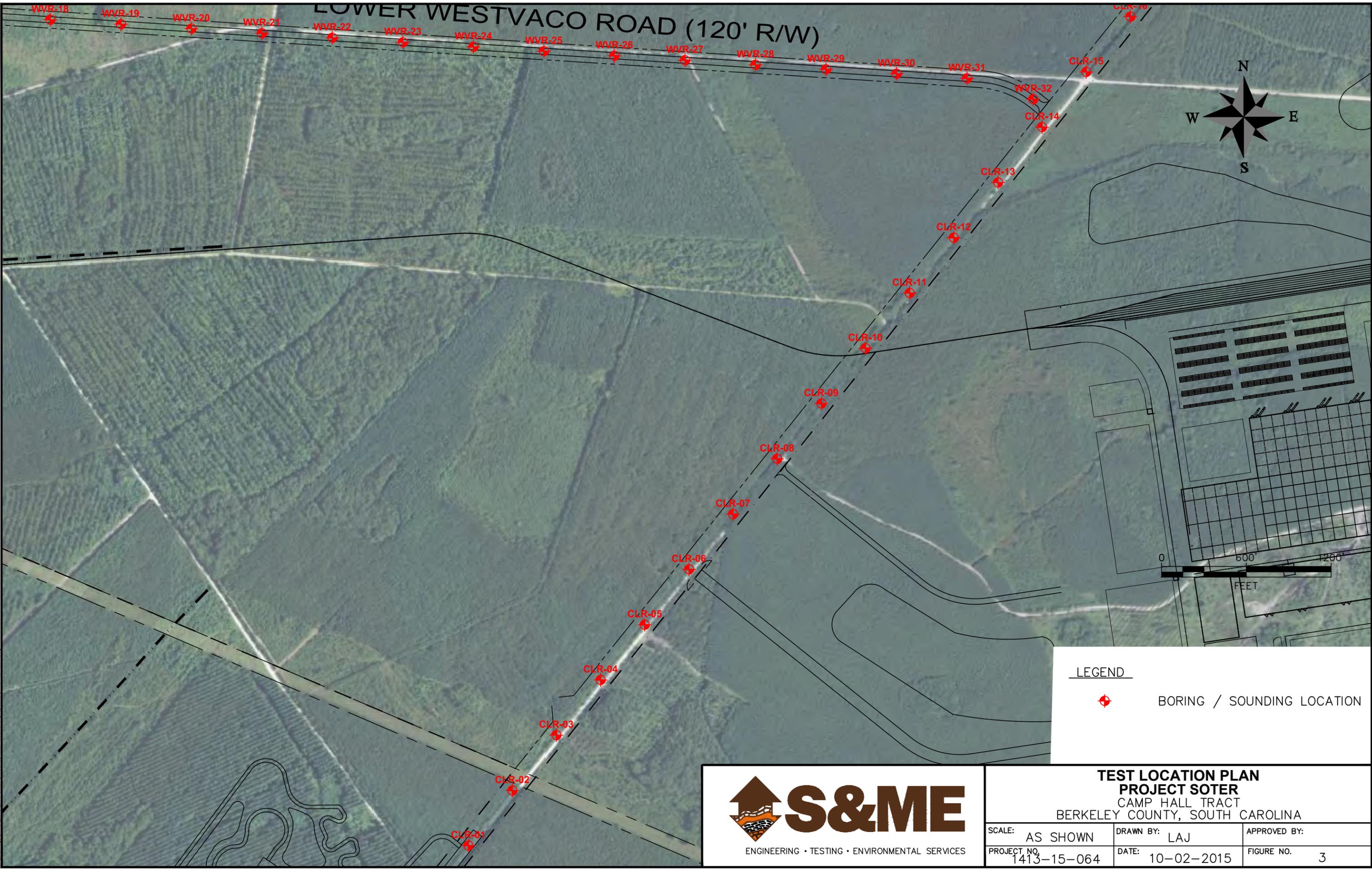
LEGEND

 BORING / SOUNDING LOCATION



TEST LOCATION PLAN		
PROJECT SOTER		
CAMP HALL TRACT		
BERKELEY COUNTY, SOUTH CAROLINA		
SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY:
PROJECT NO. 1413-15-064	DATE: 10-02-2015	FIGURE NO. 2

G:\Projects\1413\15\064_Soter_Sounding_Test_Locations.dwg



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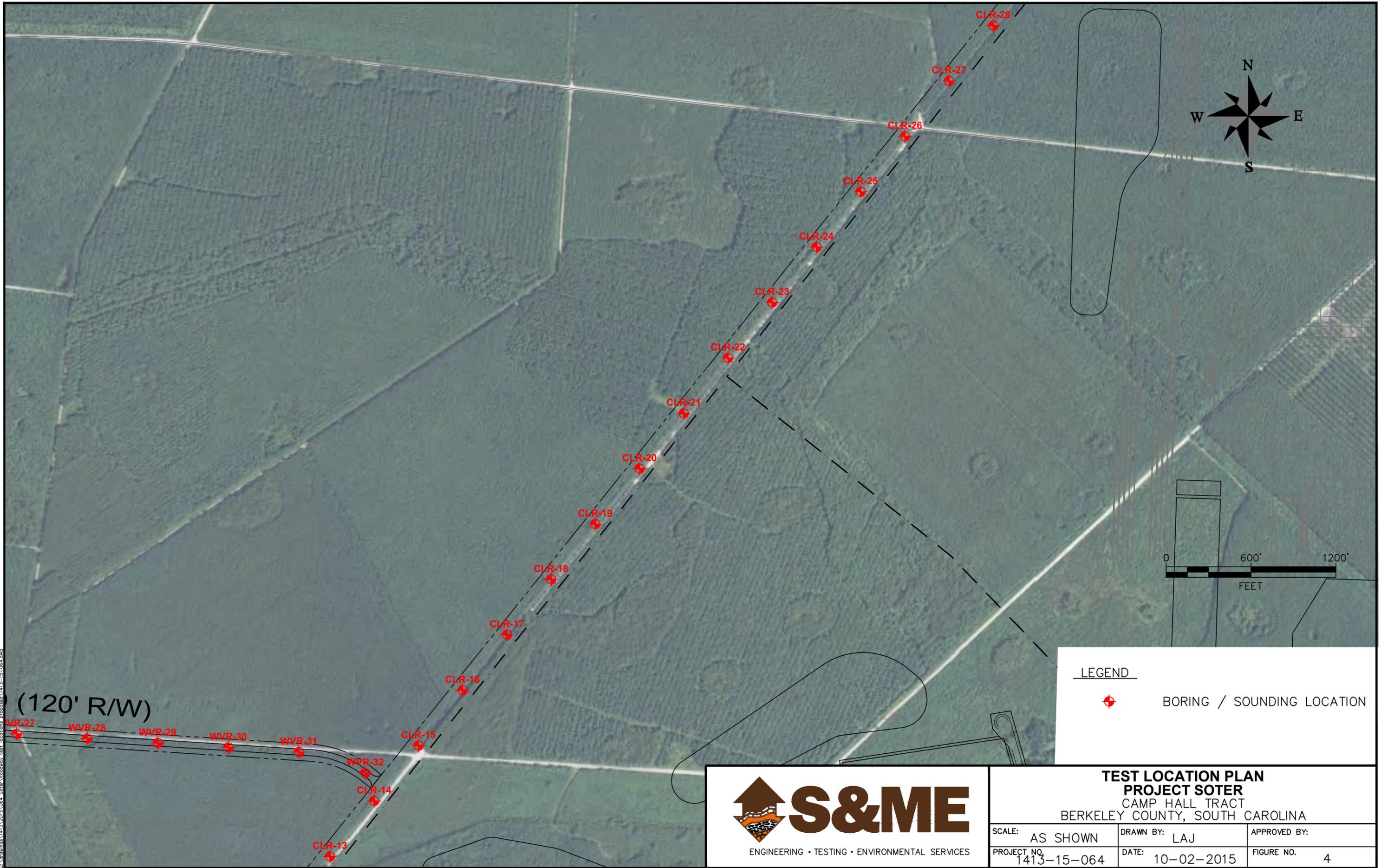
LEGEND

 BORING / SOUNDING LOCATION



ENGINEERING • TESTING • ENVIRONMENTAL SERVICES

TEST LOCATION PLAN PROJECT SOTER CAMP HALL TRACT BERKELEY COUNTY, SOUTH CAROLINA		
SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY:
PROJECT NO. 1413-15-064	DATE: 10-02-2015	FIGURE NO. 3



(120' R/W)

LEGEND

◆ BORING / SOUNDING LOCATION



TEST LOCATION PLAN
PROJECT SOTER
 CAMP HALL TRACT
 BERKELEY COUNTY, SOUTH CAROLINA

SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY:
PROJECT NO. 1413-15-064	DATE: 10-02-2015	FIGURE NO. 4

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G:\Vermilion\1413\15\064_Soter_Sounding_Test_Locations_proposed\1413-15-064.dwg

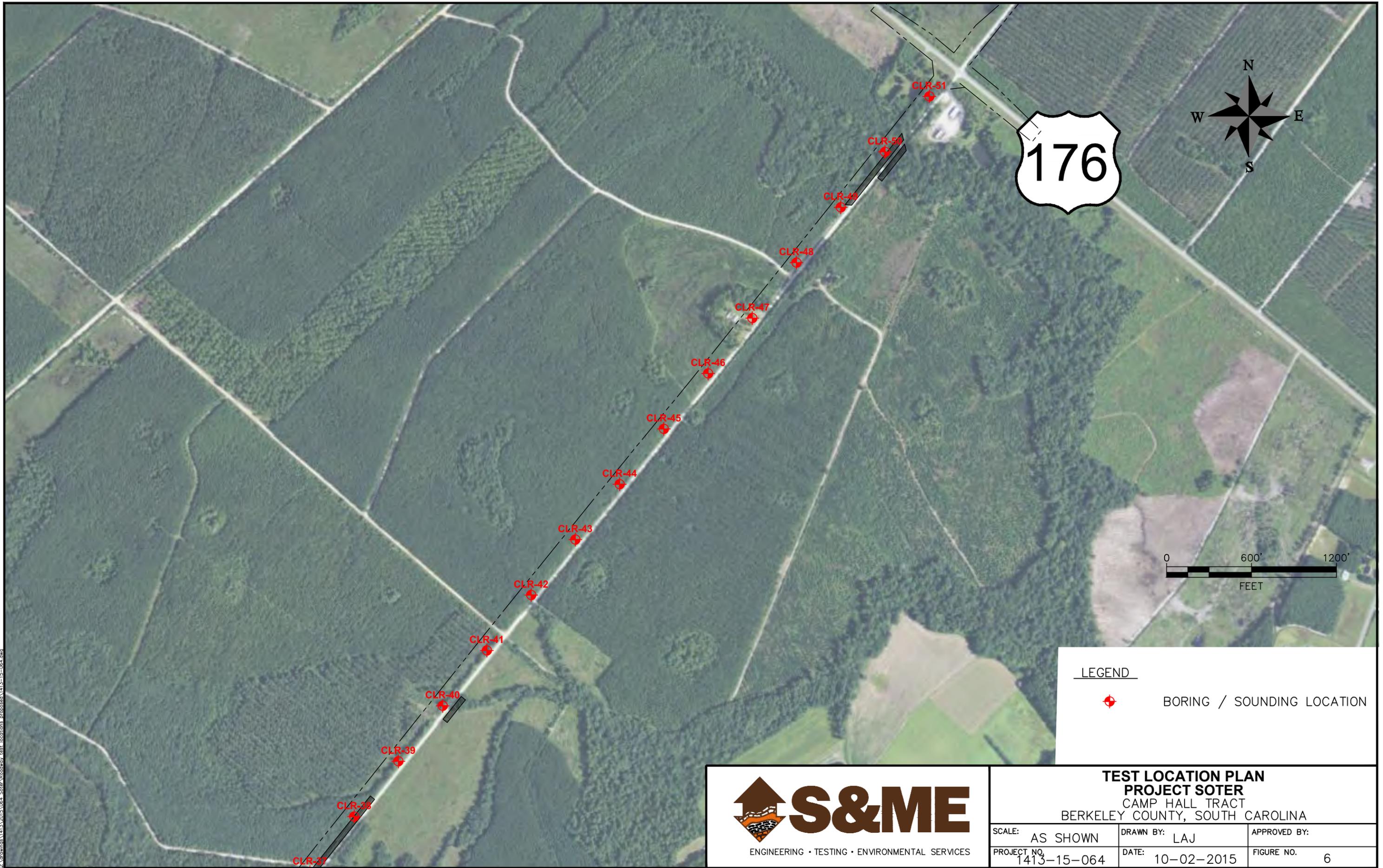
LEGEND

 BORING / SOUNDING LOCATION



S&ME
ENGINEERING • TESTING • ENVIRONMENTAL SERVICES

TEST LOCATION PLAN		
PROJECT SOTER		
CAMP HALL TRACT		
BERKELEY COUNTY, SOUTH CAROLINA		
SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY:
PROJECT NO. 1413-15-064	DATE: 10-02-2015	FIGURE NO. 5



G:\Vermilion\1413\15\064_Soter\Borehole Test Locations\proposals\1413-15-064.dwg

LEGEND

 BORING / SOUNDING LOCATION



S&ME
 ENGINEERING • TESTING • ENVIRONMENTAL SERVICES

TEST LOCATION PLAN PROJECT SOTER CAMP HALL TRACT BERKELEY COUNTY, SOUTH CAROLINA		
SCALE: AS SHOWN	DRAWN BY: LAJ	APPROVED BY:
PROJECT NO. 1413-15-064	DATE: 10-02-2015	FIGURE NO. 6



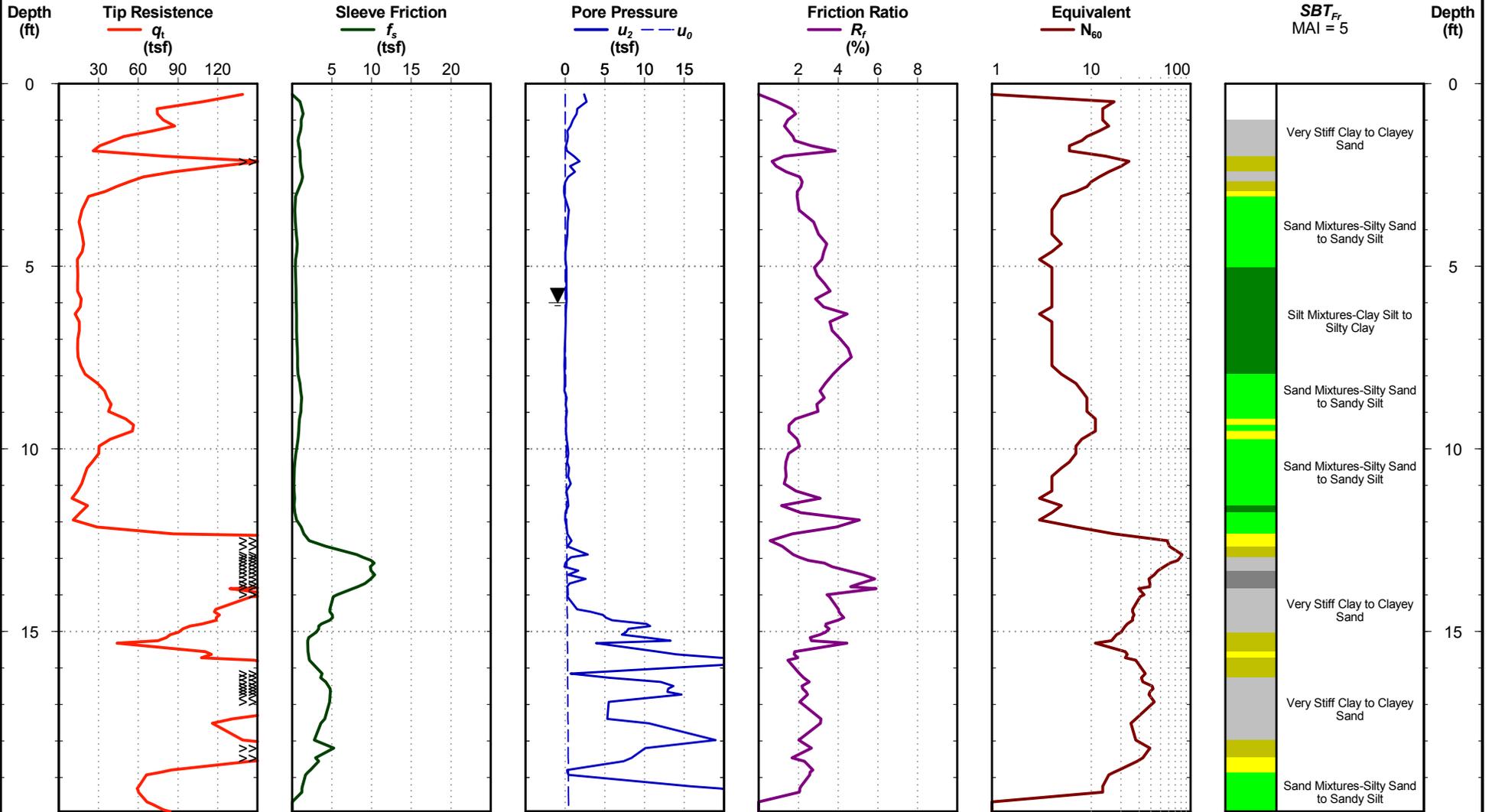
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-01

Date: May. 27, 2015
Estimated Water Depth: 6 ft
Rig/Operator: Damon | Lajay

Total Depth: 19.9 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-01



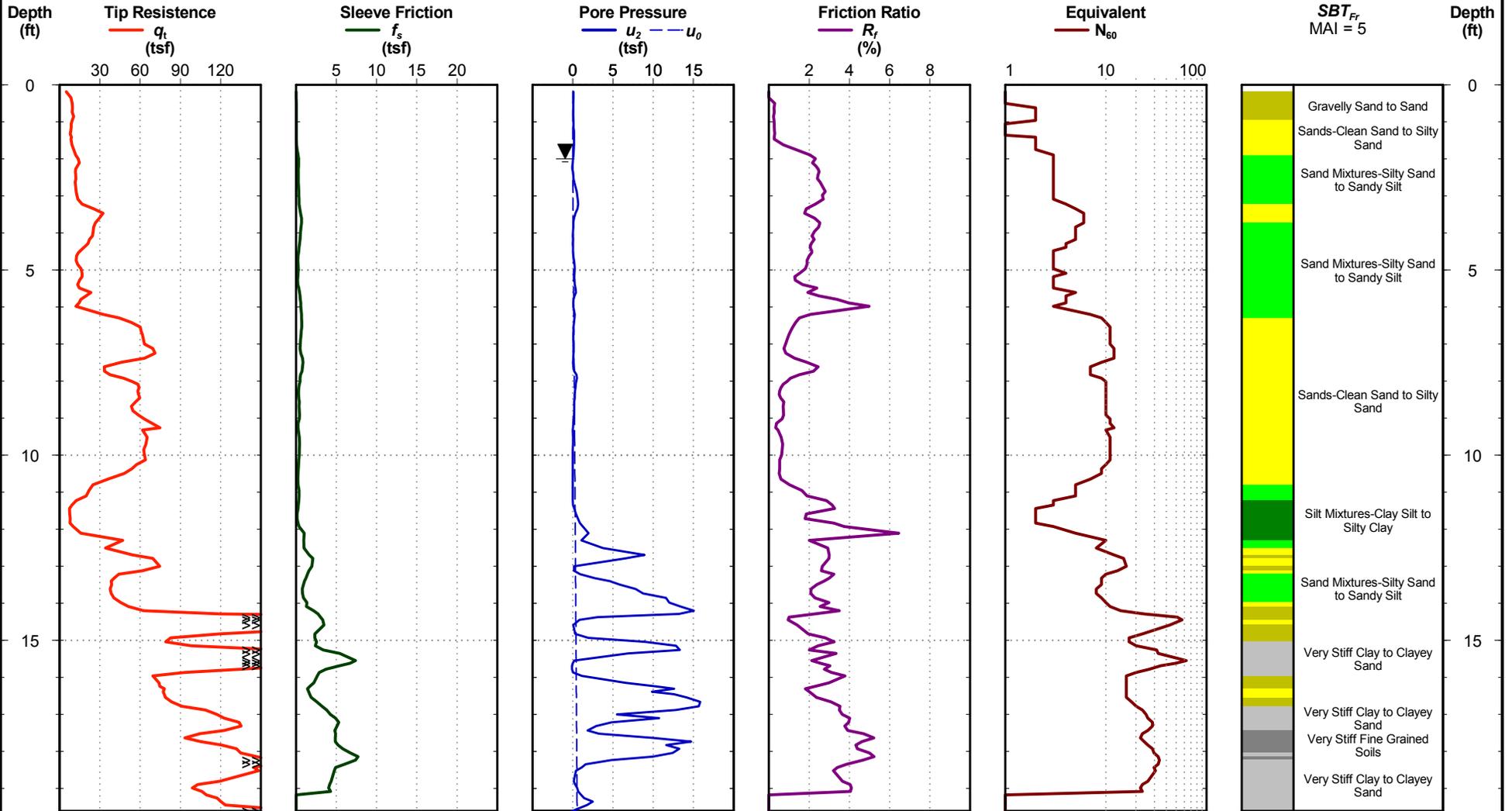
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-02

Date: Jul. 7, 2015
Estimated Water Depth: 2 ft
Rig/Operator: Andy | Mike

Total Depth: 19.6 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-02



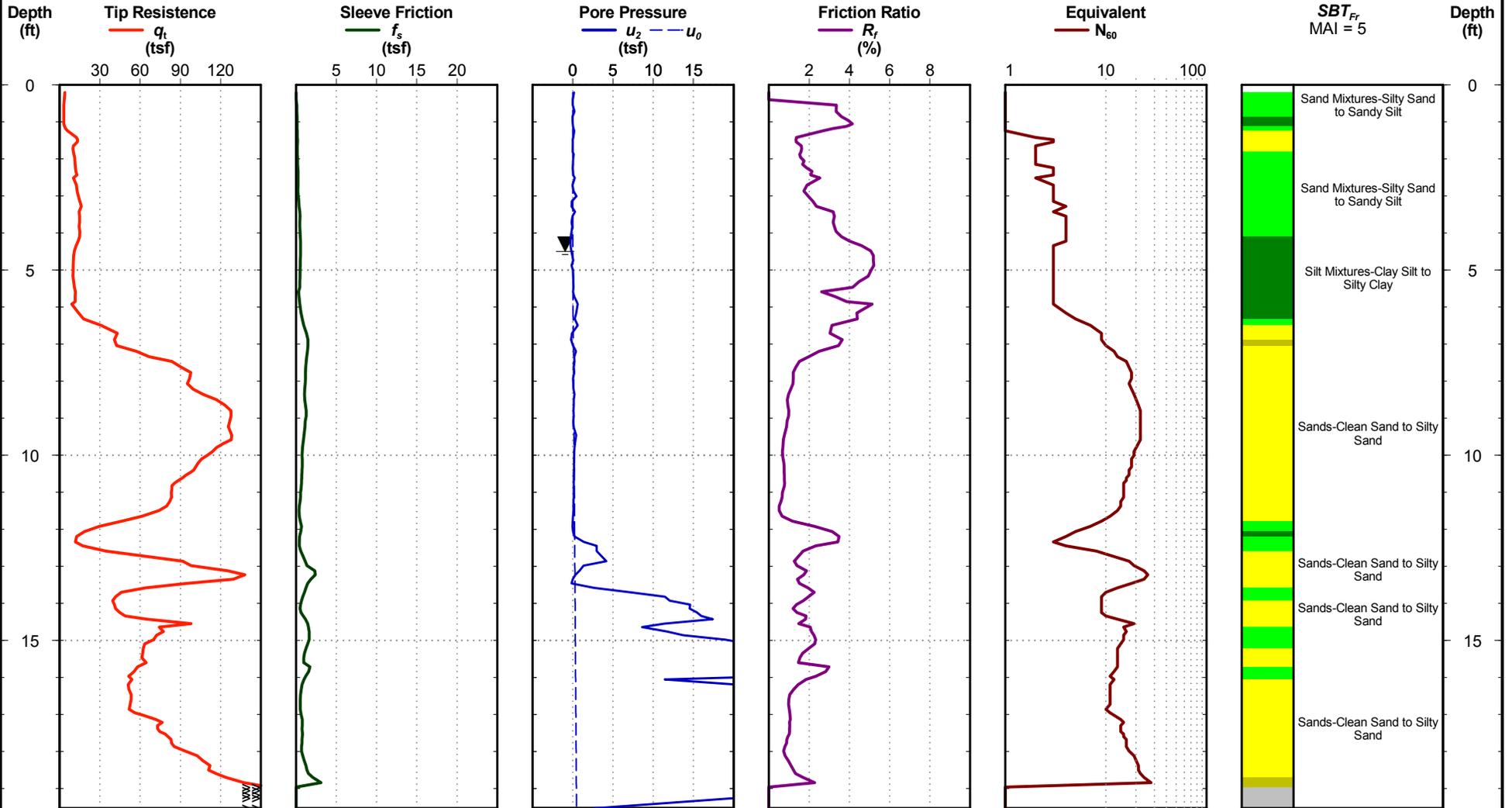
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-03

Date: Jul. 7, 2015
Estimated Water Depth: 4.5 ft
Rig/Operator: Andy | Mike

Total Depth: 19.5 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-03



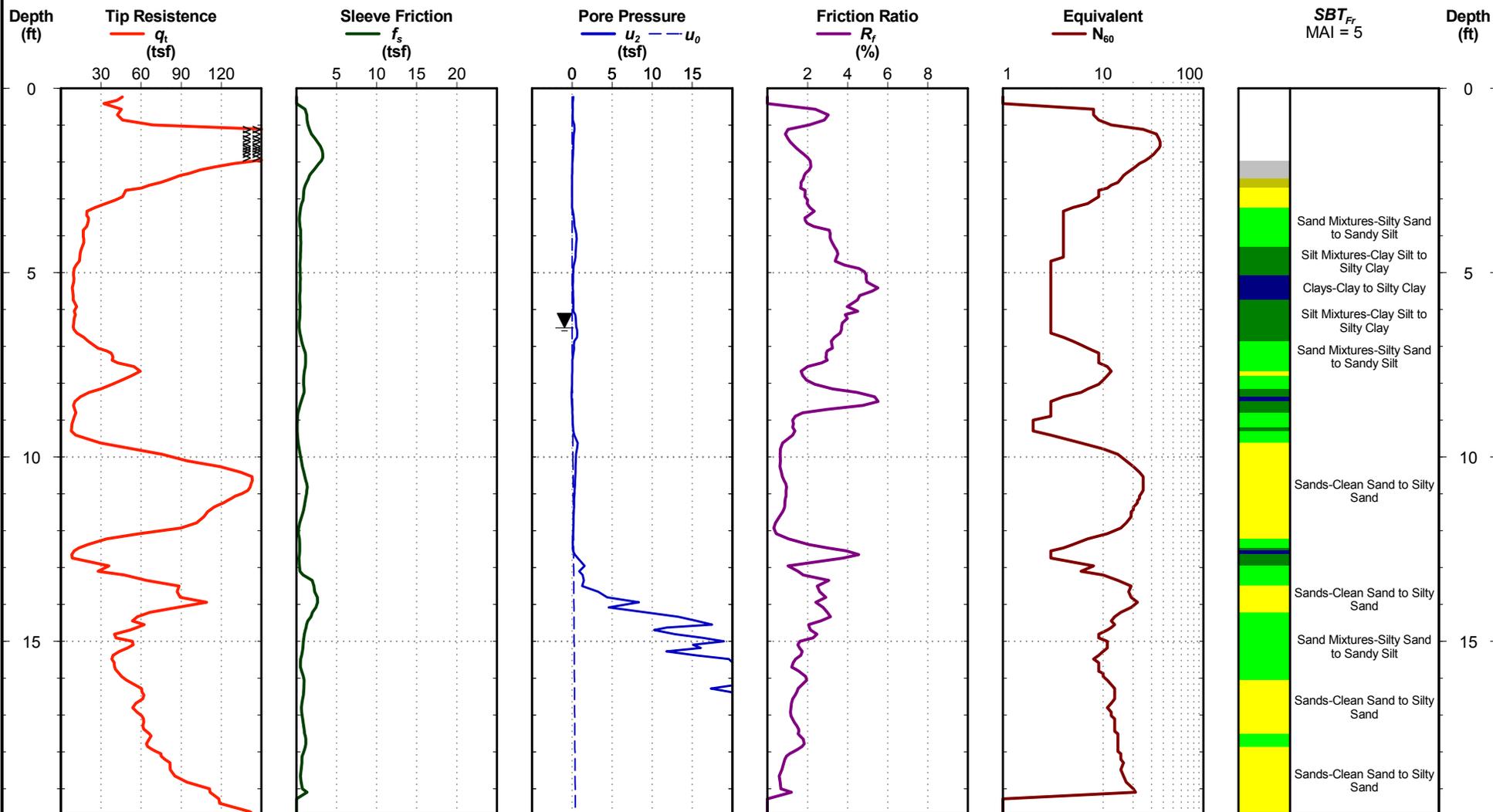
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-04

Date: Jul. 7, 2015
Estimated Water Depth: 6.5 ft
Rig/Operator: Andy | Mike

Total Depth: 19.7 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-04



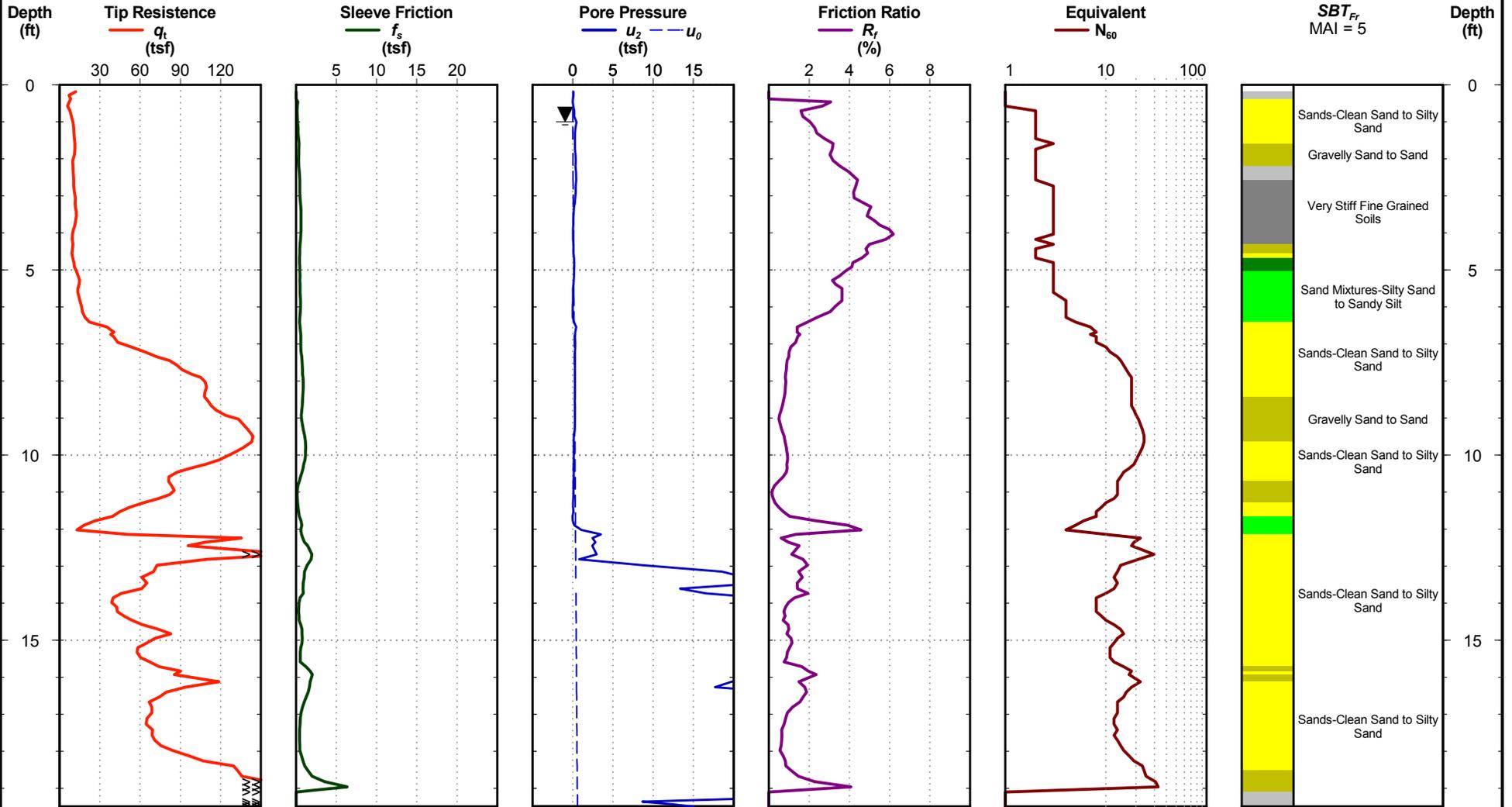
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-05

Date: Jul. 7, 2015
Estimated Water Depth: 1 ft
Rig/Operator: Andy | Mike

Total Depth: 19.5 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-05



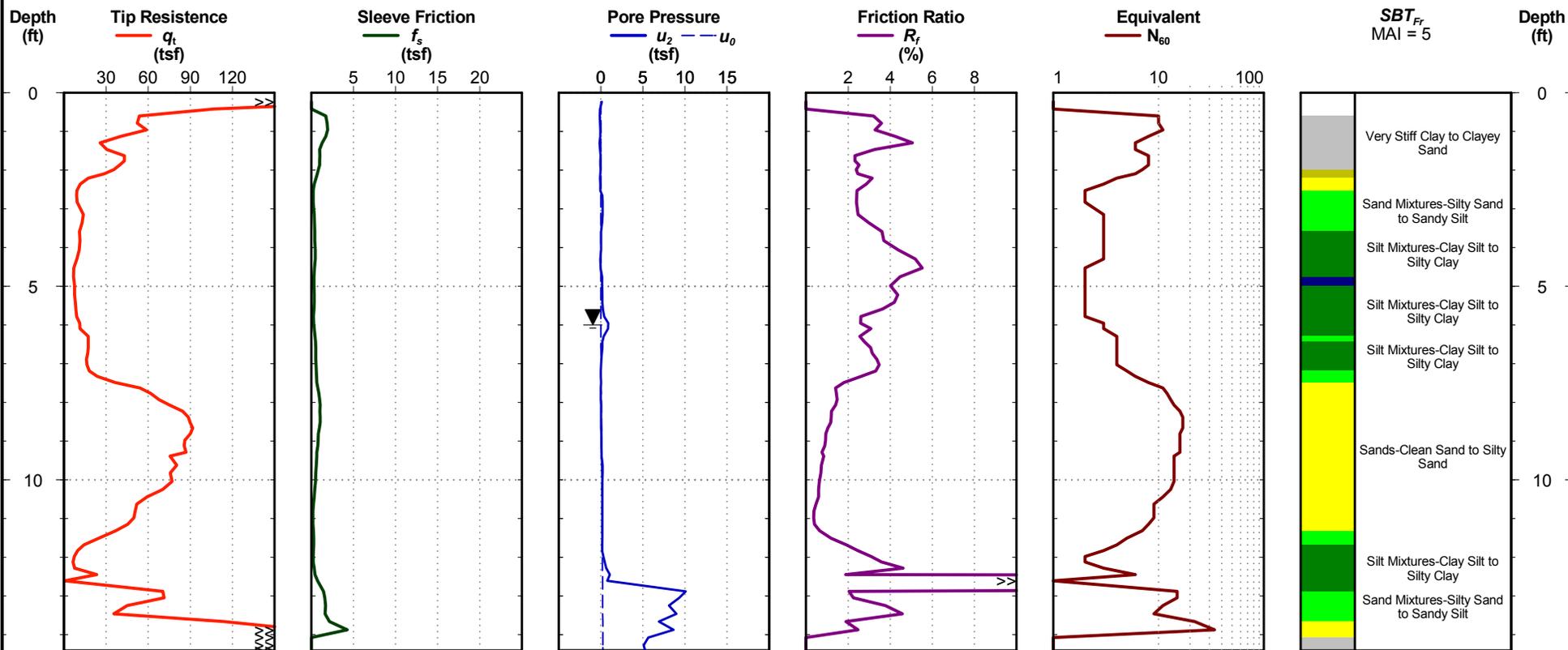
Volvo
 Berkeley County, South Carolina
 S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-06

Date: May. 27, 2015
 Estimated Water Depth: 6 ft
 Rig/Operator: Damon | Lajay

Total Depth: 14.4 ft
 Termination Criteria: Maximum Reaction Force
 Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064. ROADWAY CPT.GPJ. S&ME.GDT. 8/13/15

CLR-06



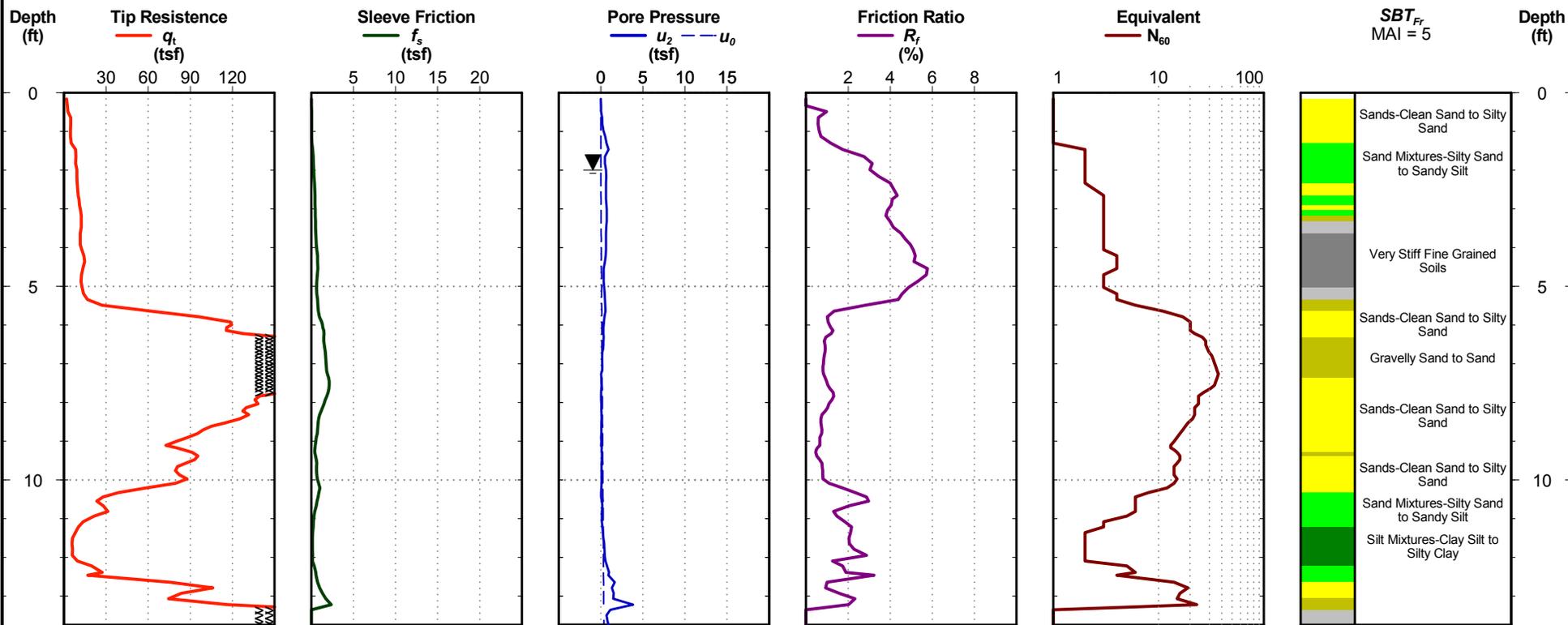
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-07

Date: Jul. 7, 2015
Estimated Water Depth: 2 ft
Rig/Operator: Andy | Mike

Total Depth: 13.7 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-07



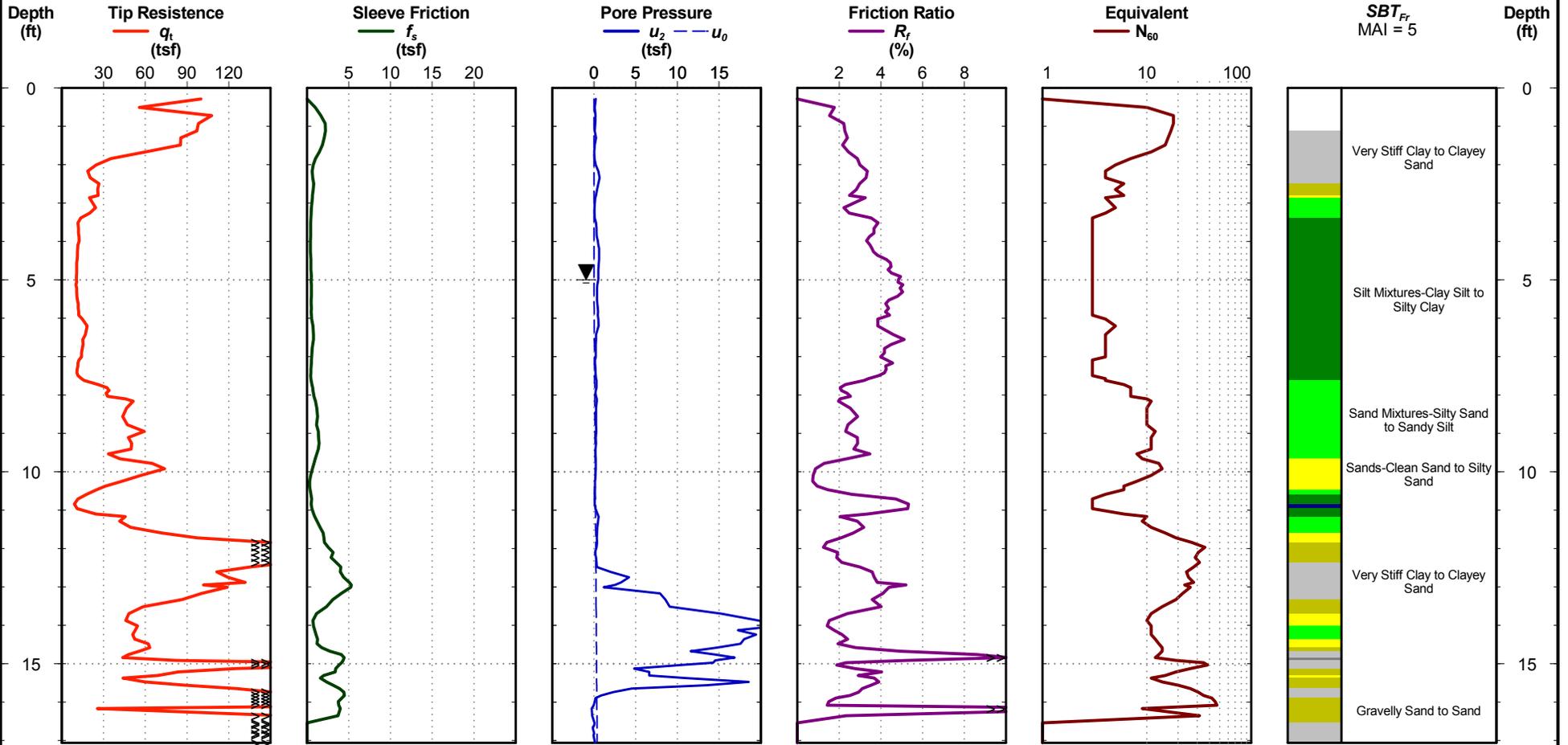
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-08

Date: Jul. 7, 2015
Estimated Water Depth: 5 ft
Rig/Operator: Andy | Mike

Total Depth: 17.1 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-08



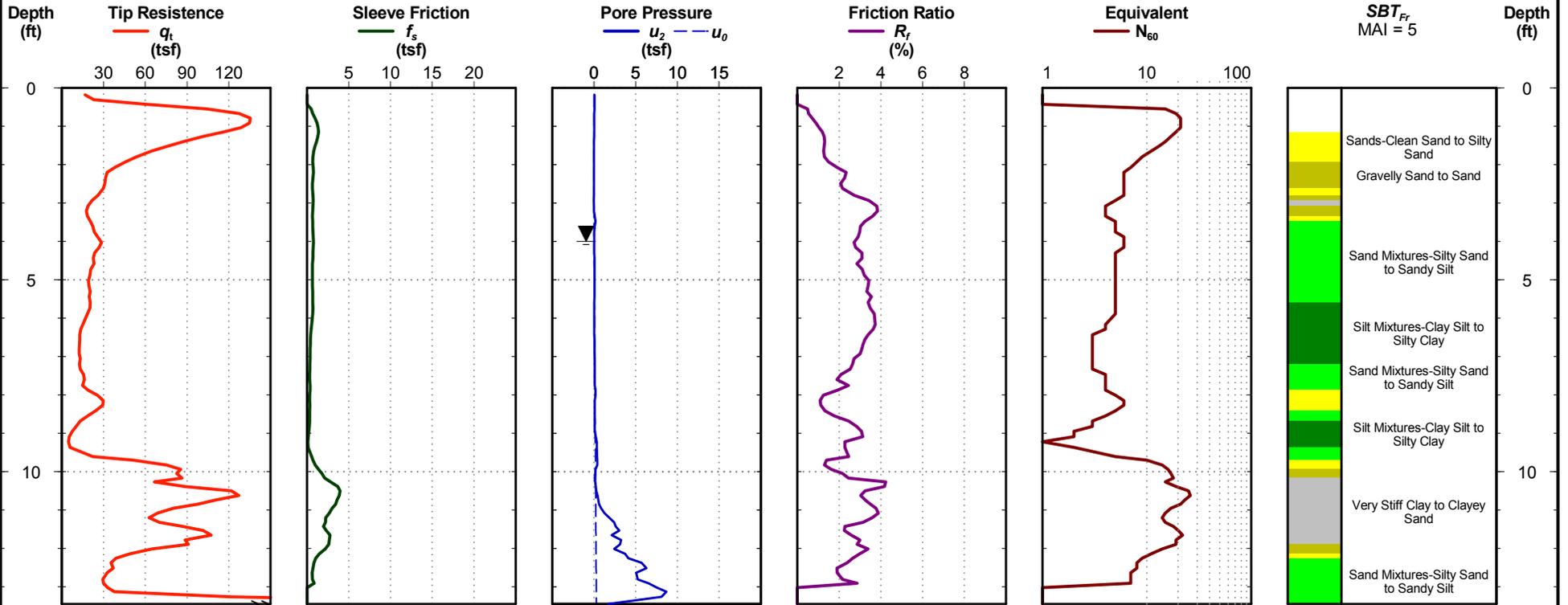
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-09

Date: Jul. 7, 2015
Estimated Water Depth: 4 ft
Rig/Operator: Andy | Mike

Total Depth: 13.5 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064. ROADWAY CPT.GPJ. S&ME.GDT. 8/13/15

CLR-09



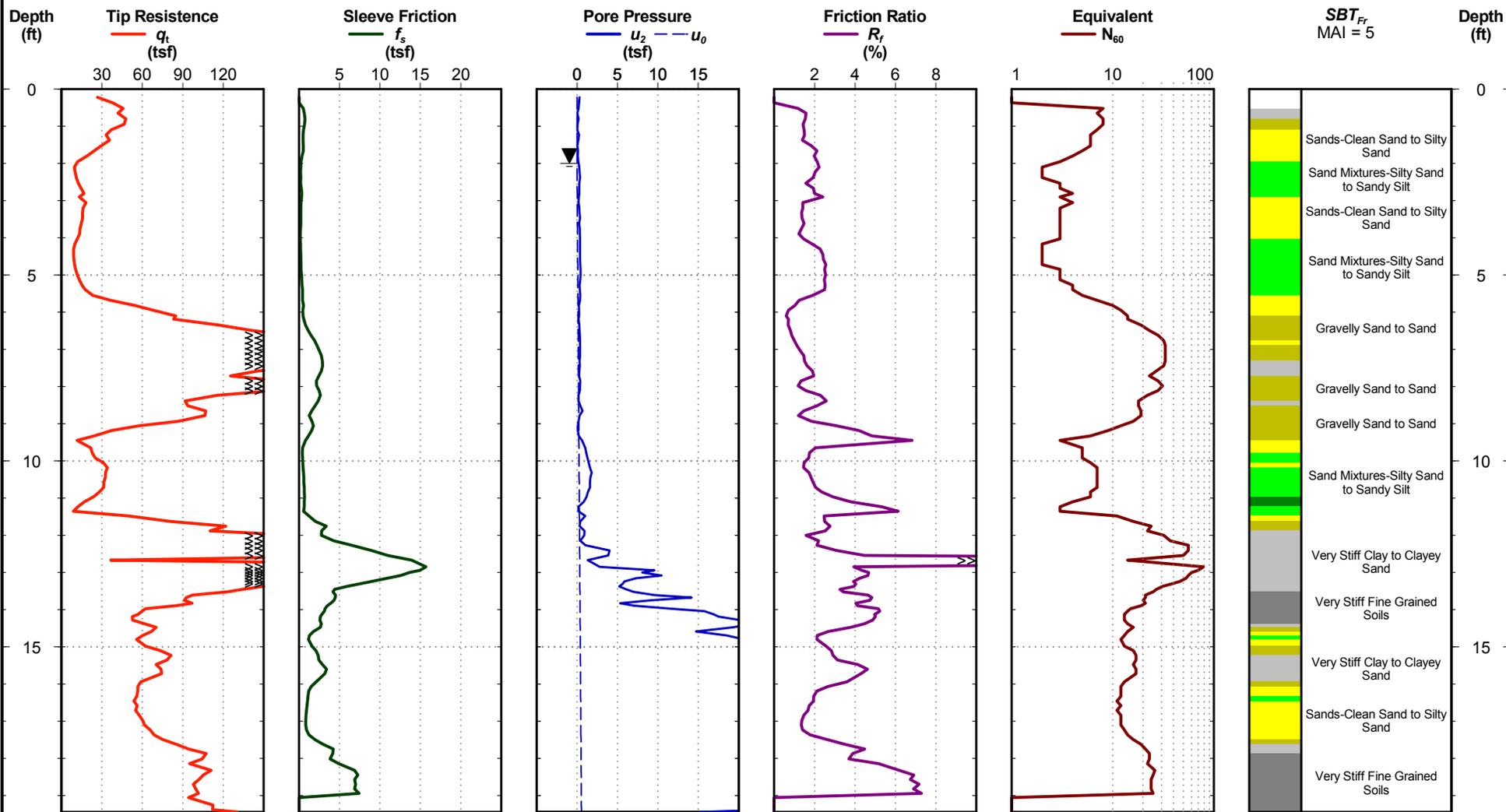
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-10

Date: May. 28, 2015
Estimated Water Depth: 2 ft
Rig/Operator: Andy | Damon

Total Depth: 19.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-10



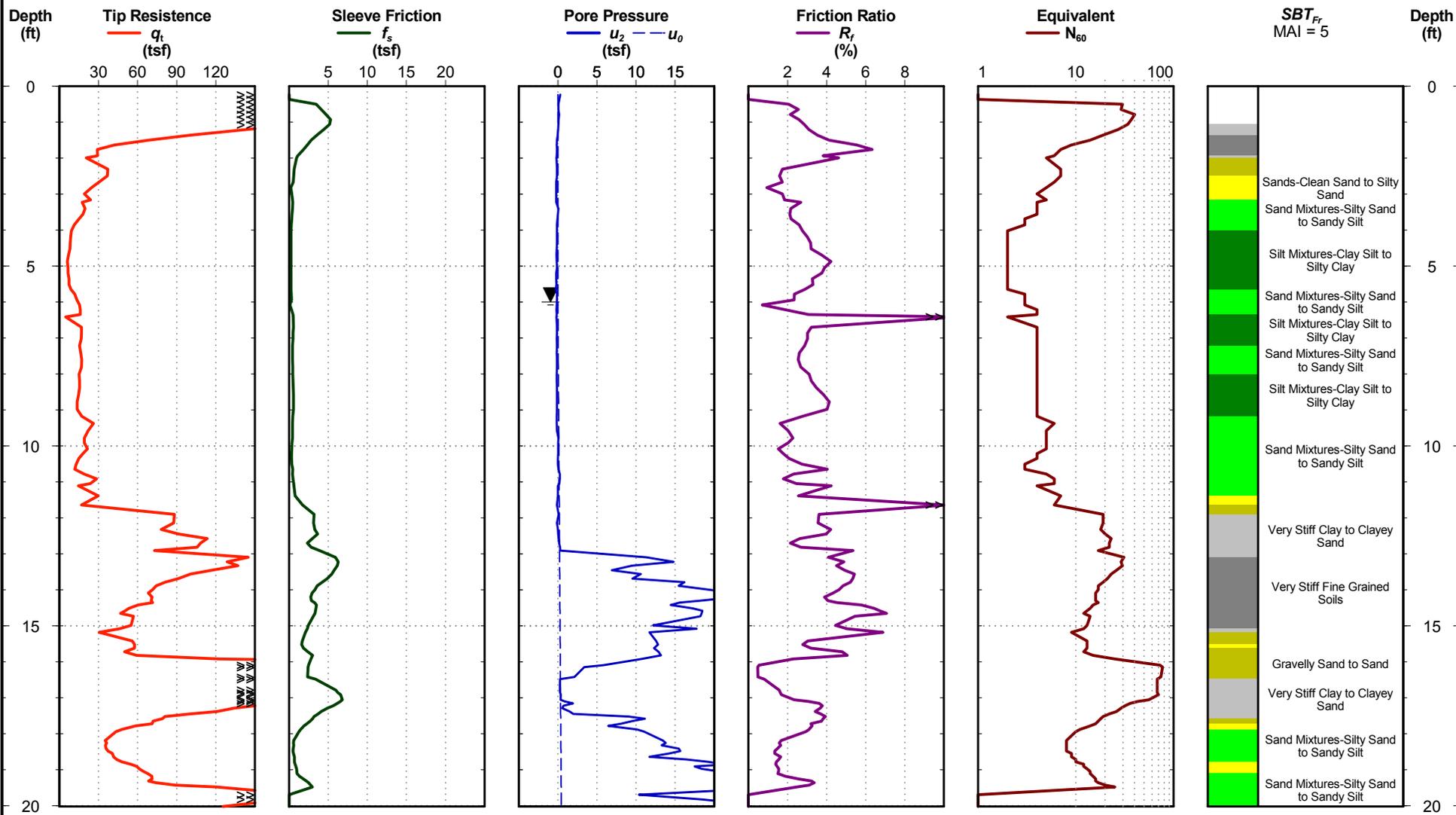
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-11

Date: May. 27, 2015
Estimated Water Depth: 6 ft
Rig/Operator: Damon | Lajay

Total Depth: 20.0 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-11



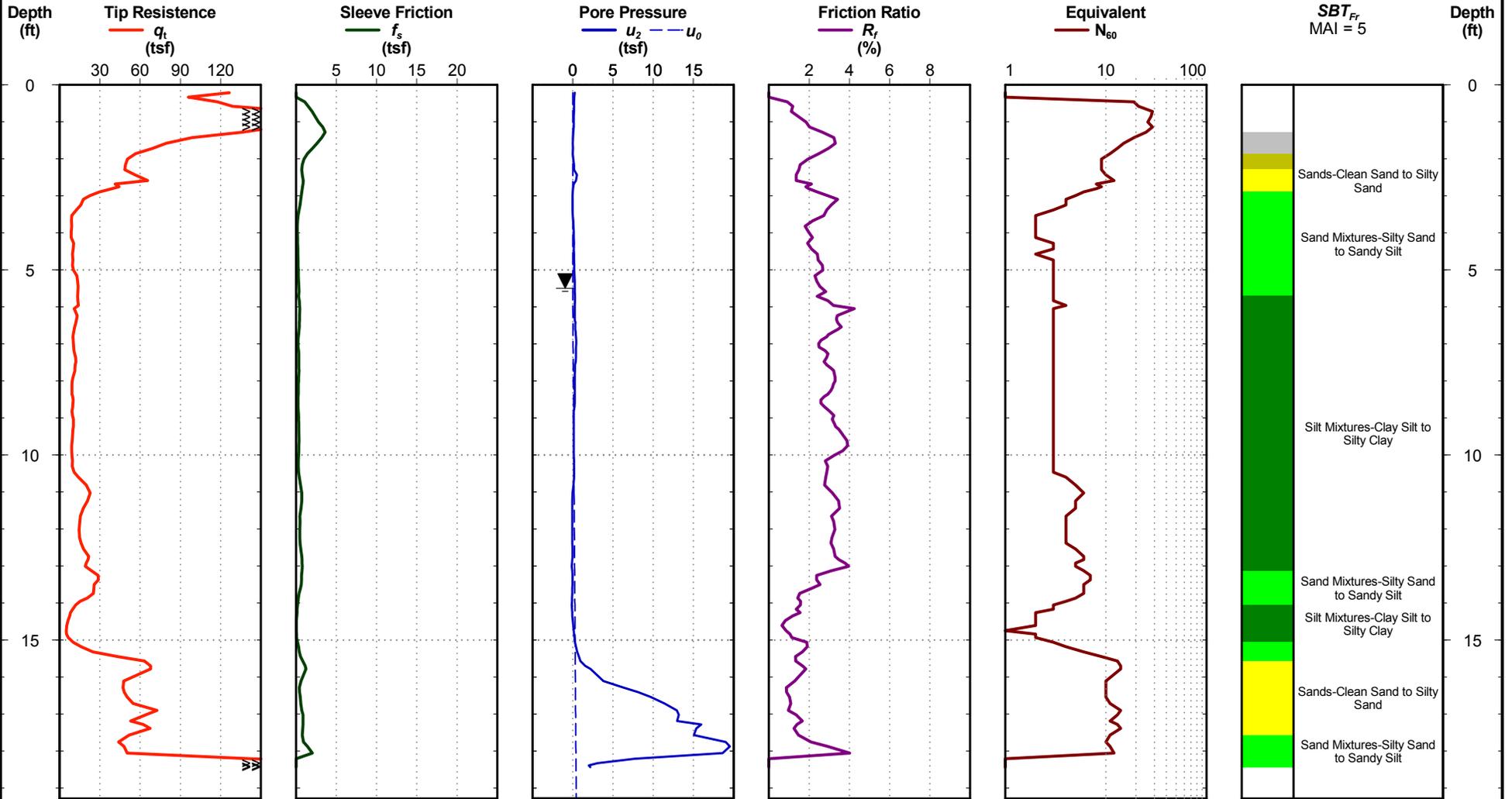
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-12

Date: Jul. 7, 2015
Estimated Water Depth: 5.5 ft
Rig/Operator: Andy | Mike

Total Depth: 19.3 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-12



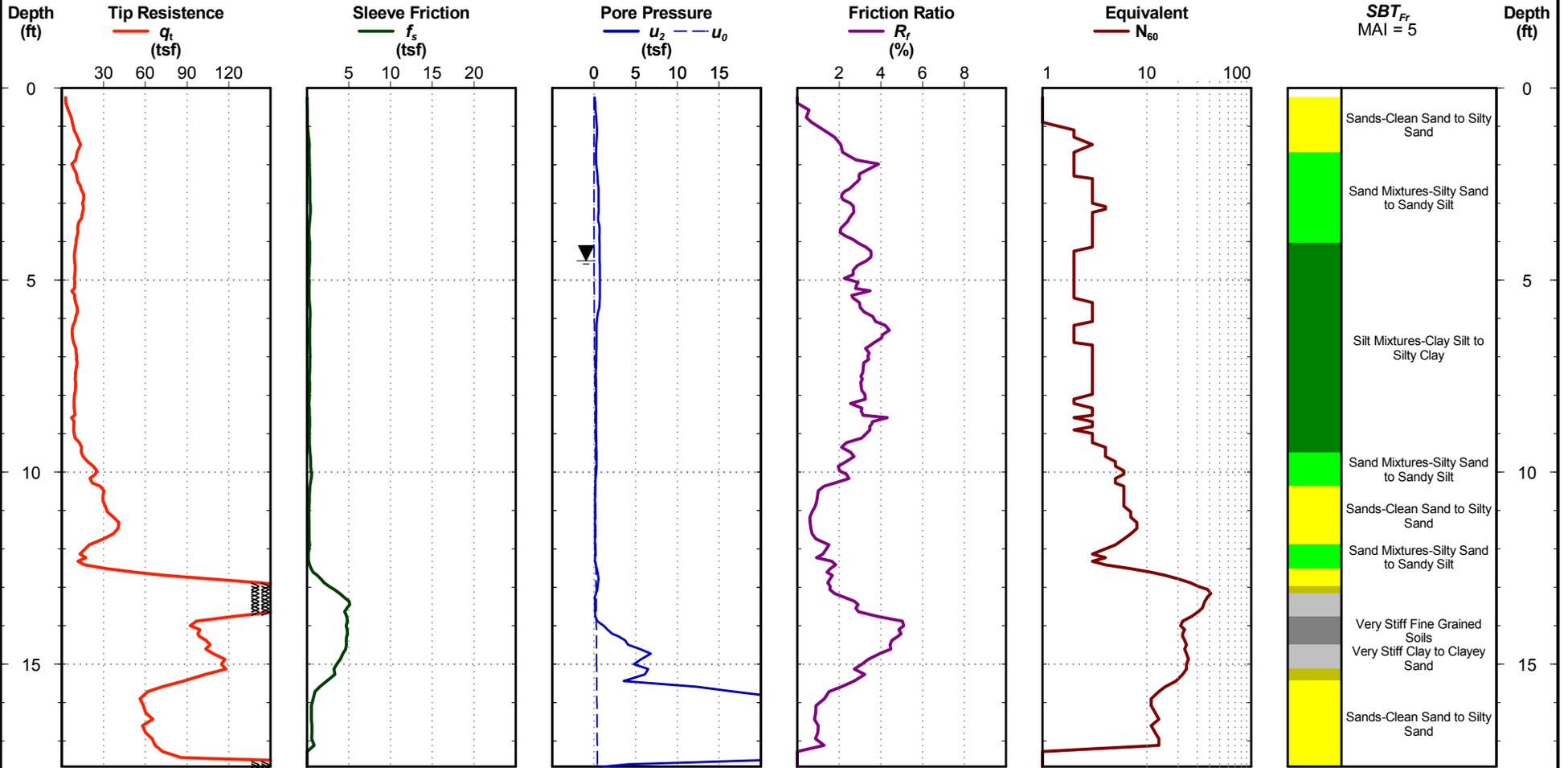
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-13

Date: Jul. 7, 2015
Estimated Water Depth: 4.5 ft
Rig/Operator: Andy | Mike

Total Depth: 17.7 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT. 8/13/15

CLR-13



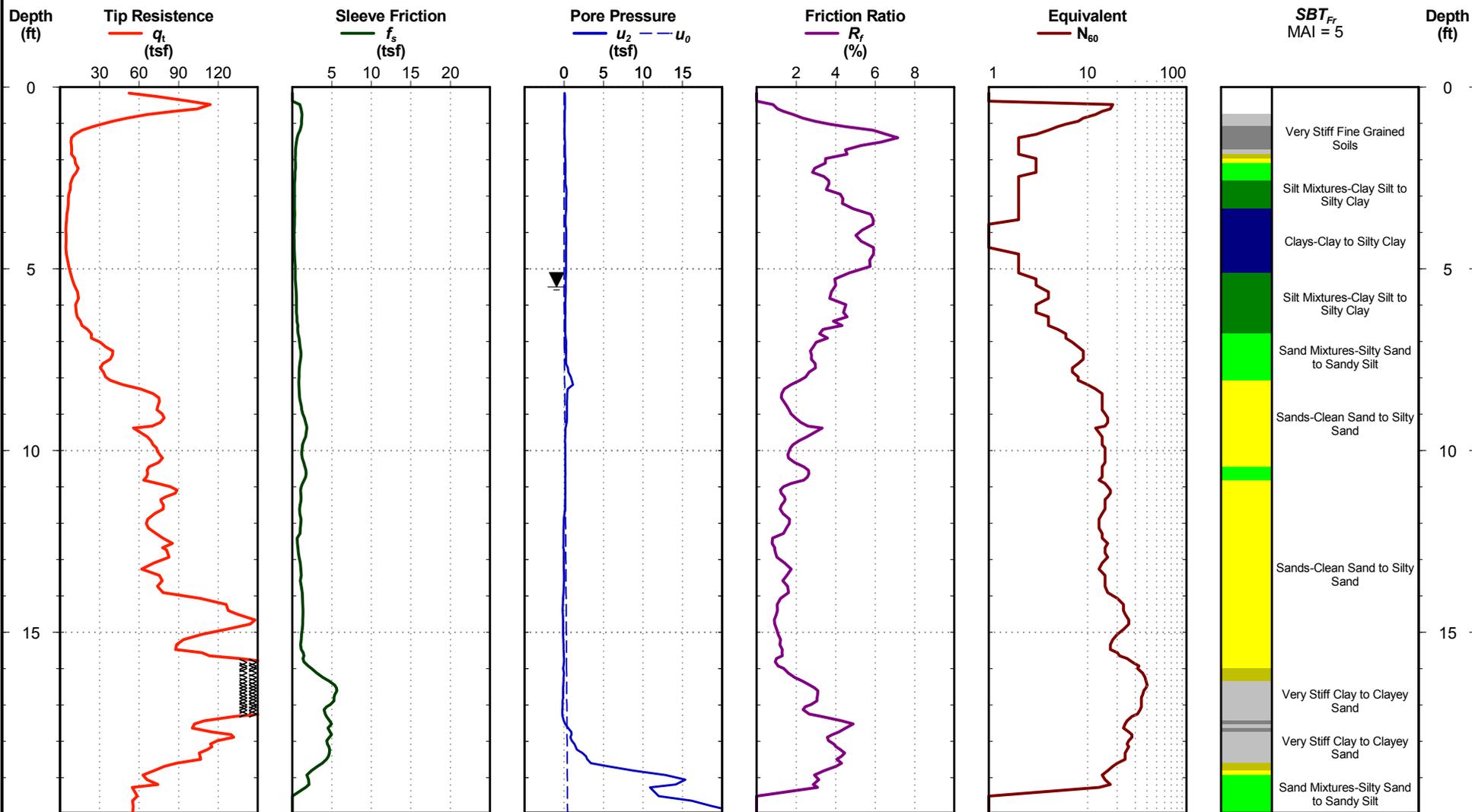
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-14

Date: Jul. 7, 2015
Estimated Water Depth: 5.5 ft
Rig/Operator: Andy | Mike

Total Depth: 20.0 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-14



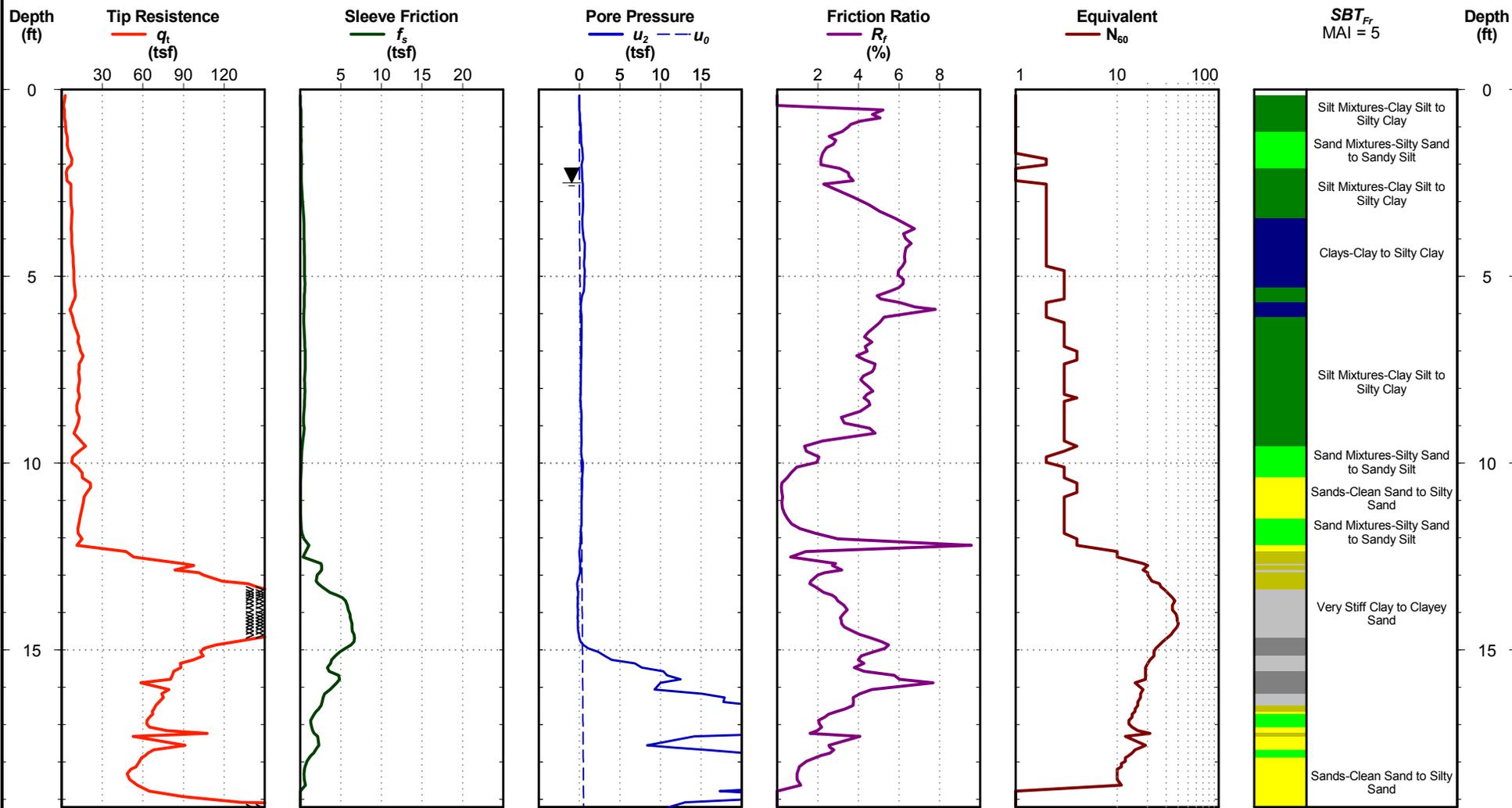
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-15

Date: Jul. 7, 2015
Estimated Water Depth: 2.5 ft
Rig/Operator: Andy | Mike

Total Depth: 19.2 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-15



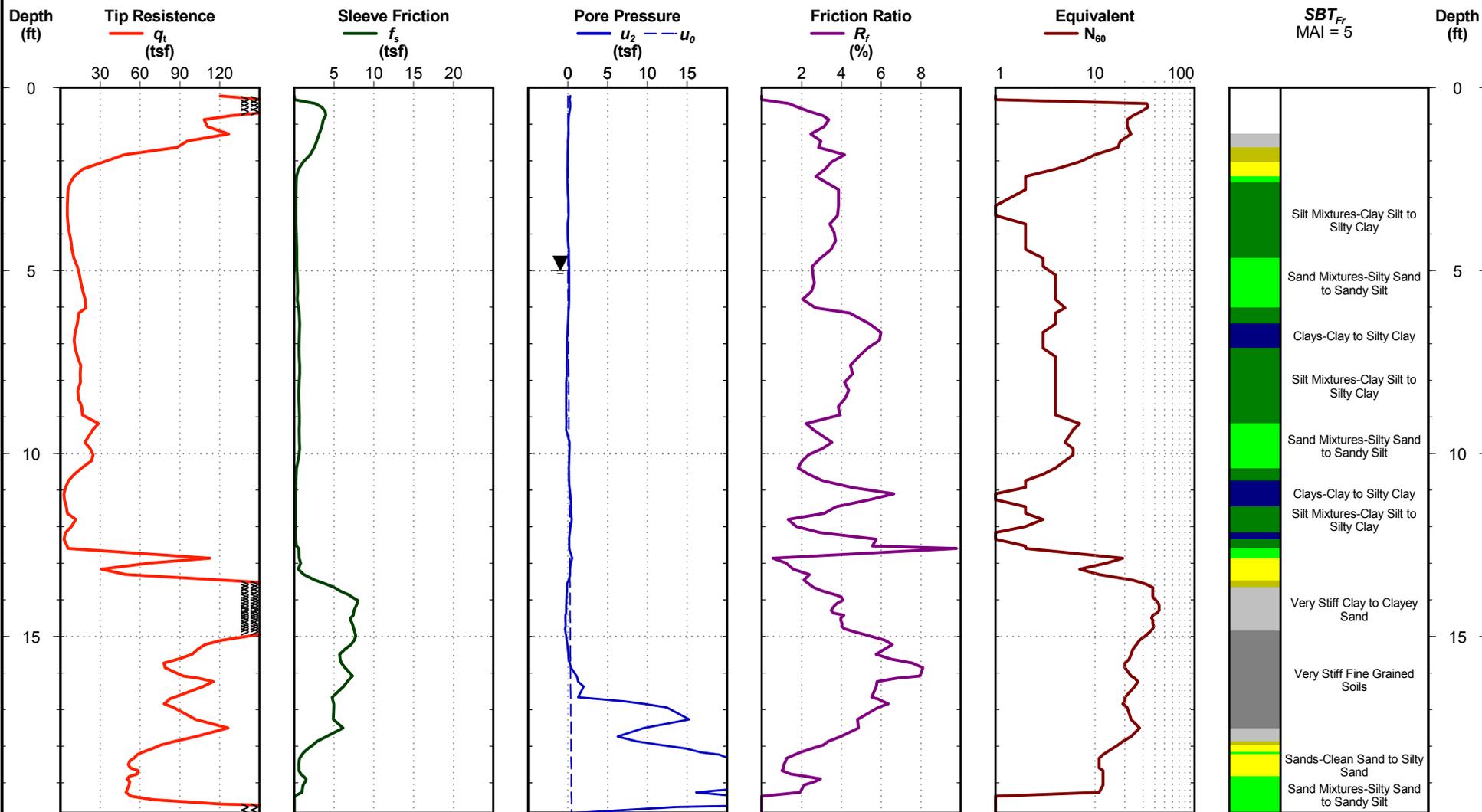
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-16

Date: May. 27, 2015
Estimated Water Depth: 5 ft
Rig/Operator: Damon | Lajay

Total Depth: 19.8 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-16



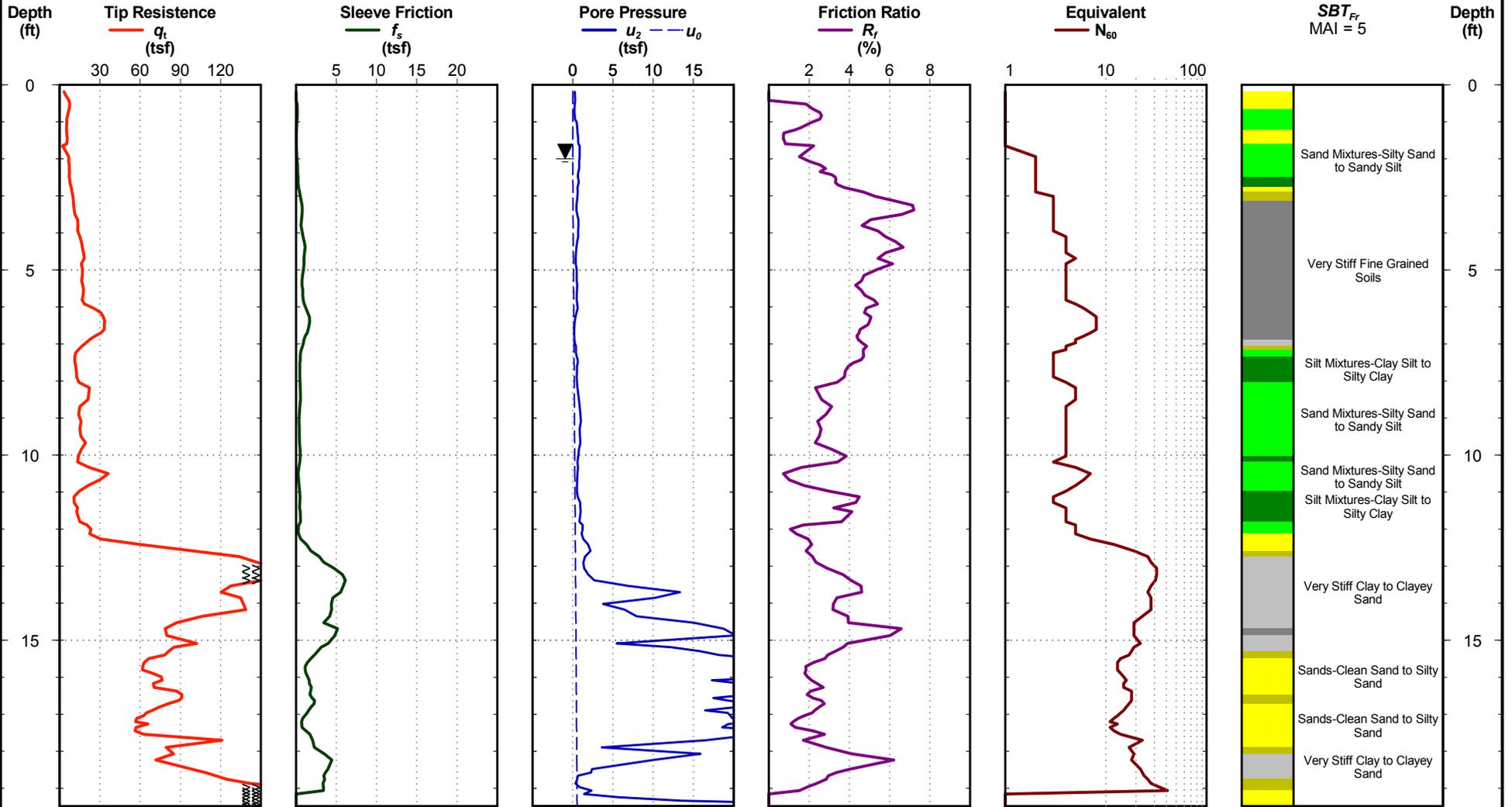
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-17

Date: Jul. 7, 2015
Estimated Water Depth: 2 ft
Rig/Operator: Andy | Mike

Total Depth: 19.5 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-17



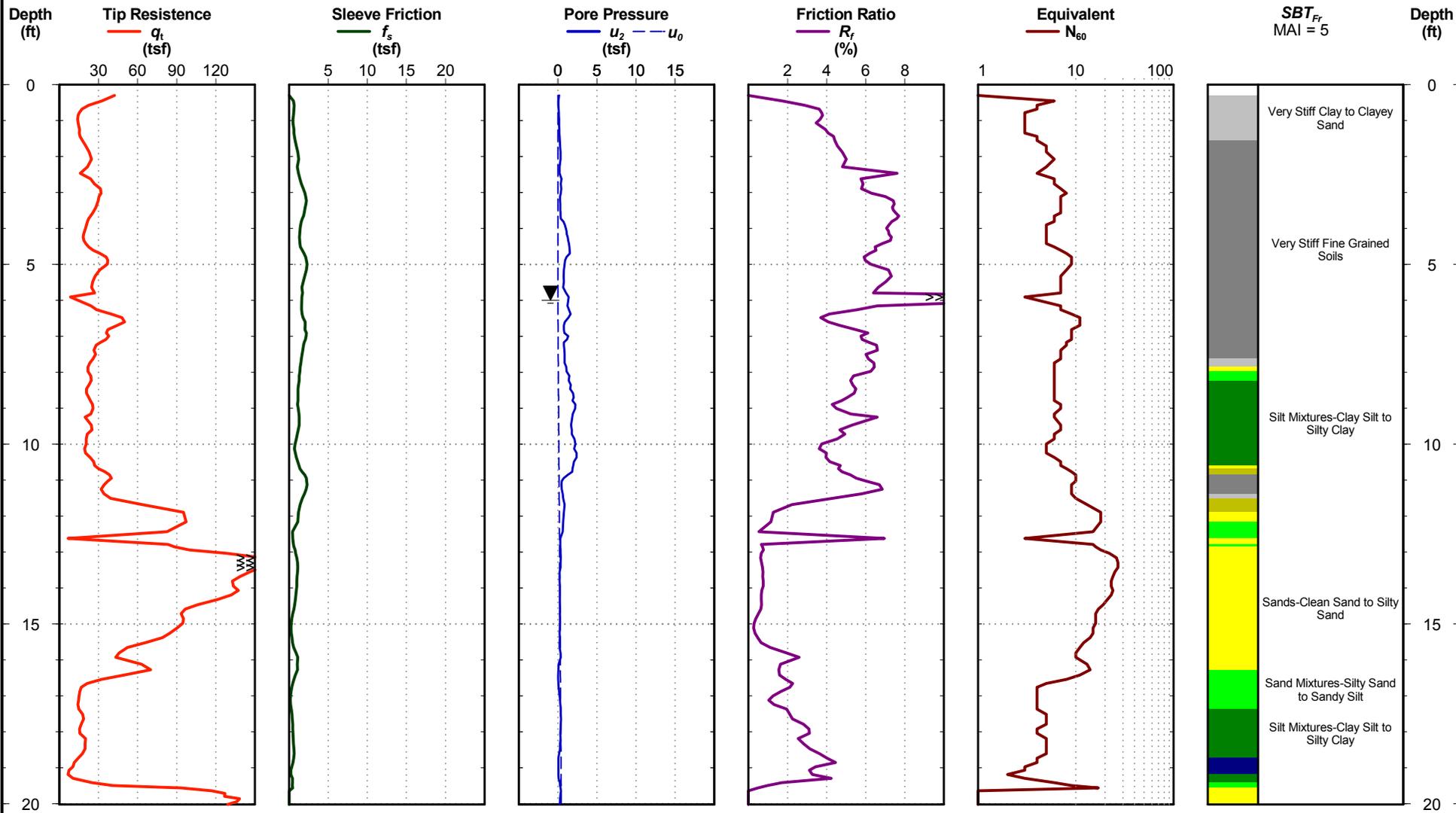
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-18

Date: Jul. 7, 2015
Estimated Water Depth: 6 ft
Rig/Operator: Andy | Mike

Total Depth: 20.0 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-18



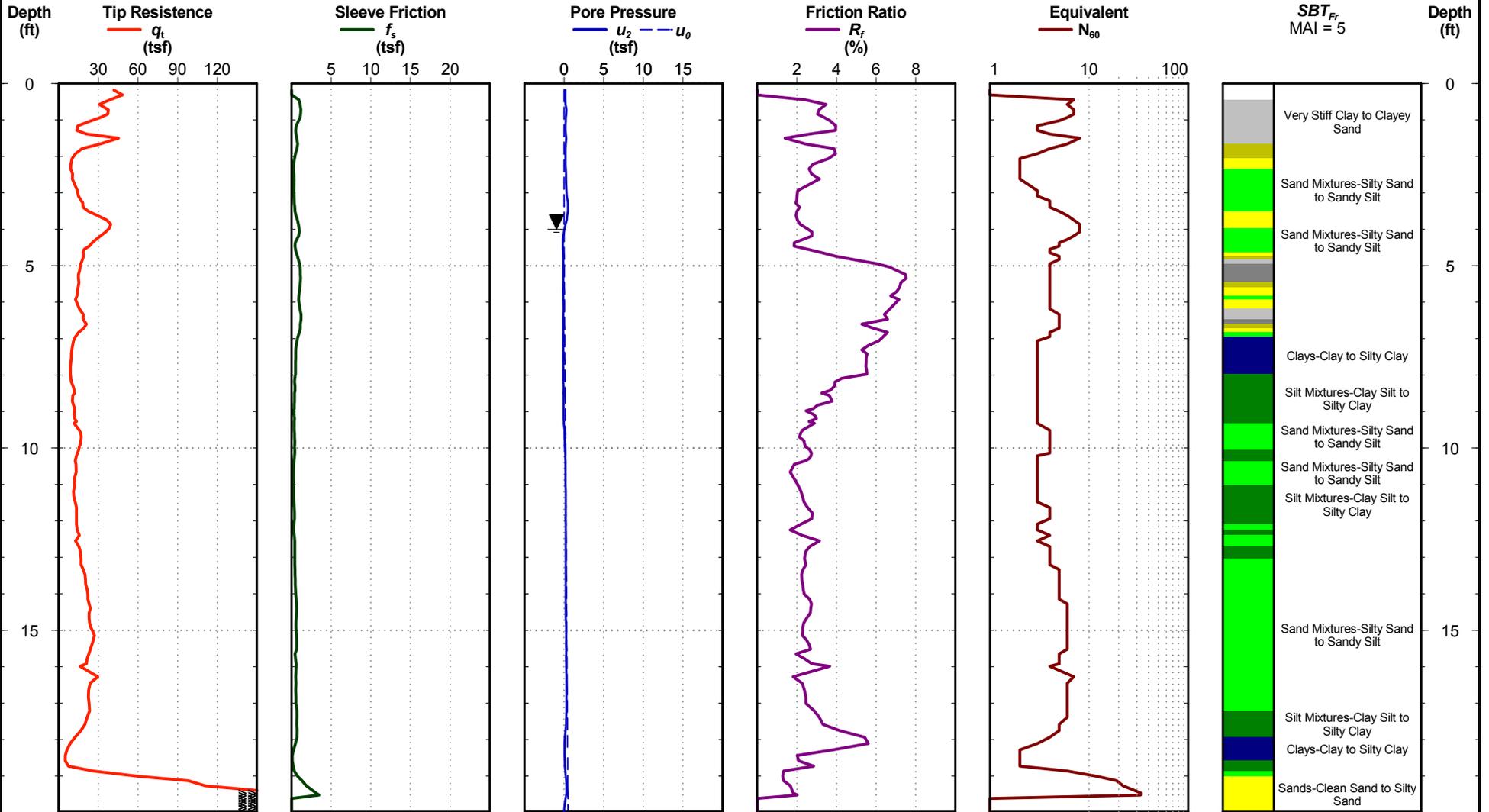
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-19

Date: Jul. 7, 2015
Estimated Water Depth: 4 ft
Rig/Operator: Andy | Mike

Total Depth: 20.0 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-19



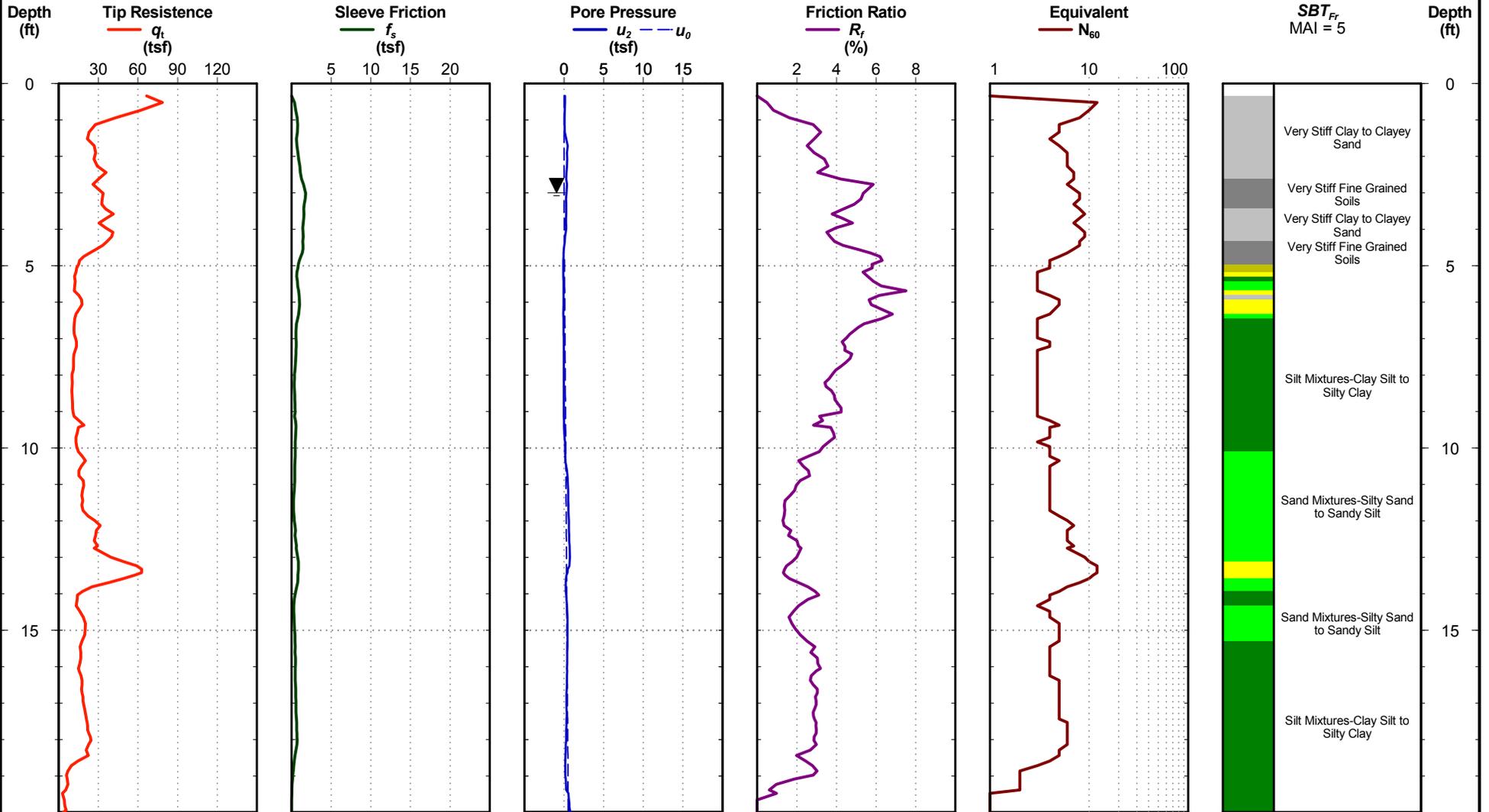
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-20

Date: Jul. 7, 2015
Estimated Water Depth: 3 ft
Rig/Operator: Andy | Mike

Total Depth: 20.0 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-20



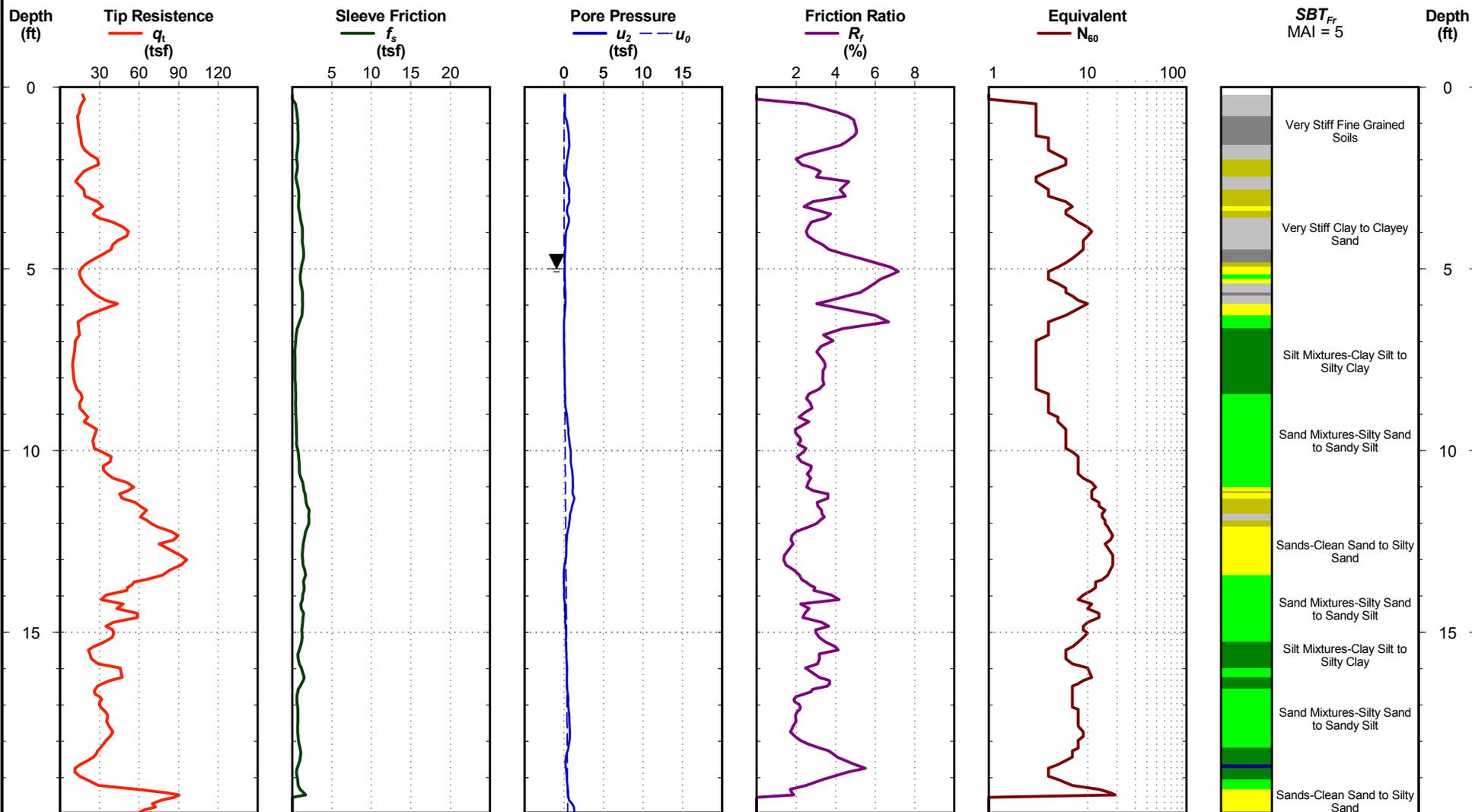
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-21

Date: Jul. 7, 2015
Estimated Water Depth: 5 ft
Rig/Operator: Andy | Mike

Total Depth: 20.0 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-21



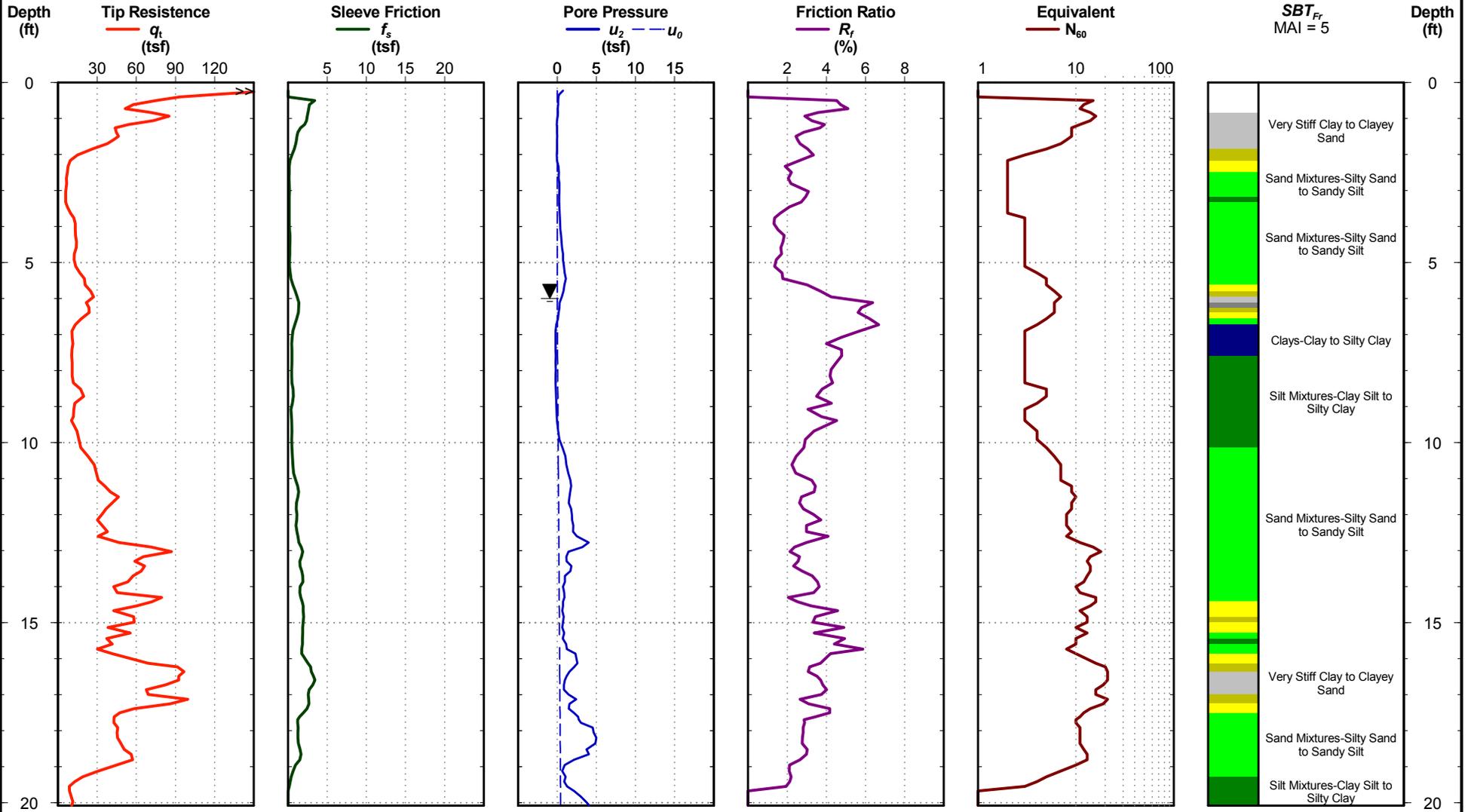
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-22

Date: May. 27, 2015
Estimated Water Depth: 6 ft
Rig/Operator: Damon | Lajay

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-22



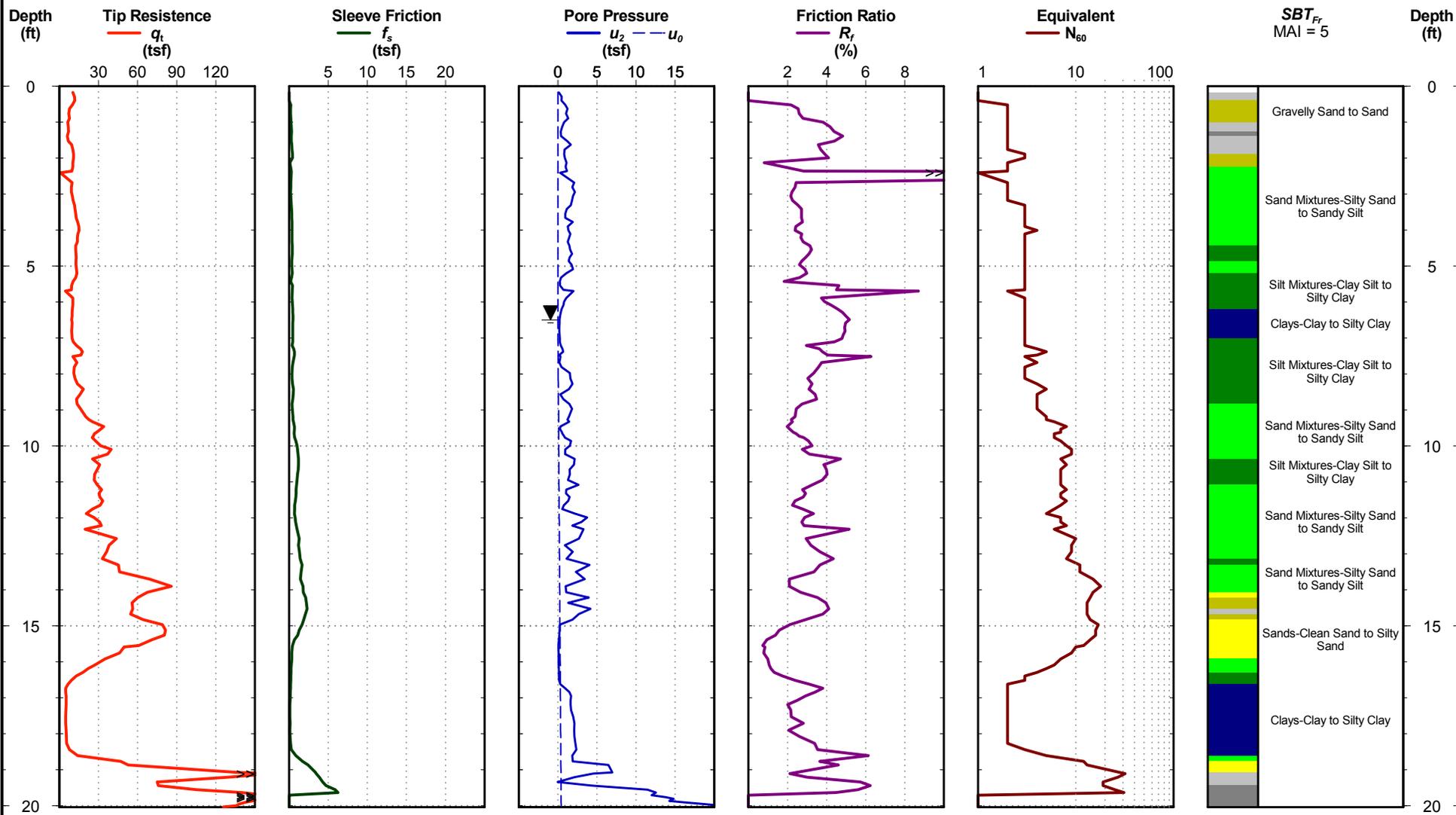
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-23

Date: Jul. 10, 2015
Estimated Water Depth: 6.5 ft
Rig/Operator: Damon | LJ

Total Depth: 20.0 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-23



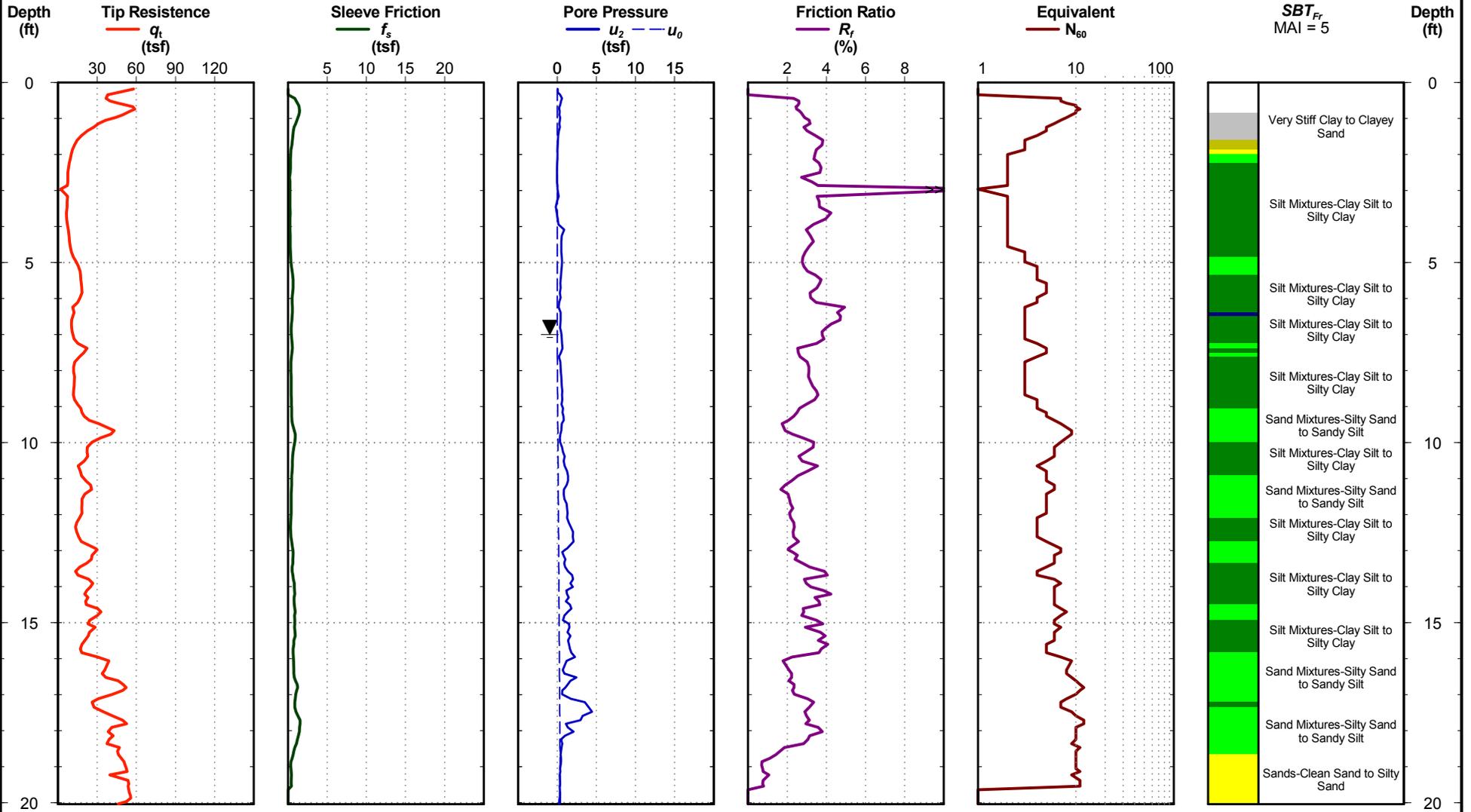
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-24

Date: Jul. 10, 2015
Estimated Water Depth: 7 ft
Rig/Operator: Damon | LJ

Total Depth: 20.0 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-24



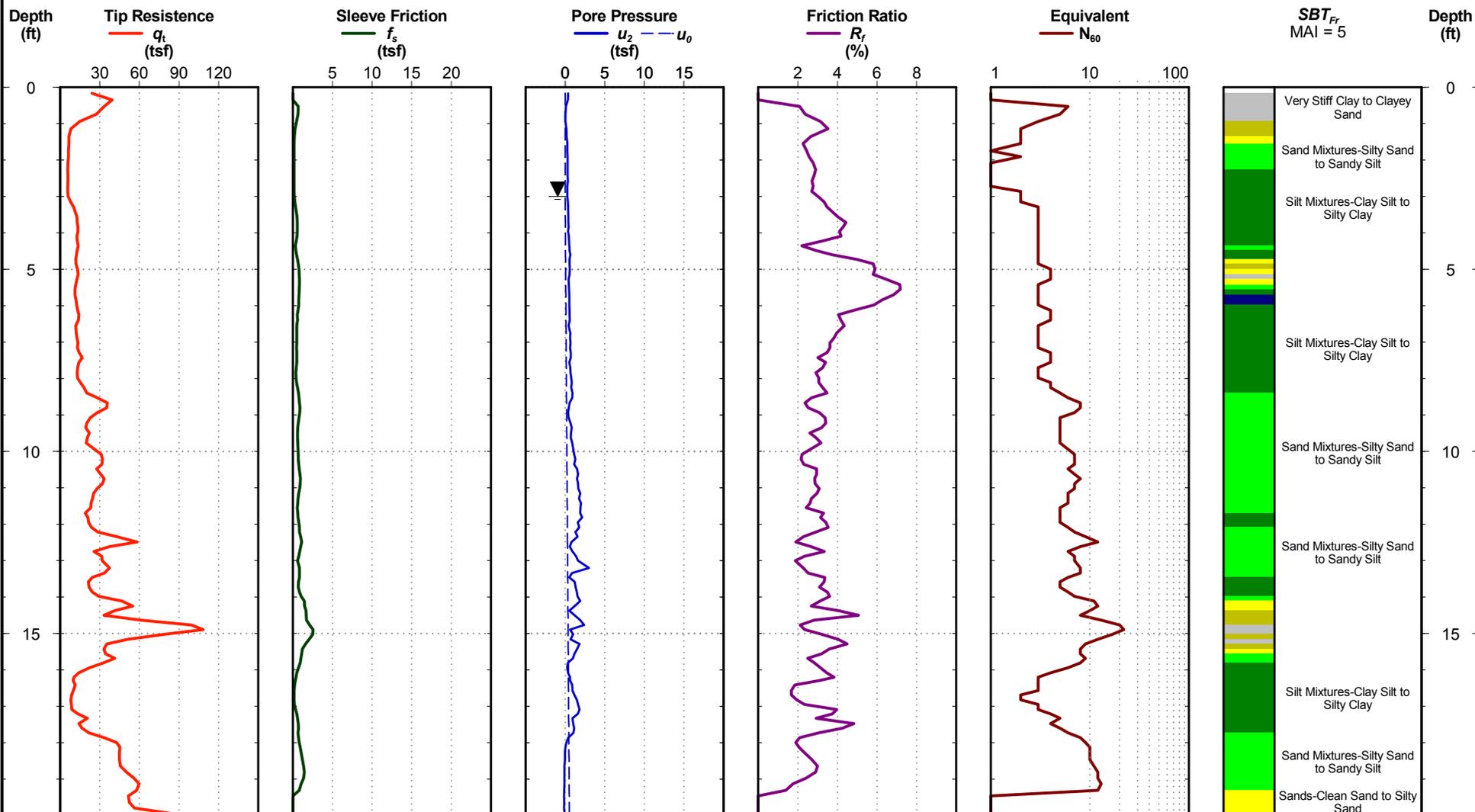
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-25

Date: May. 28, 2015
Estimated Water Depth: 3 ft
Rig/Operator: Andy | Damon

Total Depth: 19.9 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-25



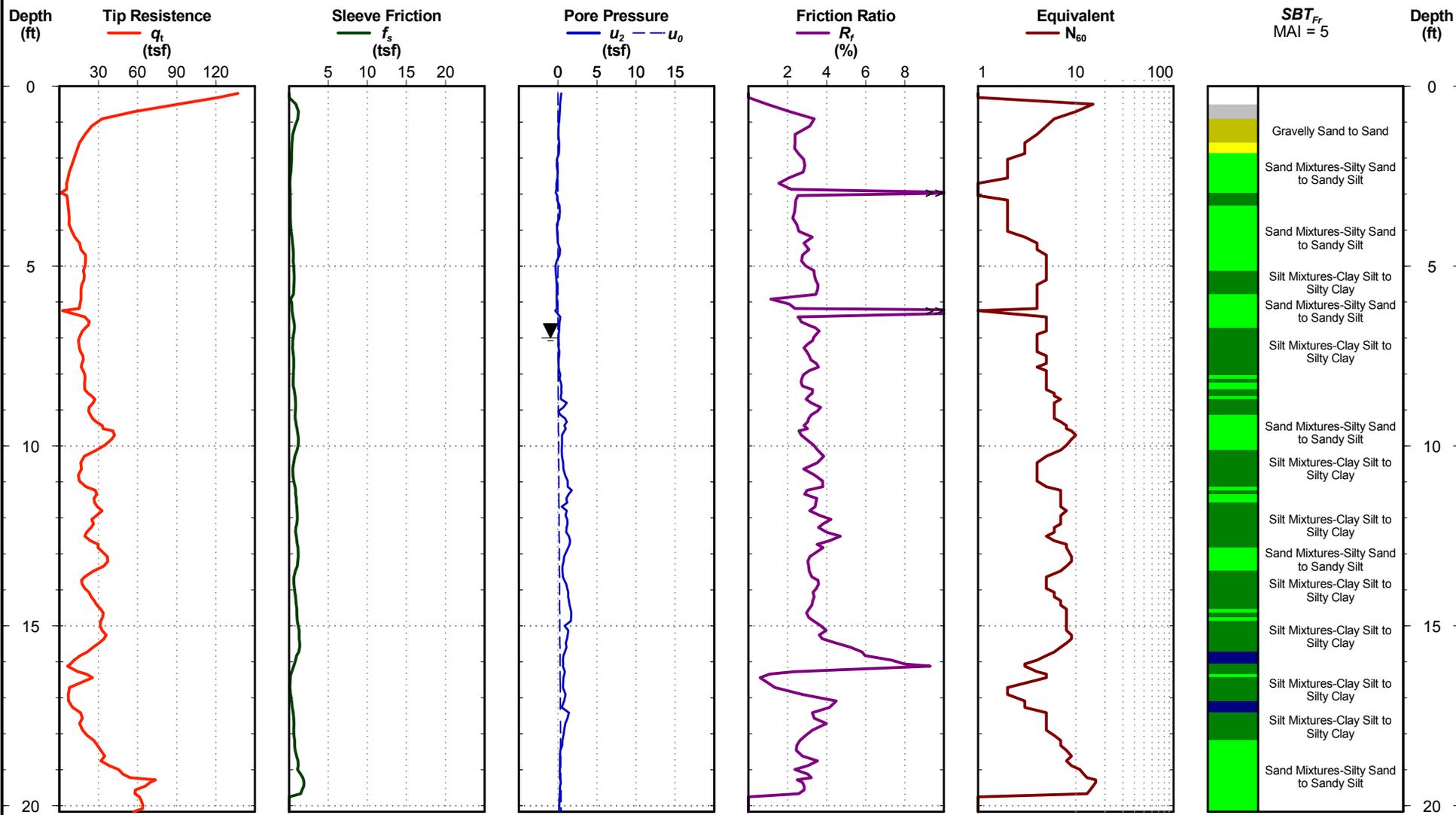
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-26

Date: Jul. 10, 2015
Estimated Water Depth: 7 ft
Rig/Operator: Damon | LJ

Total Depth: 20.2 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-26



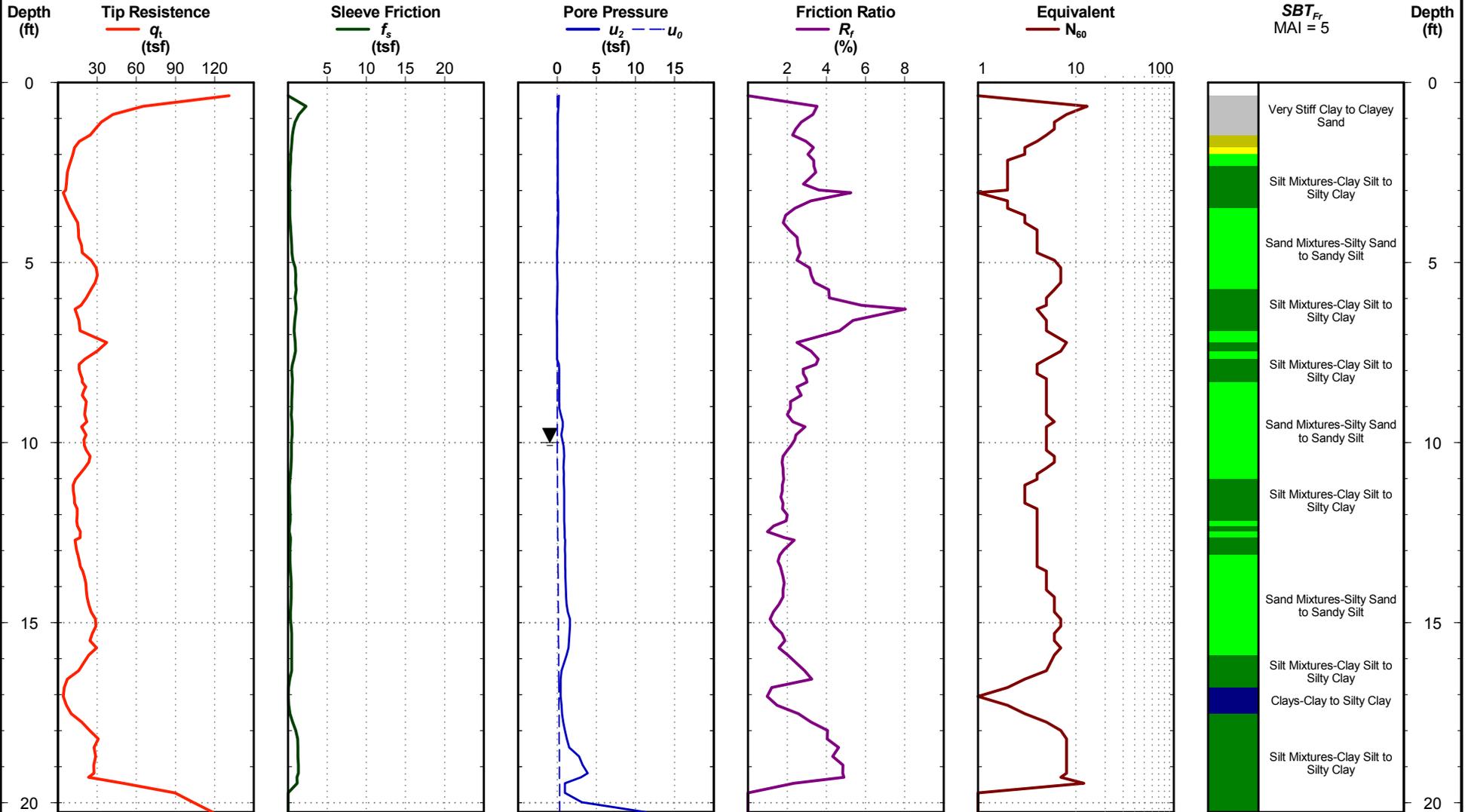
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-27

Date: May. 27, 2015
Estimated Water Depth: 10 ft
Rig/Operator: Damon | Lajay

Total Depth: 20.3 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-27



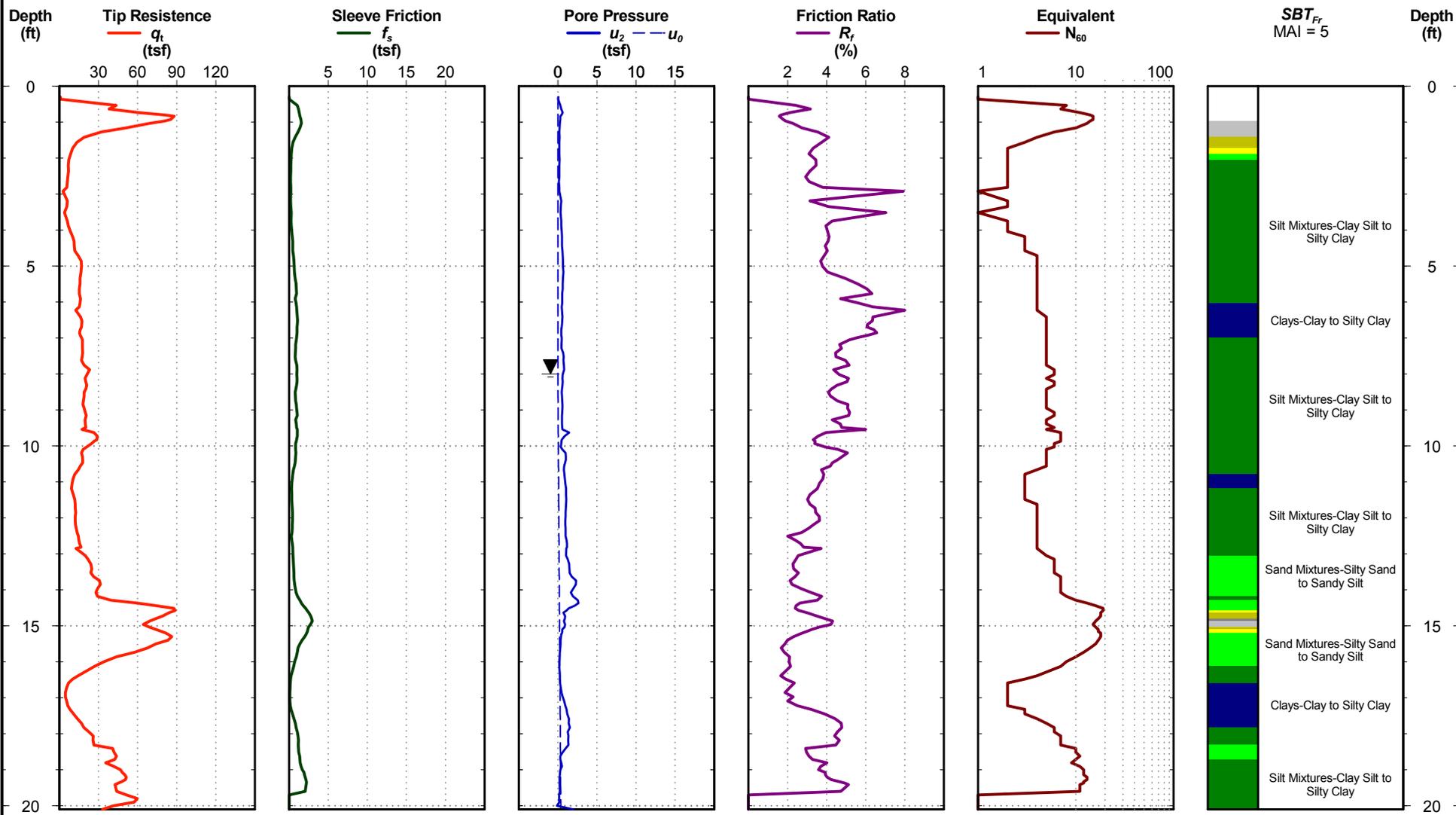
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-28

Date: Jul. 10, 2015
Estimated Water Depth: 8 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-28



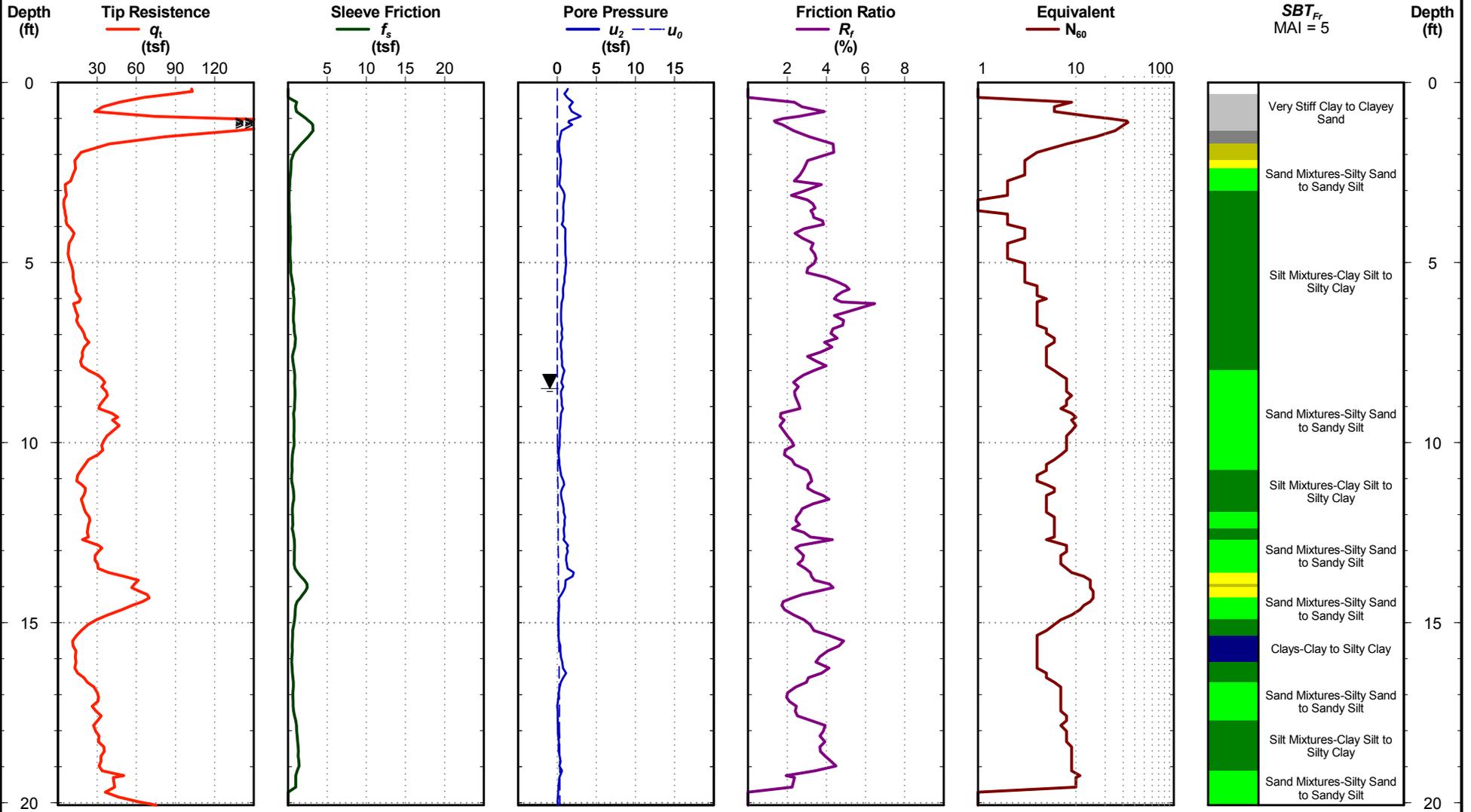
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-29

Date: Jul. 10, 2015
Estimated Water Depth: 8.5 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-29



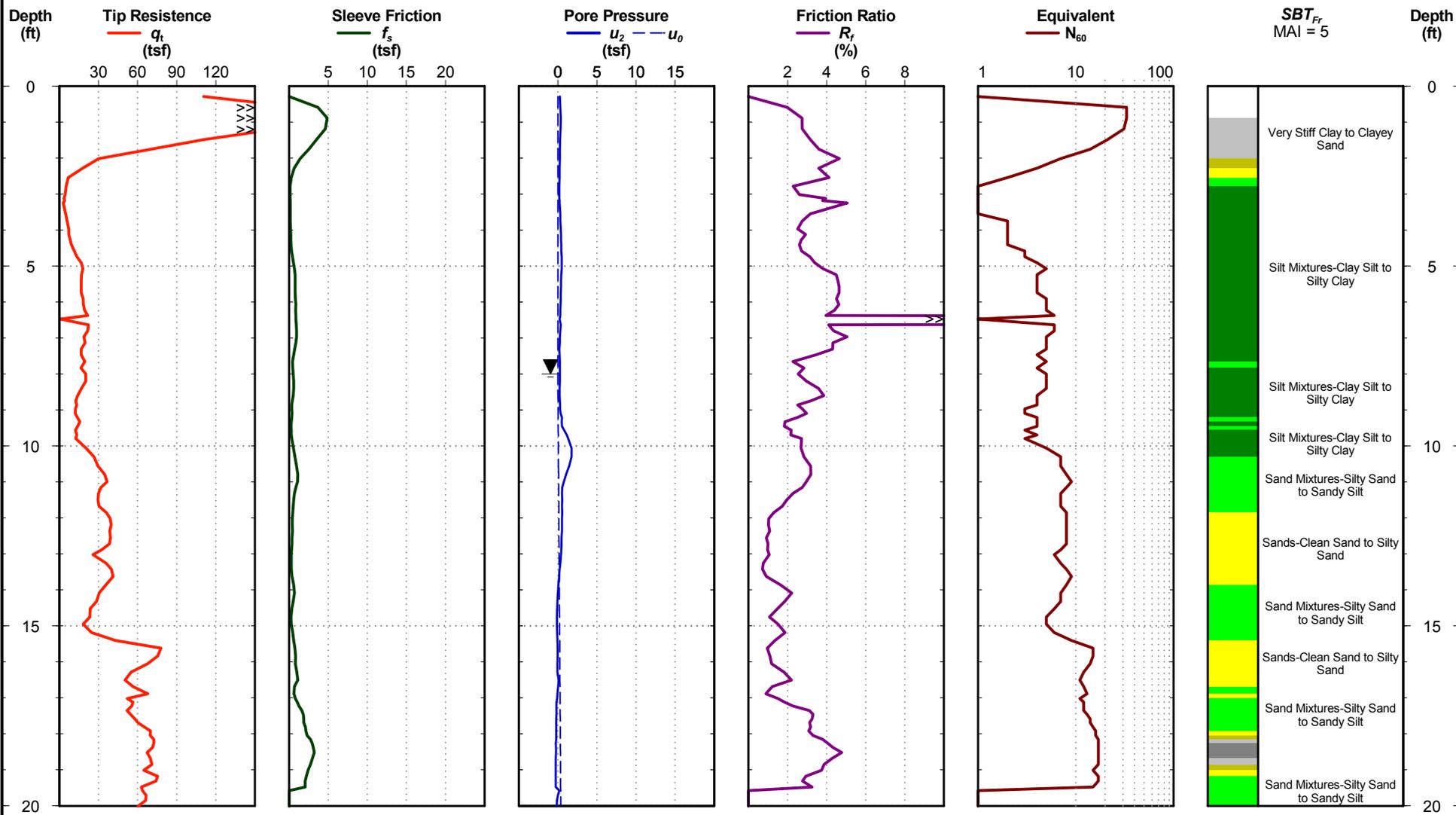
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-30

Date: May. 27, 2015
Estimated Water Depth: 8 ft
Rig/Operator: Damon | Lajay

Total Depth: 20.0 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-30



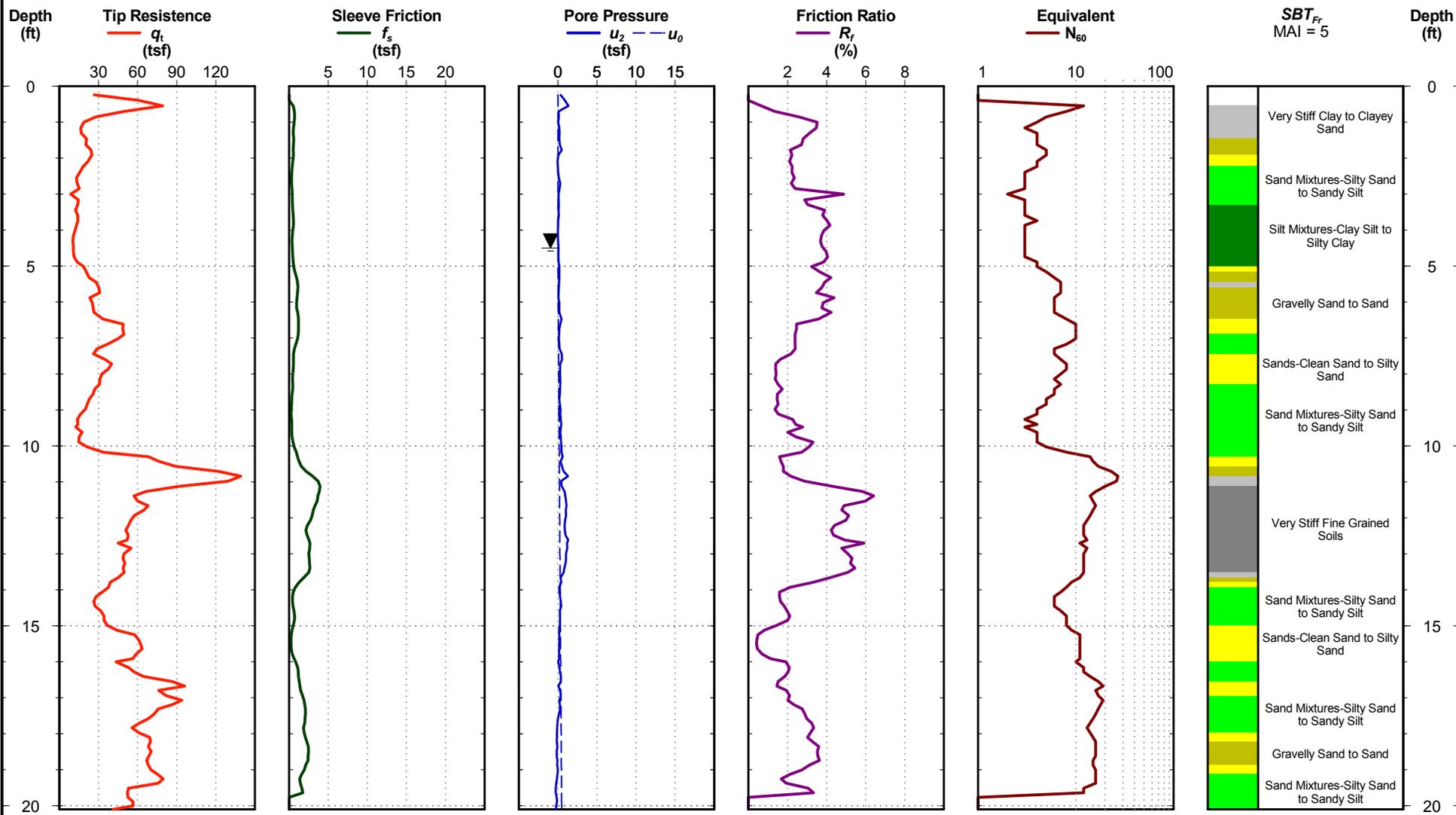
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-31

Date: May. 28, 2015
Estimated Water Depth: 4.5 ft
Rig/Operator: Andy | Damon

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-31



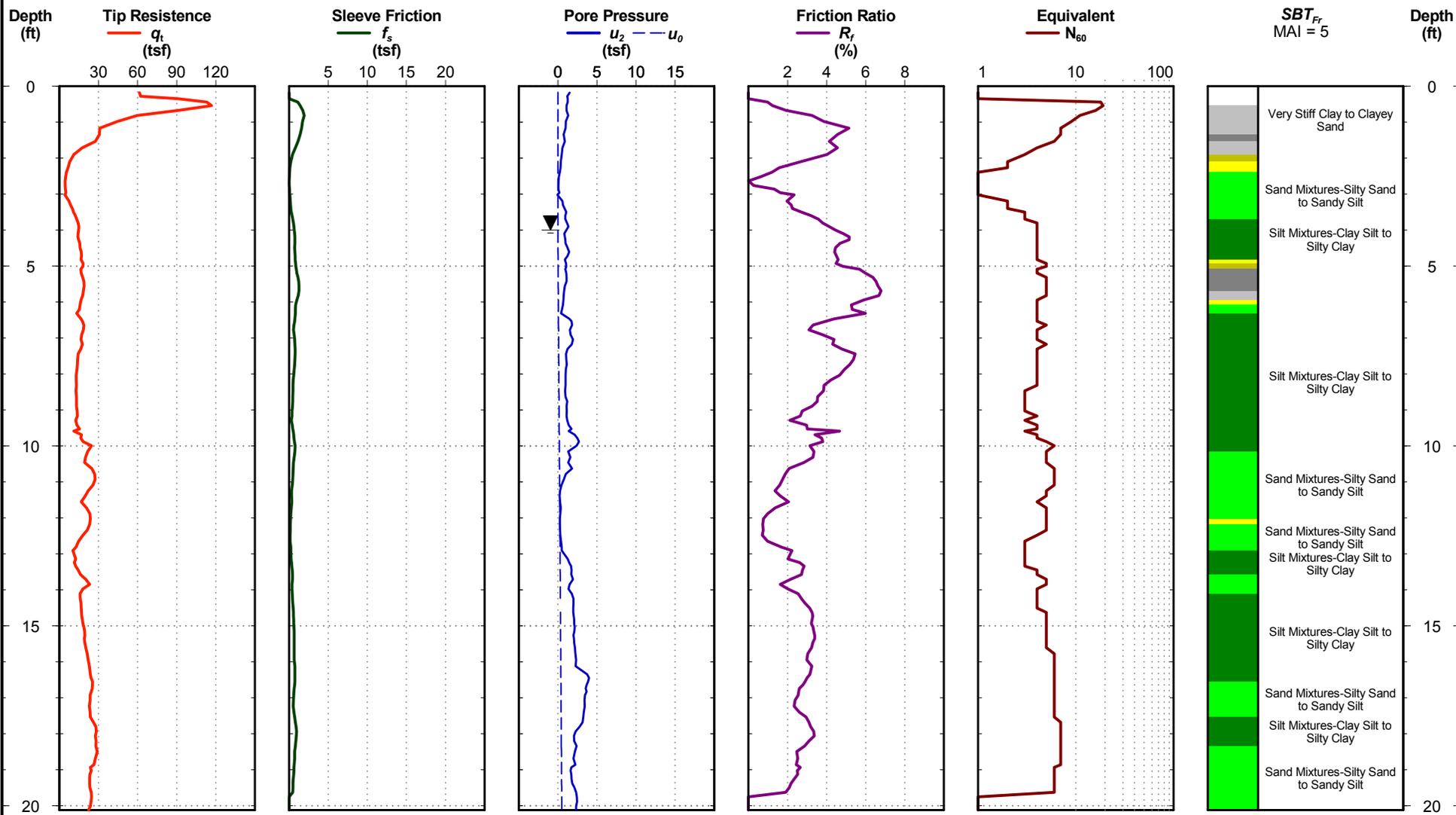
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-32

Date: Jul. 10, 2015
Estimated Water Depth: 4 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-32



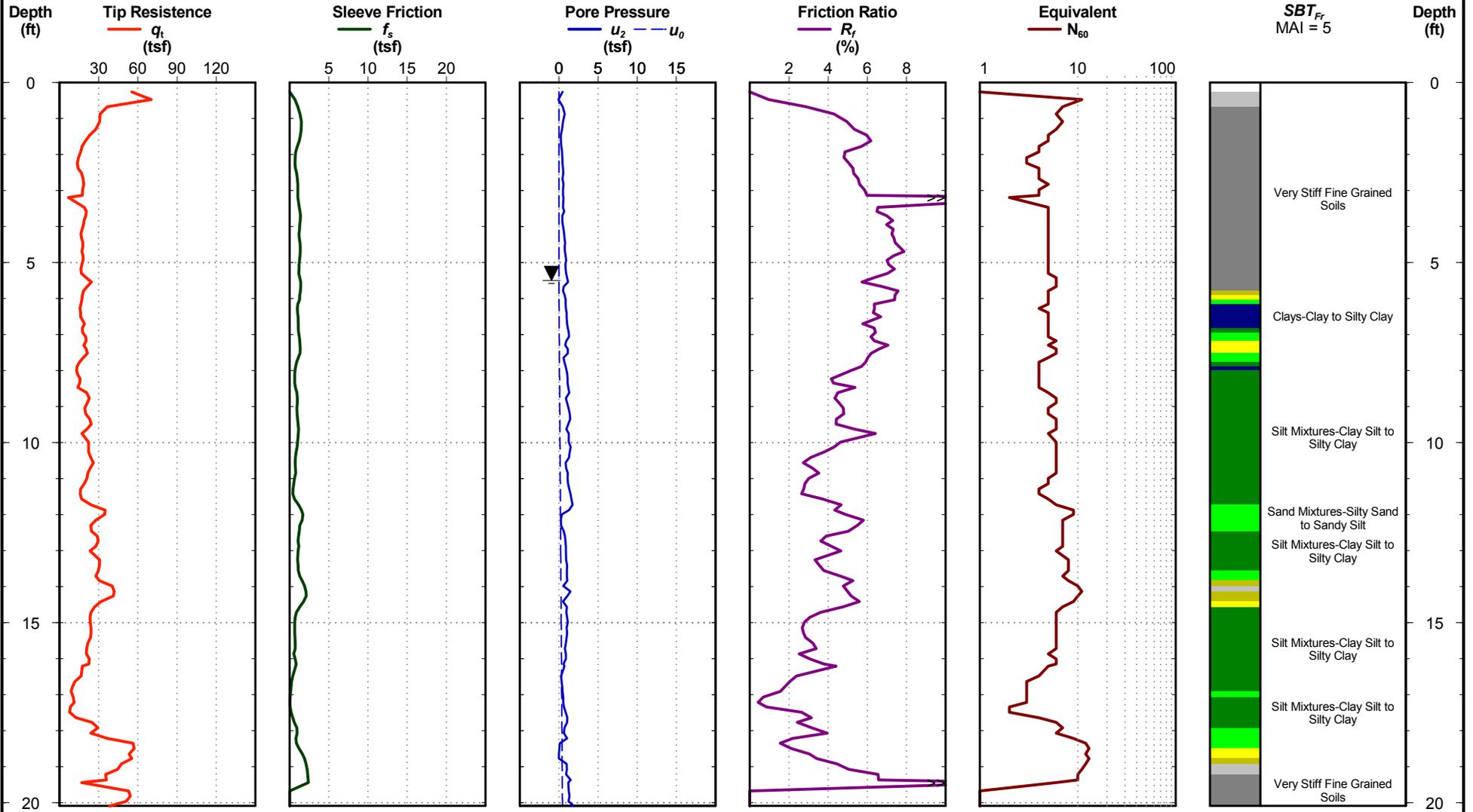
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-33

Date: May. 28, 2015
Estimated Water Depth: 5.5 ft
Rig/Operator: Andy | Damon

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-33



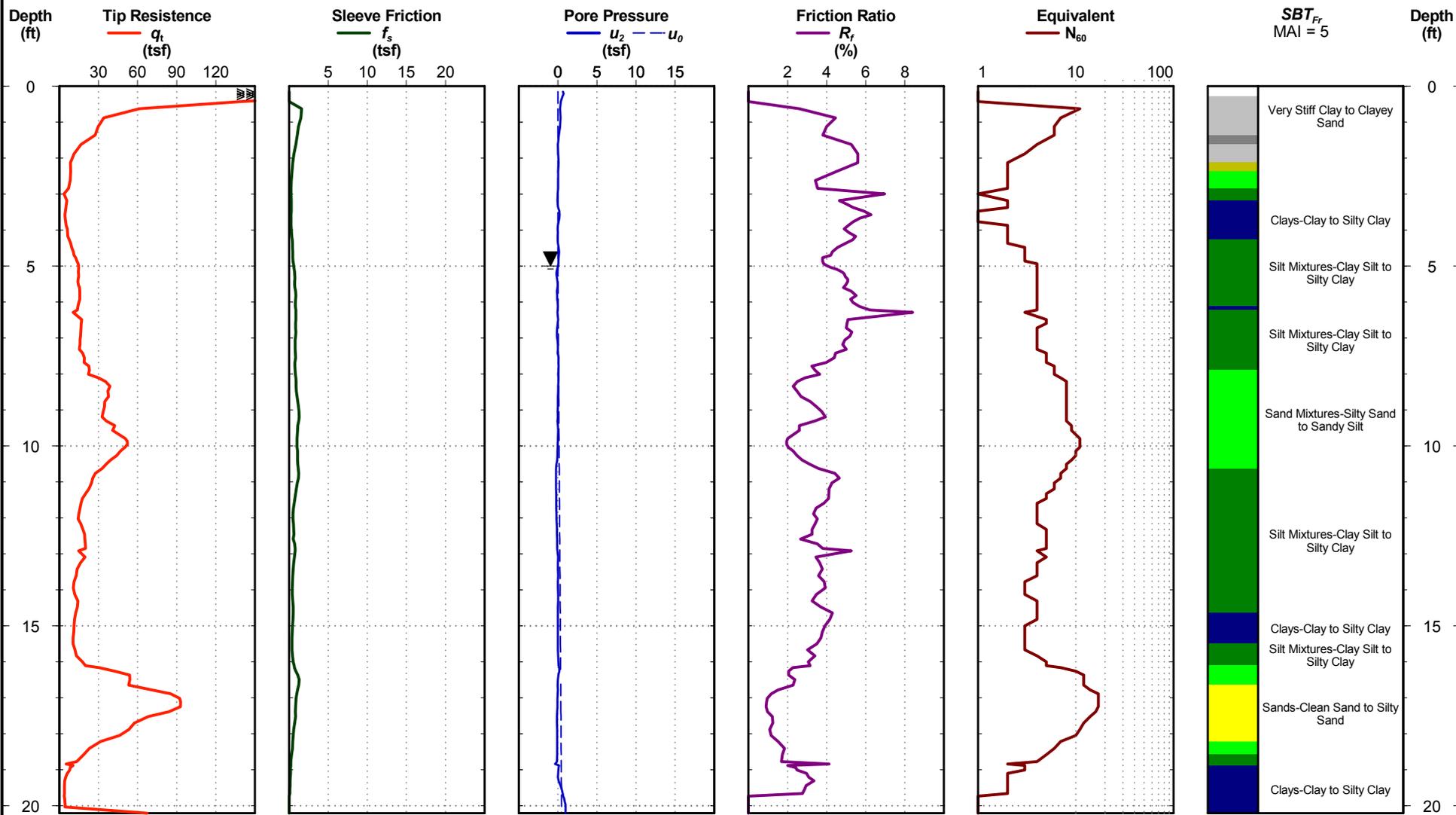
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-34

Date: Jul. 10, 2015
Estimated Water Depth: 5 ft
Rig/Operator: Damon | LJ

Total Depth: 20.2 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-34



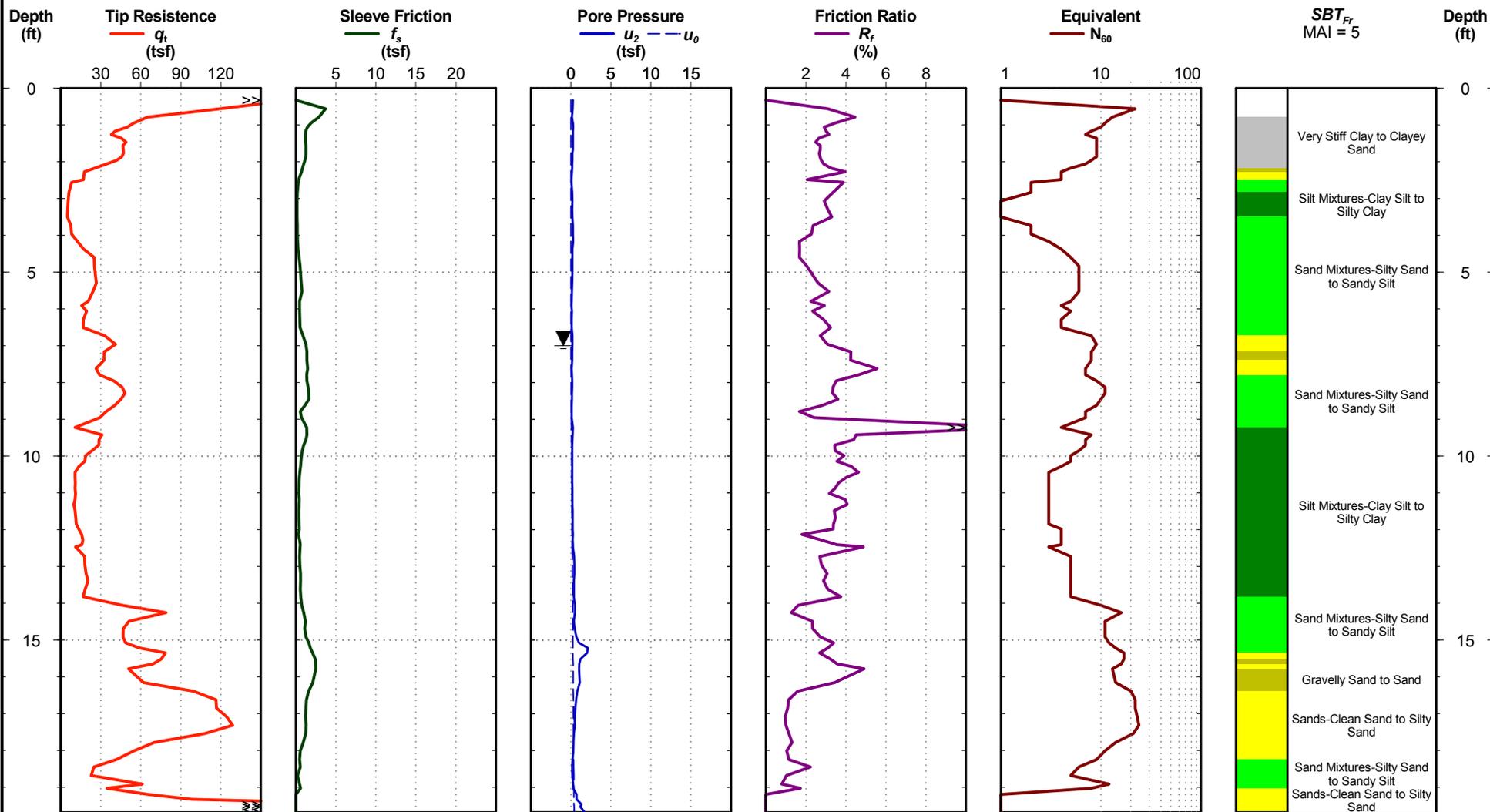
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-35

Date: May. 27, 2015
Estimated Water Depth: 7 ft
Rig/Operator: Damon | Lajay

Total Depth: 19.7 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-35



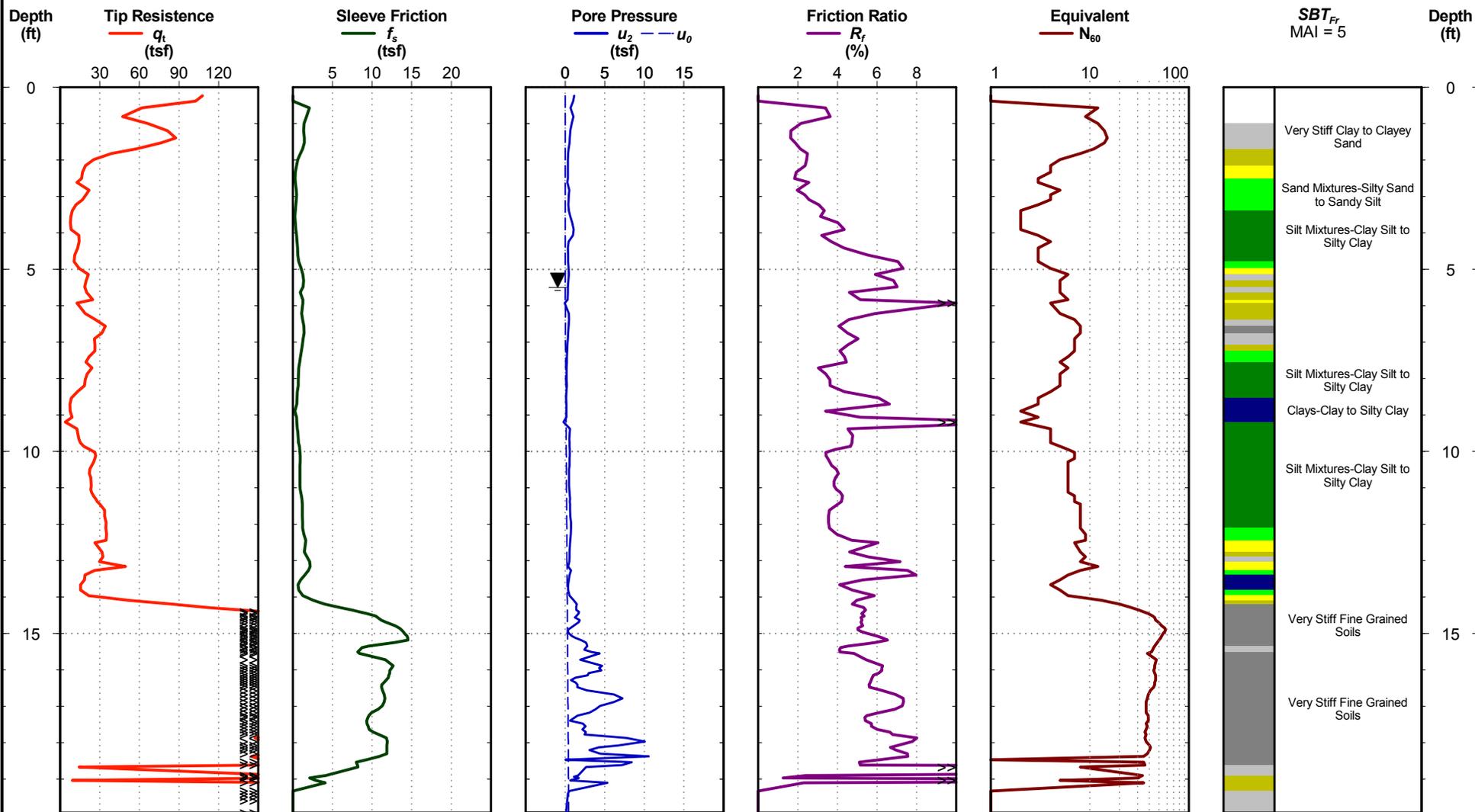
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-36

Date: Jul. 10, 2015
Estimated Water Depth: 5.5 ft
Rig/Operator: Damon | LJ

Total Depth: 19.9 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-36



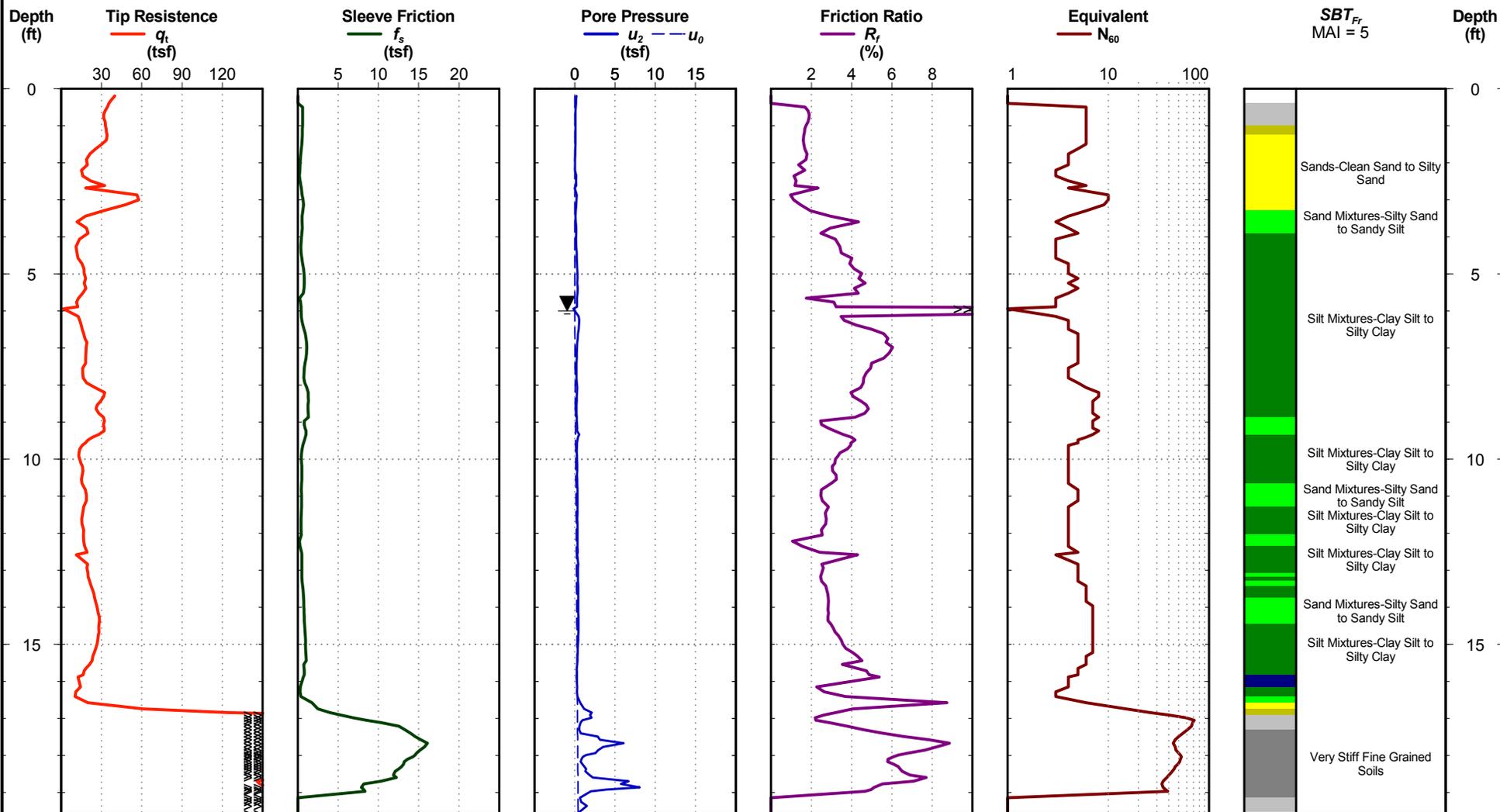
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-37

Date: Jul. 10, 2015
Estimated Water Depth: 6 ft
Rig/Operator: Damon | LJ

Total Depth: 19.6 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-37



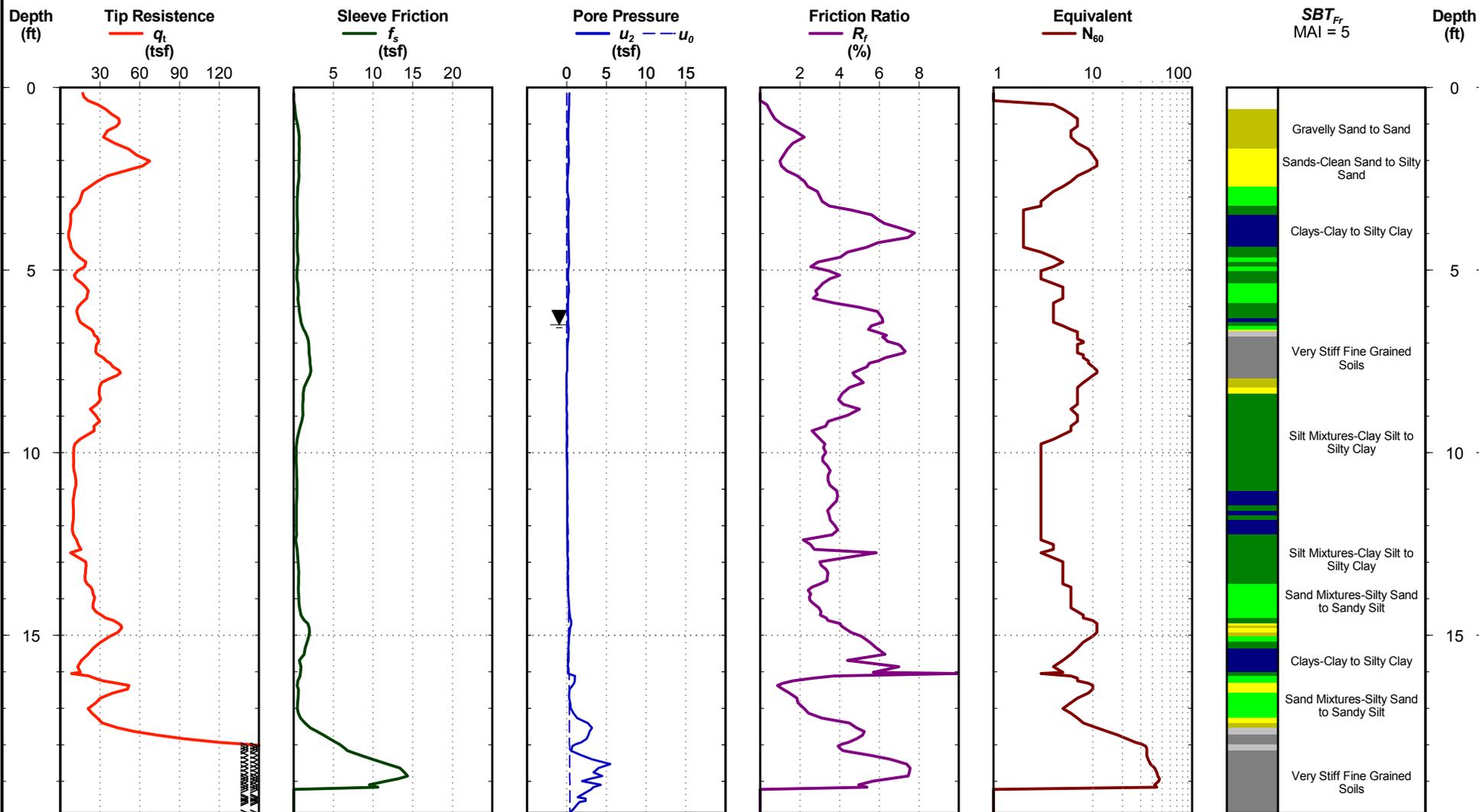
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-38

Date: Jul. 10, 2015
Estimated Water Depth: 6.5 ft
Rig/Operator: Damon | LJ

Total Depth: 19.9 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-38



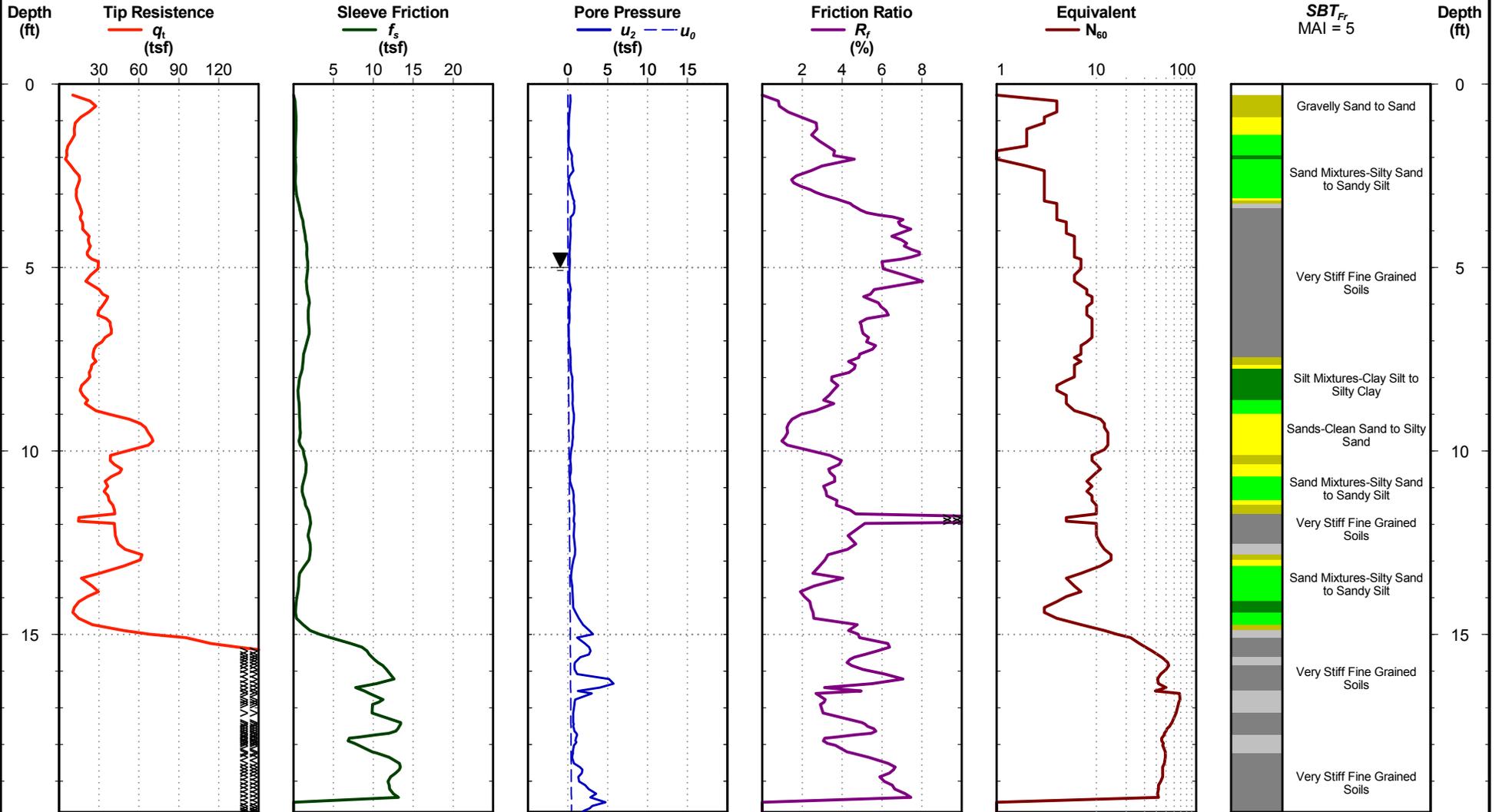
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-39

Date: Jul. 10, 2015
Estimated Water Depth: 5 ft
Rig/Operator: Damon | LJ

Total Depth: 19.8 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-39



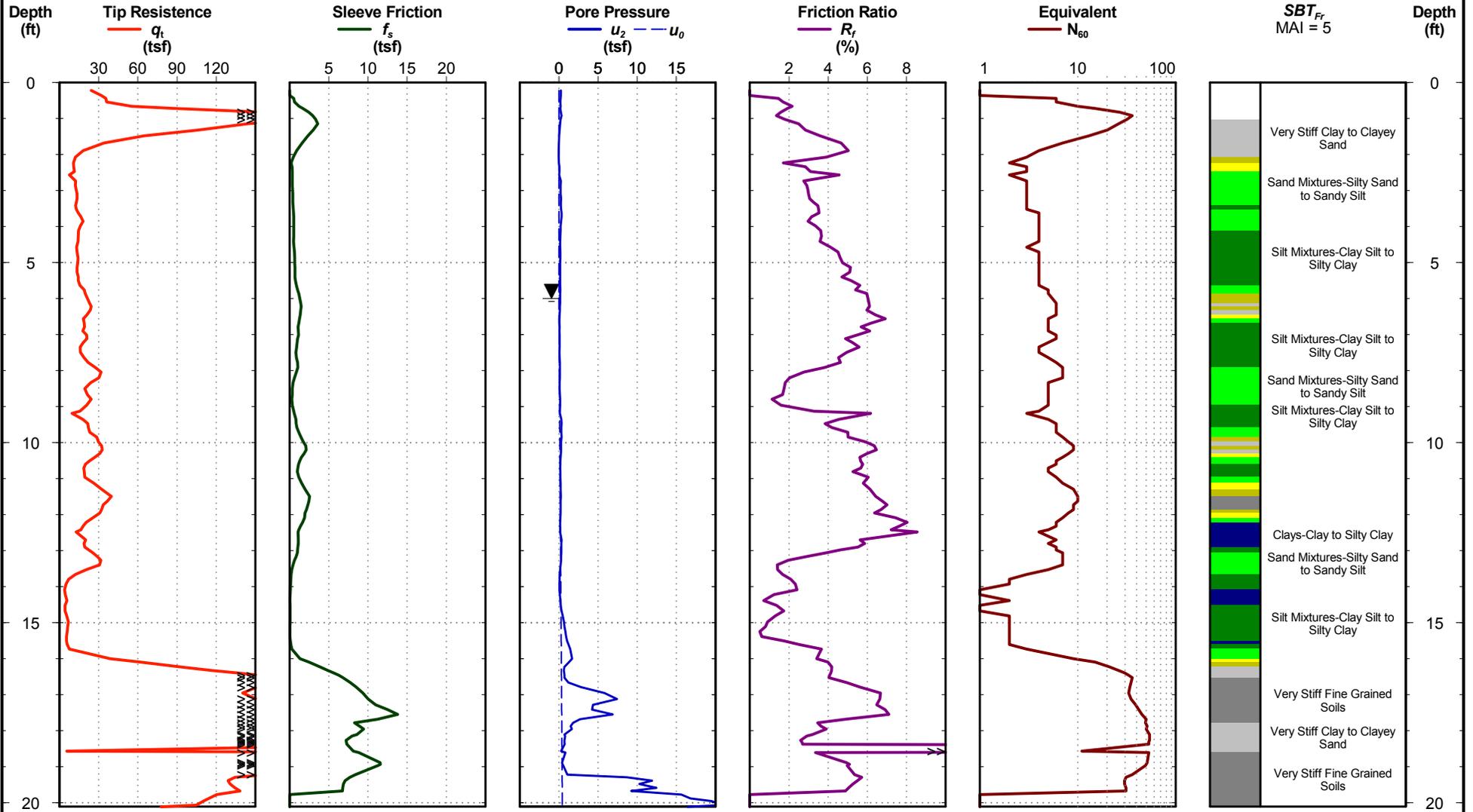
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-40

Date: Jul. 10, 2015
Estimated Water Depth: 6 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-40



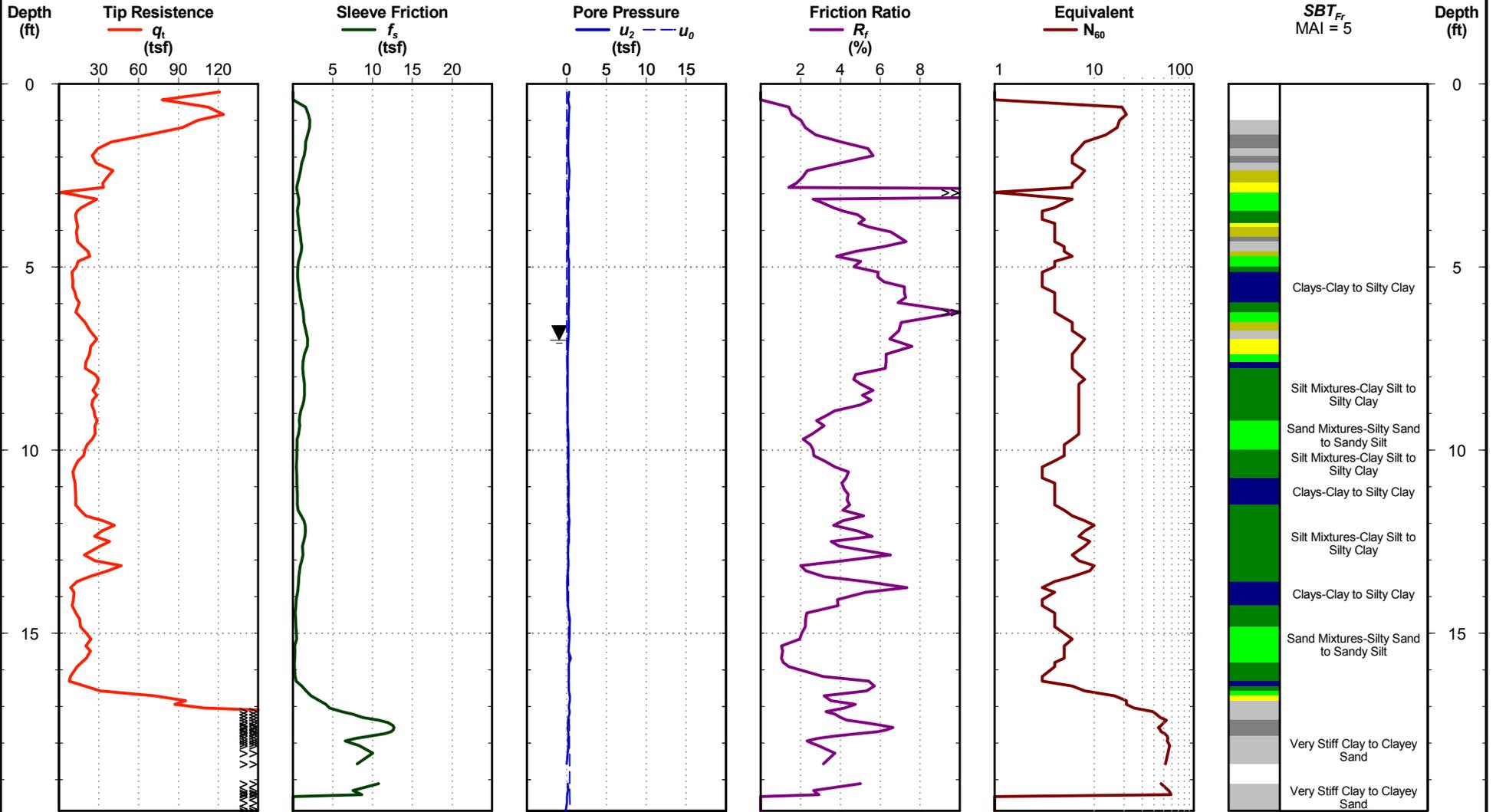
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-41

Date: May. 27, 2015
Estimated Water Depth: 7 ft
Rig/Operator: Damon | Lajay

Total Depth: 19.9 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-41



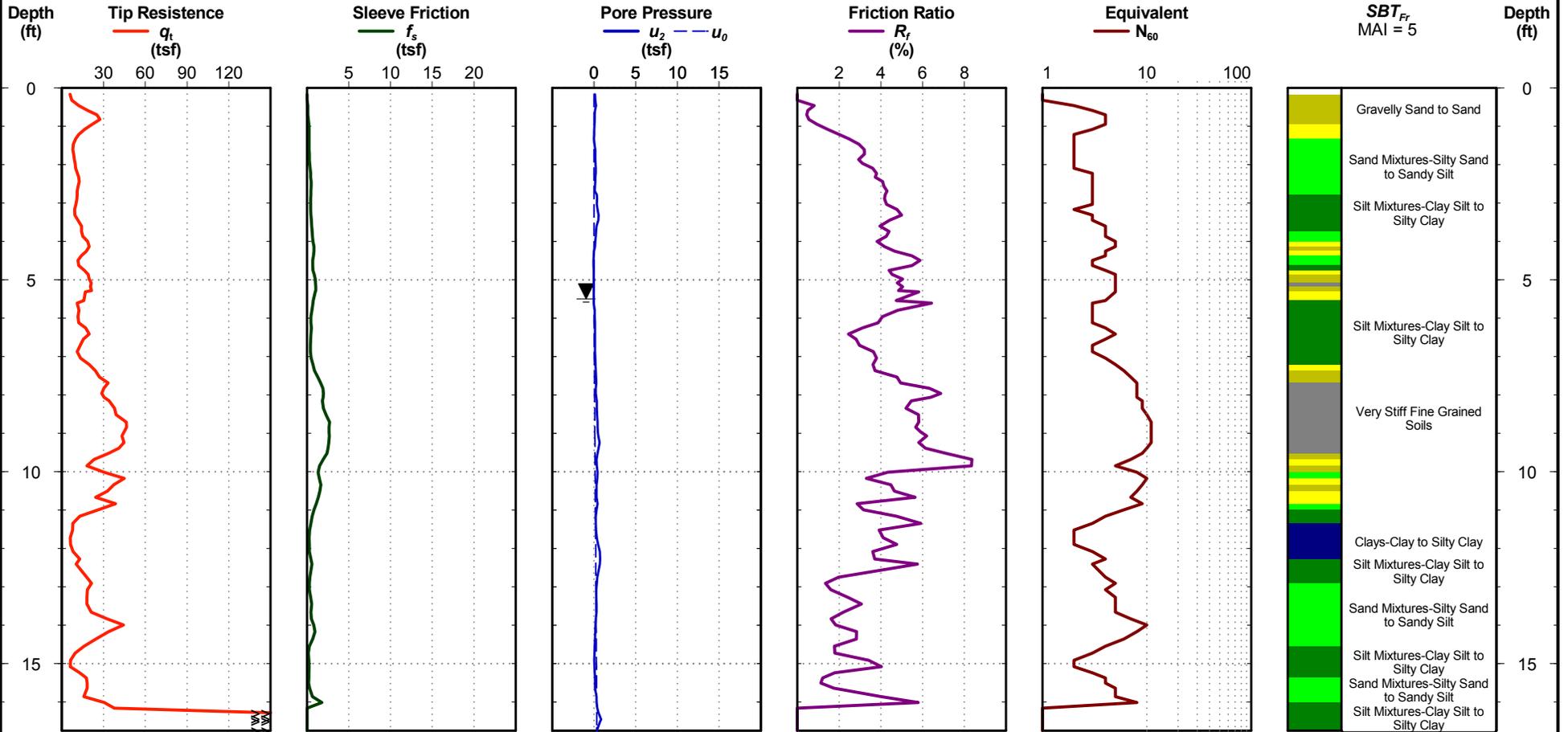
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-42

Date: Jul. 10, 2015
Estimated Water Depth: 5.5 ft
Rig/Operator: Damon | LJ

Total Depth: 16.8 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT. 8/13/15

CLR-42



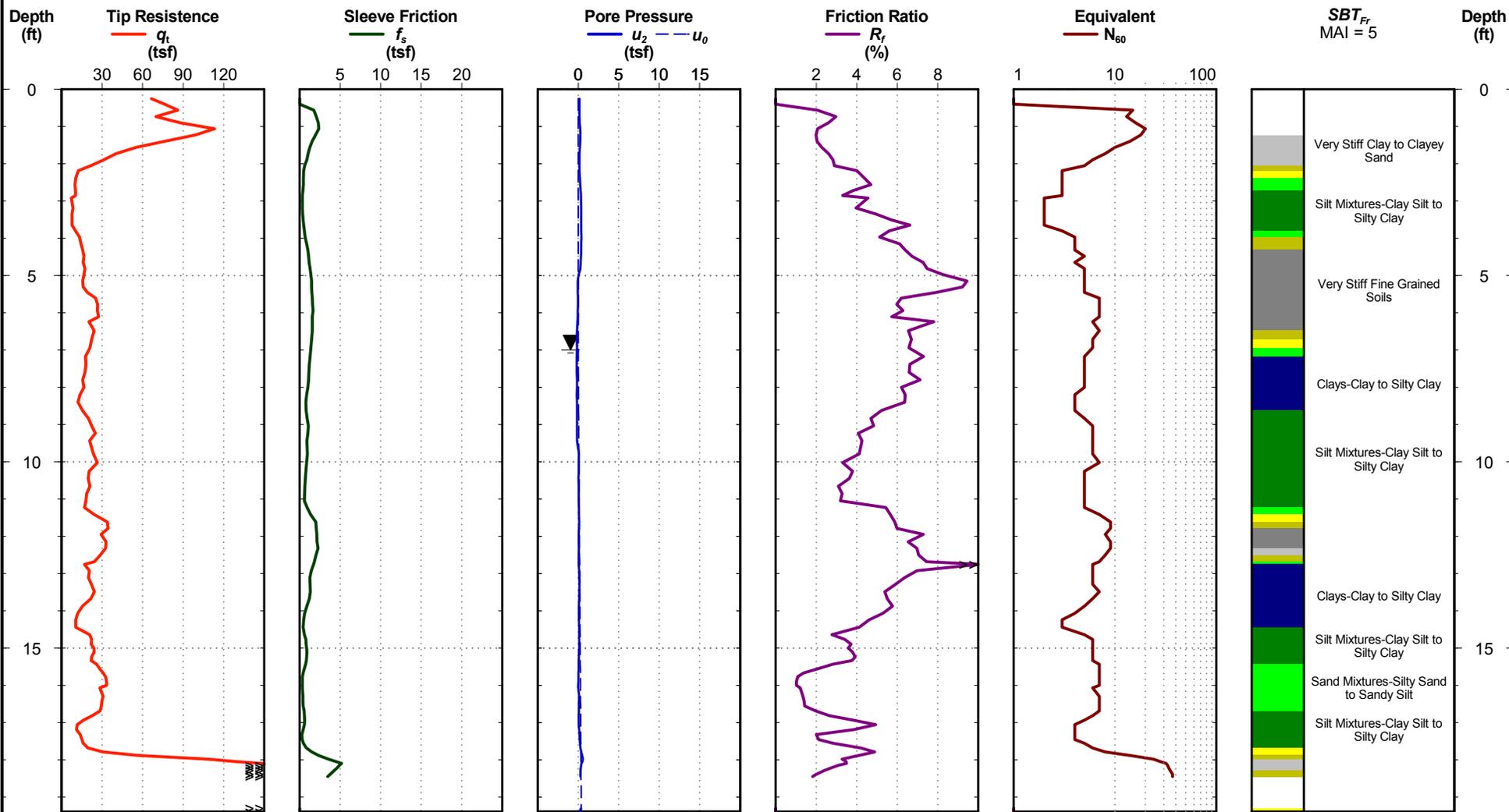
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-43

Date: May. 27, 2015
Estimated Water Depth: 7 ft
Rig/Operator: Damon | Lajay

Total Depth: 19.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-43



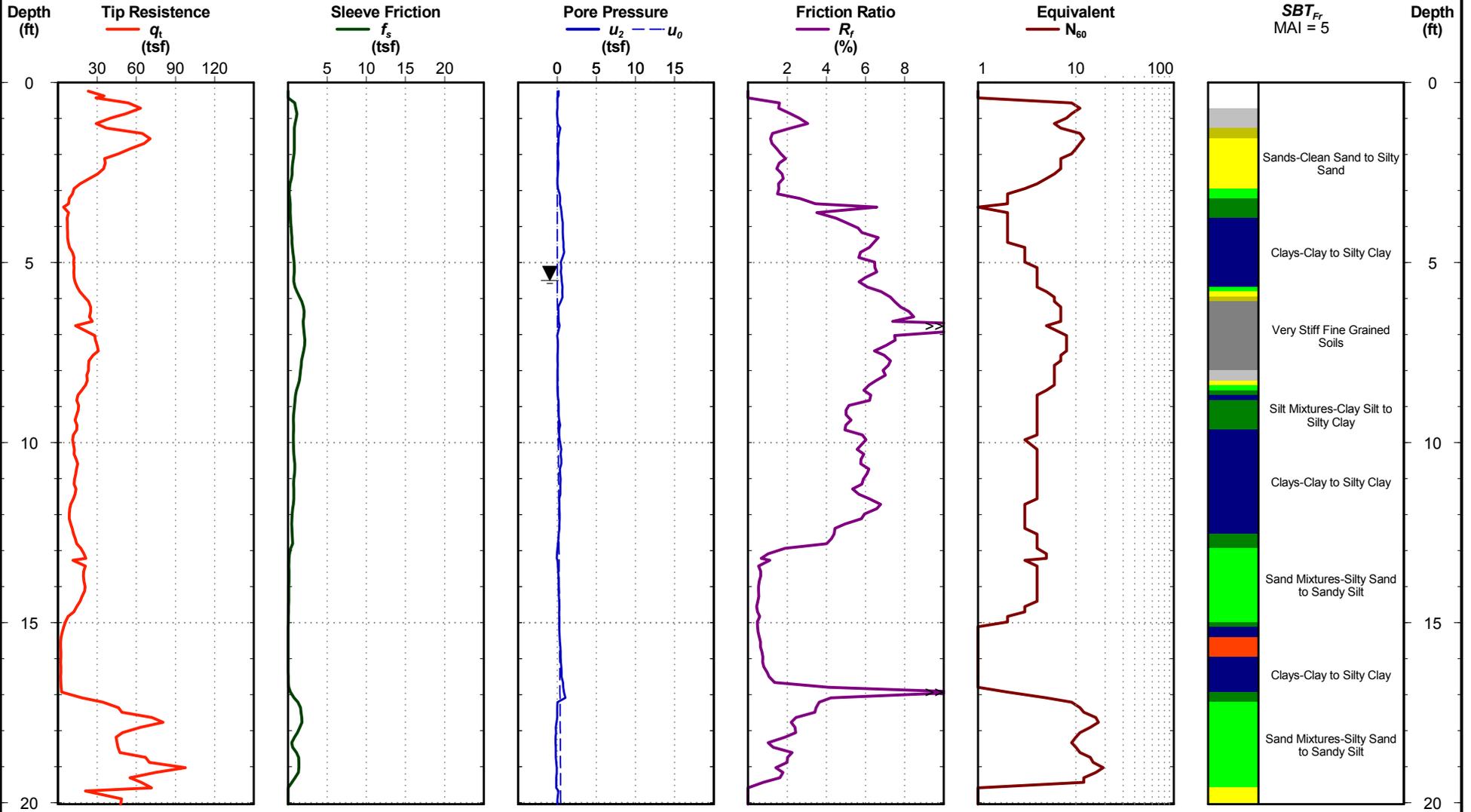
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-44

Date: May. 28, 2015
Estimated Water Depth: 5.5 ft
Rig/Operator: Andy | Damon

Total Depth: 20.0 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-44



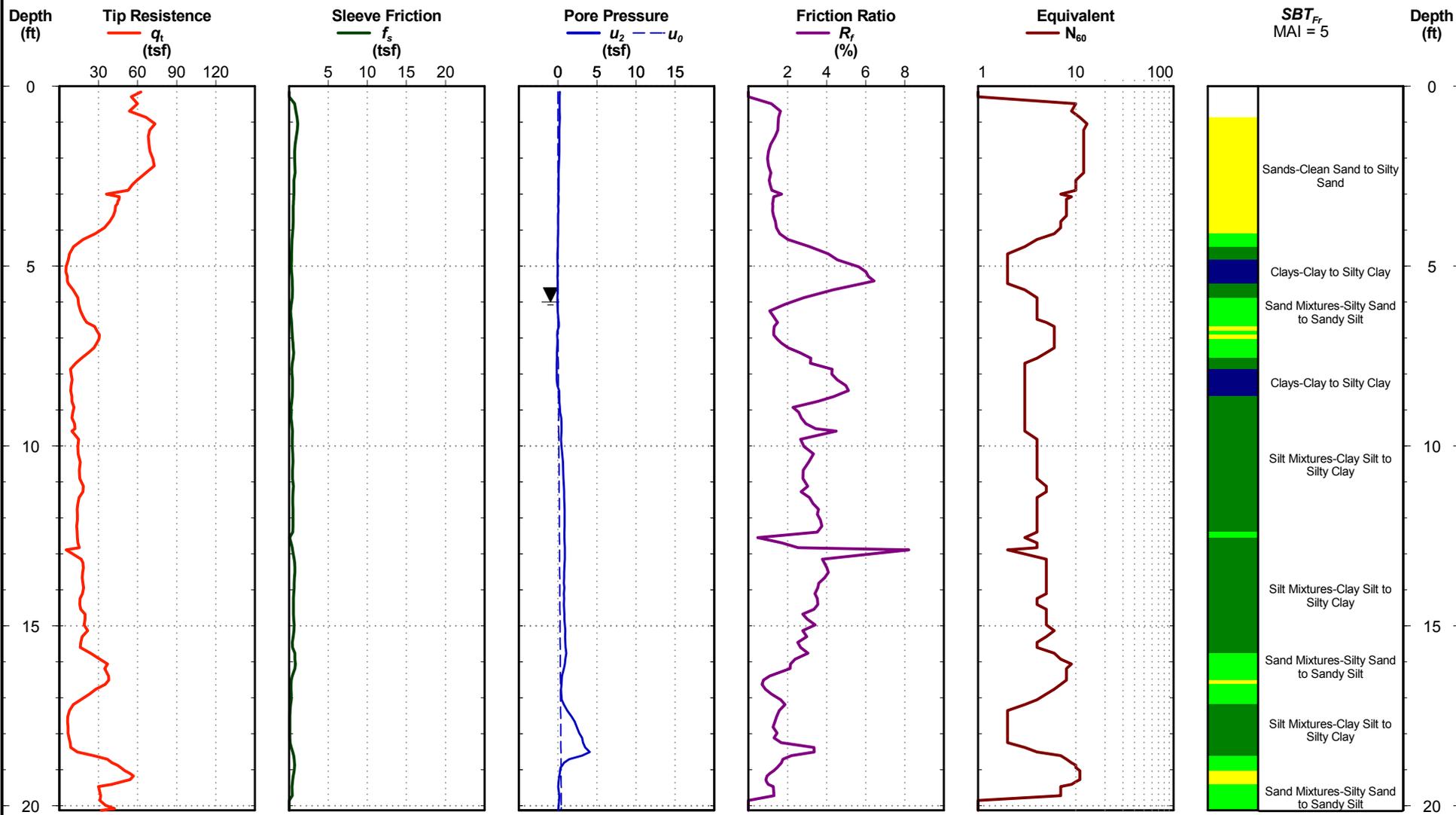
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-45

Date: Jul. 10, 2015
Estimated Water Depth: 6 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-45



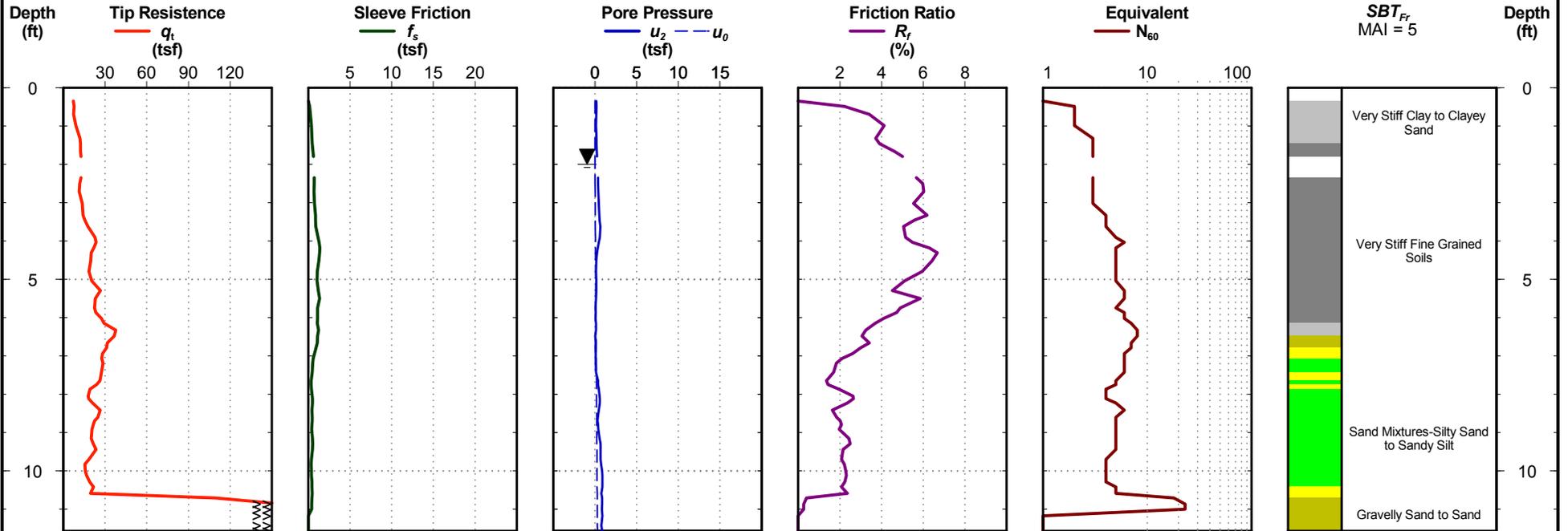
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-46

Date: Jul. 10, 2015
Estimated Water Depth: 2 ft
Rig/Operator: Andy | Mike

Total Depth: 11.6 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-46



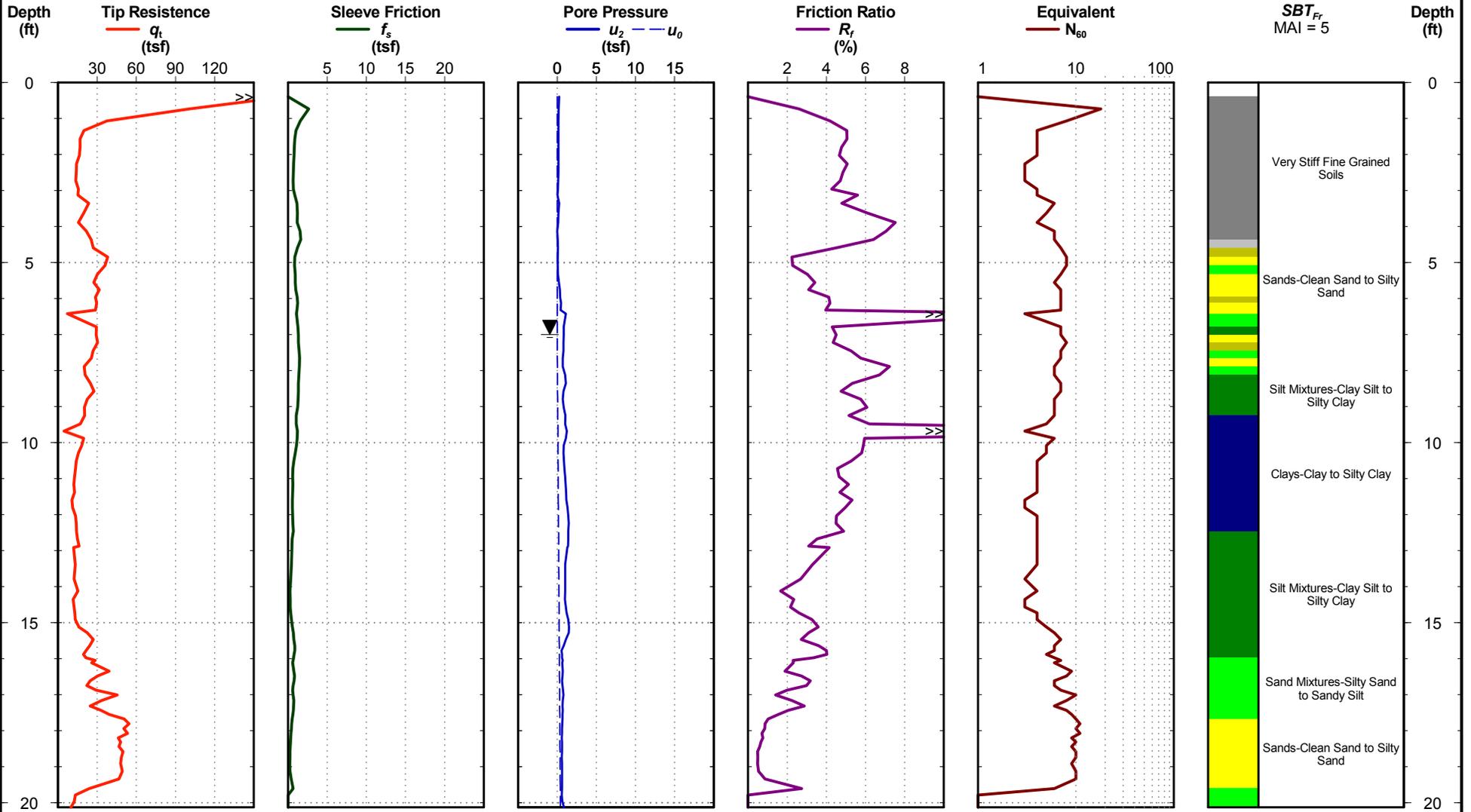
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-47

Date: May. 27, 2015
Estimated Water Depth: 7 ft
Rig/Operator: Damon | Lajay

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-47



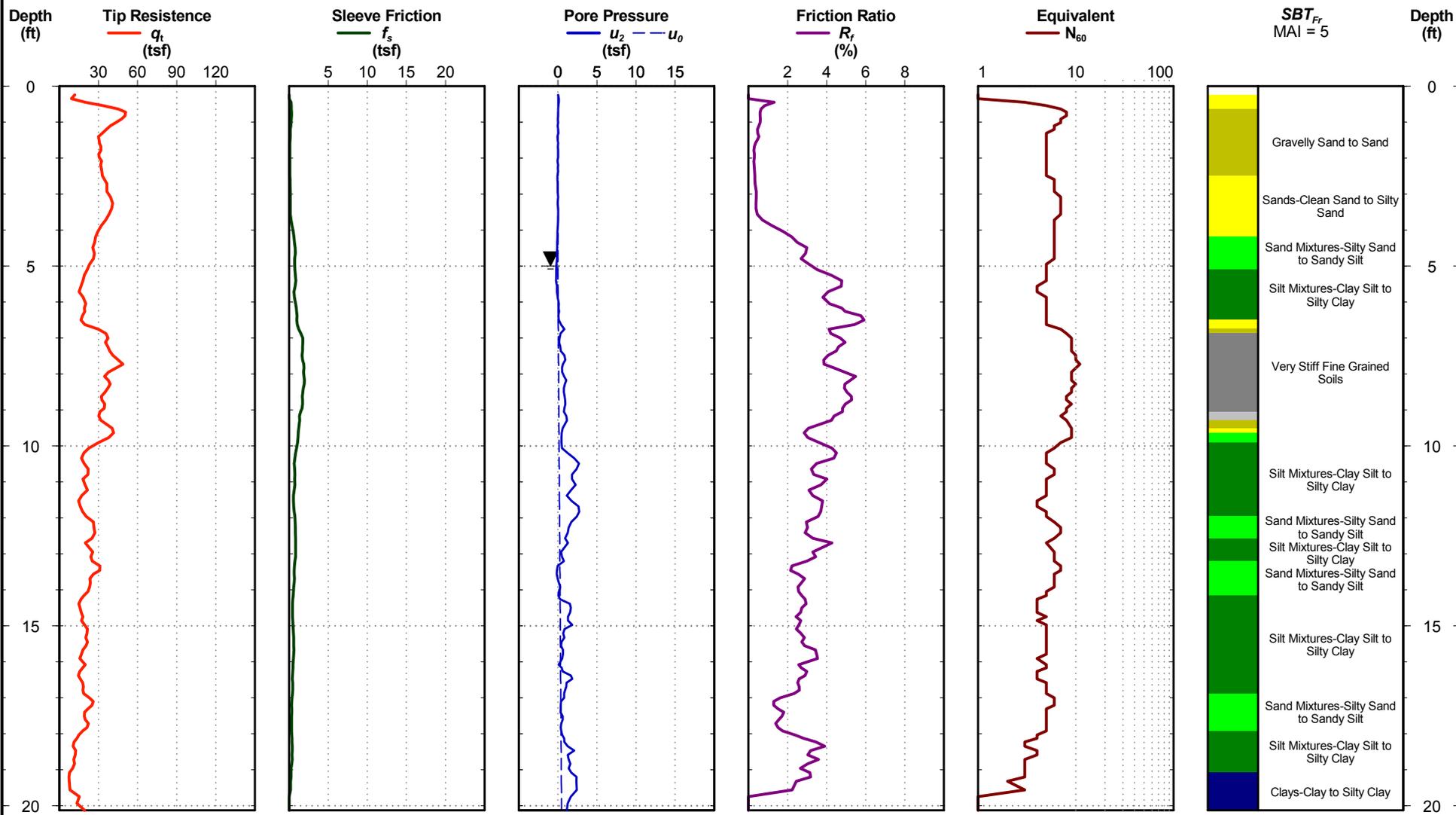
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-48

Date: Jul. 10, 2015
Estimated Water Depth: 5 ft
Rig/Operator: Andy | Mike

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-48



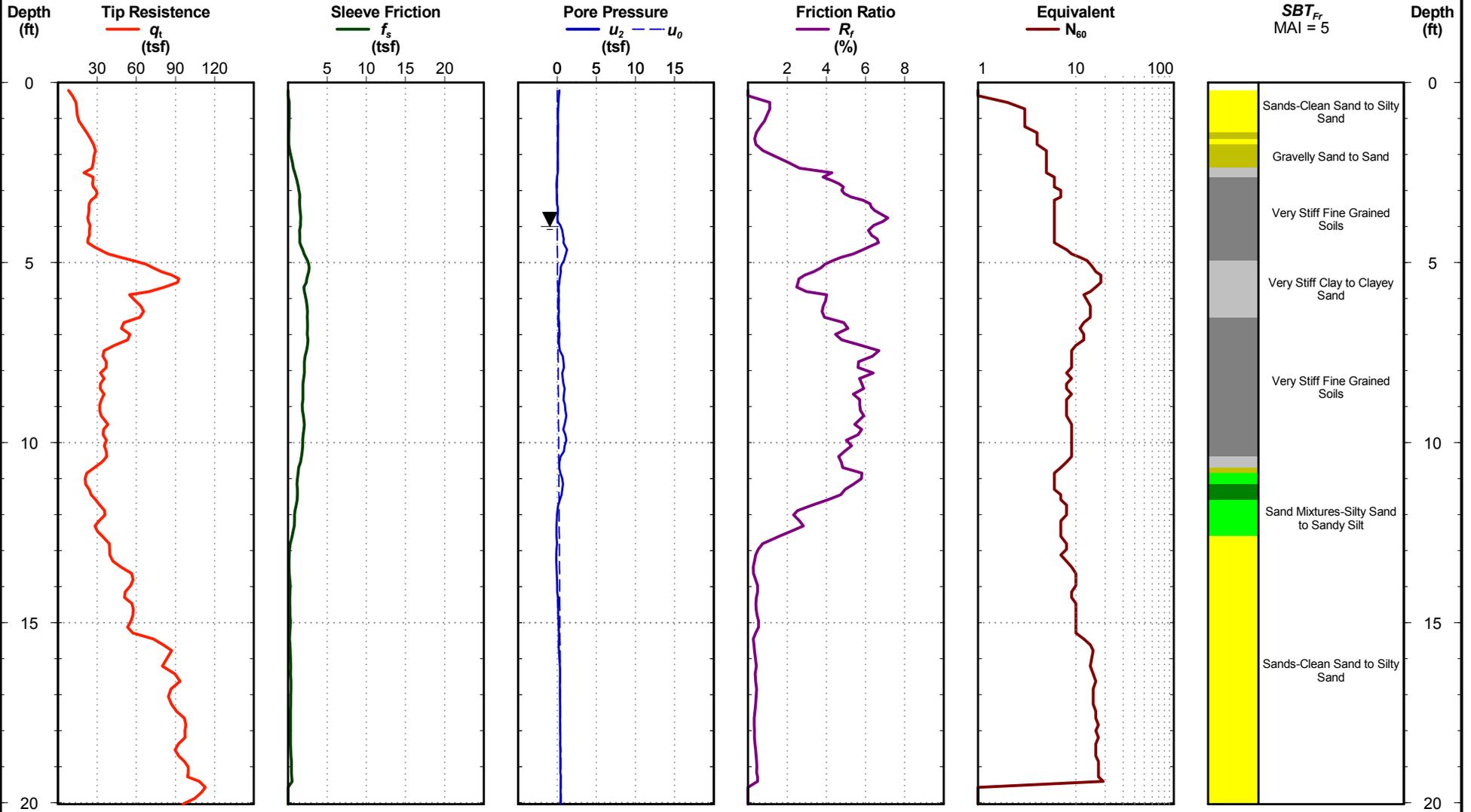
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-49

Date: Jul. 10, 2015
Estimated Water Depth: 4 ft
Rig/Operator: Andy | Mike

Total Depth: 20.0 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-49



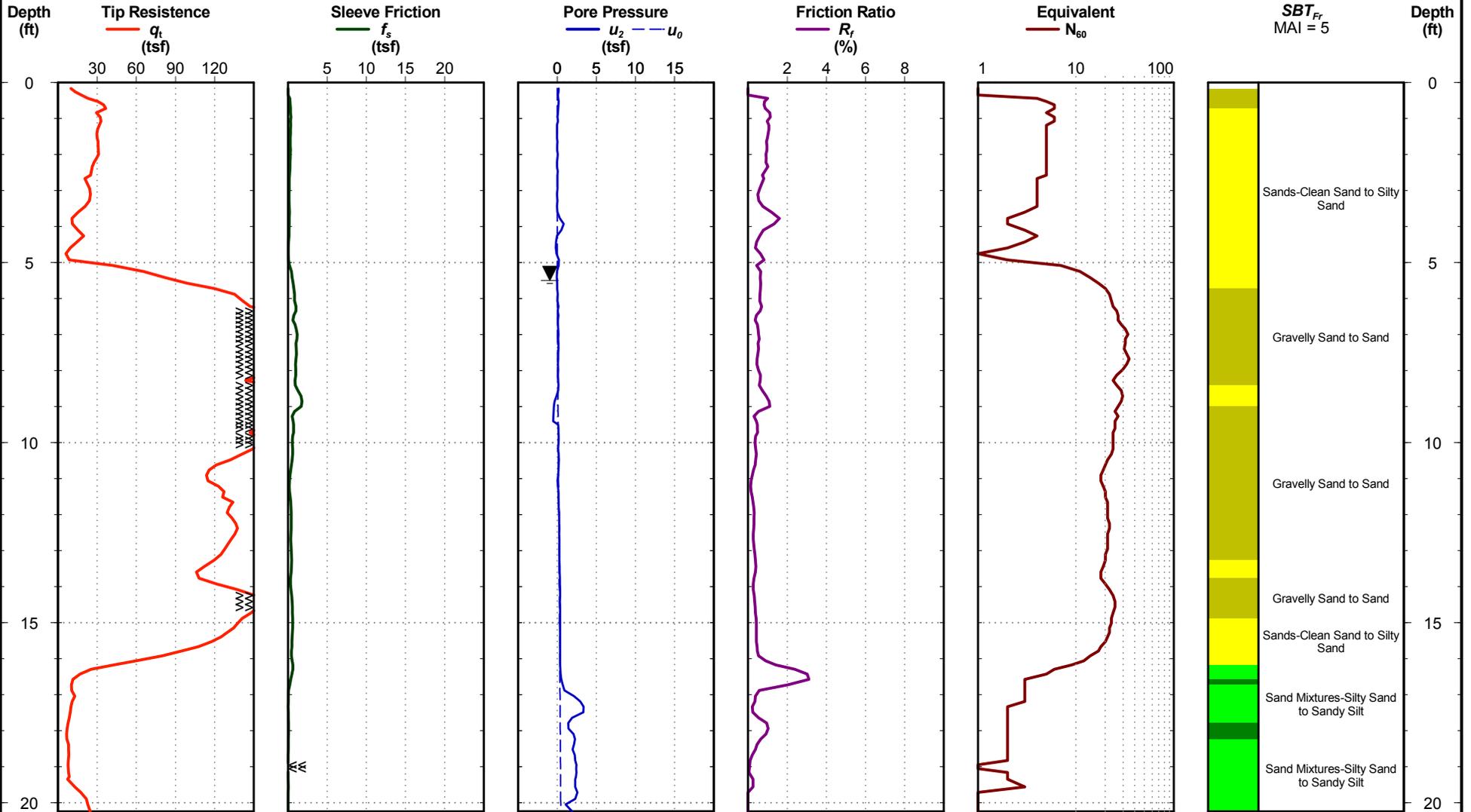
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-50

Date: Jul. 10, 2015
Estimated Water Depth: 5.5 ft
Rig/Operator: Andy | Mike

Total Depth: 20.2 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-50



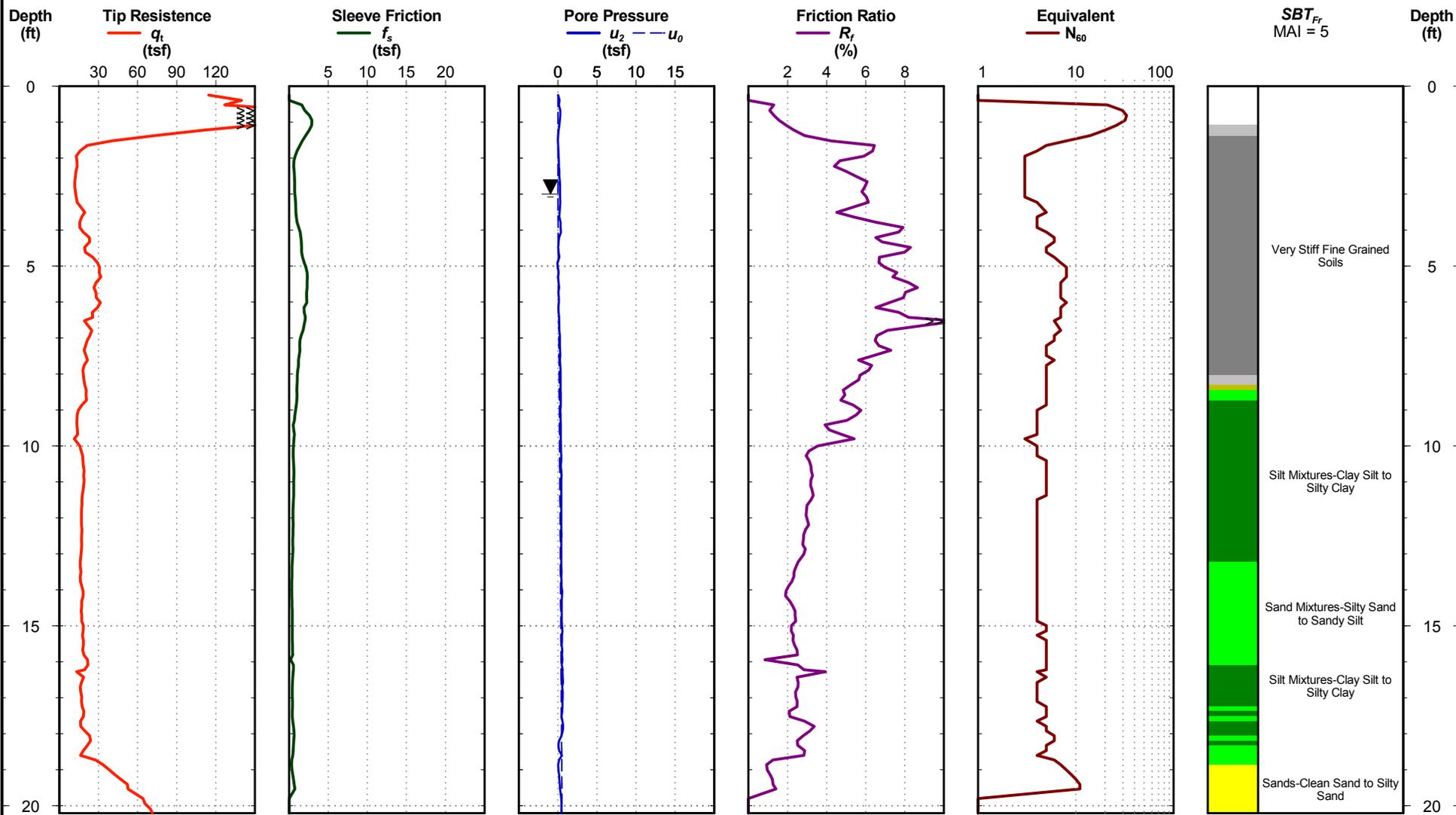
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

CLR-51

Date: May. 28, 2015
Estimated Water Depth: 3 ft
Rig/Operator: Andy | Damon

Total Depth: 20.2 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

CLR-51



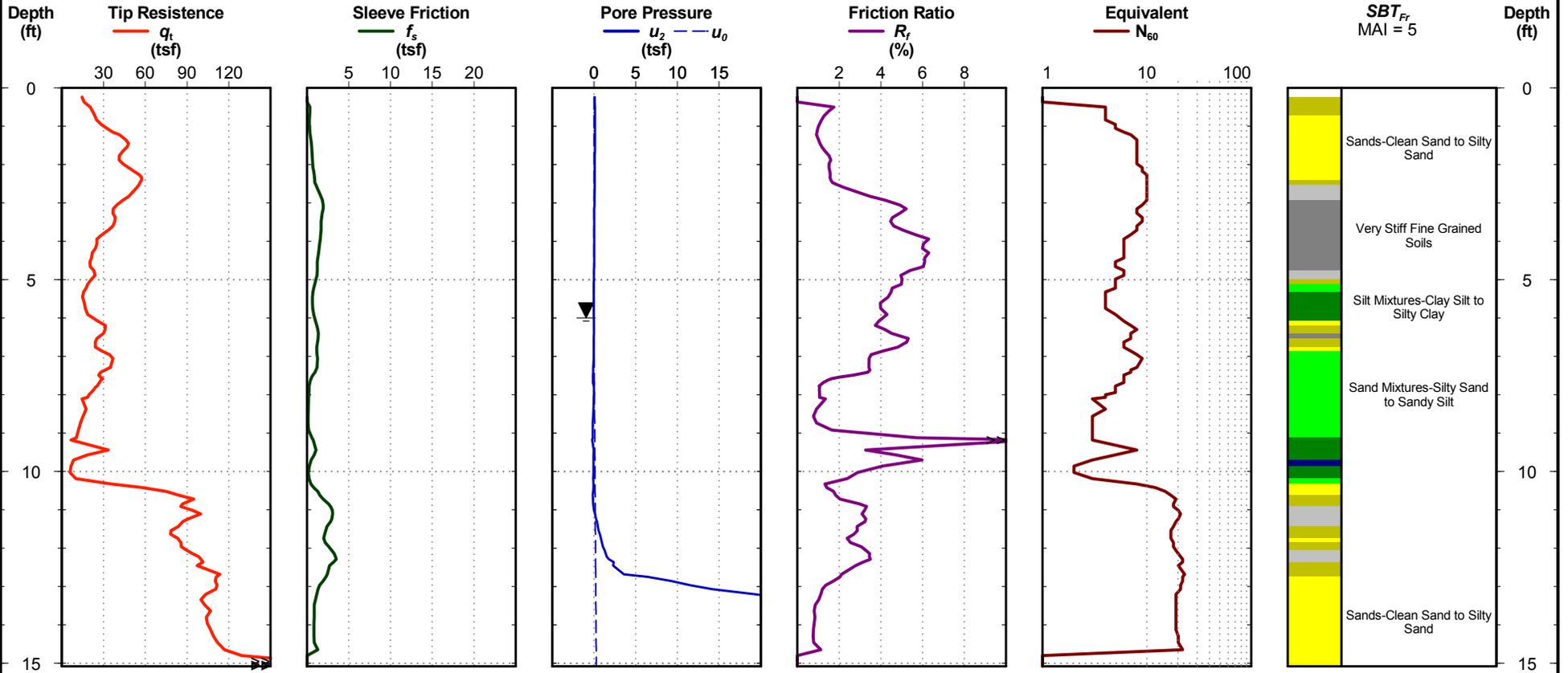
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-01

Date: Jul. 9, 2015
Estimated Water Depth: 6 ft
Rig/Operator: Damon | LJ

Total Depth: 15.1 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ_S&ME.GDT_8/13/15

WVR-01



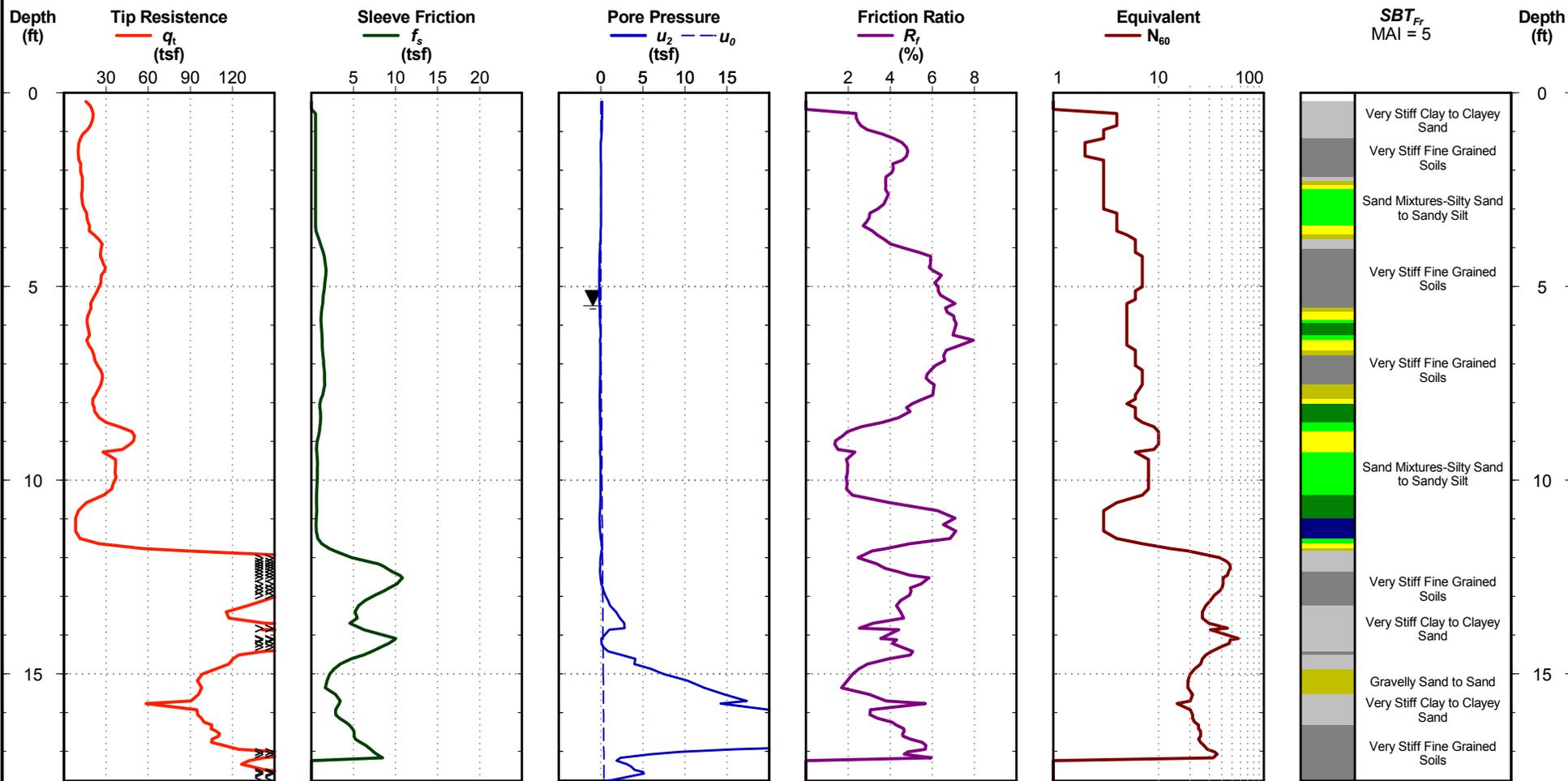
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-02

Date: Jul. 9, 2015
Estimated Water Depth: 5.5 ft
Rig/Operator: Damon | LJ

Total Depth: 17.8 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-02



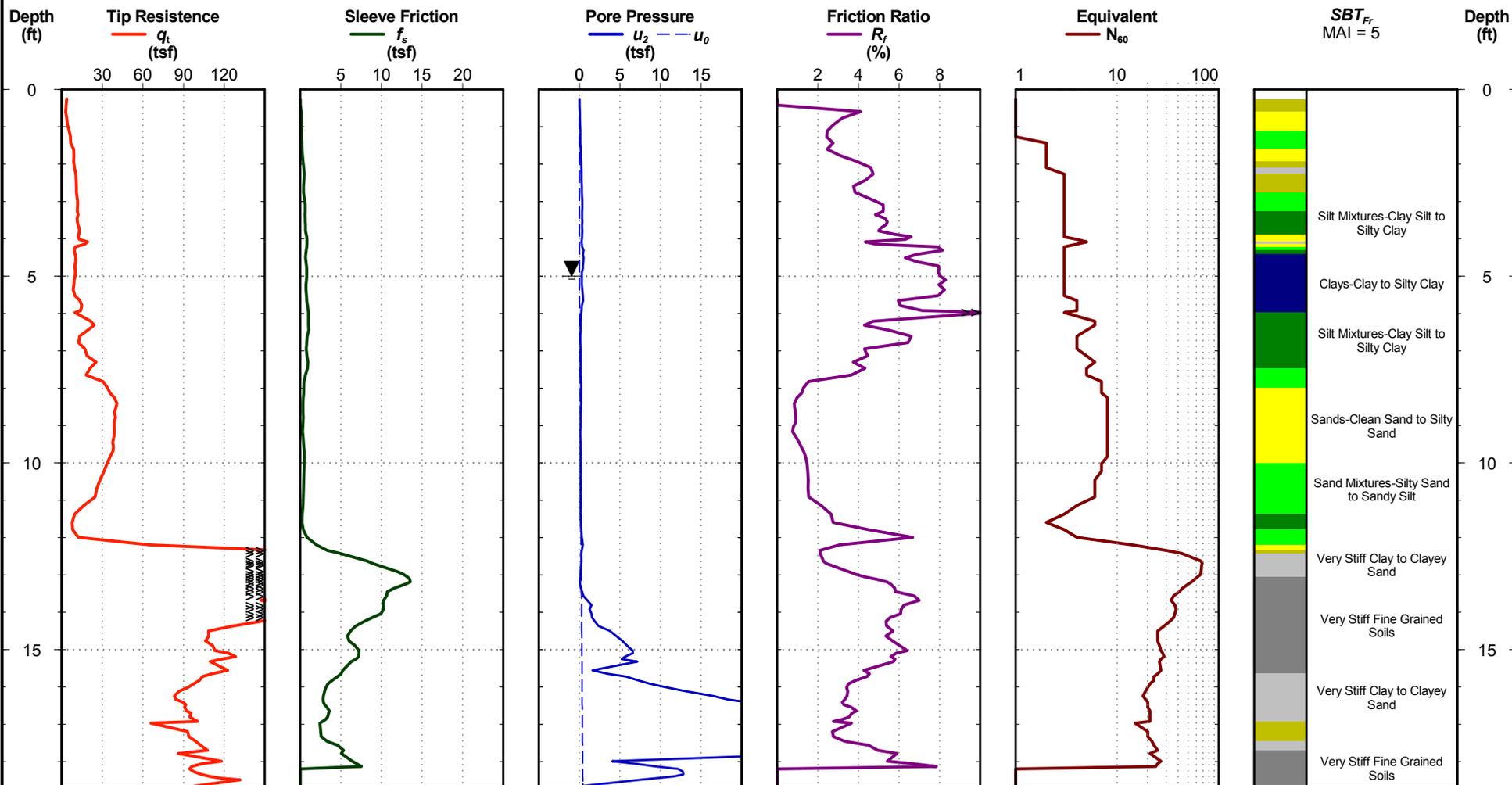
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-03

Date: Jul. 9, 2015
Estimated Water Depth: 5 ft
Rig/Operator: Damon | LJ

Total Depth: 18.7 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-03



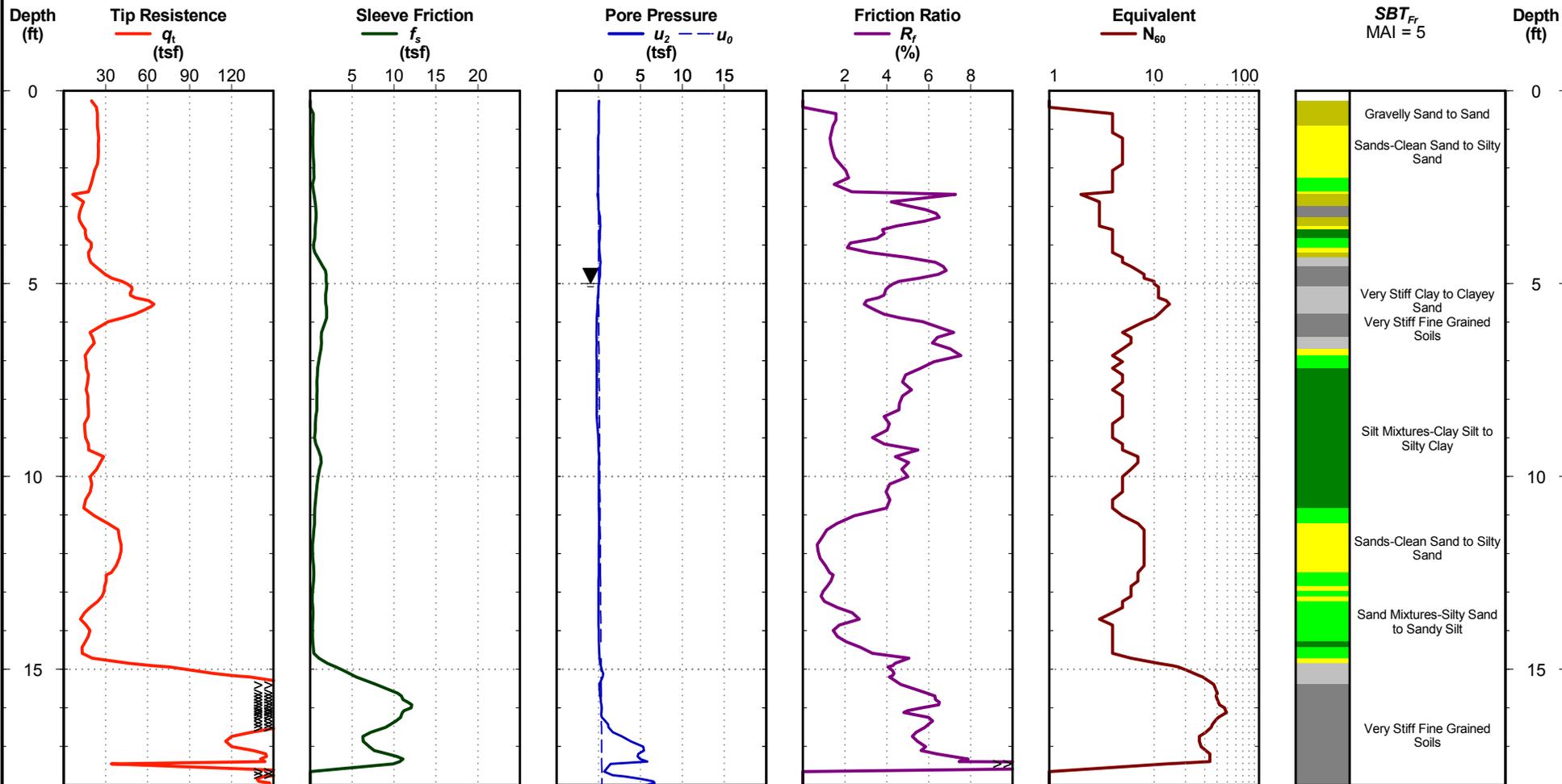
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-04

Date: Jul. 9, 2015
Estimated Water Depth: 5 ft
Rig/Operator: Damon | LJ

Total Depth: 18.0 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-04



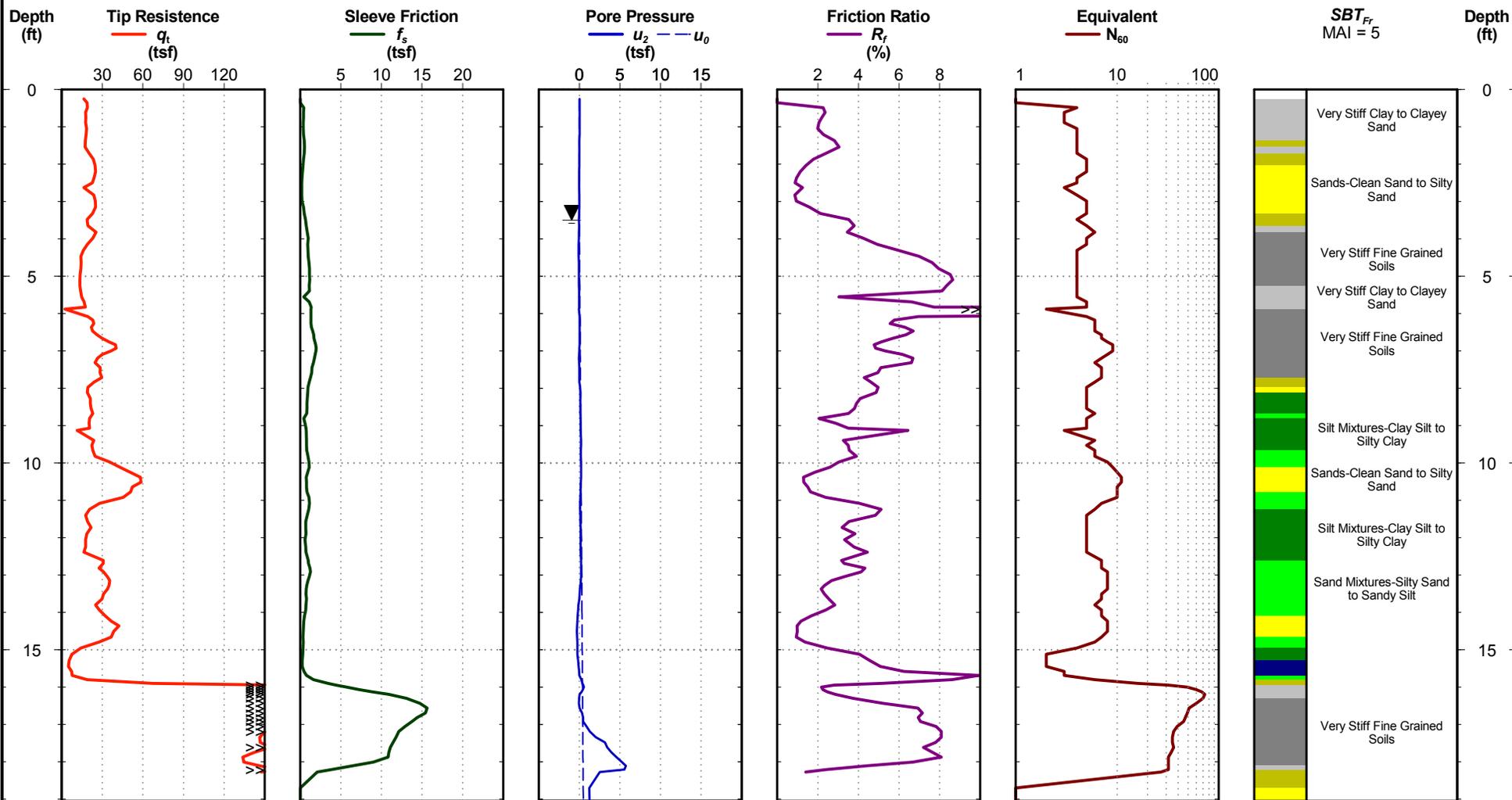
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-05

Date: Jul. 9, 2015
Estimated Water Depth: 3.5 ft
Rig/Operator: Damon | LJ

Total Depth: 19.1 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-05



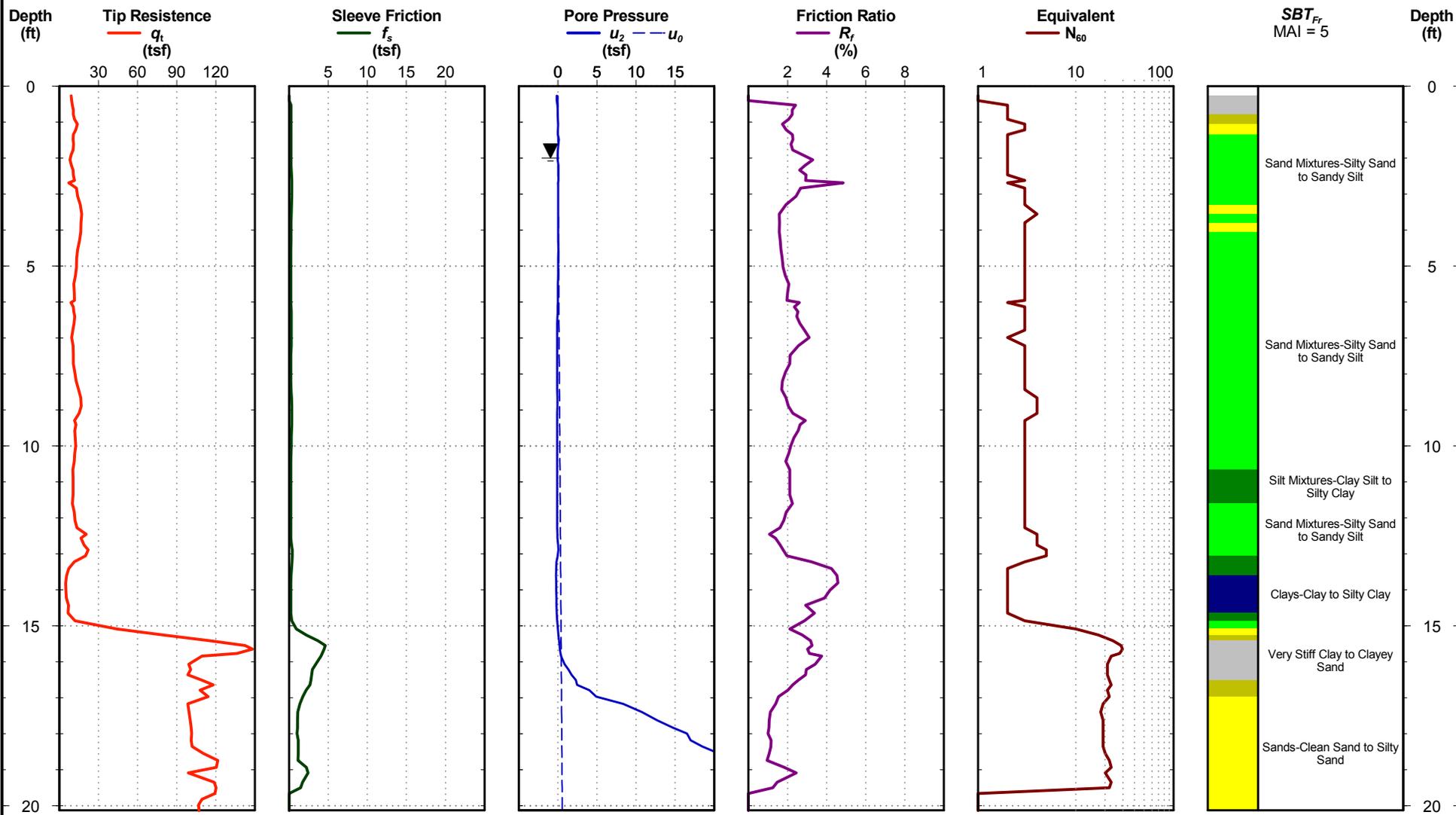
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-06

Date: Jul. 9, 2015
Estimated Water Depth: 2 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-06



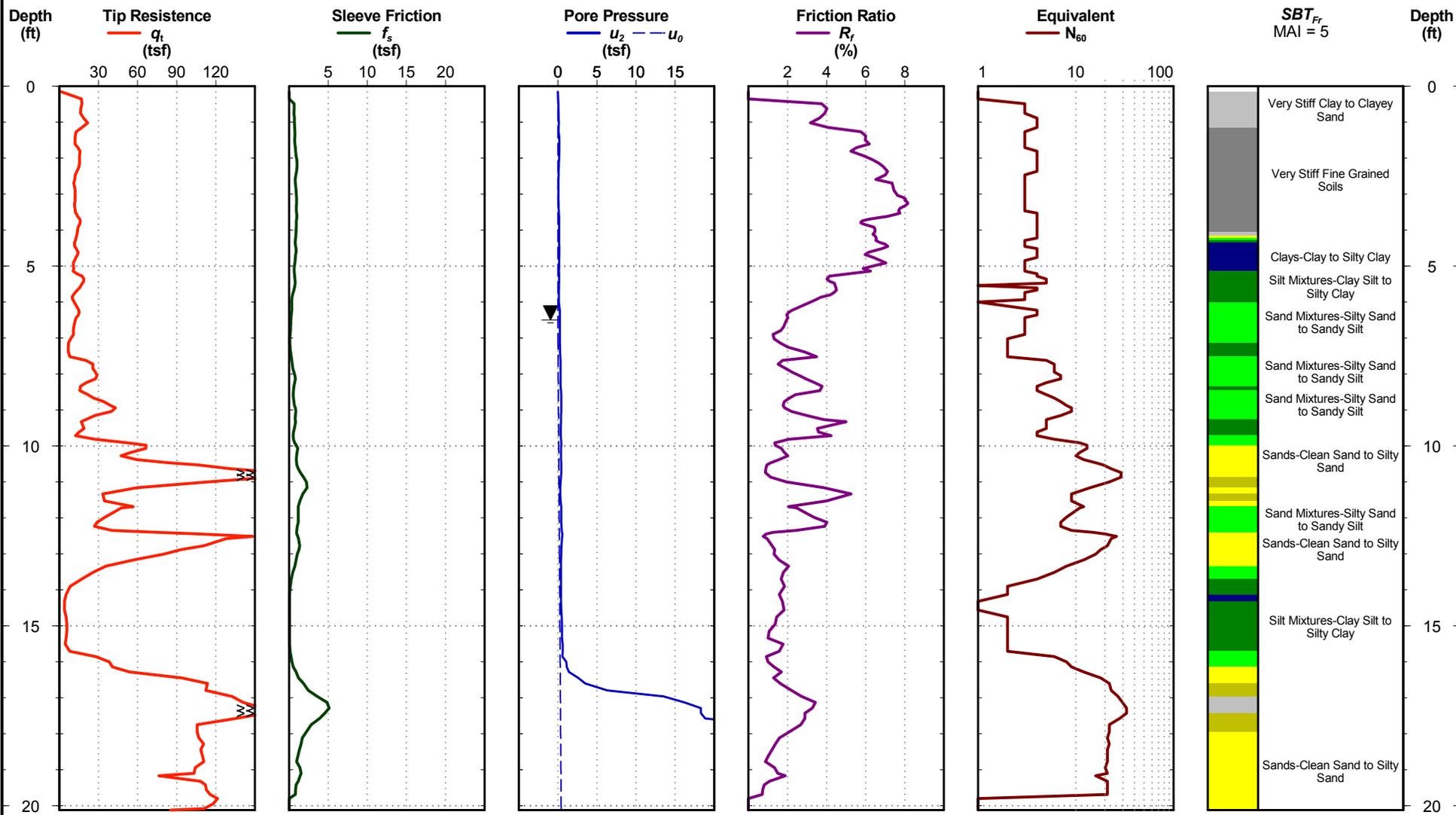
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-07

Date: Jul. 9, 2015
Estimated Water Depth: 6.5 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-07



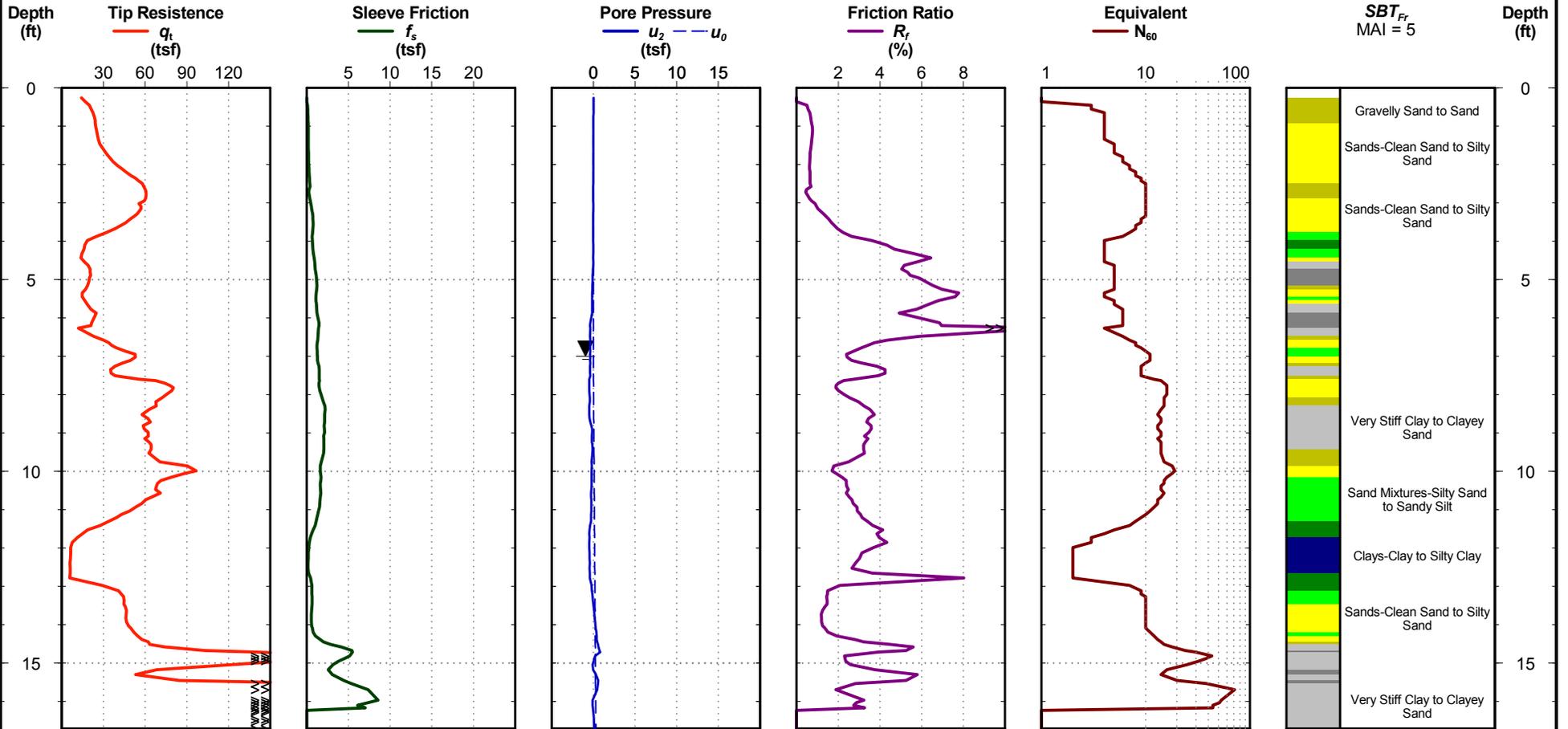
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-08

Date: Jul. 9, 2015
Estimated Water Depth: 7 ft
Rig/Operator: Damon | LJ

Total Depth: 16.7 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-08



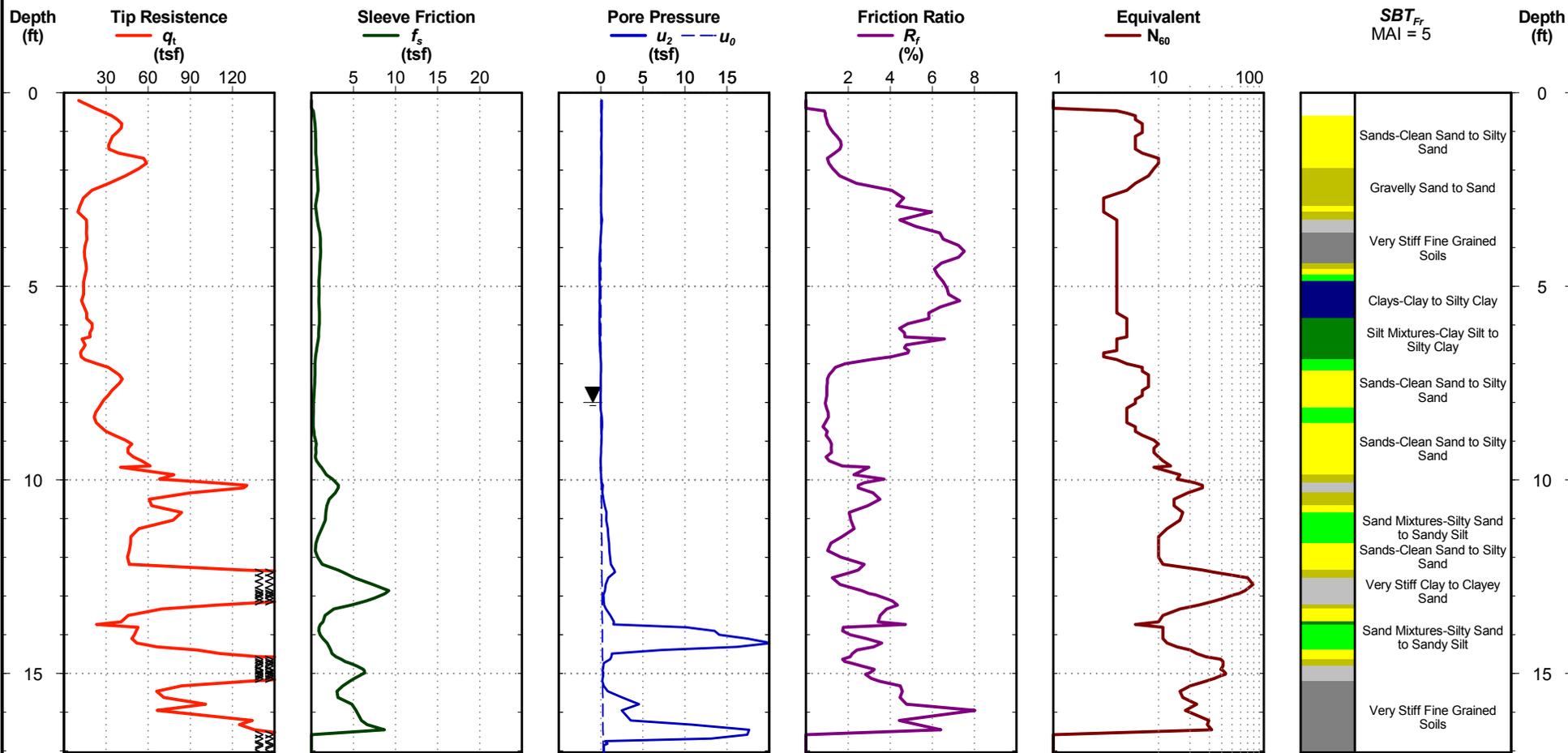
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-09

Date: Jul. 9, 2015
Estimated Water Depth: 8 ft
Rig/Operator: Damon | LJ

Total Depth: 17.0 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-09



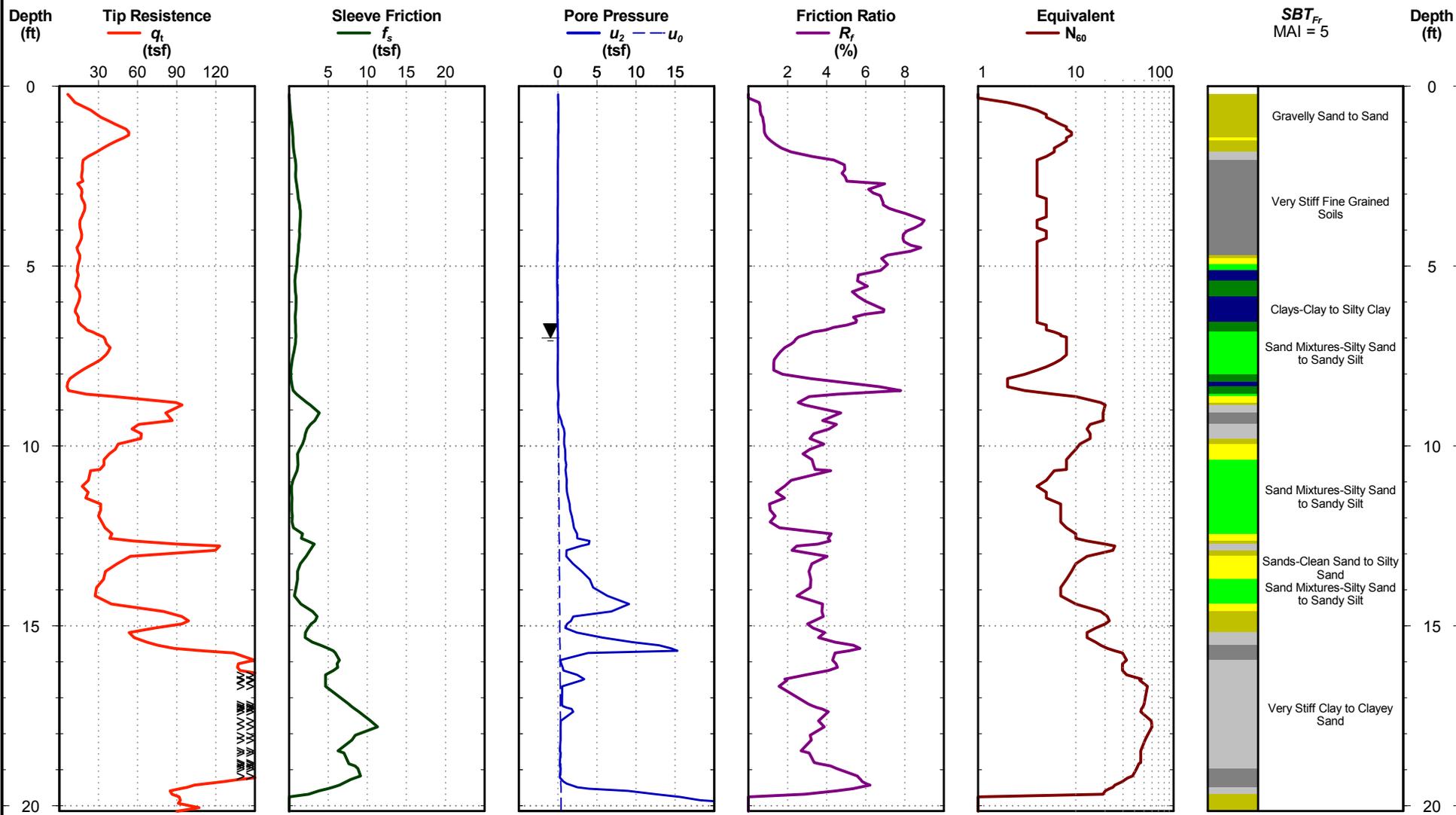
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-10

Date: Jul. 9, 2015
Estimated Water Depth: 7 ft
Rig/Operator: Damon | LJ

Total Depth: 20.2 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-10



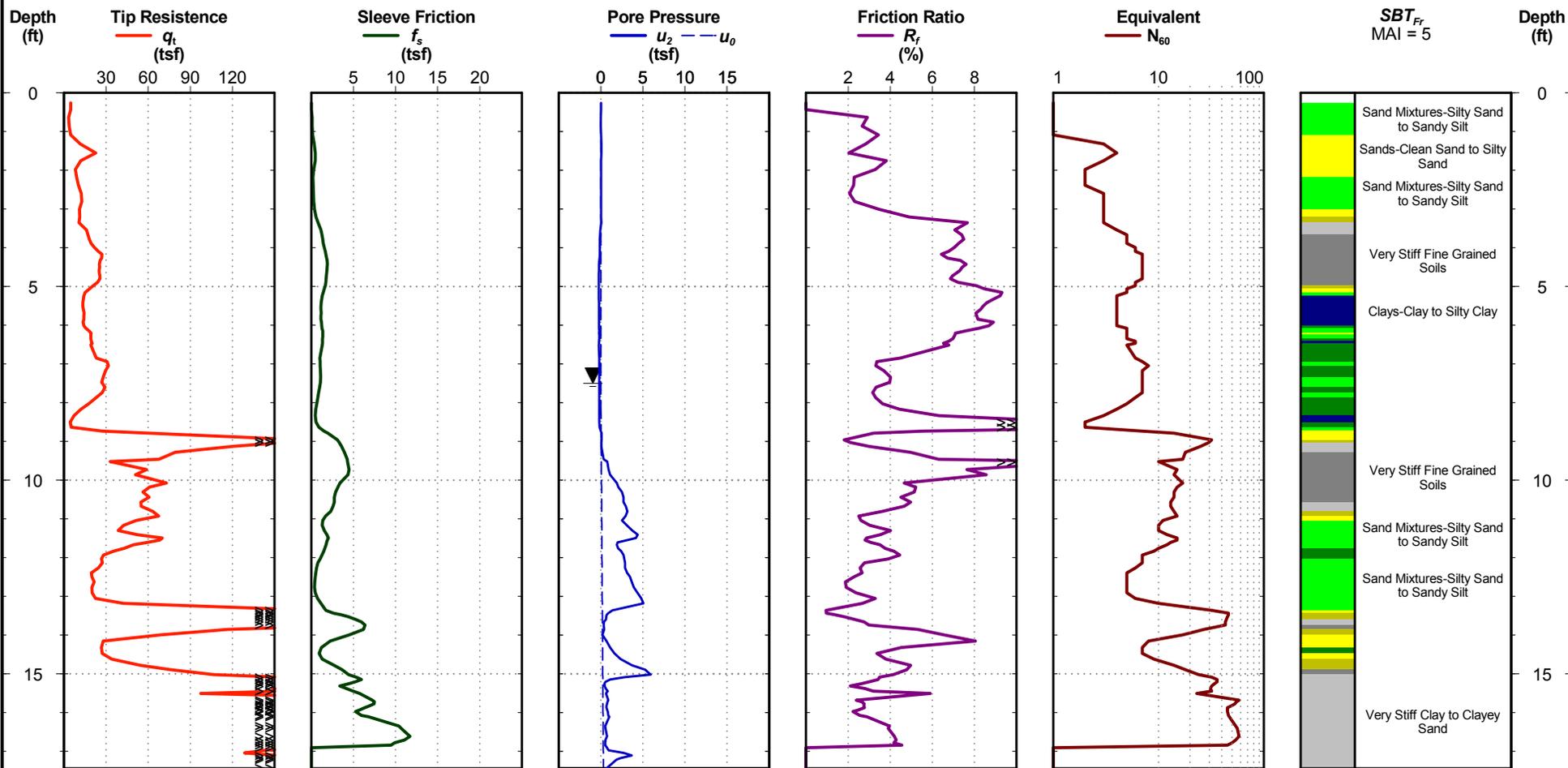
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-11

Date: Jul. 9, 2015
Estimated Water Depth: 7.5 ft
Rig/Operator: Damon | LJ

Total Depth: 17.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-11



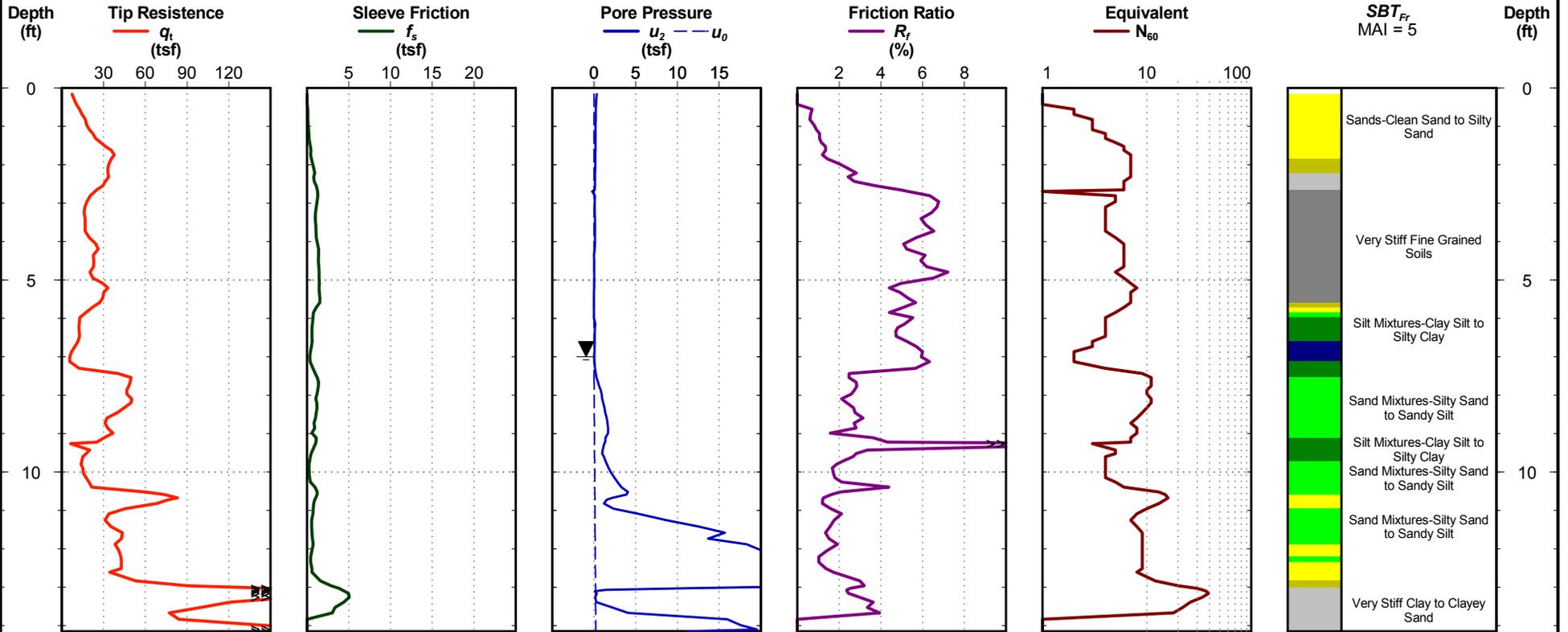
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-12

Date: Jul. 9, 2015
Estimated Water Depth: 7 ft
Rig/Operator: Damon | LJ

Total Depth: 14.2 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-12



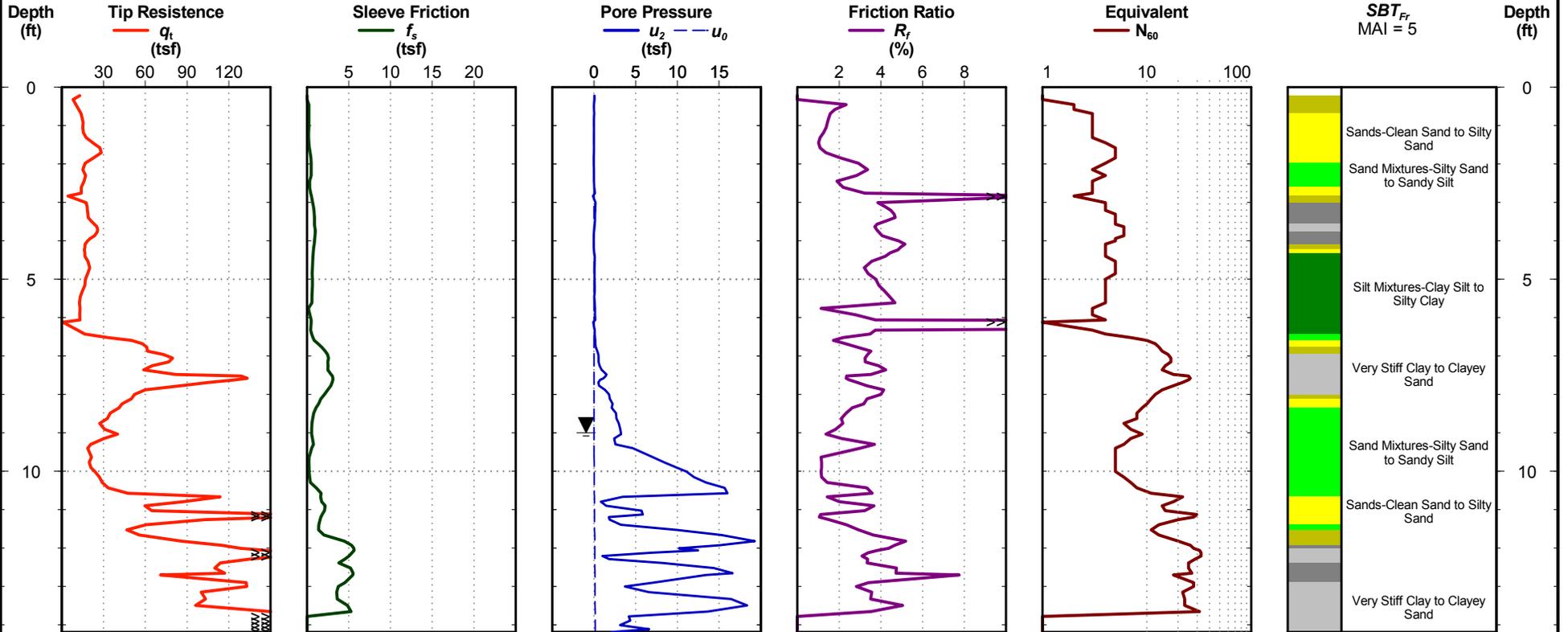
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-13

Date: Jul. 9, 2015
Estimated Water Depth: 9 ft
Rig/Operator: Damon | LJ

Total Depth: 14.2 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-13



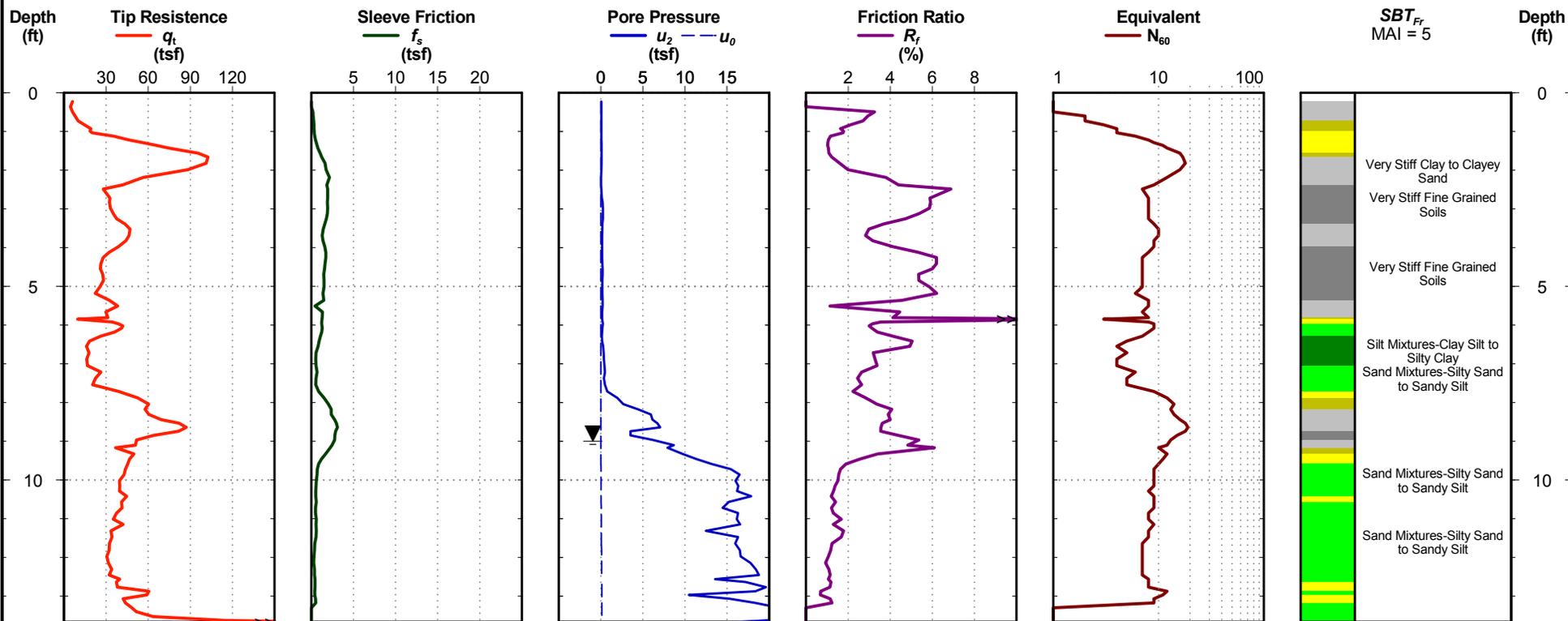
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-14

Date: Jul. 9, 2015
Estimated Water Depth: 9 ft
Rig/Operator: Damon | LJ

Total Depth: 13.7 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064. ROADWAY CPT. GPJ. S&ME.GDT. 8/13/15

WVR-14



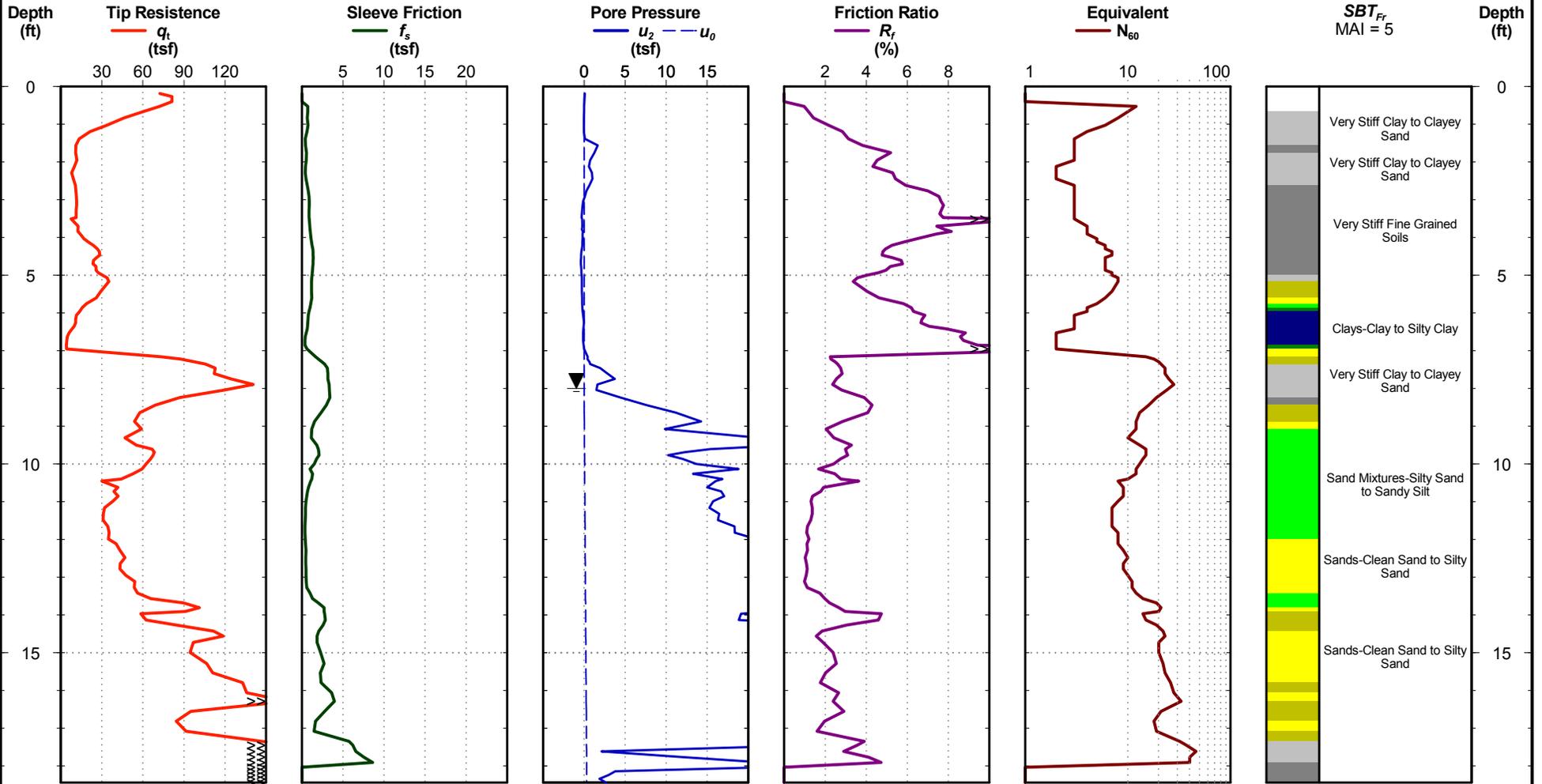
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-15

Date: Jul. 9, 2015
Estimated Water Depth: 8 ft
Rig/Operator: Damon | LJ

Total Depth: 18.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-15



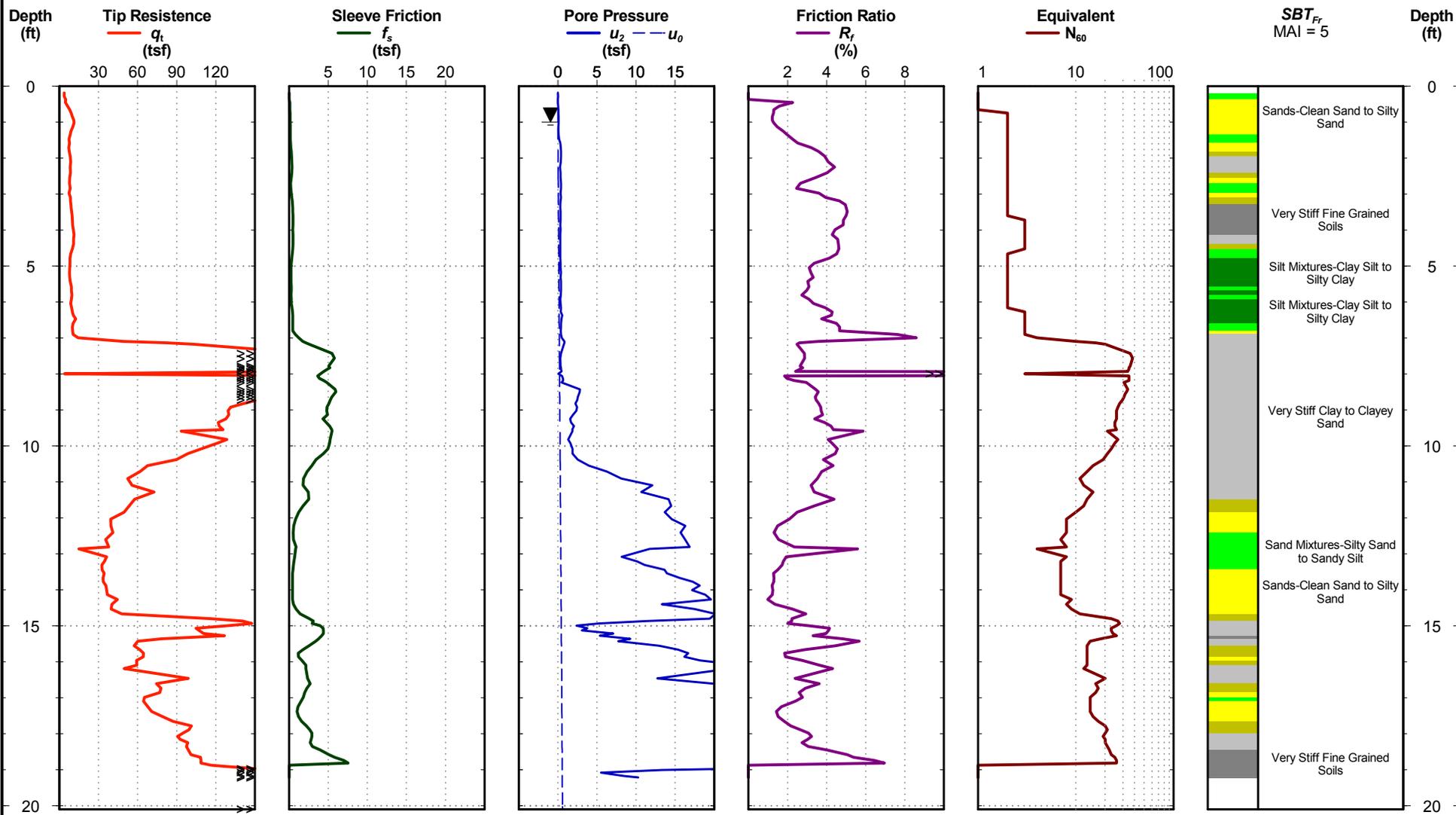
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-16

Date: Jul. 8, 2015
Estimated Water Depth: 1 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-16



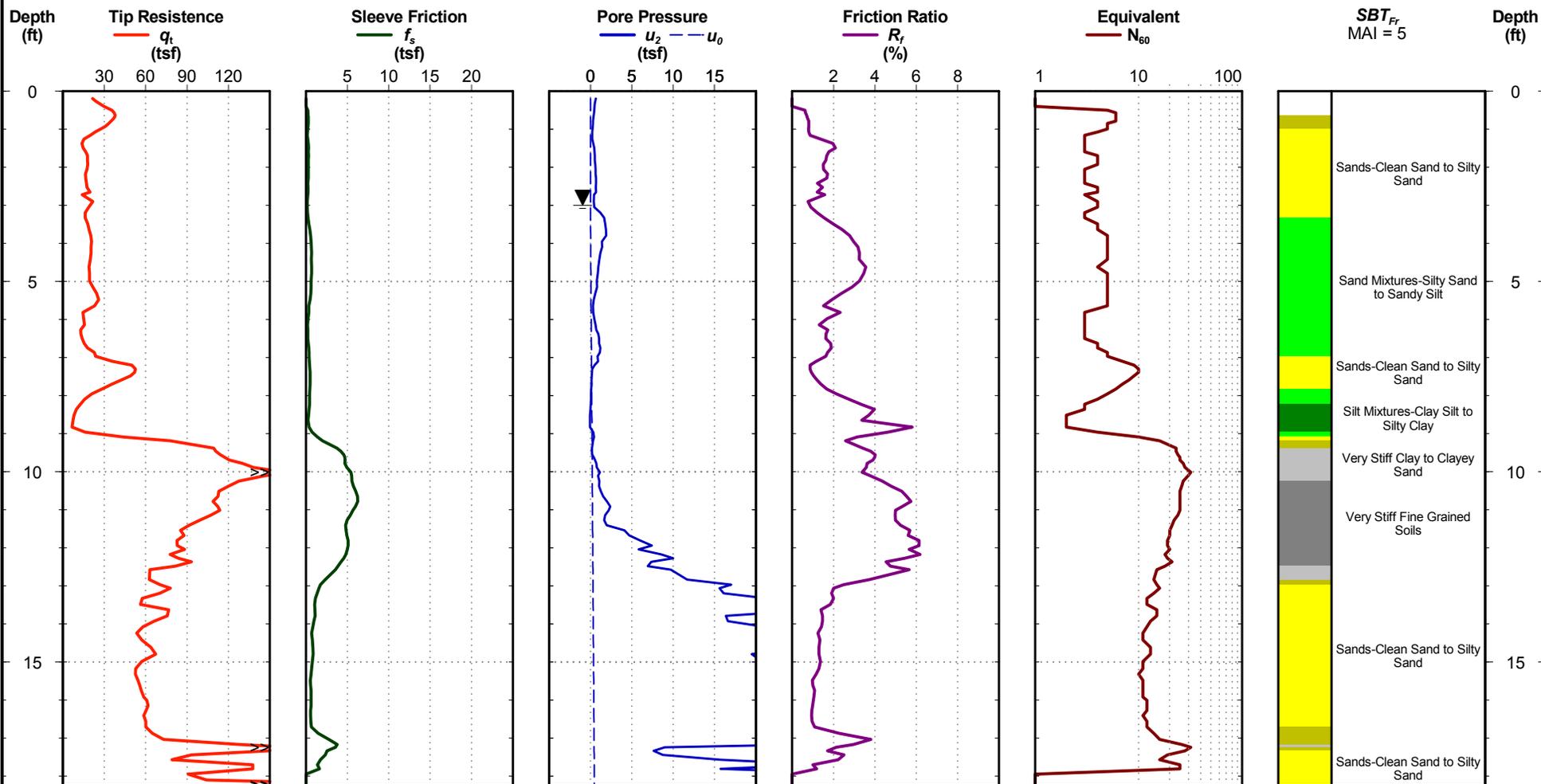
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-17

Date: Jul. 8, 2015
Estimated Water Depth: 3 ft
Rig/Operator: Damon | LJ

Total Depth: 18.3 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-17



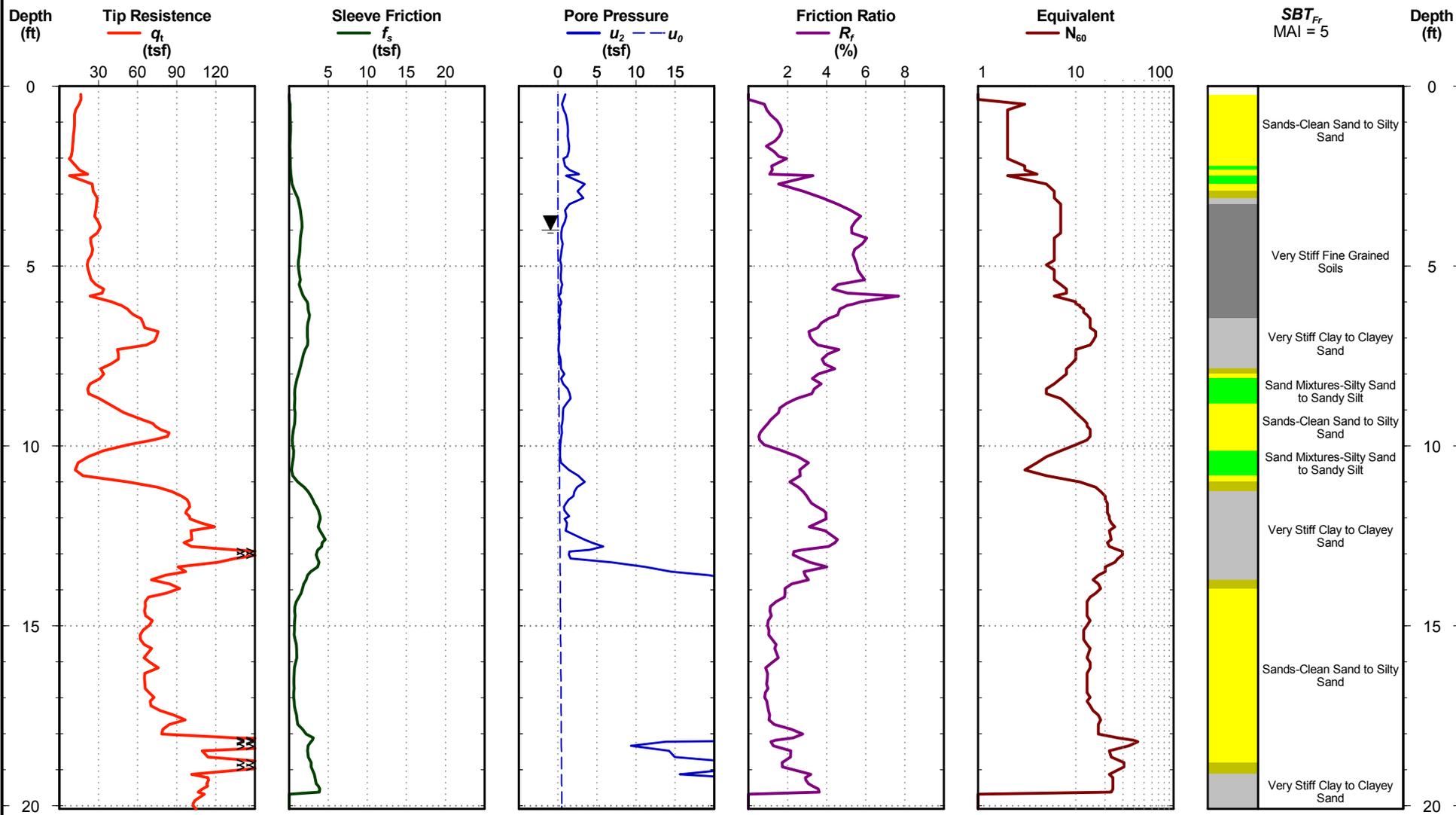
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-18

Date: Jul. 8, 2015
Estimated Water Depth: 4 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT. 8/13/15

WVR-18



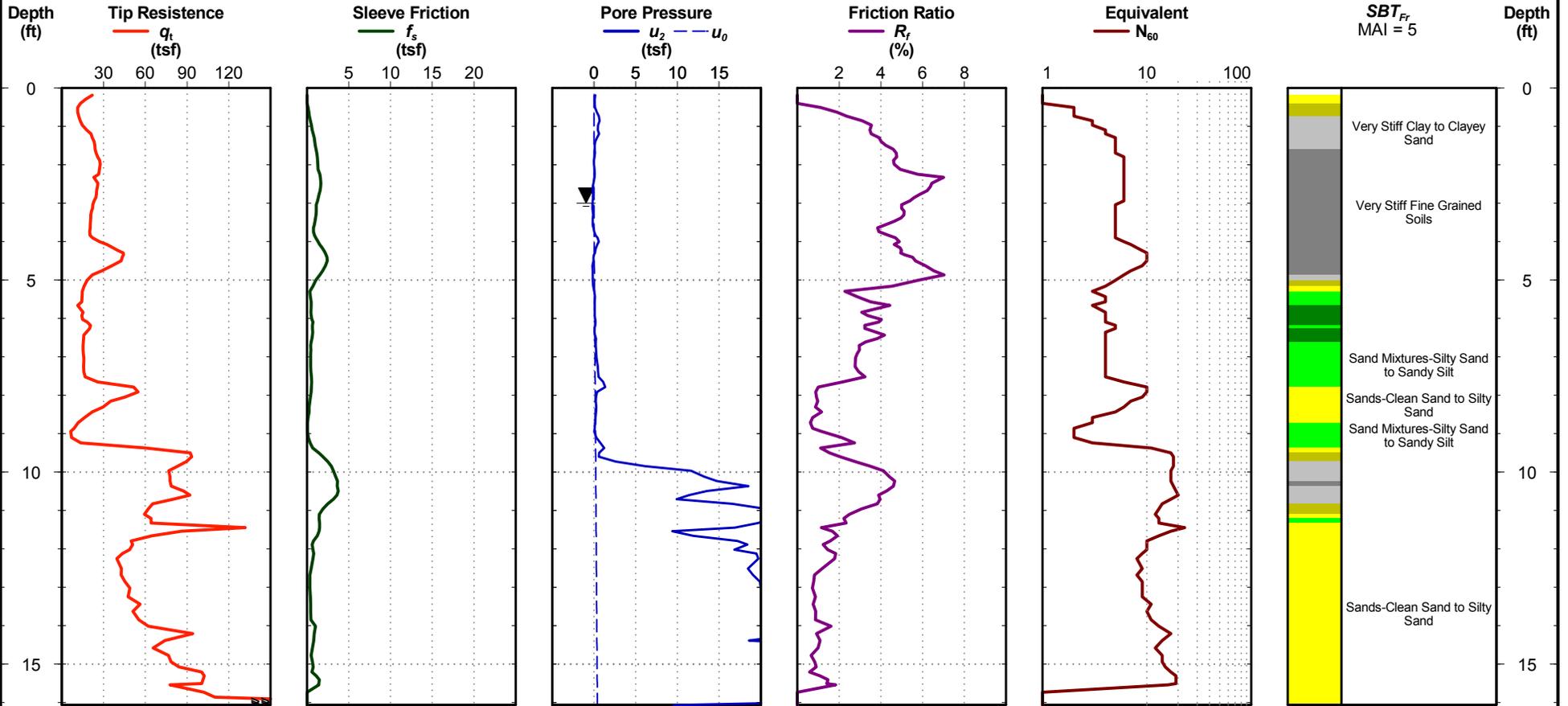
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-19

Date: Jul. 8, 2015
Estimated Water Depth: 3 ft
Rig/Operator: Damon | LJ

Total Depth: 16.1 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-19



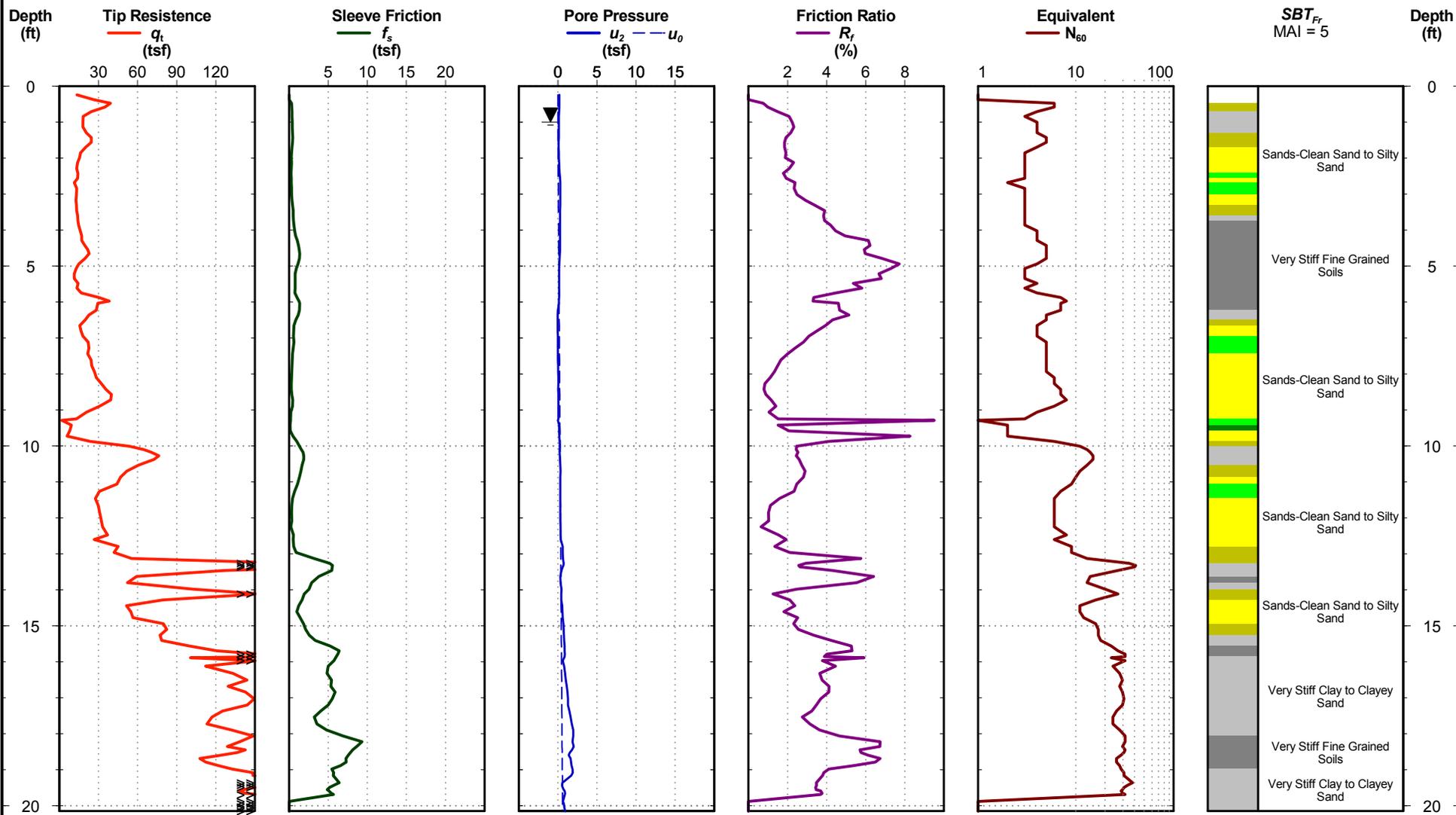
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-20

Date: Jul. 7, 2015
Estimated Water Depth: 1 ft
Rig/Operator: Damon | LJ

Total Depth: 20.2 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-20



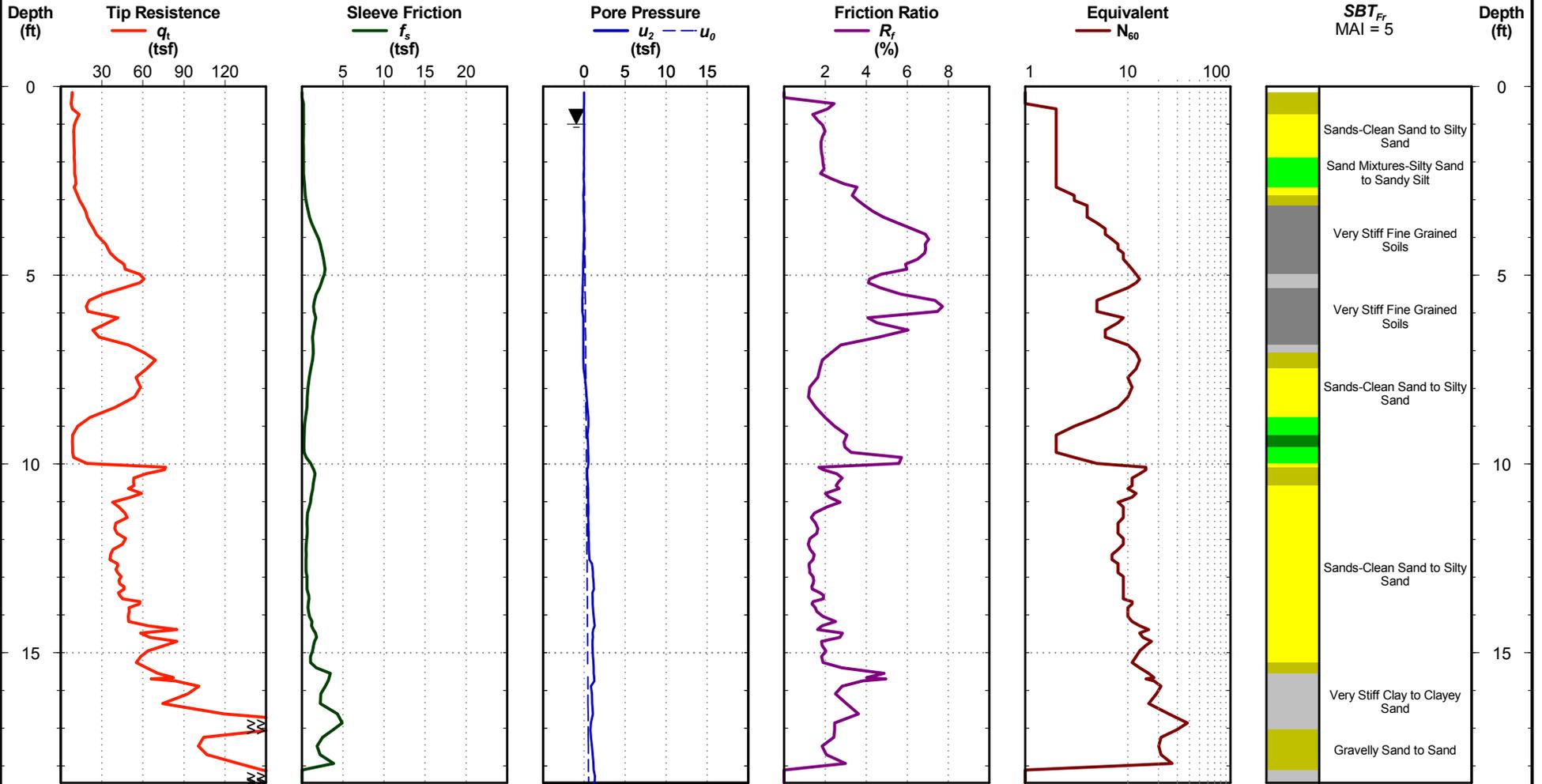
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-21

Date: Jul. 7, 2015
Estimated Water Depth: 1 ft
Rig/Operator: Damon | LJ

Total Depth: 18.5 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-21



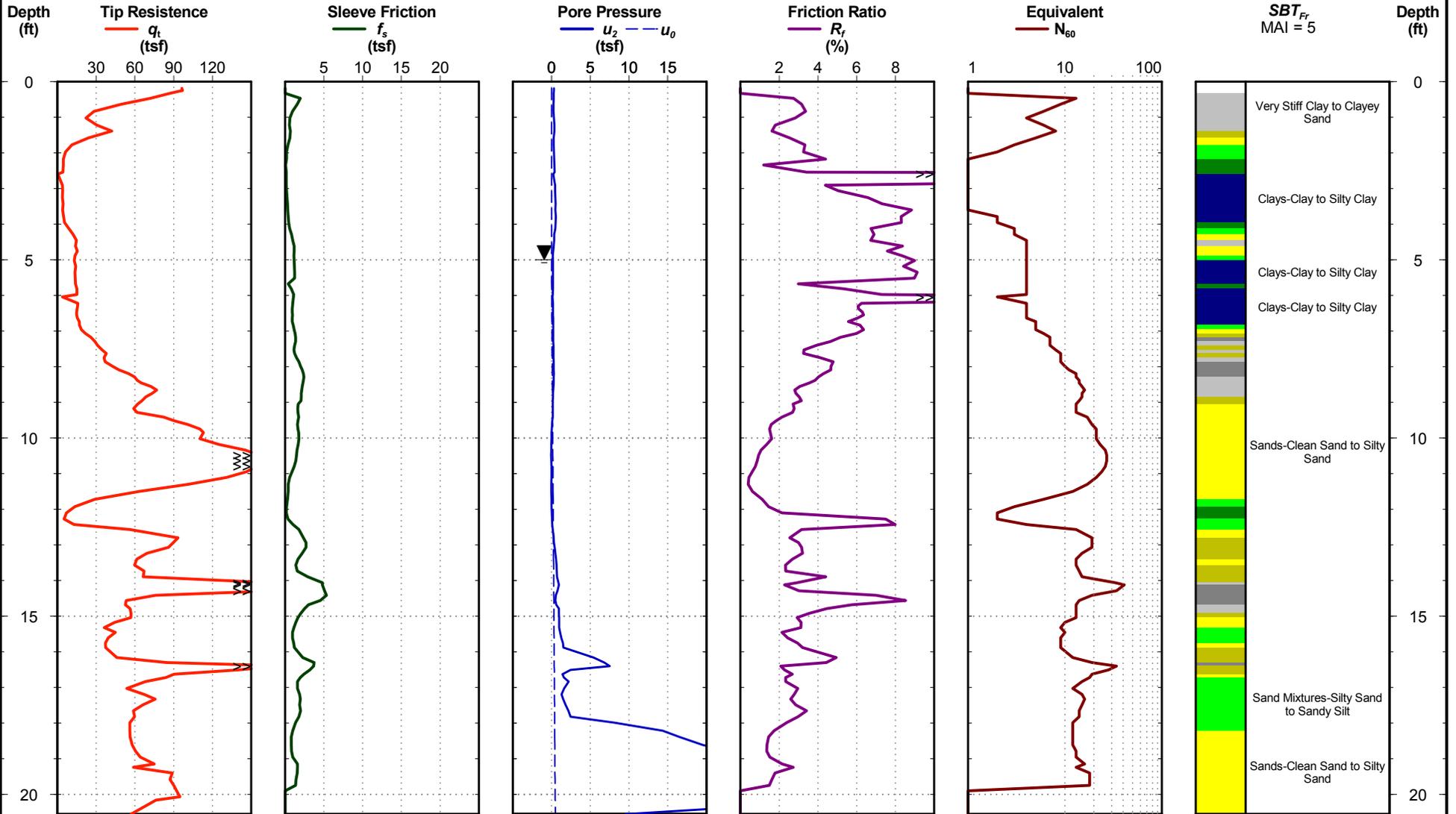
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-22

Date: Jul. 7, 2015
Estimated Water Depth: 5 ft
Rig/Operator: Damon | LJ

Total Depth: 20.6 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-22



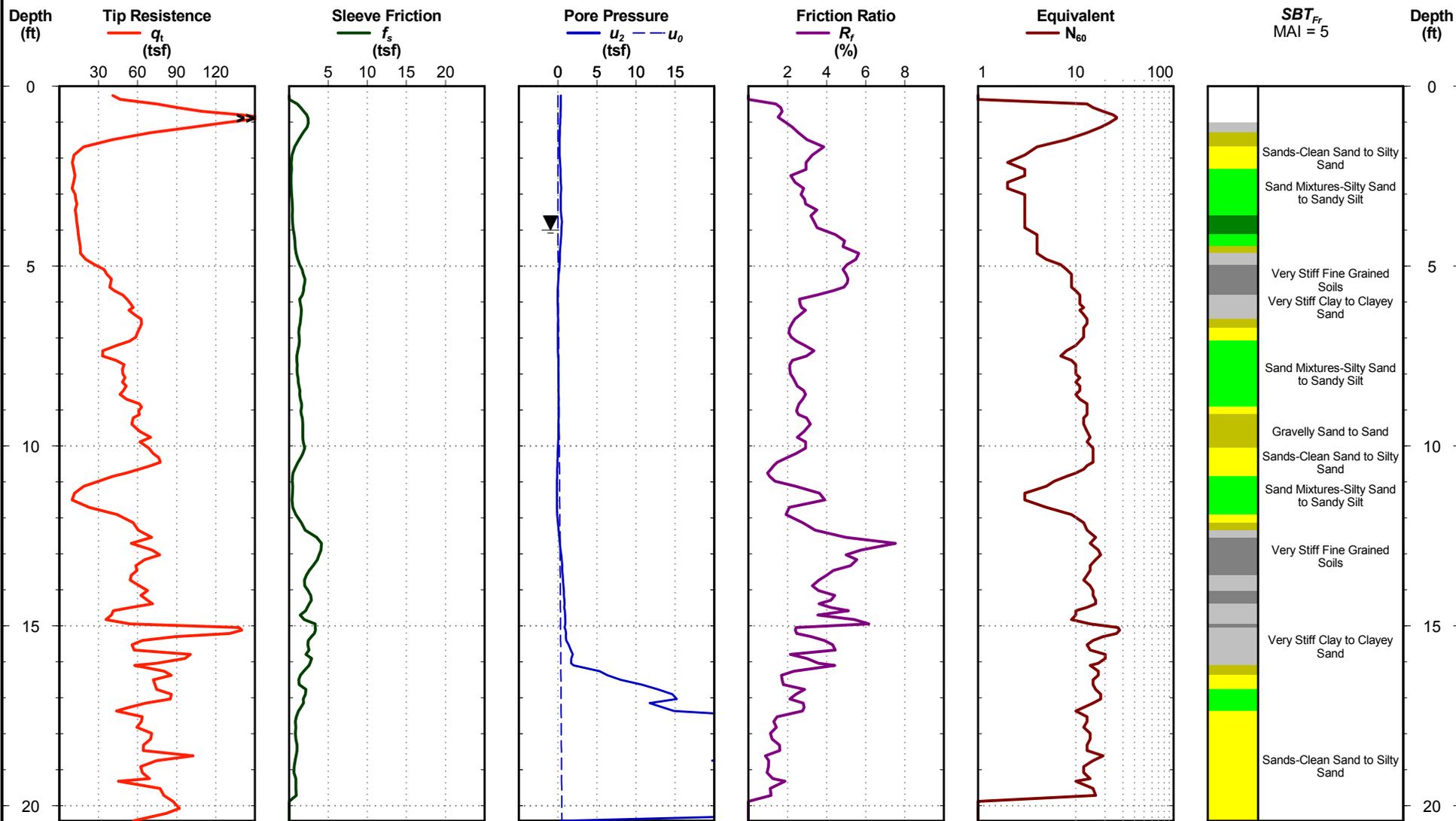
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-23

Date: Jul. 7, 2015
Estimated Water Depth: 4 ft
Rig/Operator: Damon | LJ

Total Depth: 20.4 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-23



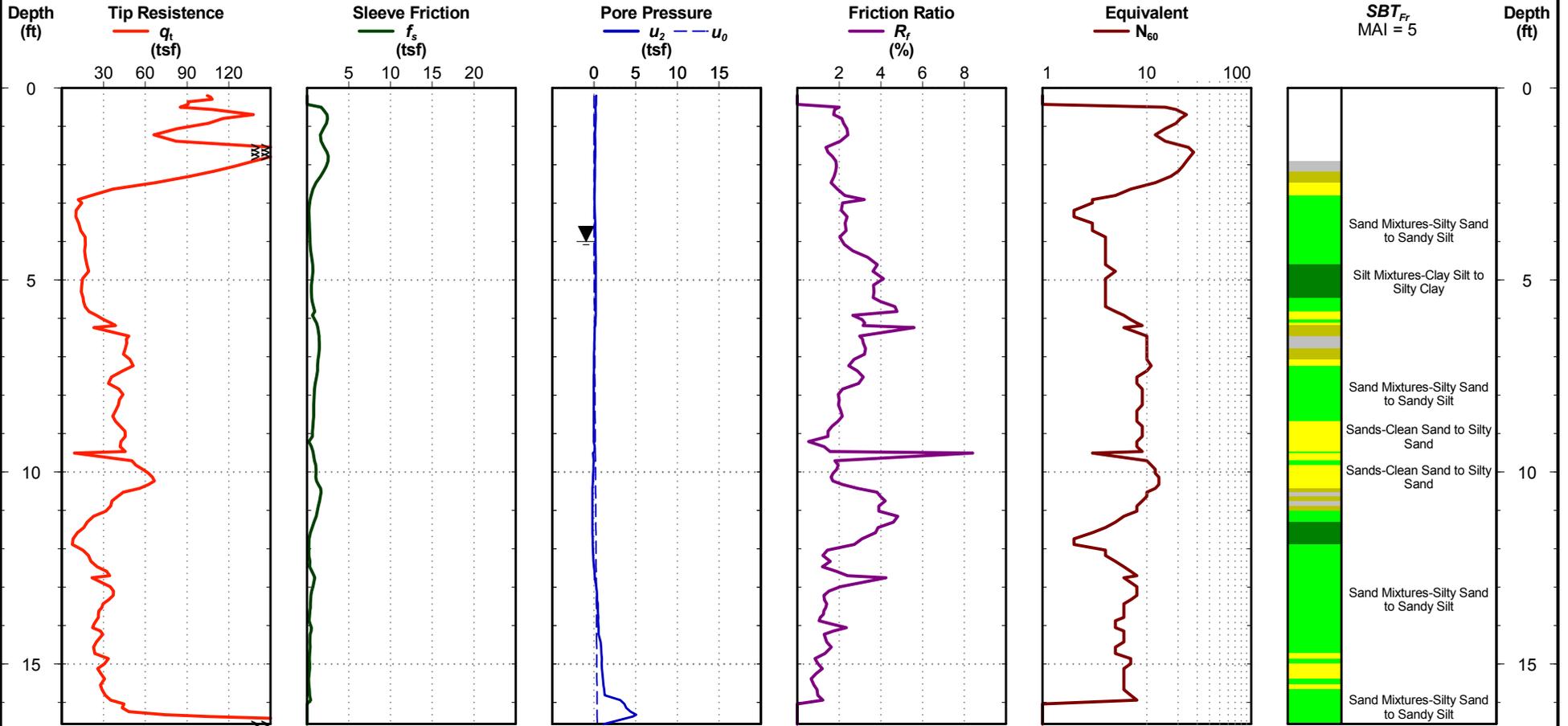
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-24

Date: Jul. 7, 2015
Estimated Water Depth: 4 ft
Rig/Operator: Damon | LJ

Total Depth: 16.6 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-24



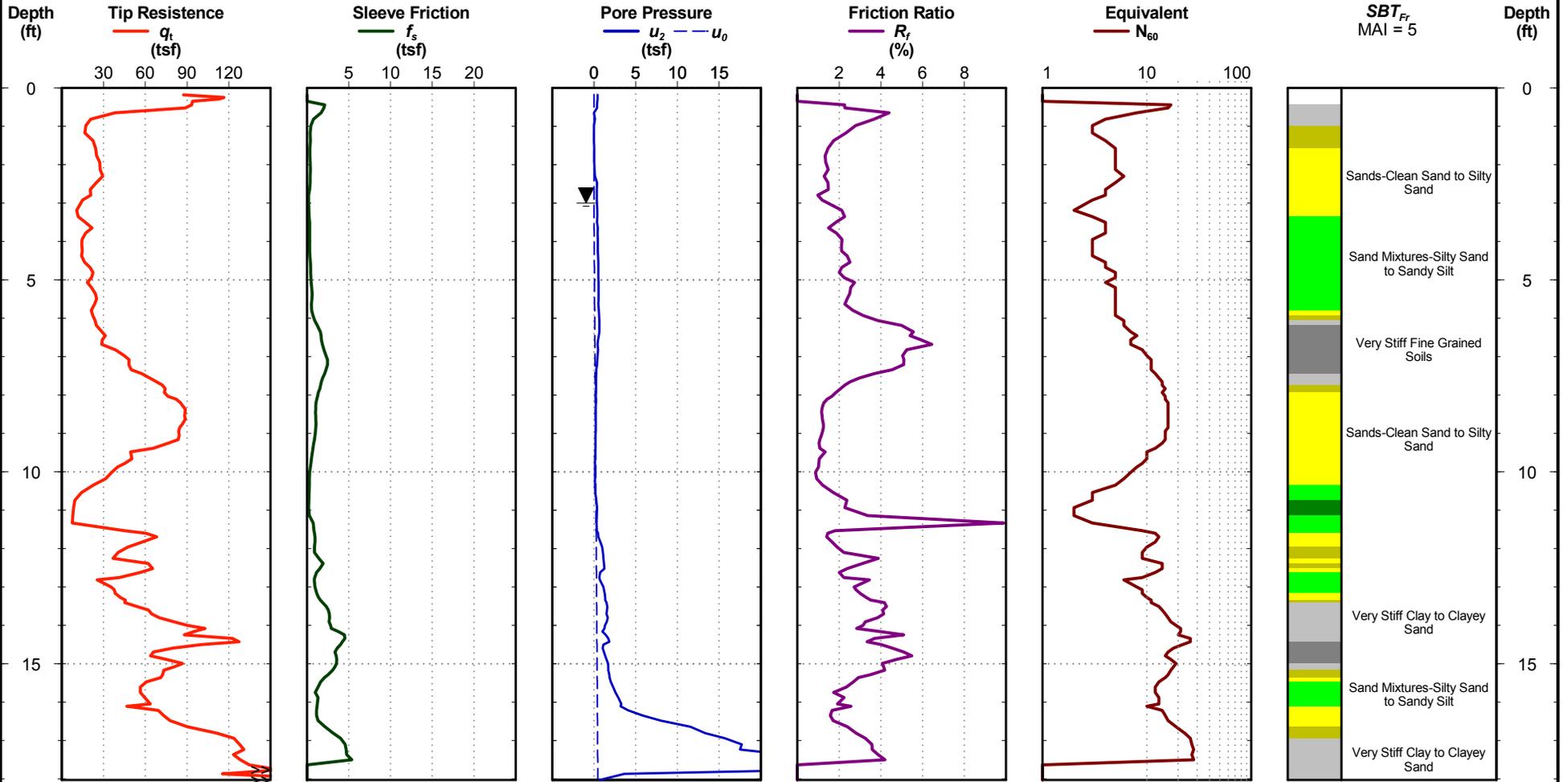
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-25

Date: Jul. 7, 2015
Estimated Water Depth: 3 ft
Rig/Operator: Damon | LJ

Total Depth: 18.0 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-25



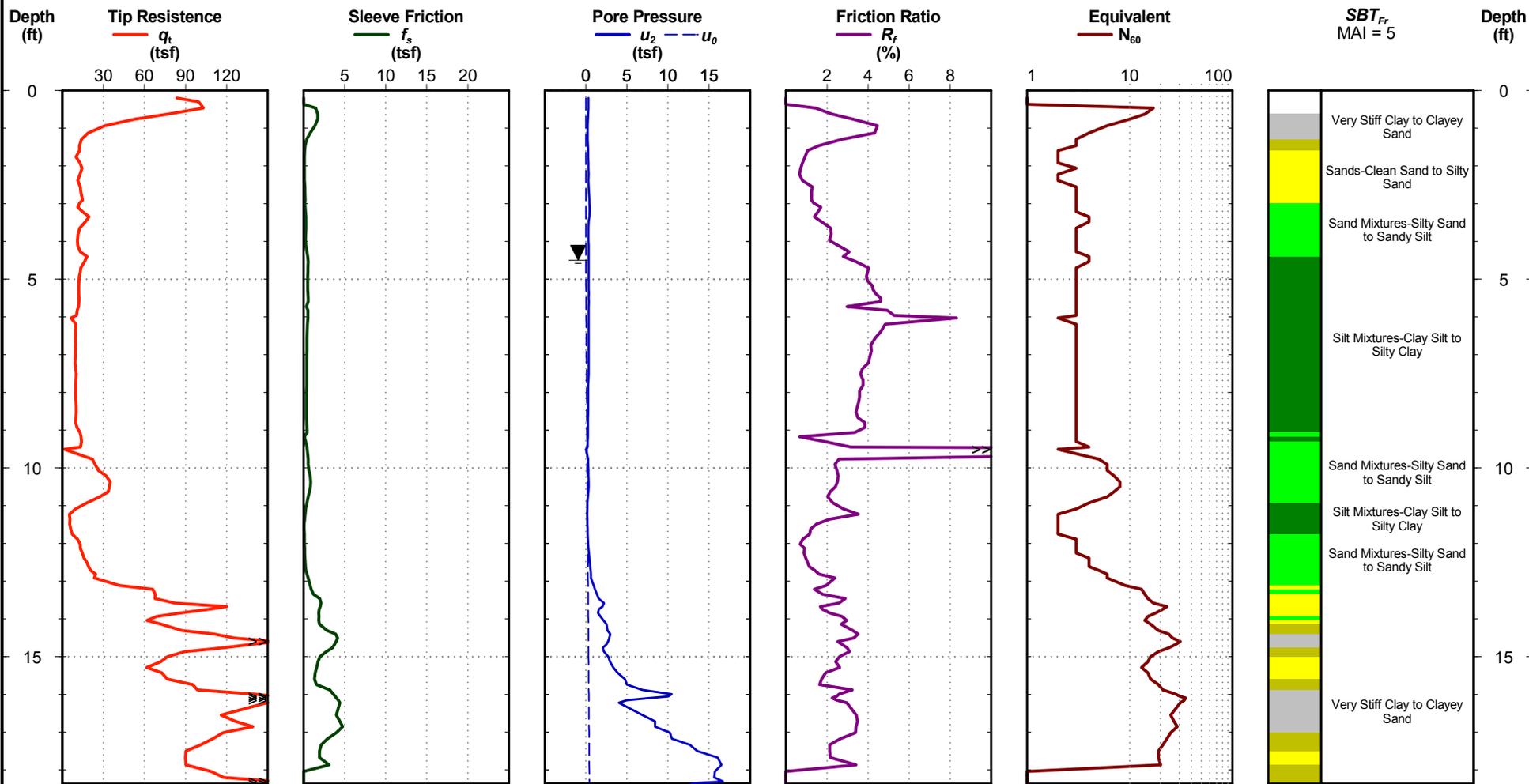
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-26

Date: Jul. 7, 2015
Estimated Water Depth: 4.5 ft
Rig/Operator: Damon | LJ

Total Depth: 18.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-26



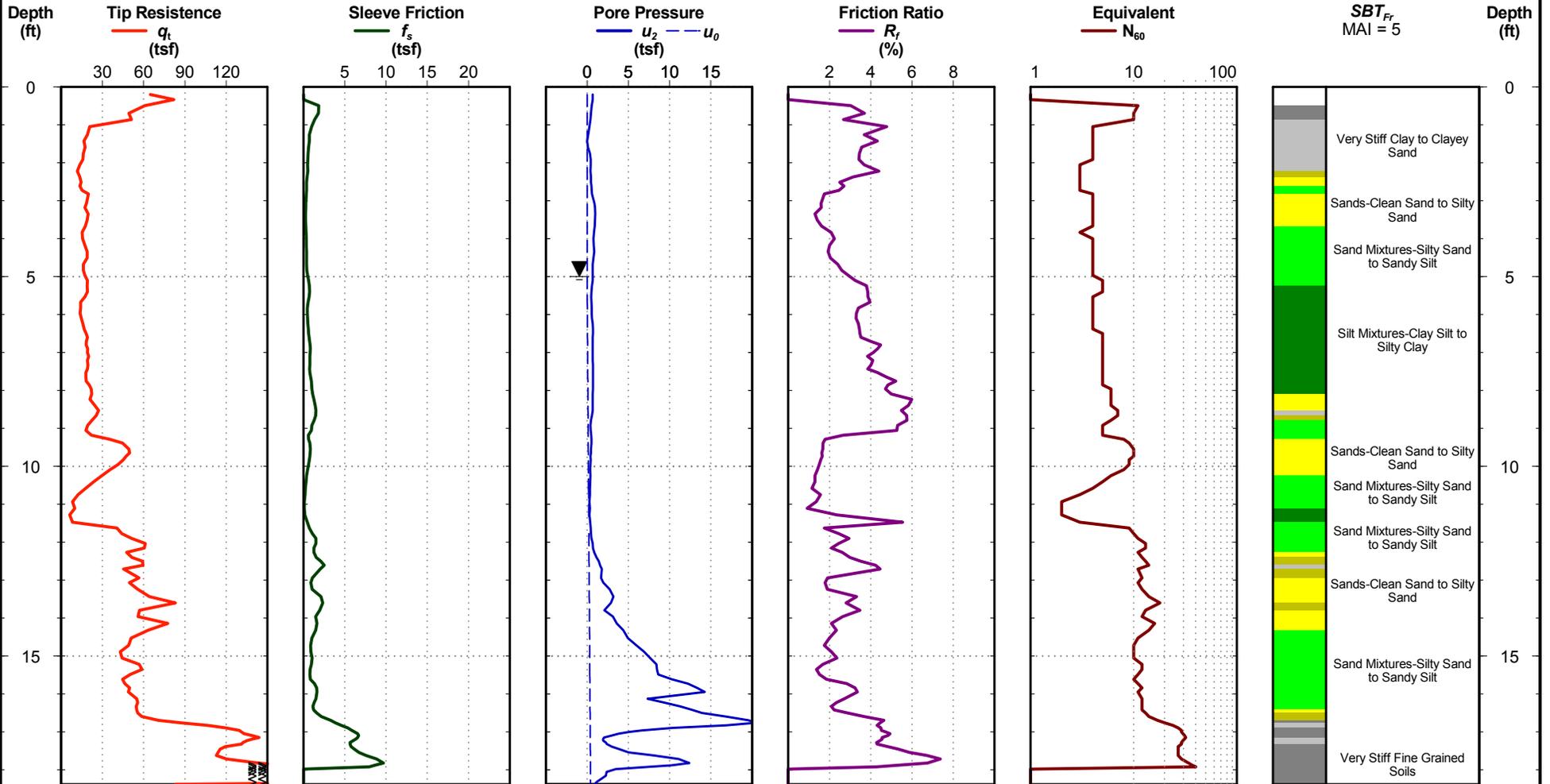
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-27

Date: Jul. 7, 2015
Estimated Water Depth: 5 ft
Rig/Operator: Damon | LJ

Total Depth: 18.4 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-27



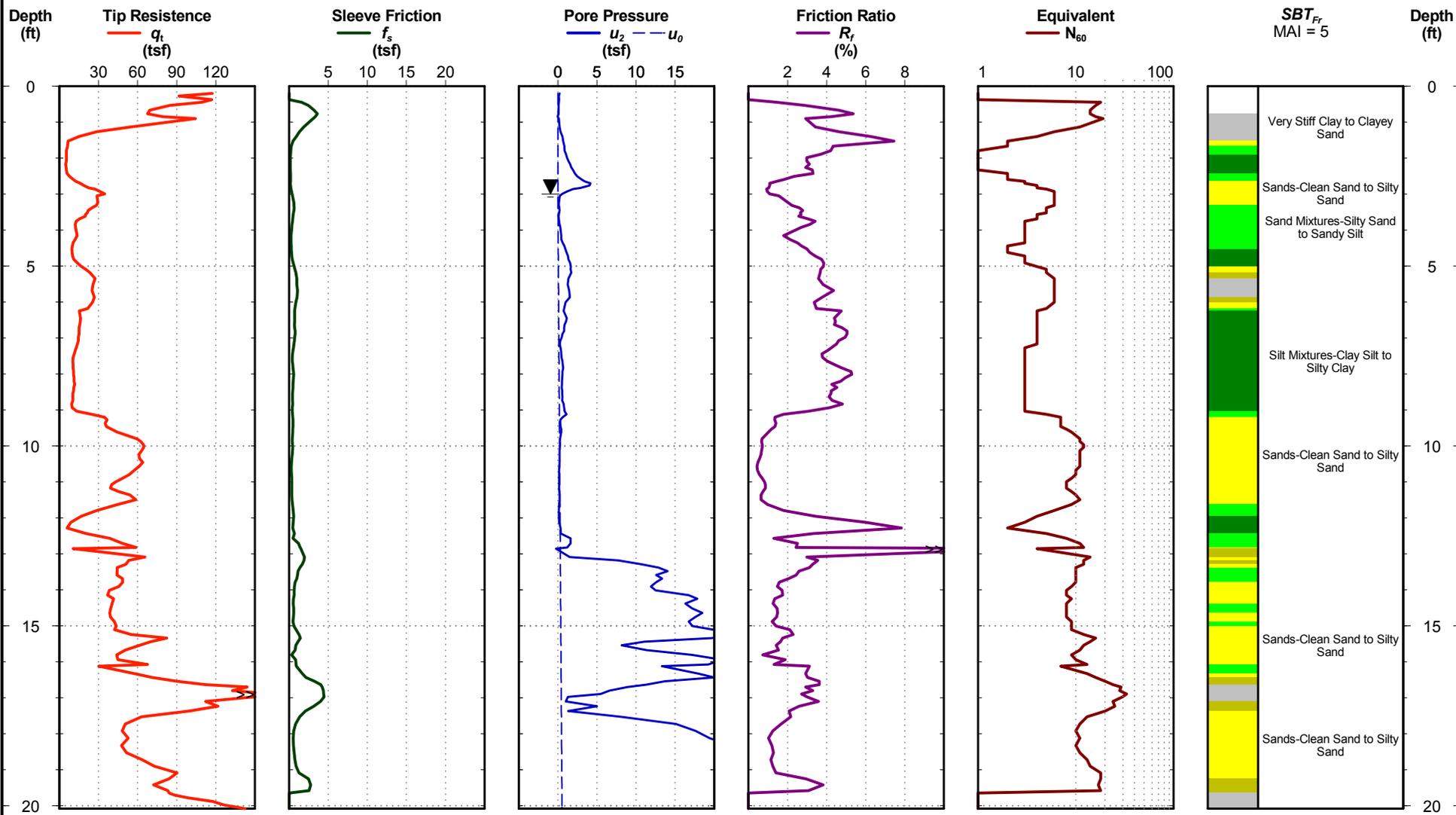
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-28

Date: Jul. 7, 2015
Estimated Water Depth: 3 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-28



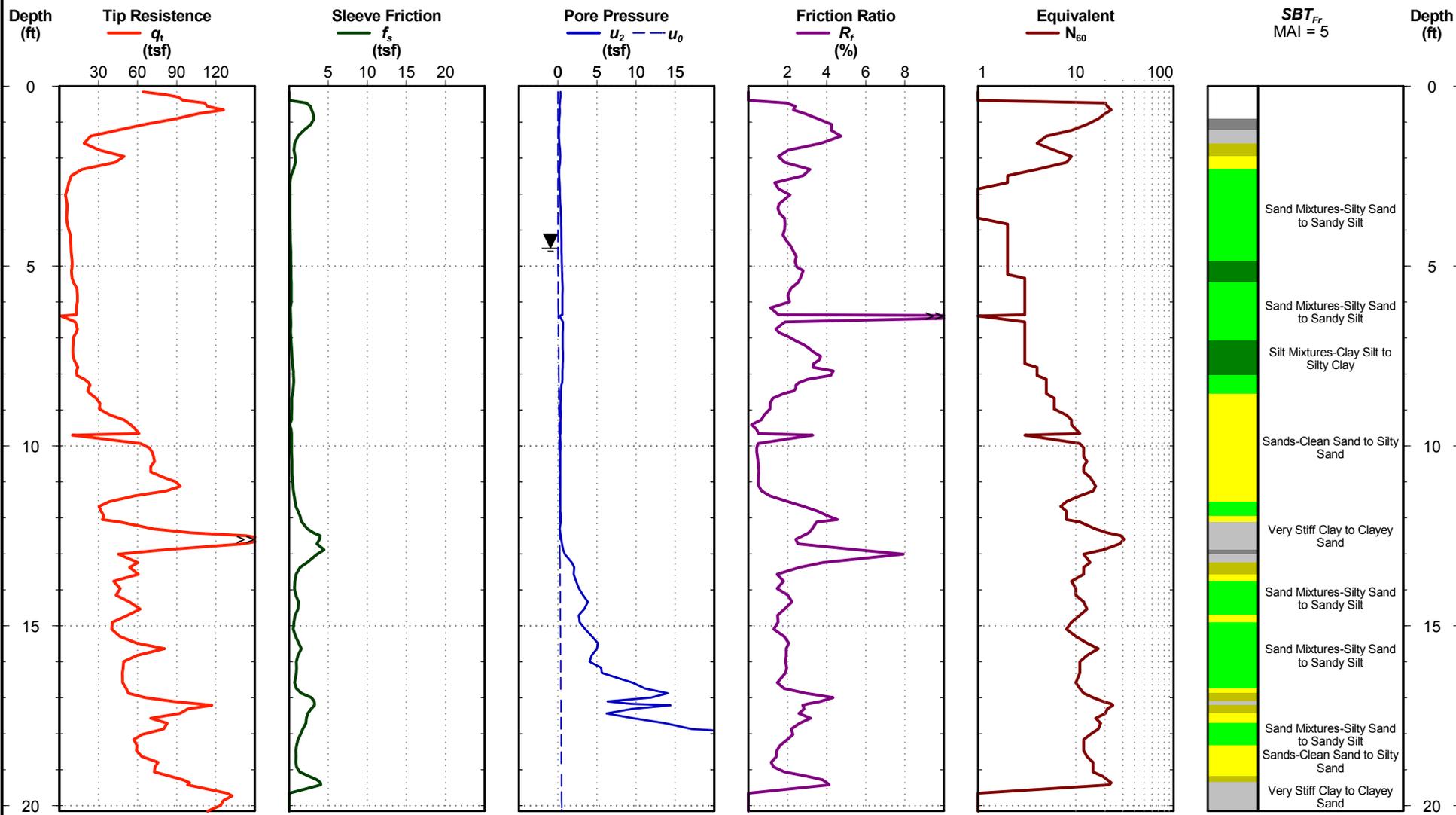
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-29

Date: Jul. 7, 2015
Estimated Water Depth: 4.5 ft
Rig/Operator: Damon | LJ

Total Depth: 20.2 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-29



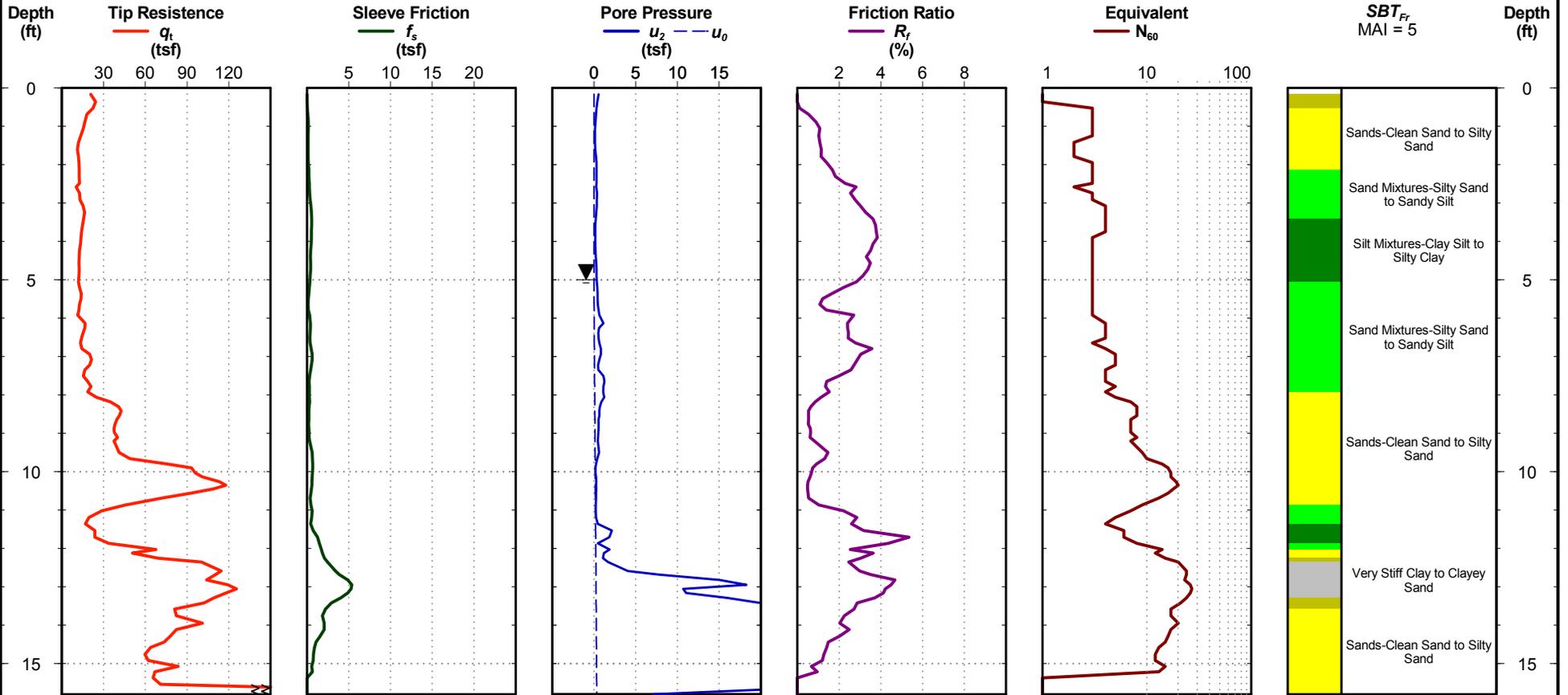
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-30

Date: Jul. 7, 2015
Estimated Water Depth: 5 ft
Rig/Operator: Damon | LJ

Total Depth: 15.8 ft
Termination Criteria: Maximum Reaction Force
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-30



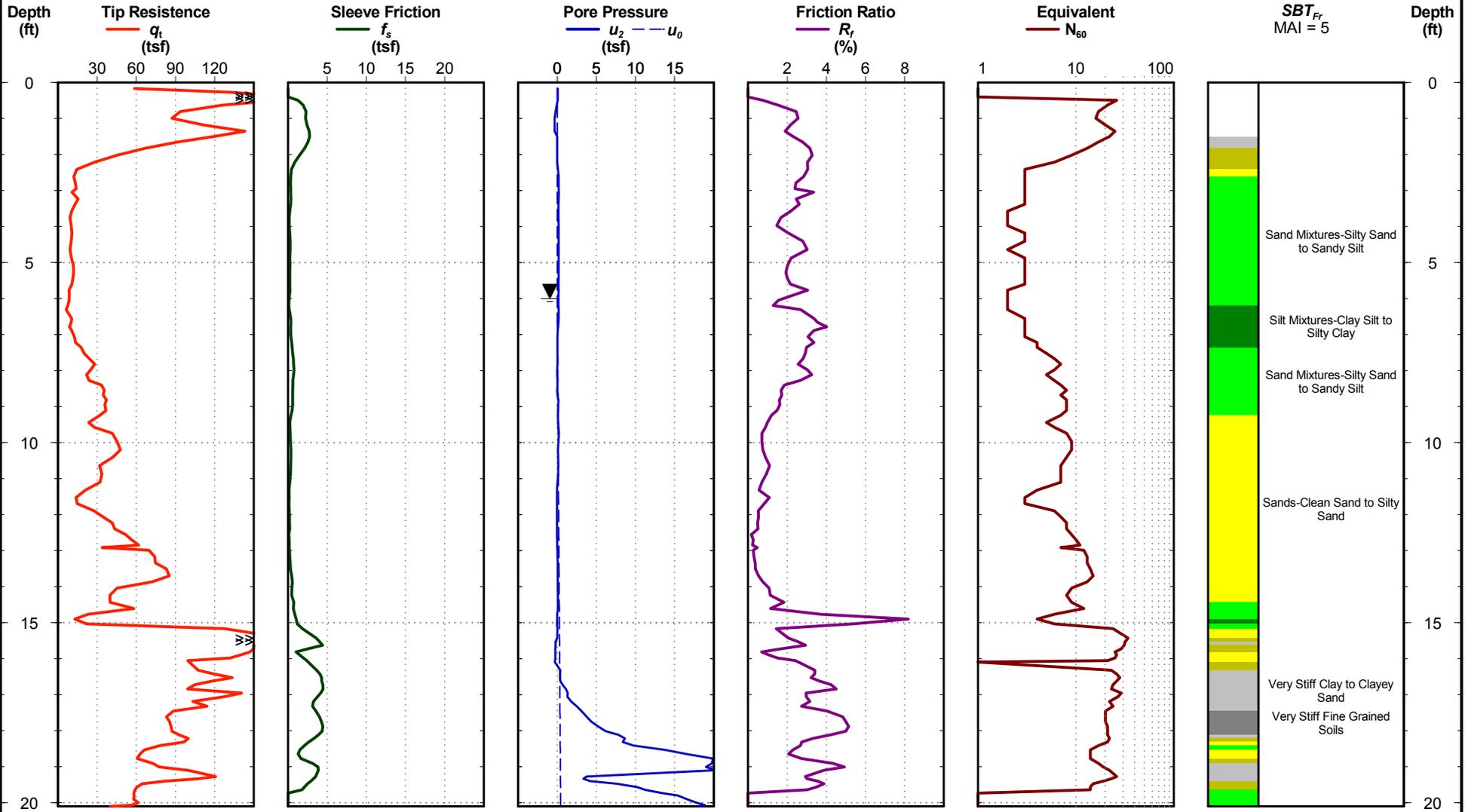
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-31

Date: Jul. 7, 2015
Estimated Water Depth: 6 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-31



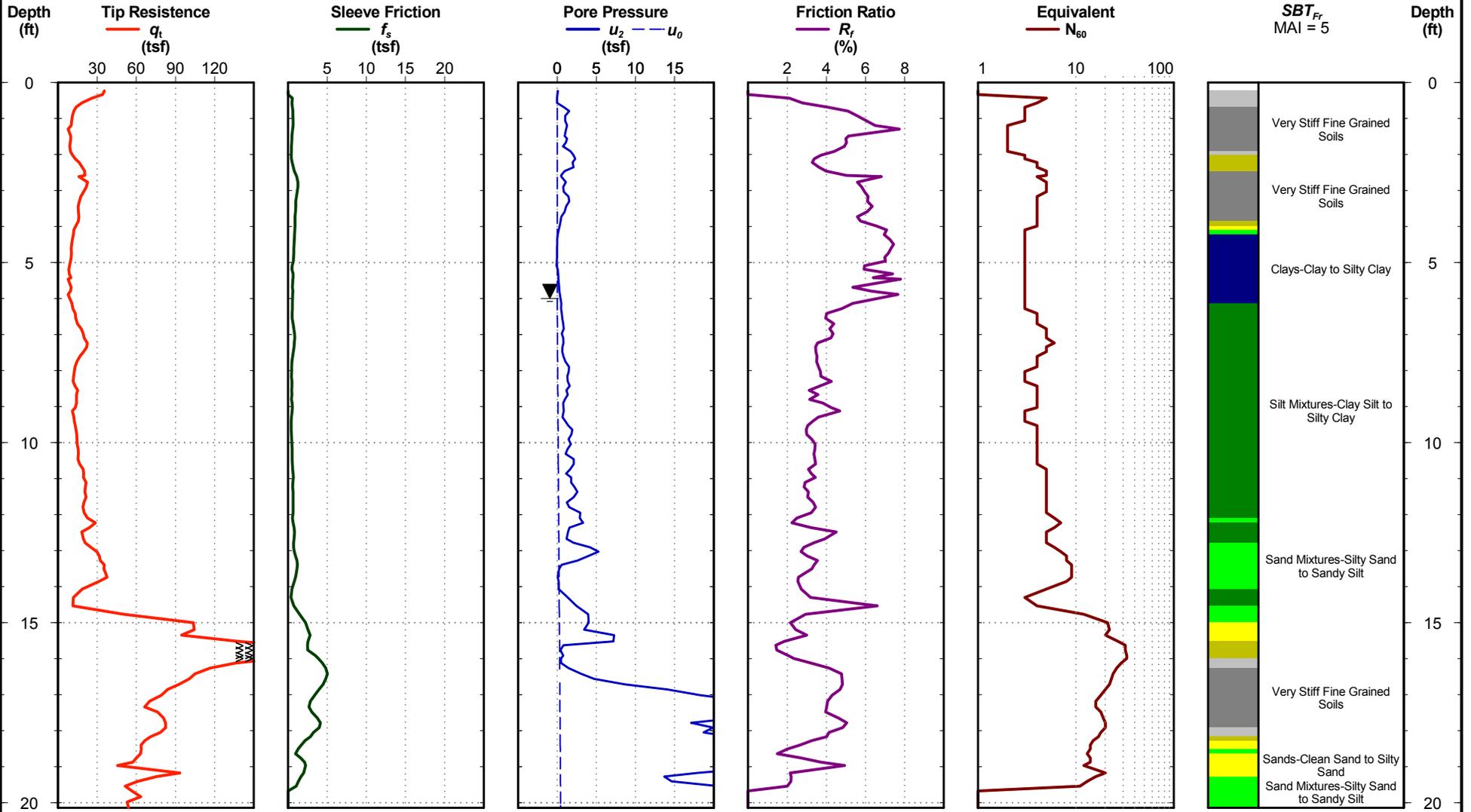
Volvo
Berkeley County, South Carolina
S&ME Project No: 1413-15-064

Cone Penetration Test

WVR-32

Date: Jul. 7, 2015
Estimated Water Depth: 6 ft
Rig/Operator: Damon | LJ

Total Depth: 20.1 ft
Termination Criteria: Target Depth
Cone Size: 1.75



CPT REPORT - STANDARD - SBT FR. 1413-15-064 ROADWAY CPT.GPJ S&ME.GDT 8/13/15

WVR-32

FIELD TESTING PROCEDURES

Cone Penetrometer Test (CPT) Sounding

The cone penetrometer test soundings (ASTM D 5778) were performed by hydraulically pushing an electronically instrumented cone penetrometer through the soil at a constant rate. As the cone penetrometer tip was advanced through the soil, nearly continuous readings of point stress, sleeve friction and pore water pressure were recorded and stored in the on-site computers. Using theoretical and empirical relationships, CPT data can be used to determine soil stratigraphy and estimate soil properties and parameters such as effective stress, friction angle, Young's Modulus and undrained shear strength.

The consistency and relative density designations, which are based on the cone tip resistance, q_t for sands and cohesive soils (silts and clays) are as follows:

<u>SANDS</u>		<u>SILTS AND CLAYS</u>	
Cone Tip Resistance, q_t (tsf)	Relative Density	Cone Tip Resistance, q_t (tsf)	Consistency
<20	Very Loose	<5	Very Soft
20 – 40	Loose	5 – 10	Soft
40 – 120	Medium Dense	10 – 15	Firm
		15 – 30	Stiff
120 – 200	Dense	30 – 60	Very Stiff
>200	Very Dense	>60	Hard

CPT Correlations

References are in parenthesis next to the appropriate equation.

General

p_a = atmospheric pressure (for unit normalization)

q_t = corrected cone tip resistance (tsf)

f_s = friction sleeve resistance (tsf)

$R_f = 100\% * (f_s/q_t)$

u_2 = pore pressure behind cone tip (tsf)

u_0 = hydrostatic pressure

$B_q = (u_2 - u_0)/(q_t - \sigma_{v0})$

$Q_t = (q_t - \sigma_{v0}) / \sigma'_{v0}$

$F_r = 100\% * f_s / (q_t - \sigma_{v0})$

$I_c = ((3.47 - \log Q_t)^2 + (\log F_r + 1.22)^2)^{0.5}$

N-Value

$$N_{60} = (q_t/p_a) / [8.5(1 - I_c/4.6)] \quad (6)$$

(6) Jefferies, M.G. and Davies, M.P., (1993), "Use of CPTu to estimate equivalent SPT N60", ASTM Geotechnical Testing Journal, Vol. 16, No. 4

CPT Soil Classification Legend

Zone	Color	Q _t /N	Description
1		2	Sensitive, Fine Grained
2		1	Organic Soils-Peats
3		1.5	Clays-Clay to Silty Clay
4		2	Silt Mixtures-Clayey Silt to Silty Clay
5		3	Sand Mixtures-Silty Sand to Sandy Silt
6		4.5	Sands-Clean Sand to Silty Sand
7		6	Gravelly Sand to Sand
8		1	Very Stiff Clay to Clayey Sand*
9		2	Very Stiff, Fine Grained*

(*) Heavily Overconsolidated or Cemented

Robertson's Soil Behavior Type (SBT), 1990			
Group #	Description	I _c	
		Min	Max
1	Sensitive, fine grained	N/A	
2	Organic soils - peats	3.60	N/A
3	Clays - silty clay to clay	2.95	3.60
4	Silt mixtures - clayey silt to silty clay	2.60	2.95
5	Sand mixtures - silty sand to sandy silt	2.05	2.60
6	Sands - clean sand to silty sand	1.31	2.05
7	Gravelly sand to dense sand	N/A	1.31
8	Very stiff sand to clayey sand (High OCR or cemented)	N/A	
9	Very stiff, fine grained (High OCR or cemented)	N/A	

Soil behavior type is based on empirical data and may not be representative of soil classification based on plasticity and grain size distribution.

Relative Density and Consistency Table			
SANDS		SILTS and CLAYS	
Cone Tip Stress, qt (tsf)	Relative Density	Cone Tip Stress, qt (tsf)	Consistency
Less than 20	Very Loose	Less than 5	Very Soft
20 - 40	Loose	5 - 15	Soft to Firm
40 - 120	Medium Dense	15 - 30	Stiff
120 - 200	Dense	30 - 60	Very Stiff
Greater than 200	Very Dense	Greater than 60	Hard

Appendix II

Summary of Laboratory Testing

Laboratory Testing Data Sheets



Summary of Laboratory Test Data

Project Soter (Volvo) Roadways
 Berkeley County, South Carolina
 S&ME Project No. 1413-15-064

Sample Location	Sample Type	Sample Depth (ft)	USCS Symbol	Natural Moisture (%)	% Finer #200	Atterberg Limits		CBR (%)	Standard Proctor	
						LL	PI		Max γ_d (pcf)	OMC (%)
BSR-1	Bulk	0.5 to 1.5	CL	7.8	51.5	45	26	12	113.5	8.2
BSR-2	Bulk	0.5 to 1.5	SC	8.9	40.8	36	20	13	123.1	8.1
BSR-3	Bulk	0.5 to 1.5	SC	4.5	22.2	19	11	17	115.3	7.8
BSR-4	Bulk	0.5 to 1.5	SC	7.5	26.3	17	12	20	114.4	9.7
BSR-5	Bulk	0.5 to 1.5	CH	13.6	62.6	59	37	8	113.1	10.8

Bulk = Bulk Sample, np = not plastic

Sieve Analysis of Soils



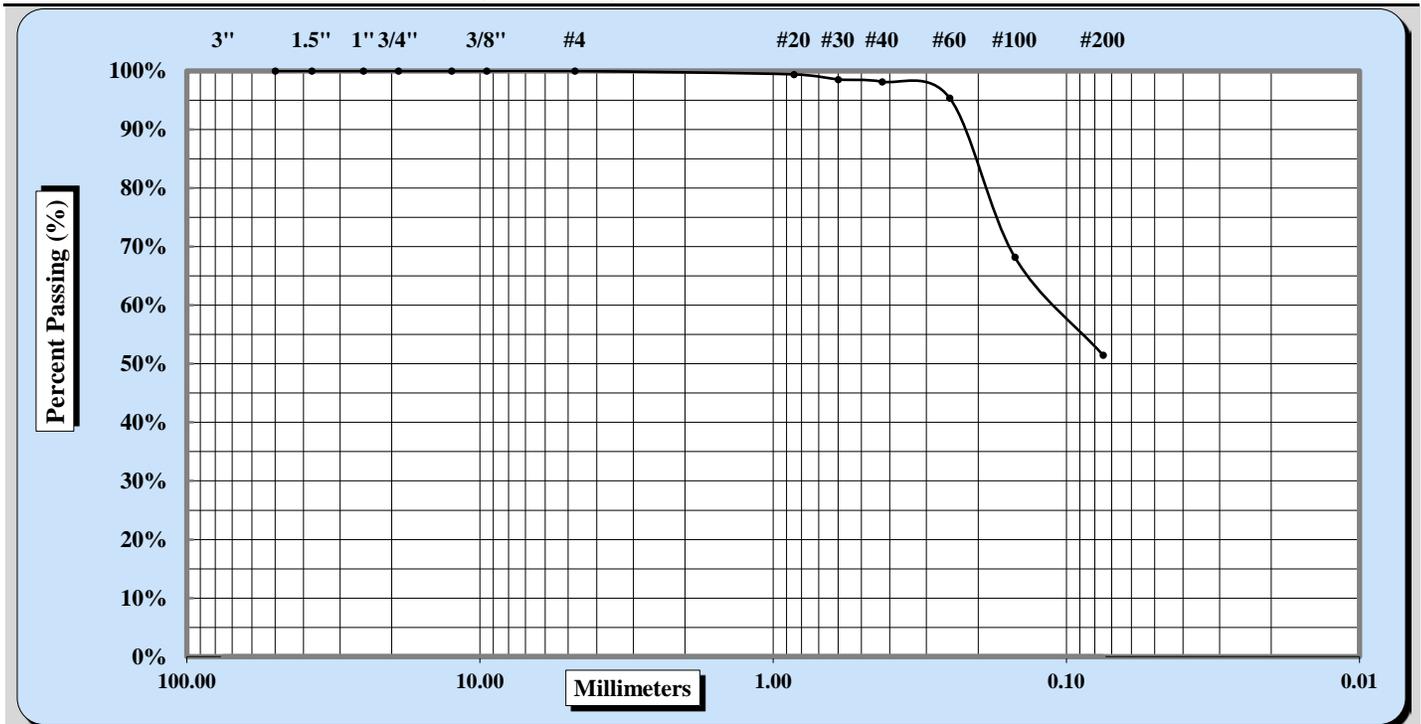
ASTM D 422

Quality Assurance

S&ME, Inc. - Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s):	8/21/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #	BSR-1	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:		Lab #:	901
		Depth:	3/4'-1.5'

Sample Description: Brown Sandy Lean Clay (CL)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	4.75 mm	Coarse Sand	0.6%	Fine Sand	46.7%
Gravel	0.0%	Medium Sand	1.3%	Silt & Clay	51.5%
Liquid Limit	45	Plastic Limit	19	Plastic Index	26
Specific Gravity	--			Moisture Content	7.8%

Coarse Sand	0.6%	Medium Sand	1.3%	Fine Sand	46.7%
Description of Sand & Gravel Particles:		Rounded	<input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

Notes / Deviations / References:

Austin Cox, P.E.
Technical Responsibility

Signature

Project Engineer
Position

Date

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Liquid Limit, Plastic Limit, and Plastic Index



ASTM D 4318 AASHTO T 89 AASHTO T 90

Quality Assurance

S&ME, Inc. Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

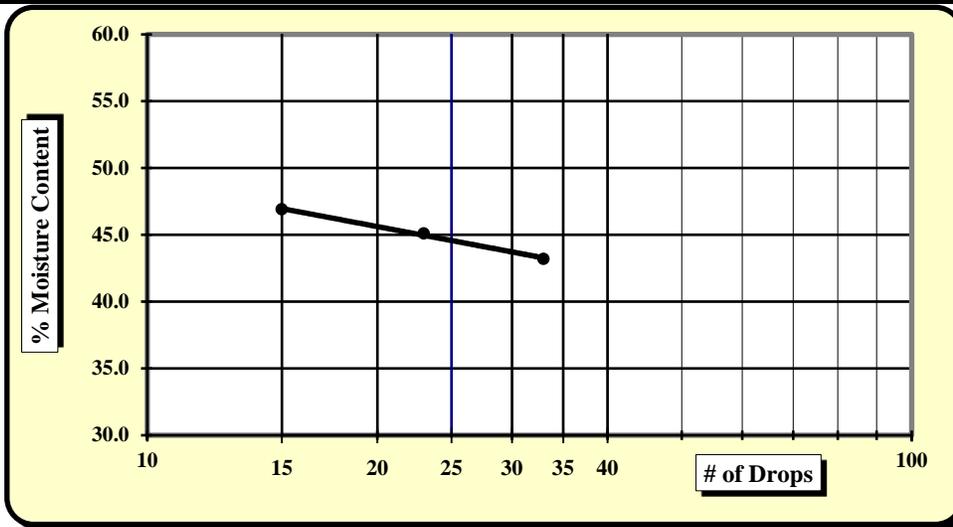
Project #: 1413-15-064 **Report Date:** 8/25/15
Project Name: Volvo **Test Date(s)** 8/20/2015
Client Name: Thomas & Hutton
Client Address: Columbia, SC

Boring #: BSR-1 **Sample #:** Bulk **Sample Date:** 8/12/2015
Location: **Lab #:** 901 **Depth:** 3/4'-1.5'

Sample Description: Brown Sandy Lean Clay (CL)

Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.01 g)	00401	2/18/2015	Grooving tool	11368	5/1/2015
LL Apparatus	18801	5/1/2015			
Oven	17745	5/3/2015			

Pan #	Tare #:	Liquid Limit						Plastic Limit		
		14	25	63	4	5	6	77	45	10
A	Tare Weight	14.53	14.55	14.47				14.63	14.22	
B	Wet Soil Weight + A	31.25	31.63	31.44				21.47	21.66	
C	Dry Soil Weight + A	26.21	26.32	26.02				20.36	20.45	
D	Water Weight (B-C)	5.04	5.31	5.42				1.11	1.21	
E	Dry Soil Weight (C-A)	11.68	11.77	11.55				5.73	6.23	
F	% Moisture (D/E)*100	43.2%	45.1%	46.9%				19.4%	19.4%	
N	# OF DROPS	33	23	15				Moisture Contents determined by ASTM D 2216		
LL	LL = F * FACTOR									
Ave.	Average							19.4%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic
 Liquid Limit **45**
 Plastic Limit **19**
 Plastic Index **26**
 Group Symbol **CL**
 Multipoint Method
 One-point Method

Wet Preparation Dry Preparation Air Dried

Notes / Deviations / References:

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

Michael Ulmer, PE
 Technical Responsibility

 Signature

Principal Engineer
 Position

8/25/2015
 Date

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Moisture - Density Report

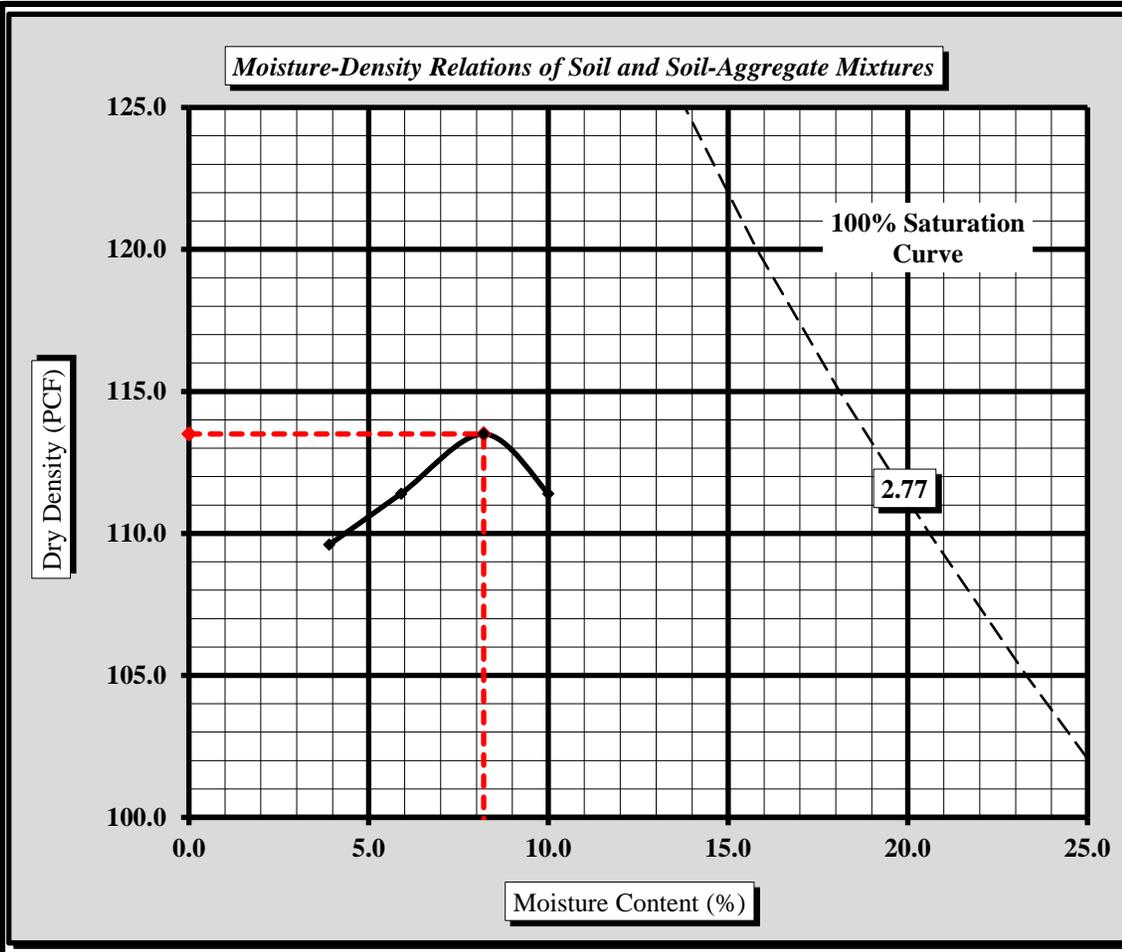


Quality Assurance

S&ME, Inc.- Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

S&ME Project #:	1413-15-064	Report Date:	
Project Name:	Volvo	Test Date(s):	8/17/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #:	BSR-1	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:		Lab #:	901
		Depth:	3/4'-1.5'
Sample Description:	Brown Sandy Lean Clay (CL)		

Maximum Dry Density 113.5 PCF. Optimum Moisture Content 8.2%
ASTM D 698 -- Method A



Soil Properties	
Natural Moisture Content	7.8%
Specific Gravity of Soil	--
Liquid Limit	45
Plastic Limit	19
Plastic Index	26
% Passing	
3/4"	100.0%
3/8"	100.0%
#4	100.0%
#20	99.4%
#40	98.2%
#60	95.4%
#200	51.5%
Oversize Fraction	
Bulk Gravity	--
% Moisture	--
% Oversize	--
MDD	
Opt. MC	

Moisture-Density Curve Displayed: Fine Fraction Corrected for Oversize Fraction (ASTM D 4718)
 Sieve Size used to separate the Oversize Fraction: #4 Sieve 3/8 inch Sieve 3/4 inch Sieve
 Mechanical Rammer Manual Rammer Moist Preparation Dry Preparation

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Michael Ulmer, PE
 Technical Responsibility

 Signature

Principal Engineer
 Position

8/25/2015
 Date

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**CBR (California Bearing Ratio) of Laboratory
Compacted Soil**

ASTM D 1883



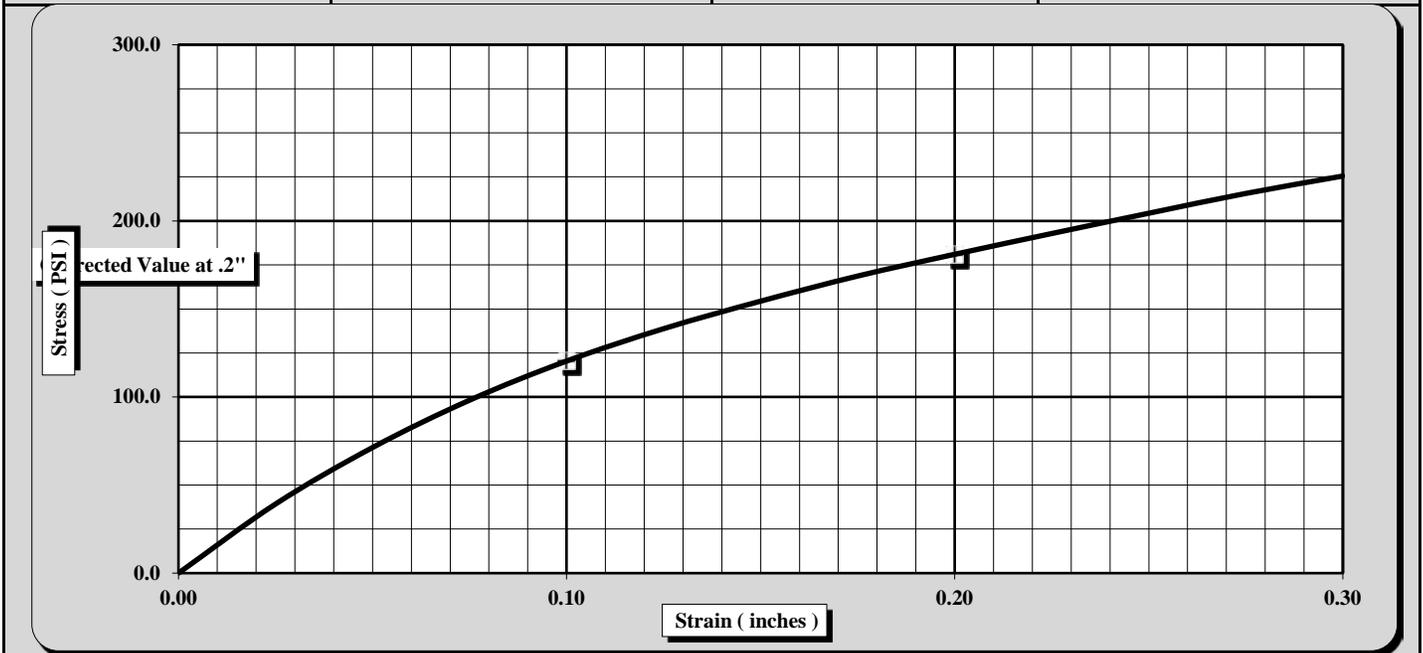
Quality Assurance

S&ME, Inc. Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s)	8/17/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #:	BSR-1	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:	Lab # 901	Depth:	3/4'-1.5'
Sample Description: Brown Sandy Lean Clay (CL)			

ASTM D 698 Method A	Maximum Dry Density:	113.5 PCF	Optimum Moisture Content:	8.2%
	Compaction Test performed on grading complying with CBR spec.		% Retained on the 3/4" sieve:	0.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in.	12.0	CBR at 0.1 in.	12.0
CBR at 0.2 in.	12.1	CBR at 0.2 in.	12.1



CBR Sample Preparation:

The entire gradation was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	32	Final Dry Density (PCF)	106.4
Initial Dry Density (PCF)	111.5	Average Final Moisture Content	12.3%
Moisture Content of the Compacted Specimen	7.7%	Moisture Content (top 1" after soaking)	12.2%
Percent Compaction	98.3%	Percent Swell	0.5%

Soak Time:	96 hrs.	Surcharge Weight	20.0	Surcharge Wt. per sq. Ft.	101.9
Liquid Limit		Plastic Index		Apparent Relative Density	--

Notes/Deviations/References: Liquid Limit: ASTM D 4318, Classification: ASTM D 2487

Michael Ulmer, PE
Technical Responsibility

Signature

Principal Engineer
Position

8/25/2015
Date

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Sieve Analysis of Soils



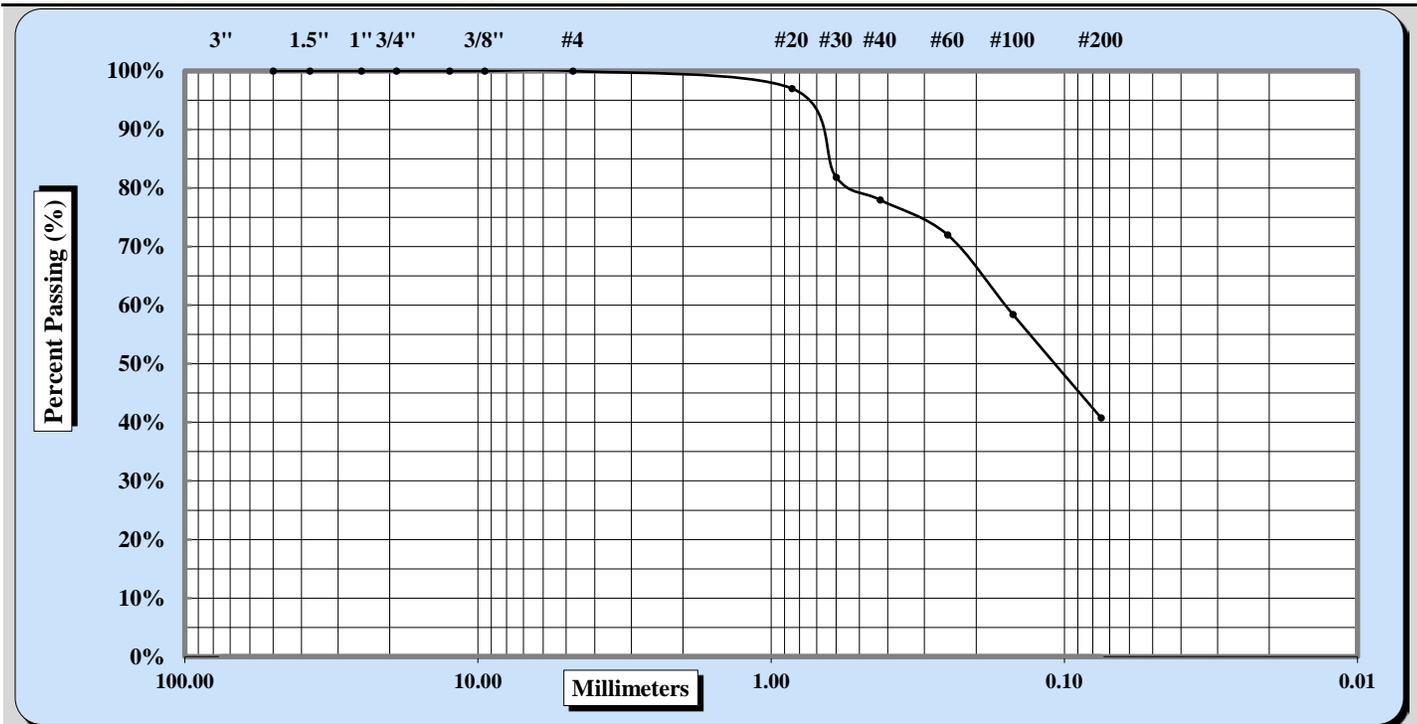
ASTM D 422

Quality Assurance

S&ME, Inc. - Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s):	8/21/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #	BSR-2	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:		Lab #:	901
		Depth:	3/4'-1.5'

Sample Description: Brown Clayey Sand (SC)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	4.75 mm	Coarse Sand	3.0%	Fine Sand	37.2%
Gravel	0.0%	Medium Sand	19.0%	Silt & Clay	40.8%
Liquid Limit	36	Plastic Limit	16	Plastic Index	20
Specific Gravity	--			Moisture Content	8.9%
Coarse Sand	3.0%	Medium Sand	19.0%	Fine Sand	37.2%
Description of Sand & Gravel Particles:		Rounded	<input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

Notes / Deviations / References:

Michael Ulmer, PE
Technical Responsibility

Signature

Principal Engineer
Position

8/25/2015
Date

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Liquid Limit, Plastic Limit, and Plastic Index



ASTM D 4318 AASHTO T 89 AASHTO T 90

Quality Assurance

S&ME, Inc. Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

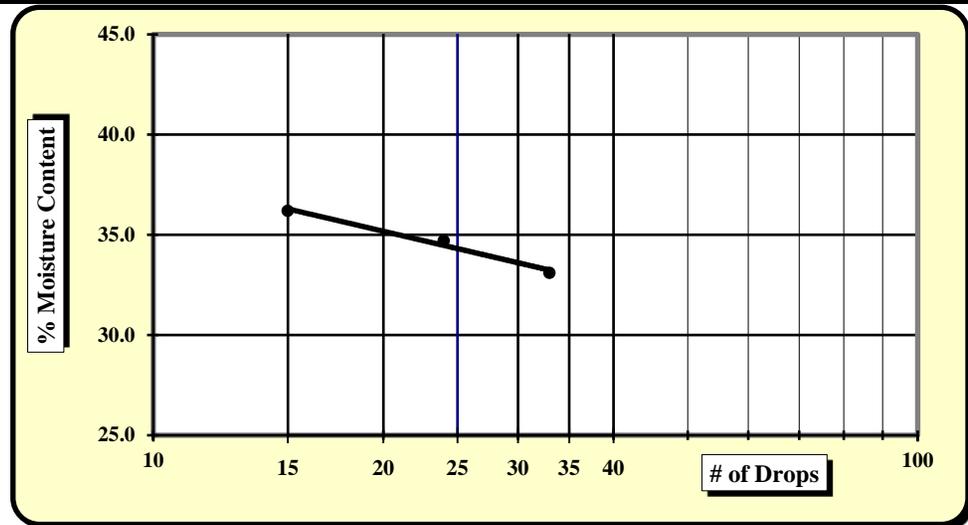
Project #: 1413-15-064 **Report Date:** 8/25/15
Project Name: Volvo **Test Date(s):** 8/20/2015
Client Name: Thomas & Hutton
Client Address: Columbia, SC

Boring #: BSR-2 **Sample #:** Bulk **Sample Date:** 8/12/2015
Location: **Lab #:** 901 **Depth:** 3/4'-1.5'

Sample Description: Brown Clayey Sand (SC)

Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.01 g)	00401	2/18/2015	Grooving tool	11368	5/1/2015
LL Apparatus	18801	5/1/2015			
Oven	17745	5/3/2015			

Pan #	Tare #:	Liquid Limit					Plastic Limit			
		23	77	114	4	5	6	119	115	10
A	Tare Weight	14.26	14.48	14.69				14.32	14.39	
B	Wet Soil Weight + A	31.02	31.50	31.77				21.22	21.36	
C	Dry Soil Weight + A	26.85	27.12	27.23				20.29	20.42	
D	Water Weight (B-C)	4.17	4.38	4.54				0.93	0.94	
E	Dry Soil Weight (C-A)	12.59	12.64	12.54				5.97	6.03	
F	% Moisture (D/E)*100	33.1%	34.7%	36.2%				15.6%	15.6%	
N	# OF DROPS	33	24	15				Moisture Contents determined by ASTM D 2216		
LL	LL = F * FACTOR									
Ave.	Average							15.6%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic
 Liquid Limit **35**
 Plastic Limit **16**
 Plastic Index **19**
 Group Symbol **SC**
 Multipoint Method
 One-point Method

Wet Preparation Dry Preparation Air Dried

Notes / Deviations / References:

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

Michael Ulmer, PE
 Technical Responsibility

 Signature

Principal Engineer
 Position

8/25/2015
 Date

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Moisture - Density Report

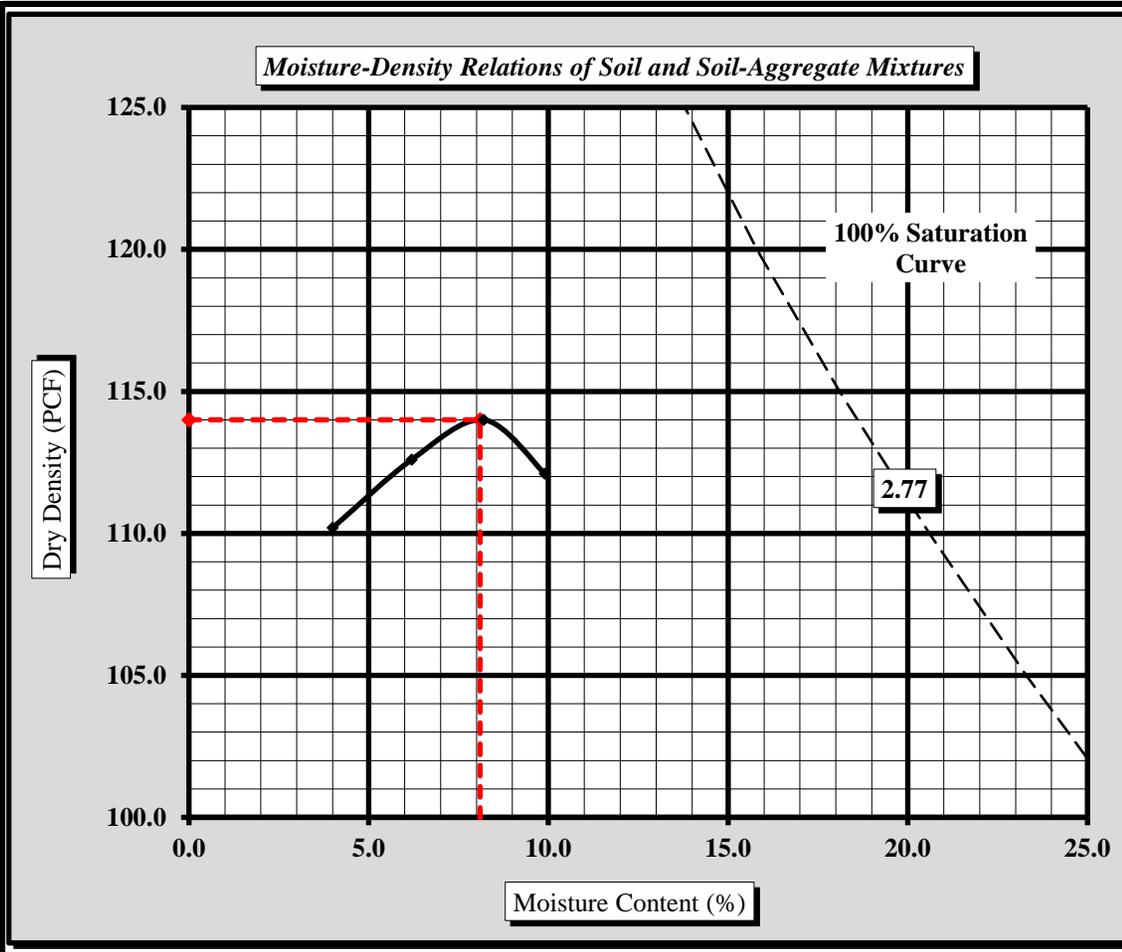


Quality Assurance

S&ME, Inc.- Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

S&ME Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s):	8/17/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #:	BSR-2	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:		Lab #:	901
		Depth:	3/4'-1.5'
Sample Description:	Brown Clayey Sand (SC)		

Maximum Dry Density 123.1 PCF. Optimum Moisture Content 8.1%
ASTM D1557 -- Method A



Soil Properties	
Natural Moisture Content	8.9%
Specific Gravity of Soil	--
Liquid Limit	35
Plastic Limit	16
Plastic Index	19
% Passing	
3/4"	100.0%
3/8"	100.0%
#4	100.0%
#20	97.0%
#40	78.0%
#60	72.0%
#200	40.8%
Oversize Fraction	
Bulk Gravity	--
% Moisture	--
% Oversize	--
MDD	
Opt. MC	

Moisture-Density Curve Displayed: Fine Fraction Corrected for Oversize Fraction (ASTM D 4718)
 Sieve Size used to separate the Oversize Fraction: #4 Sieve 3/8 inch Sieve 3/4 inch Sieve
 Mechanical Rammer Manual Rammer Moist Preparation Dry Preparation

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 ASTM D 1557: Laboratory Compaction Characteristics of Soil Using Modified Effort

Michael Ulmer, PE
 Technical Responsibility

 Signature

Principal Engineer
 Position

8/25/2015
 Date

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**CBR (California Bearing Ratio) of Laboratory
Compacted Soil**

ASTM D 1883



Quality Assurance

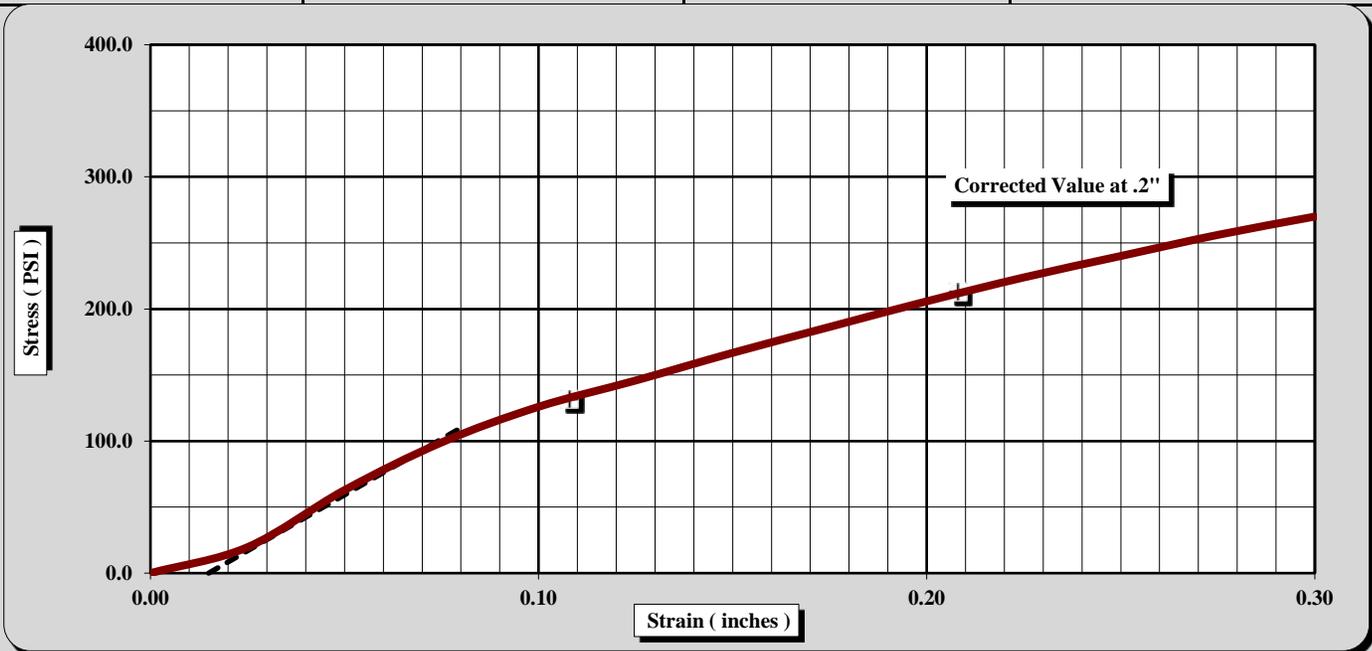
S&ME, Inc. Myrtle Beach. 1330 Highway 501 Business, Conway, SC 29526

Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s)	8/17/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #:	BSR-2	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:	Lab # 901	Depth:	3/4'-1.5'

Sample Description: Brown Clayey Sand (SC)

ASTM D1557 Method A	Maximum Dry Density:	114.0 PCF	Optimum Moisture Content:	8.1%
	<i>Compaction Test performed on grading complying with CBR spec.</i>		% Retained on the 3/4" sieve:	0.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in.	12.6	CBR at 0.2 in.	13.7
		CBR at 0.1 in.	13.2
		CBR at 0.2 in.	14.2



CBR Sample Preparation:

The entire gradation was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	32	Final Dry Density (PCF)	108.9
Initial Dry Density (PCF)	112.3	Average Final Moisture Content	11.4%
Moisture Content of the Compacted Specimen	7.8%	Moisture Content (top 1" after soaking)	12.4%
Percent Compaction	98.5%	Percent Swell	-0.2%

Soak Time:	96 hrs	Surcharge Weight	20.0	Surcharge Wt. per sq. Ft.	101.9
Liquid Limit		Plastic Index		Apparent Relative Density	--

Notes/Deviations/References: Liquid Limit: ASTM D 4318, Classification: ASTM D 2487

Michael Ulmer, PE
Technical Responsibility

Signature

Principal Engineer
Position

8/25/2015
Date

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Sieve Analysis of Soils



ASTM D 422

Quality Assurance

S&ME, Inc. - Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s):	8/21/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, Sc		
Boring #	BSR-3	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:		Lab #:	901
		Depth:	3/4'-1.5'

Sample Description: Brown Clayey Sand (SC)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	4.75 mm	Coarse Sand	0.6%	Fine Sand	58.0%
Gravel	0.0%	Medium Sand	19.2%	Silt & Clay	22.2%
Liquid Limit	19	Plastic Limit	8	Plastic Index	11
Specific Gravity	--			Moisture Content	4.5%
Coarse Sand	0.6%	Medium Sand	19.2%	Fine Sand	58.0%
Description of Sand & Gravel Particles:		Rounded	<input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

Notes / Deviations / References:

Michael Ulmer, PE
Technical Responsibility

Signature

Principal Engineer
Position

8/25/2015
Date

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Liquid Limit, Plastic Limit, and Plastic Index



ASTM D 4318 AASHTO T 89 AASHTO T 90

Quality Assurance

S&ME, Inc. Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #: 1413-15-064	Report Date: 8/25/15
Project Name: Volvo	Test Date(s): 8/20/2015
Client Name: Thomas & Hutton	
Client Address: Columbia, SC	

Boring #: BSR-3	Sample #: Bulk	Sample Date: 8/12/2015	
Location:	Lab #: 901	Depth: 3/4'-1.5'	

Sample Description: Brown Clayey Sand (SC)

Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.01 g)	00401	2/18/2015	Grooving tool	11368	5/1/2015
LL Apparatus	18801	5/1/2015			
Oven	17745	5/3/2015			

Pan #	Tare #:	Liquid Limit						Plastic Limit		
		52	87	93	4	5	6	12	63	10
A	Tare Weight	14.33	14.25	14.57				14.63	14.69	
B	Wet Soil Weight + A	31.66	31.88	31.74				21.36	21.45	
C	Dry Soil Weight + A	29.23	29.12	28.87				20.88	20.94	
D	Water Weight (B-C)	2.43	2.76	2.87				0.48	0.51	
E	Dry Soil Weight (C-A)	14.90	14.87	14.30				6.25	6.25	
F	% Moisture (D/E)*100	16.3%	18.6%	20.1%				7.7%	8.2%	
N	# OF DROPS	30	22	15				Moisture Contents determined by ASTM D 2216		
LL	LL = F * FACTOR									
Ave.	Average							8.0%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic

Liquid Limit **19**

Plastic Limit **8**

Plastic Index **11**

Group Symbol **SC**

Multipoint Method

One-point Method

Wet Preparation Dry Preparation Air Dried

Notes / Deviations / References:

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

Michael Ulmer, PE
Technical Responsibility

Signature

Principal Engineer
Position

8/25/2015
Date

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Moisture - Density Report

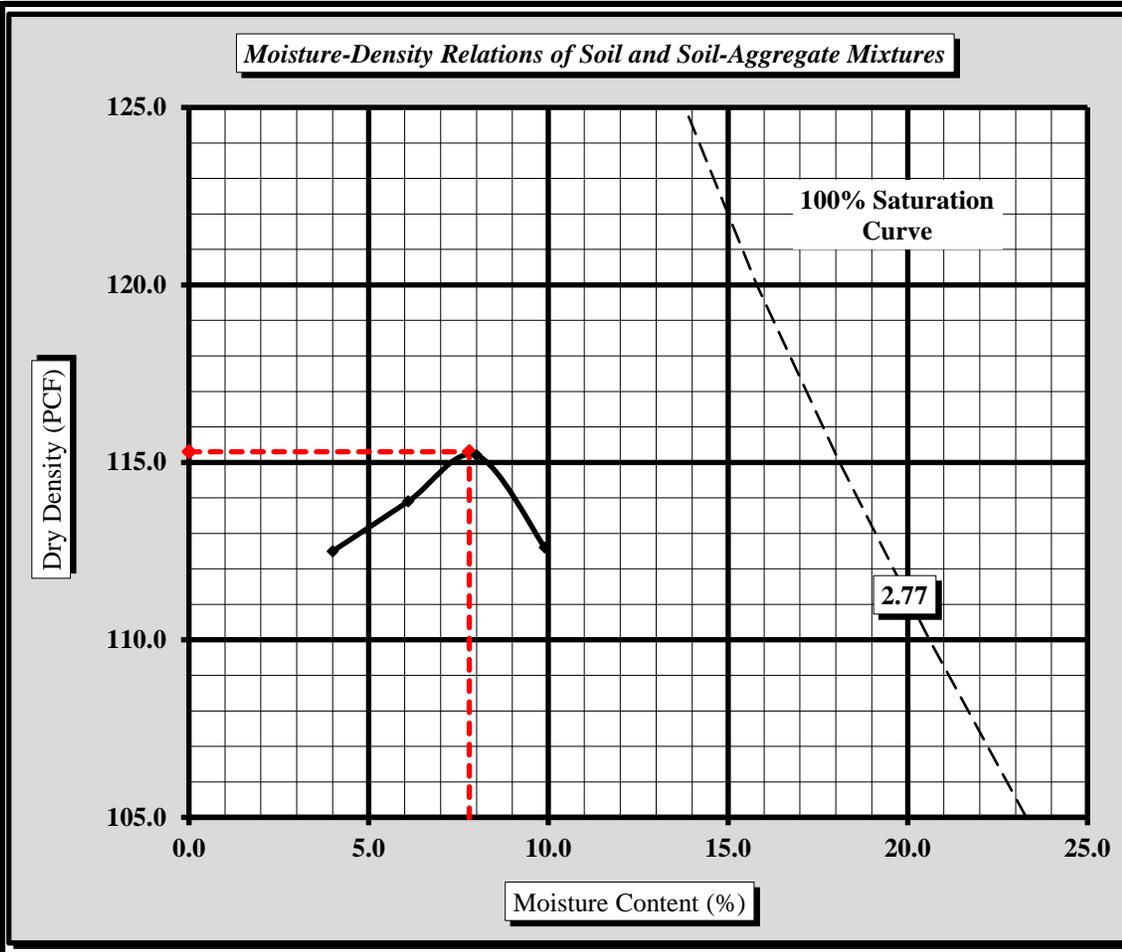


Quality Assurance

S&ME, Inc.- Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

S&ME Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s):	8/17/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #:	BSR-3	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:		Lab #:	901
		Depth:	3/4'-1.5'
Sample Description:	Brown Clayey Sand (SC)		

Maximum Dry Density 115.3 PCF. Optimum Moisture Content 7.8%
ASTM D 698 -- Method A



Soil Properties	
Natural Moisture Content	4.5%
Specific Gravity of Soil	--
Liquid Limit	19
Plastic Limit	8
Plastic Index	11
% Passing	
3/4"	100.0%
3/8"	100.0%
#4	100.0%
#20	99.4%
#40	80.2%
#60	66.0%
#200	22.2%
Oversize Fraction	
Bulk Gravity	--
% Moisture	--
% Oversize	--
MDD	
Opt. MC	

Moisture-Density Curve Displayed: Fine Fraction Corrected for Oversize Fraction (ASTM D 4718)
 Sieve Size used to separate the Oversize Fraction: #4 Sieve 3/8 inch Sieve 3/4 inch Sieve
 Mechanical Rammer Manual Rammer Moist Preparation Dry Preparation

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Michael Ulmer, PE
 Technical Responsibility

 Signature

Principal Engineer
 Position

8/25/2015
 Date

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**CBR (California Bearing Ratio) of Laboratory
Compacted Soil**

ASTM D 1883



Quality Assurance

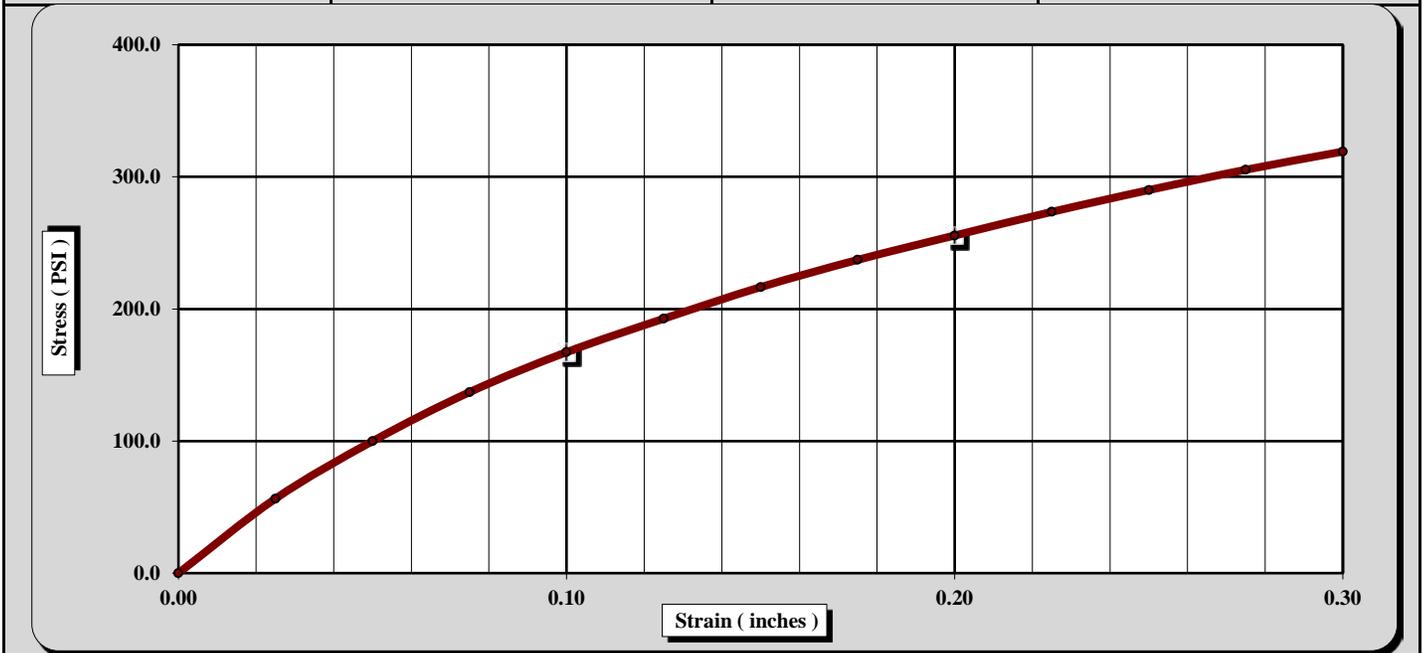
S&ME, Inc. Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s)	8/17/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #:	BSR-3	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:	Lab # 901	Depth:	3/4'-1.5'

Sample Description: Brown Clayey Sand (SC)

ASTM D 698 Method A	Maximum Dry Density:	115.3 PCF	Optimum Moisture Content:	7.8%
	Compaction Test performed on grading complying with CBR spec.		% Retained on the 3/4" sieve:	0.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in.	16.7	CBR at 0.1 in.	16.7
CBR at 0.2 in.	17.0	CBR at 0.2 in.	17.0



CBR Sample Preparation:

The replacement method was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	32	Final Dry Density (PCF)	106.9
Initial Dry Density (PCF)	113.5	Average Final Moisture Content	13.8%
Moisture Content of the Compacted Specimen	7.5%	Moisture Content (top 1" after soaking)	14.7%
Percent Compaction	98.4%	Percent Swell	0.3%

Soak Time:	96 hrs.	Surcharge Weight	20.0	Surcharge Wt. per sq. Ft.	101.9
Liquid Limit		Plastic Index		Apparent Relative Density	--

Notes/Deviations/References: Liquid Limit: ASTM D 4318, Specific Gravity: ASTM D 854, Classification: ASTM D 2487

Michael Ulmer, PE
Technical Responsibility

Signature

Principal Engineer
Position

8/25/2015
Date

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Sieve Analysis of Soils



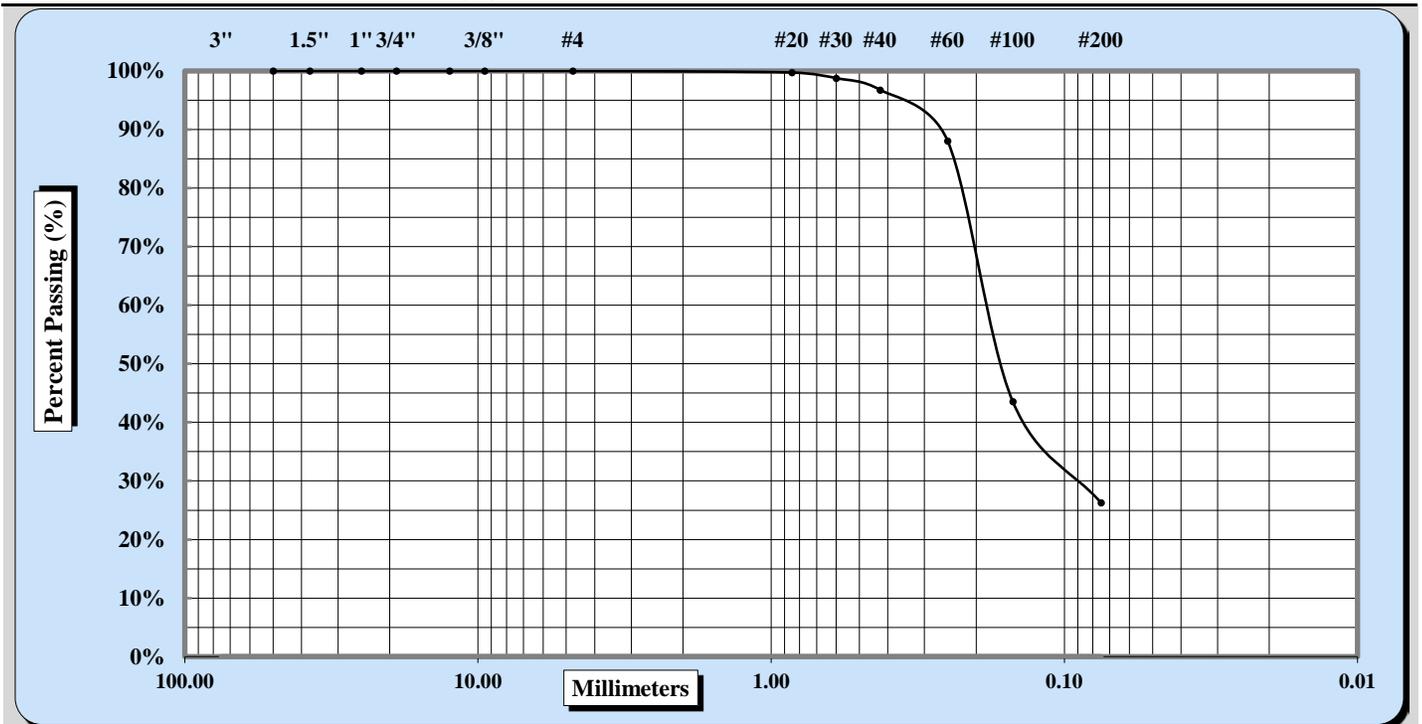
ASTM D 422

Quality Assurance

S&ME, Inc. - Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s):	8/21/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #	BSR-4	Sample #:	Bulk
Location:		Sample Date:	8/12/2015
		Lab #:	901
		Depth:	3/4'-1.5'

Sample Description: Brown Clayey Sand (SC)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	4.75 mm	Coarse Sand	0.3%	Fine Sand	70.5%
Gravel	0.0%	Medium Sand	3.0%	Silt & Clay	26.3%
Liquid Limit	17	Plastic Limit	5	Plastic Index	12
Specific Gravity	--	Moisture Content	7.5%		
Coarse Sand	0.3%	Medium Sand	3.0%	Fine Sand	70.5%
Description of Sand & Gravel Particles:		Rounded	<input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

Notes / Deviations / References:

Michael Ulmer, PE
Technical Responsibility

Signature

Principal Engineer
Position

8/25/2015
Date

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Liquid Limit, Plastic Limit, and Plastic Index



ASTM D 4318 AASHTO T 89 AASHTO T 90

Quality Assurance

S&ME, Inc. Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

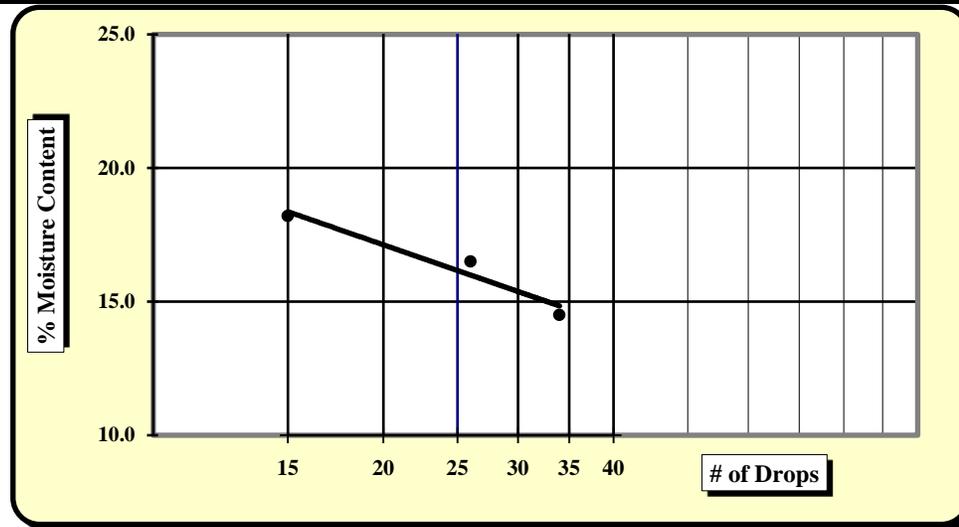
Project #: 1413-15-064 Report Date: 8/25/15
Project Name: Volvo Test Date(s): 8/20/2015
Client Name: Thomas & Hutton
Client Address: Columbia, SC

Boring #: BSR-4 **Sample #:** Bulk **Sample Date:** 8/12/2015
Location: **Lab #:** 901 **Depth:** 3/4'-1.5'

Sample Description: Brown Clayey Sand (SC)

Type and Specification	S&ME ID #	Cal Date:	Type and Specification	S&ME ID #	Cal Date:
Balance (0.01 g)	00401	2/18/2015	Grooving tool	11368	5/1/2015
LL Apparatus	18801	5/1/2015			
Oven	17745	5/3/2015			

Pan #	Tare #:	Liquid Limit						Plastic Limit		
		78	36	25	4	5	6	96	23	10
A	Tare Weight	14.77	14.63	14.58				14.74	14.55	
B	Wet Soil Weight + A	31.22	31.39	31.47				21.22	21.26	
C	Dry Soil Weight + A	29.14	29.02	28.87				20.89	20.93	
D	Water Weight (B-C)	2.08	2.37	2.60				0.33	0.33	
E	Dry Soil Weight (C-A)	14.37	14.39	14.29				6.15	6.38	
F	% Moisture (D/E)*100	14.5%	16.5%	18.2%				5.4%	5.2%	
N	# OF DROPS	34	26	15				Moisture Contents determined by ASTM D 2216		
LL	LL = F * FACTOR									
Ave.	Average							5.3%		



One Point Liquid Limit			
N	Factor	N	Factor
20	0.974	26	1.005
21	0.979	27	1.009
22	0.985	28	1.014
23	0.99	29	1.018
24	0.995	30	1.022
25	1.000		

NP, Non-Plastic
 Liquid Limit **17**
 Plastic Limit **5**
 Plastic Index **12**
 Group Symbol **SC**
 Multipoint Method
 One-point Method

Wet Preparation Dry Preparation Air Dried

Notes / Deviations / References:

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

Michael Ulmer, PE
 Technical Responsibility

 Signature

Principal Engineer
 Position

8/25/15
 Date

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Moisture - Density Report



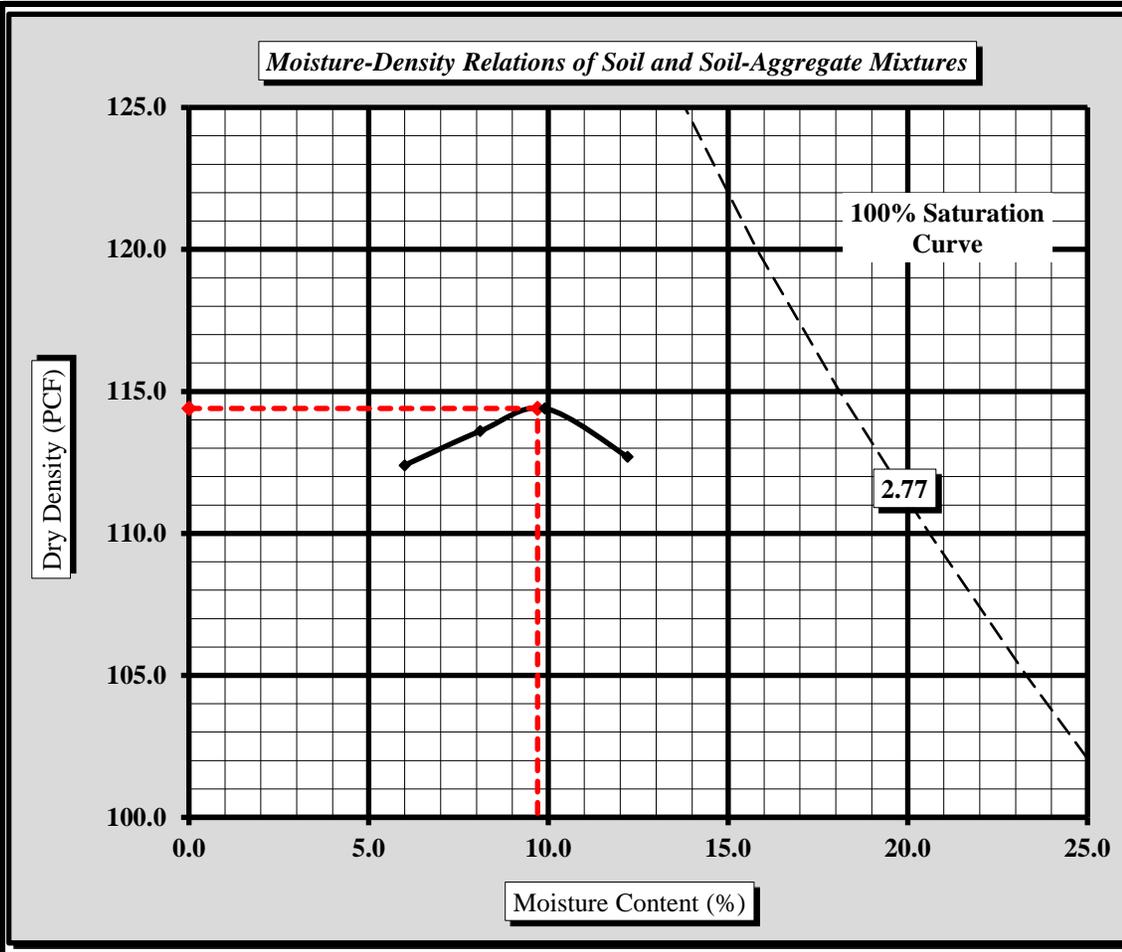
Quality Assurance

S&ME, Inc.- Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

S&ME Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s):	8/17/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #:	BSR-4	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:		Lab #:	901
		Depth:	3/4'-1.5'
Sample Description:	Brown Clayey Sand (SC)		

Maximum Dry Density 114.4 PCF. Optimum Moisture Content 9.7%

ASTM D 698 -- Method A



Soil Properties	
Natural Moisture Content	7.5%
Specific Gravity of Soil	--
Liquid Limit	17
Plastic Limit	5
Plastic Index	12
% Passing	
3/4"	100.0%
3/8"	100.0%
#4	100.0%
#20	99.7%
#40	96.8%
#60	88.0%
#200	26.3%
Oversize Fraction	
Bulk Gravity	--
% Moisture	--
% Oversize	--
MDD	
Opt. MC	

Moisture-Density Curve Displayed: Fine Fraction Corrected for Oversize Fraction (ASTM D 4718)
 Sieve Size used to separate the Oversize Fraction: #4 Sieve 3/8 inch Sieve 3/4 inch Sieve
 Mechanical Rammer Manual Rammer Moist Preparation Dry Preparation

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Michael Ulmer, PE

Technical Responsibility

Principal Engineer

Position

8/25/2015

Date

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**CBR (California Bearing Ratio) of Laboratory
Compacted Soil**

ASTM D 1883



Quality Assurance

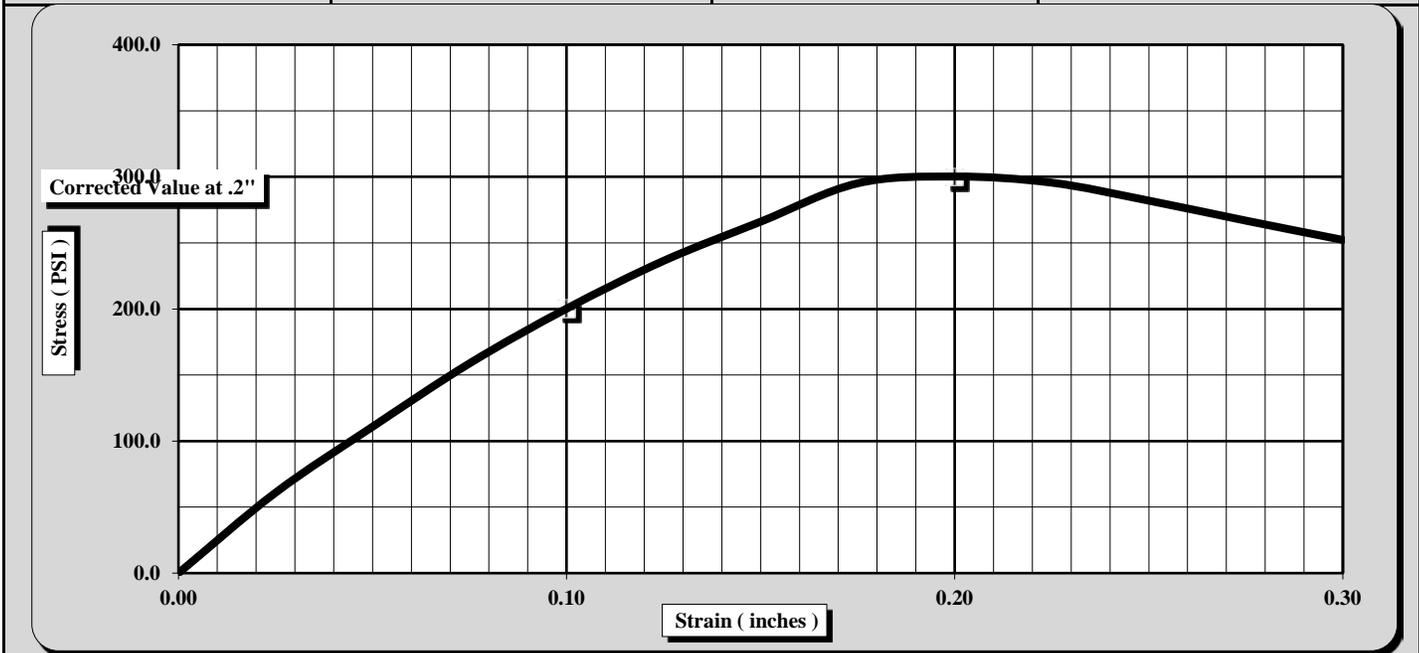
S&ME, Inc. Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s)	8/17/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #:	BSR-4	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:	Lab # 901	Depth:	3/4'-1.5'

Sample Description: Brown Clayey Sand (SC)

ASTM D1557 Method A	Maximum Dry Density:	114.4 PCF	Optimum Moisture Content:	9.7%
	Compaction Test performed on grading complying with CBR spec.		% Retained on the 3/4" sieve:	0.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in.	20.0	CBR at 0.1 in.	20.0
CBR at 0.2 in.	20.0	CBR at 0.2 in.	20.0



CBR Sample Preparation:

The entire gradation was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	32	Final Dry Density (PCF)	106.8
Initial Dry Density (PCF)	111.9	Average Final Moisture Content	14.6%
Moisture Content of the Compacted Specimen	9.4%	Moisture Content (top 1" after soaking)	15.7%
Percent Compaction	97.8%	Percent Swell	0.0%

Soak Time:	96 hrs.	Surcharge Weight	20.0	Surcharge Wt. per sq. Ft.	101.9
Liquid Limit		Plastic Index		Apparent Relative Density	--

Notes/Deviations/References: Liquid Limit: ASTM D 4318, Classification: ASTM D 2487

Michael Ulmer, PE
Technical Responsibility

Signature

Principal Engineer
Position

8/25/2015
Date

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Sieve Analysis of Soils



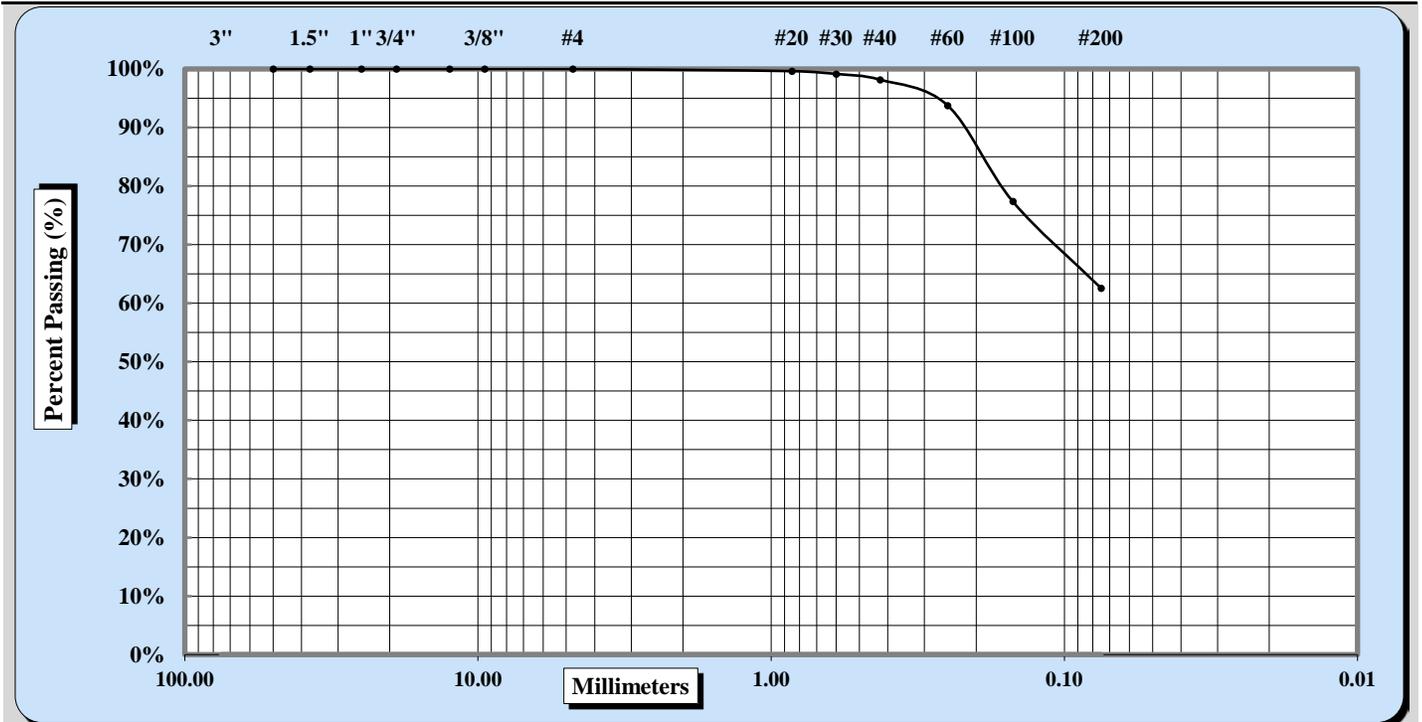
ASTM D 422

Quality Assurance

S&ME, Inc. - Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s):	8/21/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #	BSR-5	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:		Lab #:	901
		Depth:	3/4'-1.5'

Sample Description: Brown Sandy Fat Clay (CH)



Cobbles	< 300 mm (12") and > 75 mm (3")	Fine Sand	< 0.425 mm and > 0.075 mm (#200)
Gravel	< 75 mm and > 4.75 mm (#4)	Silt	< 0.075 and > 0.005 mm
Coarse Sand	< 4.75 mm and > 2.00 mm (#10)	Clay	< 0.005 mm
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	Colloids	< 0.001 mm

Maximum Particle Size	4.75 mm	Coarse Sand	0.4%	Fine Sand	35.6%
Gravel	0.0%	Medium Sand	1.5%	Silt & Clay	62.6%
Liquid Limit	59	Plastic Limit	22	Plastic Index	37
Specific Gravity	--			Moisture Content	13.6%
Coarse Sand	0.4%	Medium Sand	1.5%	Fine Sand	35.6%
Description of Sand & Gravel Particles:		Rounded	<input type="checkbox"/>	Angular	<input checked="" type="checkbox"/>
Hard & Durable	<input checked="" type="checkbox"/>	Soft	<input type="checkbox"/>	Weathered & Friable	<input type="checkbox"/>

Notes / Deviations / References:

Michael Ulmer, PE
Technical Responsibility

Signature

Principal Engineer
Position

8/25/2015
Date

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Moisture - Density Report

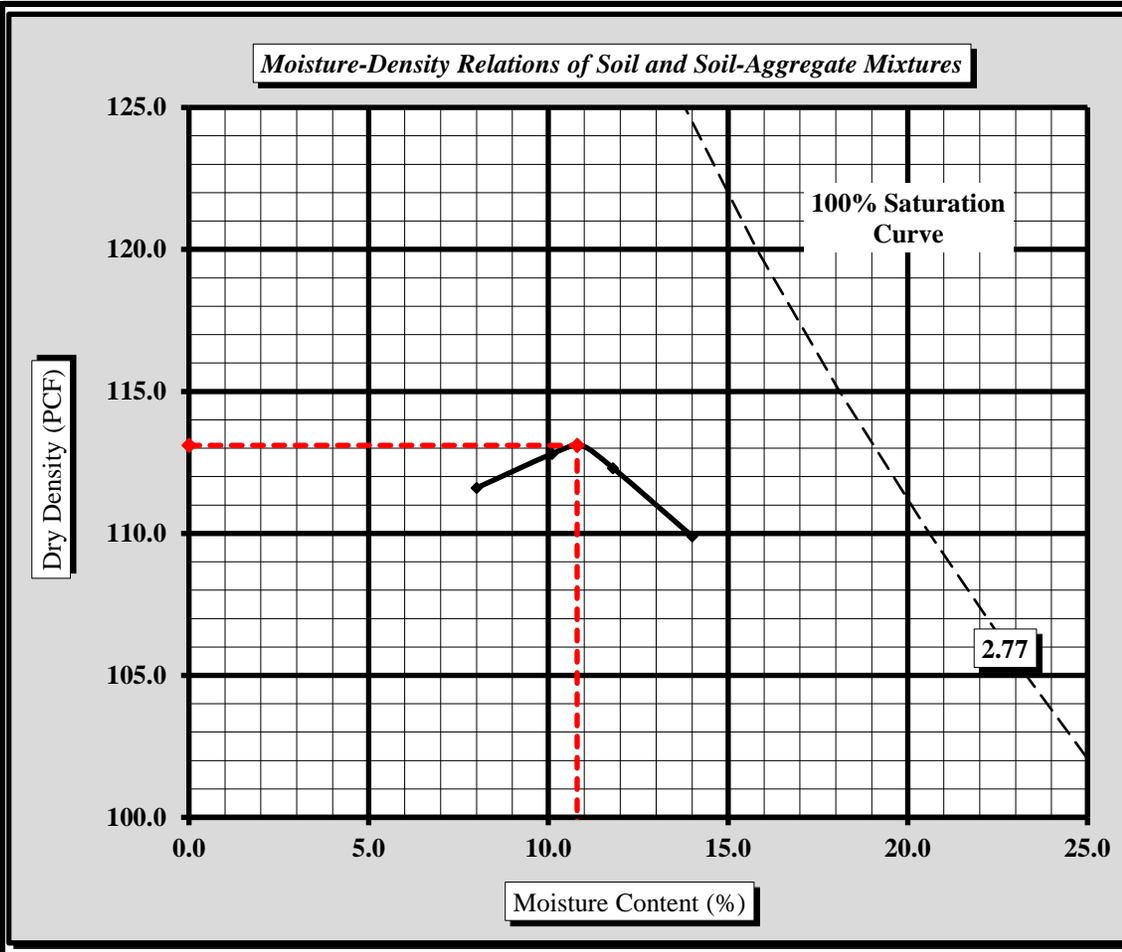


Quality Assurance

S&ME, Inc.- Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

S&ME Project #:	1413-15-064	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s):	8/17/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #:	BSR-5	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:		Lab #:	901
		Depth:	3/4'-1.5'
Sample Description:	Brown Sandy Fat Clay (CH)		

Maximum Dry Density 113.1 PCF. Optimum Moisture Content 10.8%
ASTM D 698 -- Method A



Soil Properties	
Natural Moisture Content	13.6%
Specific Gravity of Soil	--
Liquid Limit	59
Plastic Limit	22
Plastic Index	37
% Passing	
3/4"	100.0%
3/8"	100.0%
#4	100.0%
#20	99.6%
#40	98.2%
#60	93.8%
#200	62.6%
Oversize Fraction	
Bulk Gravity	--
% Moisture	--
% Oversize	--
MDD	
Opt. MC	

Moisture-Density Curve Displayed: Fine Fraction Corrected for Oversize Fraction (ASTM D 4718)
 Sieve Size used to separate the Oversize Fraction: #4 Sieve 3/8 inch Sieve 3/4 inch Sieve
 Mechanical Rammer Manual Rammer Moist Preparation Dry Preparation

References / Comments / Deviations:

ASTM D 2216: Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
 ASTM D 698: Laboratory Compaction Characteristics of Soil Using Standard Effort

Michael Ulmer, PE
 Technical Responsibility

 Signature

Principal Engineer

8/25/2015
 Date

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**CBR (California Bearing Ratio) of Laboratory
Compacted Soil**

ASTM D 1883



Quality Assurance

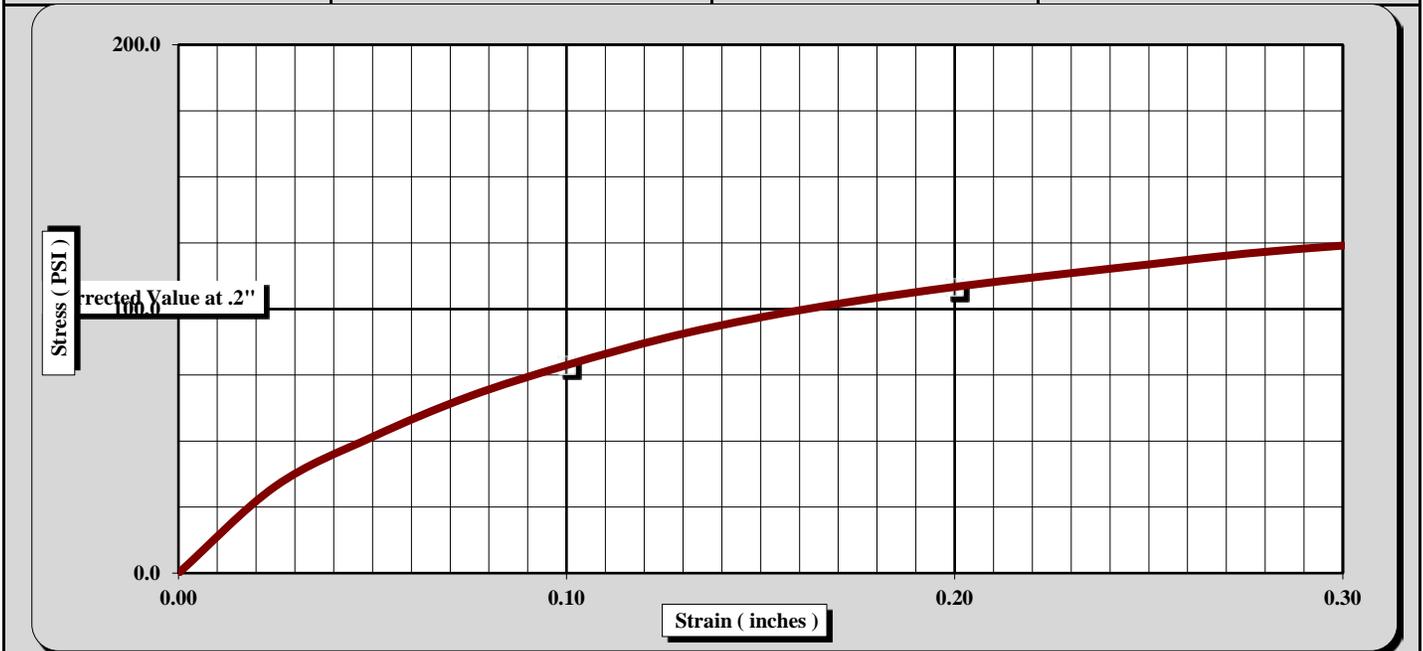
S&ME, Inc. Myrtle Beach 1330 Highway 501 Business; Conway, SC 29526

Project #:	1413-15-046	Report Date:	8/25/15
Project Name:	Volvo	Test Date(s)	8/17/2015
Client Name:	Thomas & Hutton		
Client Address:	Columbia, SC		
Boring #:	BSR-5	Sample #:	Bulk
		Sample Date:	8/12/2015
Location:	Lab # 901	Depth:	3/4'-1.5'

Sample Description: Brown Sandy Fat Clay (CH)

ASTM D 698 Method A	Maximum Dry Density:	113.1 PCF	Optimum Moisture Content:	10.8%
	Compaction Test performed on grading complying with CBR spec.		% Retained on the 3/4" sieve:	0.0%

Uncorrected CBR Values		Corrected CBR Values	
CBR at 0.1 in.	7.9	CBR at 0.2 in.	7.2
CBR at 0.1 in.	7.9	CBR at 0.2 in.	7.2



CBR Sample Preparation:

The entire gradation was used and compacted in a 6" CBR mold in accordance with ASTM D1883, Section 6.1.1

Before Soaking		After Soaking	
Compactive Effort (Blows per Layer)	32	Final Dry Density (PCF)	104.3
Initial Dry Density (PCF)	111.5	Average Final Moisture Content	17.2%
Moisture Content of the Compacted Specimen	10.3%	Moisture Content (top 1" after soaking)	20.5%
Percent Compaction	98.5%	Percent Swell	0.5%
Soak Time:	96 Hrs	Surcharge Weight	20.0
Liquid Limit		Surcharge Wt. per sq. Ft.	101.9
		Plastic Index	
		Apparent Relative Density	--

Notes/Deviations/References: Liquid Limit: ASTM D 4318, Classification: ASTM D 2487

Michael Ulmer, PE
Technical Responsibility

Signature

Principal Engineer
Position

8/25/2015
Date

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Appendix III

Pavement Design Calculations

Structural Number (SN) Calculation

Job Name: Centerline Road
 Job Number: 1413-15-064
 Section: North to Fish Road and US 176

2019-2029

Target ESAL value = 328,942

SN	pt	SSV	ESALs
2.85	2.0	3.8	328,942

Structural Number (SN) Calculation

Job Name: Centerline Road
 Job Number: 1413-15-064
 Section: North to Fish Road and US 176

2029-2039

Target ESAL value = 569,306

SN	pt	SSV	ESALs
3.10	2.0	3.8	569,306

$$\log(ESALs) = 9.36 \log(SN + 1) - 0.20 + \frac{\log\left[\frac{(4.2 - p_i)}{(4.2 - 1.5)}\right]}{0.40 + \left[1094 / (SN + 1)^{5.19}\right]}$$

$$+ \log\left(\frac{1}{R}\right) + 0.372(SSV - 3.0)$$

Conversion of Pavement Design to Thickness

Job Name: Centerline Road
 Job Number: 1413-15-064
 Alignment section: North to Fish Road and US 176

New Pavement

1. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 1-10
Surface B	150	1.43	0.44	0.63
Surface B	150	1.43	0.44	0.63
Intermediate B	200	1.90	0.44	0.84
Subtotal				2.10

2. Base Courses

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 1-10
MLBC		8.00	0.18	1.44
Subtotal				1.44

Total Thickness (in)	12.8
Total SN	3.54
Target SN	2.85

Conversion of Pavement Design to Thickness

Job Name: Centerline Road
 Job Number: 1413-15-064
 Section: North to Fish Road and US 176

Overlay Pavement

1. Overlay

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 11-20
Surface CM	125	1.19	0.44	0.52
Subtotal				0.52

2. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	Old Structural Coefficient, a_i	SN Year 11-20
Surface B	150	1.43	0.26	0.37
Surface B	150	1.43	0.26	0.37
Intermediate B	200	1.90	0.26	0.50
Subtotal				1.24

3. Base Courses

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
MLBC		8.00	0.18	1.44
Subtotal				1.44

Total Thickness (in)	13.95
Total SN	3.20
Target SN	3.10

Structural Number (SN) Calculation

Job Name: Centerline Road
 Job Number: 1413-15-064
 Section: South of Lower Westvaco Road

2019-2029

Target ESAL value = 909,374

SN	pt	SSV	ESALs
3.33	2.0	3.8	909,374

Structural Number (SN) Calculation

Job Name: Centerline Road
 Job Number: 1413-15-064
 Section: South of Lower Westvaco Road

2029-2039

Target ESAL value = 2,205,070

SN	pt	SSV	ESALs
3.79	2.0	3.8	2,205,070

$$\log(ESALs) = 9.36 \log(SN + 1) - 0.20 + \frac{\log\left[\frac{(4.2 - p_i)}{(4.2 - 1.5)}\right]}{0.40 + \left[1094 / (SN + 1)^{5.19}\right]}$$

$$+ \log\left(\frac{1}{R}\right) + 0.372(SSV - 3.0)$$

Conversion of Pavement Design to Thickness

Job Name: Centerline Road

Job Number: 1413-15-064

Alignment section: South of Lower Westvaco Road

New Pavement

1. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 1-10
Surface B	150	1.43	0.44	0.63
Surface B	150	1.43	0.44	0.63
Intermediate B	250	2.38	0.44	1.05
Subtotal				2.30

2. Base Courses

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 1-10
MLBC		10.00	0.18	1.80
Subtotal				1.80

Total Thickness (in)	15.24
Total SN	4.10
Target SN	3.33

Conversion of Pavement Design to Thickness

Job Name: Centerline Road
 Job Number: 1413-15-064
 Section: South of Lower Westvaco Road

Overlay Pavement

1. Overlay

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 11-20
Surface B	200	1.90	0.44	0.84
Intermediate B		0.00	0.44	0.00
Subtotal				0.84

2. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	Old Structural Coefficient, a_i	SN Year 11-20
Surface B (mill to remove)	0	0.00	0.26	0.00
Surface B	150	1.43	0.26	0.37
Intermediate B	250	2.38	0.26	0.62
Subtotal				0.99

3. Base Courses

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
MLBC		10.00	0.18	1.80
Subtotal				1.80

Total Thickness (in)	15.71
Total SN	3.63
Target SN	3.79

ESAL Calculation

Job Name: Lower Westvaco

Job Number: 1413-15-064

Section: _____

Given Information:

Year	ADT		Percent Trucks	8.0%
2019	6,500		Road Group	L
2039	4,000		ESALs/Truck	0.7052
Difference	-2,500		Design Period	2019-2039
Difference/Yr	-125		ESALs over Design Period	1,135,125

Year	ADT	One-way Traffic Per Day			Total ESALs/Day	Total ESALs/Year	Constr. Traffic	Total Traffic
		ADT	Critical Lane ADT	Trucks				
2019	6,500	3,250	3,250	260	183.4	66,923	1590	68,513
2020	6,375	3,188	3,188	255	179.8	65,636	1590	67,226
2021	6,250	3,125	3,125	250	176.3	64,350	1590	65,940
2022	6,125	3,063	3,063	245	172.8	63,063	1590	64,653
2023	6,000	3,000	3,000	240	169.2	61,776	1590	63,366
2024	5,875	2,938	2,938	235	165.7	60,489	1590	62,079
2025	5,750	2,875	2,875	230	162.2	59,202	1590	60,792
2026	5,625	2,813	2,813	225	158.7	57,915	1590	59,505
2027	5,500	2,750	2,750	220	155.1	56,628	1590	58,218
2028	5,375	2,688	2,688	215	151.6	55,341	1590	56,931
2029	5,250	2,625	2,625	210	148.1	54,054	1590	55,644
2030	5,125	2,563	2,563	205	144.6	52,767	1590	54,357
2031	5,000	2,500	2,500	200	141.0	51,480	1590	53,070
2032	4,875	2,438	2,438	195	137.5	50,193	1590	51,783
2033	4,750	2,375	2,375	190	134.0	48,906	1590	50,496
2034	4,625	2,313	2,313	185	130.5	47,619	1590	49,209
2035	4,500	2,250	2,250	180	126.9	46,332	1590	47,922
2036	4,375	2,188	2,188	175	123.4	45,045	1590	46,635
2037	4,250	2,125	2,125	170	119.9	43,758	1590	45,348
2038	4,125	2,063	2,063	165	116.4	42,471	1590	44,061
2039	4,000	2,000	2,000	160	112.8	41,184	1590	42,774
2040		0	0	0	0.0	0		
2041		0	0	0	0.0	0		
2042		0	0	0	0.0	0		
2043		0	0	0	0.0	0		
2044		0	0	0	0.0	0		

Structural Number (SN) Calculation

Job Name: Lower Westvaco
 Job Number: 1413-15-064
 Section: 0

2019-2029

Target ESAL value = 682,864

SN	pt	SSV	ESALs
3.19	2.0	3.8	682,864

Structural Number (SN) Calculation

Job Name: Lower Westvaco
 Job Number: 1413-15-064
 Section: 0

2029-2039

Target ESAL value = 485,651

SN	pt	SSV	ESALs
3.03	2.0	3.8	485,651

$$\log(ESALs) = 9.36 \log(SN + 1) - 0.20 + \frac{\log\left[\frac{(4.2 - p_i)}{(4.2 - 1.5)}\right]}{0.40 + \left[1094 / (SN + 1)^{5.19}\right]}$$

$$+ \log\left(\frac{1}{R}\right) + 0.372(SSV - 3.0)$$

Conversion of Pavement Design to Thickness

Job Name: Lower Westvaco
 Job Number: 1413-15-064
 Alignment section: 0

New Pavement

1. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 1-10
Surface B	150	1.43	0.44	0.63
Surface B	150	1.43	0.44	0.63
Intermediate B	250	2.38	0.44	1.05
Subtotal				2.30

2. Base Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 1-10
MLBC	0	8.00	0.18	1.44
Subtotal				1.44

Total Thickness (in)	13.2
Total SN	3.74
Target SN	3.19

Conversion of Pavement Design to Thickness

Job Name: Lower Westvaco
 Job Number: 1413-15-064
 Section: 0

Overlay Pavement

1. Overlay

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
Surface B	150	1.43	0.44	0.63
Subtotal				0.63

2. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 11-20
Surface B (mill off)	0	0.00	0.26	0.00
Surface B	150	1.43	0.26	0.37
Intermediate B	250	2.38	0.26	0.62
Subtotal				0.99

3. Base Courses

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
MLBC		8.00	0.18	1.44
Subtotal				1.44

Total Thickness (in)	10.86
Total SN	3.06
Target SN	3.03

ESAL Calculation

Job Name: Fish Road

Job Number: 1413-15-064

Section: _____

Given Information:

Year	ADT		Percent Trucks	8.0%
2019	3,000		Road Group	L
2039	3,000		ESALs/Truck	0.7052
Difference	0		Design Period	2019-2039
Difference/Yr	0		ESALs over Design Period	617,755

Year	ADT	One-way Traffic Per Day			Total ESALs/Day	Total ESALs/Year
		ADT	Critical Lane ADT	Trucks		
2019	3,000	1,500	1,500	120	84.6	30,888
2020	3,000	1,500	1,500	120	84.6	30,888
2021	3,000	1,500	1,500	120	84.6	30,888
2022	3,000	1,500	1,500	120	84.6	30,888
2023	3,000	1,500	1,500	120	84.6	30,888
2024	3,000	1,500	1,500	120	84.6	30,888
2025	3,000	1,500	1,500	120	84.6	30,888
2026	3,000	1,500	1,500	120	84.6	30,888
2027	3,000	1,500	1,500	120	84.6	30,888
2028	3,000	1,500	1,500	120	84.6	30,888
2029	3,000	1,500	1,500	120	84.6	30,888
2030	3,000	1,500	1,500	120	84.6	30,888
2031	3,000	1,500	1,500	120	84.6	30,888
2032	3,000	1,500	1,500	120	84.6	30,888
2033	3,000	1,500	1,500	120	84.6	30,888
2034	3,000	1,500	1,500	120	84.6	30,888
2035	3,000	1,500	1,500	120	84.6	30,888
2036	3,000	1,500	1,500	120	84.6	30,888
2037	3,000	1,500	1,500	120	84.6	30,888
2038	3,000	1,500	1,500	120	84.6	30,888
2039	3,000	1,500	1,500	120	84.6	30,888
2040		0	0	0	0.0	0
2041		0	0	0	0.0	0
2042		0	0	0	0.0	0
2043		0	0	0	0.0	0
2044		0	0	0	0.0	0

Structural Number (SN) Calculation

Job Name: Fish Road
 Job Number: 1413-15-064
 Section: 0

2019-2029

Target ESAL value = 308,878

SN	pt	SSV	ESALs
2.83	2.0	3.8	308,878

Structural Number (SN) Calculation

Job Name: Fish Road
 Job Number: 1413-15-064
 Section: 0

2029-2039

Target ESAL value = 308,878

SN	pt	SSV	ESALs
2.83	2.0	3.8	308,878

$$\log(ESALs) = 9.36 \log(SN + 1) - 0.20 + \frac{\log\left[\frac{(4.2 - p_i)}{(4.2 - 1.5)}\right]}{0.40 + \left[1094 / (SN + 1)^{5.19}\right]}$$

$$+ \log\left(\frac{1}{R}\right) + 0.372(SSV - 3.0)$$

Conversion of Pavement Design to Thickness

Job Name: Fish Road
 Job Number: 1413-15-064
 Alignment section: 0

New Pavement

1. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 1-10
Surface B	150	1.43	0.44	0.63
Intermediate B	200	1.90	0.44	0.84
Subtotal				1.47

2. Base Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 1-10
MLBC		8.00	0.18	1.44
Subtotal				1.44

Total Thickness (in)	11.3
Total SN	2.91
Target SN	2.83

Conversion of Pavement Design to Thickness

Job Name: Fish Road
 Job Number: 1413-15-064
 Section: 0

Overlay Pavement

1. Overlay

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
Surface CM	150	1.43	0.44	0.63
Subtotal				0.63

2. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 11-20
Surface B	150	1.43	0.26	0.37
Intermediate B	200	1.90	0.26	0.50
Subtotal				0.87

3. Base Courses

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
MLBC		8.00	0.18	1.44
Subtotal				1.44

Total Thickness (in)	12.76
Total SN	2.94
Target SN	2.83

Conversion of Pavement Design to Thickness

Job Name: Fish Road
 Job Number: 1413-15-064
 Section: 0

Overlay Pavement

1. Overlay

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
Surface B	200	1.90	0.44	0.84
Intermediate B	250	2.38	0.44	1.05
Subtotal				1.89

2. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 11-20
Asphalt (mill 1 inch)		1.00	0.26	0.26
Sand Asphalt		4.00	0.16	0.64
Subtotal				0.90

3. Base Courses

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
MLBC			0.18	0.00
Subtotal				0.00

Total Overlay Thickness (in)	4.29
Total SN	2.79
Target SN	2.83

ESAL Calculation

Job Name: SC 27

Job Number: 1413-15-064

Section: _____

Given Information:

Year	ADT		Percent Trucks	8.0%
2019	9,500		Road Group	L
2039	8,000		ESALs/Truck	0.7052
Difference	-1,500		Design Period	2019-2039
Difference/Yr	-75		ESALs over Design Period	1,794,064

Year	ADT	One-way Traffic Per Day			Total ESALs/Day	Total ESALs/Year
		ADT	Critical Lane ADT	Trucks		
2019	9,500	4,750	4,750	380	268.0	97,811
2020	9,425	4,713	4,713	377	265.9	97,039
2021	9,350	4,675	4,675	374	263.7	96,267
2022	9,275	4,638	4,638	371	261.6	95,495
2023	9,200	4,600	4,600	368	259.5	94,722
2024	9,125	4,563	4,563	365	257.4	93,950
2025	9,050	4,525	4,525	362	255.3	93,178
2026	8,975	4,488	4,488	359	253.2	92,406
2027	8,900	4,450	4,450	356	251.1	91,634
2028	8,825	4,413	4,413	353	248.9	90,861
2029	8,750	4,375	4,375	350	246.8	90,089
2030	8,675	4,338	4,338	347	244.7	89,317
2031	8,600	4,300	4,300	344	242.6	88,545
2032	8,525	4,263	4,263	341	240.5	87,773
2033	8,450	4,225	4,225	338	238.4	87,001
2034	8,375	4,188	4,188	335	236.2	86,228
2035	8,300	4,150	4,150	332	234.1	85,456
2036	8,225	4,113	4,113	329	232.0	84,684
2037	8,150	4,075	4,075	326	229.9	83,912
2038	8,075	4,038	4,038	323	227.8	83,140
2039	8,000	4,000	4,000	320	225.7	82,367
2040		0	0	0	0.0	0
2041		0	0	0	0.0	0
2042		0	0	0	0.0	0
2043		0	0	0	0.0	0
2044		0	0	0	0.0	0

Structural Number (SN) Calculation

Job Name: SC 27
 Job Number: 1413-15-064
 Section: 0

2019-2029

Target ESAL value = 935,642

SN	pt	SSV	ESALs
3.34	2.0	3.8	935,642

Structural Number (SN) Calculation

Job Name: SC 27
 Job Number: 1413-15-064
 Section: 0

2029-2039

Target ESAL value = 858,422

SN	pt	SSV	ESALs
3.30	2.0	3.8	858,422

$$\log(ESALs) = 9.36 \log(SN + 1) - 0.20 + \frac{\log\left[\frac{(4.2 - p_i)}{(4.2 - 1.5)}\right]}{0.40 + \left[1094 / (SN + 1)^{5.19}\right]}$$

$$+ \log\left(\frac{1}{R}\right) + 0.372(SSV - 3.0)$$

Conversion of Pavement Design to Thickness

Job Name: SC 27
 Job Number: 1413-15-064
 Alignment section: 0

New Pavement

1. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 1-10
Surface B	200	1.90	0.44	0.84
Intermediate B	200	1.90	0.44	0.84
Subtotal				1.68

2. Base Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 1-10
AABC	500	4.76	0.34	1.62
Subtotal				1.62

Total Thickness (in)	8.6
Total SN	3.30
Target SN	3.34

Conversion of Pavement Design to Thickness

Job Name: SC 27
 Job Number: 1413-15-064
 Section: 0

Overlay Pavement

1. Overlay

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
Surface CM	125	1.19	0.44	0.52
Subtotal				0.52

2. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 11-20
Surface B	200	1.90	0.26	0.50
Intermediate B	200	1.90	0.26	0.50
Subtotal				0.99

3. Base Courses

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
AABC		4.76	0.34	1.62
Subtotal				1.62

Total Thickness (in)	9.76
Total SN	3.13
Target SN	3.30

Conversion of Pavement Design to Thickness

Job Name: SC 27
 Job Number: 1413-15-064
 Section: 0

Overlay Pavement

1. Overlay

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
Surface B	200	1.90	0.44	0.84
Intermediate B	300	2.86	0.44	1.26
Subtotal				2.10

2. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 11-20
Old Asphalt (mill 1 in.)		3.50	0.26	0.91
Old Sand Asphalt		2.00	0.16	0.32
Subtotal				1.23

3. Base Courses

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
			0.34	0.00
Subtotal				0.00

Total Overlay Thickness (in)	4.76
Total SN	3.33
Target SN	3.34

ESAL Calculation

Job Name: US 176

Job Number: 1413-15-064

Section: _____

Given Information:

Year	ADT		Percent Trucks	8.0%
2019	4,500		Road Group	L
2039	8,500		ESALs/Truck	0.7052
Difference	4,000		Design Period	2019-2039
Difference/Yr	200		ESALs over Design Period	1,359,061

Year	ADT	One-way Traffic Per Day			Total ESALs/Day	Total ESALs/Year
		ADT	Critical Lane ADT	Trucks		
2019	4,500	2,250	2,250	180	126.9	46,332
2020	4,700	2,350	2,350	188	132.6	48,391
2021	4,900	2,450	2,450	196	138.2	50,450
2022	5,100	2,550	2,550	204	143.9	52,509
2023	5,300	2,650	2,650	212	149.5	54,568
2024	5,500	2,750	2,750	220	155.1	56,628
2025	5,700	2,850	2,850	228	160.8	58,687
2026	5,900	2,950	2,950	236	166.4	60,746
2027	6,100	3,050	3,050	244	172.1	62,805
2028	6,300	3,150	3,150	252	177.7	64,864
2029	6,500	3,250	3,250	260	183.4	66,923
2030	6,700	3,350	3,350	268	189.0	68,983
2031	6,900	3,450	3,450	276	194.6	71,042
2032	7,100	3,550	3,550	284	200.3	73,101
2033	7,300	3,650	3,650	292	205.9	75,160
2034	7,500	3,750	3,750	300	211.6	77,219
2035	7,700	3,850	3,850	308	217.2	79,279
2036	7,900	3,950	3,950	316	222.8	81,338
2037	8,100	4,050	4,050	324	228.5	83,397
2038	8,300	4,150	4,150	332	234.1	85,456
2039	8,500	4,250	4,250	340	239.8	87,515
2040		0	0	0	0.0	0
2041		0	0	0	0.0	0
2042		0	0	0	0.0	0
2043		0	0	0	0.0	0
2044		0	0	0	0.0	0

Structural Number (SN) Calculation

Job Name: US 176
 Job Number: 1413-15-064
 Section: 0

2019-2029

Target ESAL value = 576,572

SN	pt	SSV	ESALs
3.11	2.0	3.8	576,572

Structural Number (SN) Calculation

Job Name: US 176
 Job Number: 1413-15-064
 Section: 0

2029-2039

Target ESAL value = 782,490

SN	pt	SSV	ESALs
3.25	2.0	3.8	782,490

$$\log(ESALs) = 9.36 \log(SN + 1) - 0.20 + \frac{\log\left[\frac{(4.2 - p_i)}{(4.2 - 1.5)}\right]}{0.40 + \left[1094 / (SN + 1)^{5.19}\right]} + \log\left(\frac{1}{R}\right) + 0.372(SSV - 3.0)$$

Conversion of Pavement Design to Thickness

Job Name: US 176
 Job Number: 1413-15-064
 Alignment section: 0

New Pavement

1. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 1-10
Surface B	200	1.90	0.44	0.84
Intermediate B	200	1.90	0.44	0.84
Subtotal				1.68

2. Base Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 1-10
MLBC		8.00	0.18	1.44
Subtotal				1.44

Total Thickness (in)	11.8
Total SN	3.12
Target SN	3.11

Conversion of Pavement Design to Thickness

Job Name: US 176
 Job Number: 1413-15-064
 Section: 0

Overlay Pavement

1. Overlay

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
Surface CM	200	1.90	0.44	0.84
Subtotal				0.84

2. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 11-20
Surface B	200	1.90	0.26	0.50
Intermediate B	200	1.90	0.26	0.50
Subtotal				0.99

3. Base Courses

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
MLBC		8.00	0.18	1.44
Subtotal				1.44

Total Thickness (in)	13.71
Total SN	3.27
Target SN	3.25

Conversion of Pavement Design to Thickness

Job Name: US 176
 Job Number: 1413-15-064
 Section: 0

Overlay Pavement

1. Overlay

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
Surface B	200	1.90	0.44	0.84
Intermediate B		0.00	0.44	0.00
Subtotal				0.84

2. Surface and Intermediate Courses

Material	Rate (psy)	Thickness (in)	New Structural Coefficient, a_i	SN Year 11-20
Old Asphalt (mill 1 inch)		1.50	0.26	0.39
Old Sand Asphalt		11.00	0.16	1.76
Subtotal				2.15

3. Base Courses

Material	Rate (psy)	Thickness (in)	Structural Coefficient, a_i	SN Year 11-20
MLBC			0.18	0.00
Subtotal				0.00

Total Overlay Thickness (in)	1.90
Total SN	2.99
Target SN	3.25

INDEX TO
SECTION 01025
MEASUREMENT AND PAYMENT

Paragraph	Title	Page
PART 1 – GENERAL		
1.1	Section Includes	01025-1
1.2	Authority	01025-1
1.3	Unit Quantities Specified	01025-1
1.4	Measurement of Quantities	01025-1
1.5	Payment	01025-2

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

SECTION 01025**MEASUREMENT AND PAYMENT****PART 1 – GENERAL****1.1 SECTION INCLUDES**

- A. Measurement and payment criteria applicable to the Work performed under a unit price payment method.

1.2 AUTHORITY

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section. In the event of conflict, the requirements of the individual specification section govern.
- B. Take all measurements and compute quantities. The Engineer will verify measurements and quantities.
- C. Assist by providing necessary equipment, workers, and survey personnel as required.

1.3 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements supplied or placed in the Work and verified by the Engineer determine payment.
- B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit sum/prices contracted.

1.4 MEASUREMENT OF QUANTITIES

- A. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
- B. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
- C. Measurement by Area: Measured by square dimension using mean length and width or radius.
- D. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- E. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

1.5 PAYMENT

- A. Payment Includes: Full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work including overhead and profit.
- B. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Engineer multiplied by the unit sum/price for Work which is incorporated in or made necessary by the Work.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01135

BIDDER'S QUALIFICATIONS

Please answer all questions and have your statement notarized. If necessary, you may answer questions on separate sheets of paper and attach them to this statement. Other additional information your firm deems useful in the evaluation of your capabilities may also be included.

1. ORGANIZATION

Date of Response: _____

Legal Name of Bidder: _____

Street Address: _____

City, State, Zip Code: _____

Website: _____

Contact: _____ Phone: _____ Mobile: _____

Email Address: _____

Is the address of the business listed above a: (Please circle one listed below)

Main Office Regional Office Branch Office

When Organized: _____

When and Where Incorporated: _____

Licensed or Registered To Do Business in State of South Carolina: ___Yes _____No

If No, In What (State) _____ Municipality does your Company Have A Business License?_

Business License Number for Said (State) _____ Municipality: _____

Federal Employer I.D. Number: _____

If Partnership, list all partners and their addresses:

If there is no South Carolina Partner, give name and address of agent for service of process in South Carolina.

_____	_____
_____	_____
_____	_____
_____	_____

If an individual owner is not a South Carolina resident, give name and address of agent for service of process in South Carolina.

_____	_____
_____	_____
_____	_____
_____	_____

Is your company: (Please circle one listed below)

MBE WBE DBE MBE/WBE/DBE Certified by:_____

Has your company or any of its principals ever petitioned for bankruptcy, failed in business, defaulted or been terminated on a contract awarded to you?

_____ Yes _____ No

Has your company ever been banned or otherwise precluded from pursuing public work or have ever been found to be non-responsive by a public agency?

_____ Yes _____ No

Has your company ever had a claim made against it for improper, delayed, or non-compliant work or failure to meet warranty obligations?

_____ Yes _____ No

Is your company or any of its owners, officers, or major shareholders currently involved in any arbitration or litigation?

_____ Yes _____ No

Does your company have any outstanding judgments or claims against it?

_____ Yes _____ No

Is your company currently involved or has been involved in the last 3 years with any litigation?

_____ Yes _____ No

Has your organization ever failed to complete any work awarded to it?

_____ Yes _____ No

If yes to any of the above questions, please explain: _____

Please list any litigation brought against your company in the past five (5) years asserting that you failed to make payments to anyone.

Has your company ever had a contract terminated for any reason?

_____ Yes _____ No

If Yes, please explain: _____

List the geographical areas in which you work: _____

List the areas of work that you normally perform with your own forces: _____

What percentage of the Company's work is normally subcontracted? _____%

What is the largest contract your company has completed?

Amount \$ _____ Year _____

Project Name / Scope / Contact Information _____

Should the work require compliance with the South Carolina State Construction Licensing Board Rules and Regulations, the Contractor and any Subcontractor shall list the appropriate License number(s):

Main Contractor's License Number: _____

Subcontractor #1 License Number: _____

Subcontractor #1 Name: _____

Subcontractor #2 License Number: _____

Subcontractor #2 Name: _____

Subcontractor #3 License Number: _____

Subcontractor #3 Name: _____

(List additional if appropriate)

Year Firm Established: _____

2. EXPERIENCE

How many years have you been engaged in the contracting business under your present firm or trade name? _____

List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable.

Current Employment (Numbers of Employees): Total: _____

Management: _____ Clerical: _____ Professional: _____

Technical: _____ Skilled Labor: _____ Common Labor: _____

Total Value of Projects Completed (last five years): \$ _____

A. Contracts On Hand

Project Name and Location	Owner Name Address Phone No.	Project Description	Bid \$	Actual \$	Anticipated Completion Date

B. Selected Similar Construction Project Examples

At Least Five (5) Projects Similar in Nature:

Project Name and Location	Owner Name Address Phone No.	Project Description	Bid \$	Actual \$	Completion Date

Has your company or your proposed subcontractors ever completed projects that included the following:

[List] Yes___No___

[List] Yes___No___

[List] Yes___No___

[List] Yes___No___

[List] Yes___No___

C. Safety Issues Disclosure:

Contractor's Experience Modification Rate (EMR):
 List Safety Issues for Last Five Years:

List Major Equipment Proposed To Be Used For This Project:

Description	Make/Model	Owned by Bidder or Sub?	Year Purchased
_____	_____	Yes ___ No ___	_____
_____	_____	Yes ___ No ___	_____
_____	_____	Yes ___ No ___	_____
_____	_____	Yes ___ No ___	_____
_____	_____	Yes ___ No ___	_____
_____	_____	Yes ___ No ___	_____
_____	_____	Yes ___ No ___	_____
_____	_____	Yes ___ No ___	_____
_____	_____	Yes ___ No ___	_____
_____	_____	Yes ___ No ___	_____

D. Proposed Superintendent for this Project:

Name: _____

Address: _____

E. Select Project Experience of the Superintendent:

Project Name and Location	Owner Name Address Phone No.	Project Description	Bid \$	Actual \$	Completion Date

3. REFERENCES

Name of your Bank: _____

Address: _____

Phone: _____ Contact Person: _____

Amount of line of credit: _____ Amount Available: _____

Bonding Company: _____

Address: _____

Contact Person: _____ Phone: _____

Bonding Company's Rating: _____

Bonding Capacity: Per Job \$_____ Aggregate \$_____

Date of Last Bond: _____ Bond Amount \$_____

Bond Rate: _____ Remaining Bonding Capacity \$_____

Please list the persons or entities that provide indemnification to your Surety: _____

List three of your major suppliers:

A. Company: _____
Address: _____
Phone: _____ Fax: _____
Contact: _____

B. Company: _____
Address: _____
Phone: _____ Fax: _____
Contact: _____

C. Company: _____
Address: _____
Phone: _____ Fax: _____
Contact: _____

List three Contractors/Owners you do business with:

A. Company: _____
Address: _____
Phone: _____ Fax: _____
Contact: _____

B. Company: _____
Address: _____
Phone: _____ Fax: _____
Contact: _____

C. Company: _____
Address: _____
Phone: _____ Fax: _____
Contact: _____

4. SIGNATURE

The Undersigned certifies under oath that the information provided herein is true and sufficiently complete so as not to be misleading. The undersigned also recognizes that the Owner is relying on the accuracy of the information and the responses in deciding the demonstrated competence and qualifications for the type of required work.

The foregoing statement of qualifications is submitted under oath:

Respectfully submitted:

Company Name: _____

Street Address: _____

City, State, Zip: _____

By (Signed): _____

By (Typed): _____

Title: _____

Attach satisfactory evidence of the authority of the officer, or officers, signing on behalf of a corporation.

SWORN to before me this

_____ Day of _____, 20____

_____(SEAL)

Notary Public for _____

My Commission Expires: _____

INDEX TO
DIVISION I – GENERAL REQUIREMENTS
SECTION 01300
SUBMITTALS

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PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

DIVISION I – GENERAL REQUIREMENTS**SECTION 01300 – SUBMITTALS****PART 1 – GENERAL****1.1 SECTION INCLUDES**

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Product Data.
- D. Shop Drawings.
- E. Samples.
- F. Design data.
- G. Test reports.
- H. Certificates.
- I. Manufacturer's instructions.
- J. Manufacturer's field reports.
- K. Erection drawings.

1.2 RELATED SECTIONS

- A. Section 01400 – Quality Control: Manufacturers' field services and reports.

1.3 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Engineer accepted form.
- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix. Resubmit as specified for initial submittal. Indicate on revised drawings all changes that have been made other than those requested by the Engineer.
- C. Identify Project, Contractor, Subcontractor, or supplier; pertinent drawing and detail number, and specification section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed verifying review, approval, products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents. Submittal without the Contractor's stamp will be returned to Contractor without Engineer's review.

- E. Make all submittals far enough in advance of scheduled dates for installation to provide all required time for reviews, for securing necessary approvals, for possible revision and resubmittal, and for placing orders and securing delivery. In scheduling, allow sufficient time for the Engineer's review following the receipt of the submittal. Coordinate submission of related items. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
- F. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed Work.
- G. Provide space for Contractor and Architect/Engineer review stamps.
- H. When revised for resubmission, identify all changes made since previous submission.
- I. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedule in duplicate within 15 days established in Notice to Proceed.
- B. Revise and resubmit as required.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a computer generated or horizontal bar chart with separate line for each major portion of Work or operation, identifying first work day of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submission.
- G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by allowances.

1.5 PRODUCT DATA

- A. Product Data For Review:
 - 1. Submitted to Engineer for review and conformance with information given in specifications and the design concept expressed in contract documents.

2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above.
- B. Submit the number of copies Contractor and Owner require, plus two copies retained by Engineer.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. After review, distribute in accordance with the Submittal Procedures article above.

1.6 SHOP DRAWINGS

- A. Contractor shall submit a minimum 6 copies of each shop drawing to the Engineer for review.
- B. Submitted to Engineer for review and conformance with information given in specifications and design concept expressed in contract documents. Review of shop drawings by Engineer shall not relieve Contractor of its responsibility for accuracy of shop drawings nor for furnishing of all materials and equipment required by the contract even though such items may not be indicated on shop drawings reviewed by Engineer.
- C. Shop drawings shall include applicable technical information, drawings, diagrams, performance curves, schedules, templates, calculations, instructions, measurements, and similar information as applicable to the specific item for which shop drawing is prepared.
- D. Do not use Engineer's Drawings for shop or erection purposes.
- E. Each shop drawing copy shall bear a Contractor's stamp showing they have been checked. Shop drawings submitted to the Engineer without Contractor's stamp will be returned to Contractor without review.

No review will be given to partial submittals of shop drawings for items which interconnect and/or are interdependent. It is the Contractor's responsibility to assemble shop drawings for all such interconnecting and/or interdependent items, check them and then make one submittal to Engineer.

Schedule of Submittals: Within 30 days of Contract award and prior to any shop drawing submittal, Contractor shall submit a schedule showing the estimated submittal date and desired acceptance date for each shop drawing anticipated. Time lost due to unacceptable submittals shall be the Contractor's responsibility.

1.7 SAMPLES

- A. Samples For Review:
 - 1. Submitted to Engineer for review and conformance with information given in specifications and design concept expressed in contract documents.
 - 2. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above.
- B. Samples For Information:
 - 1. Submitted for Engineer's knowledge as contract administrator or for the Owner.
- C. Include identification on each sample, with full product information.
- D. Submit the number of samples specified in individual specification sections; one of which will be retained by Engineer.
- E. Reviewed samples which may be used in the Work are indicated in individual specification sections.
- F. Samples will not be used for testing purposes unless specifically stated in the specification section.

1.8 DESIGN DATA

- A. Submit for Engineer's knowledge as contract administrator or for the Owner.
- B. Submit for information and conformance with information given in specifications and design concept expressed in contract documents.

1.9 TEST REPORTS

- A. Submit for Engineer's knowledge as contract administrator or for the Owner.
- B. Submit test reports for information and assessing conformance with information given in specifications and design concept expressed in contract documents.

1.10 CERTIFICATES

- A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or the Contractor to Engineer, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product, but must be acceptable to Engineer.

1.11 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer for delivery to Owner in quantities specified for product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- C. Refer to Section 01400 – Quality Control, Manufacturers' Field Services article.

1.12 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for Engineer's benefit as contract administrator or for the Owner.
- B. Submit report in duplicate within 30 days of observation to Engineer for information.
- C. Submit for information and assessing conformance with information given in specifications and design concept expressed in contract documents.

1.13 ERECTION DRAWINGS

- A. Submit drawings for Engineer's benefit as contract administrator or for the Owner.
- B. Submit for information and assessing conformance with information given in specifications and design concept expressed in contract documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by the Engineer or Owner.

1.14 REVIEWED SHOP DRAWINGS

- A. Engineer Review.
 - 1. Acceptable submittals will be marked "No Exceptions Taken." A minimum of three copies will be retained by the Engineer for Engineer's and Owner's use and remaining copies will be returned to Contractor.
 - 2. Submittals requiring minor corrections before the product is acceptable will be marked "Furnish as Corrected." Contractor may order, fabricate, and ship items included in submittals, provided the indicated corrections are made.
 - 3. Submittals marked "Revise and Resubmit" must be revised to reflect required changes and the initial review procedure repeated.
 - 4. The "Rejected" notation is used to indicate products not acceptable. Upon return of a submittal so marked, Contractor shall repeat the initial review procedure utilizing acceptable products.
 - 5. Only two copies of items marked "Revise and Resubmit" and "Rejected" will be reviewed and marked. One copy will be retained by Engineer and

the other copy with all remaining unmarked copies will be returned to Contractor for resubmittal.

- B. No Work or products shall be installed without a drawing or submittal bearing the "No Exceptions Taken" or "Furnish as Corrected" notation. Contractor shall maintain at the job site a complete set of shop drawings bearing Engineer's stamp.
- C. Substitutions: In the event Contractor obtains Engineer's acceptance for use of products other than those listed first in Contract Documents, Contractor shall, at Contractor's own expense and using methods accepted by Engineer, make any changes to structures, piping and electrical work necessary to accommodate these products.
- D. Use of "No Exceptions Taken" or "Furnish as Corrected" notation on shop drawings or other submittals is general and shall not relieve Contractor of the responsibility of furnishing products of proper dimension, size, quality, quantity, materials, all performance characteristics, and to efficiently perform requirements and intent of Contract Documents. Engineer's review shall not relieve Contractor of the responsibility of errors of any kind on shop drawings. Review is intended only to assure conformance with design concept of the project and compliance with information given in Contract Documents.

1.15 SUBMITTAL CHECKLIST

- A. This checklist is not necessarily complete. Contractor is responsible to submit all items and materials as specified in each section.

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
02204 – Earthwork					
	Borrow				
02210 – Soil Erosion Control					
	Silt Fence				
02231 – Aggregate Base Course					
	Aggregate				
	Prime				
02237 – Soil Cement Base Course					
	Mix Design				
	Prime				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
02275 – Rip-Rap					
	Stone				
	Sand-Cement Bag				
	Filter Fabric				
02356 – Pile Load Tests					
	Test Method & Equipment				
	Piles				
02361 – Wood Friction Piles					
	Piles				
	Preservative Treatment Certification				
	Driving Equipment				
	Pile Driving Sequence				
02484 – Concrete Bulkhead					
	Design Data				
	Precast Members				
	Driving Equipment				
	Premolded Expansion Joint Fillers				
	Hardware				
	Concrete Mix Design				
	Filter Fabric				
02511 – Asphaltic Concrete Base Course					
	Asphalt Cement				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Anti-Stripping Agent				
	Mix Design				
02512 – Asphaltic Concrete Binder/Surface Courses					
	Tack Coat				
	Asphalt Cement				
	Anti-Stripping Agent				
	Mix Designs				
02667SC – Water Distribution System					
	PVC Pipe – 4"Ø and Larger				
	PVC Pipe – Smaller than 4"Ø				
	D.I. Pipe				
	Tubing for Service Lateral				
	Fittings – PVC				
	Fittings – Compact D.I.				
	Gate Valve				
	2" Ball Valves				
	Air Release Valve				
	Air/Vacuum Valve				
	Combination Air Valve				
	Corporation Stops				
	Curb Stops				
	Magnetic Marking Tape				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Valve Boxes				
	Valve Box Collar				
	Hydrant Tees				
	Threaded Rod with Bitumastic Coating and Painting				
	Fire Hydrants				
	Restrained Joint Fittings				
	Service Saddles				
	Tapping Sleeves/Crosses				
	Tapping Valves				
	Backflow Prevention Devices				
	Tracing Wire				
	Service Pipe/Tubing				
	Casing Pipe				
02720 – Storm Drainage					
	Reinforced Concrete Pipe				
	Aluminum Pipe				
	Polyethylene Pipe				
	Gaskets				
	Drainage Structures				
	Fiberglass Grating				
	Frames, Covers & Grates				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Subgrade Drain pipe				
	Filter Fabric				
	Tracing Wire				
02731 – Wastewater Collection System					
	Wetwell				
	Manholes & Interior Coating				
	Boots and S.S. Straps				
	Joint Wrap				
	Joint Sealant				
	Steps				
	Piping – PVC – Gravity				
	Piping – PVC – Force Main				
	Piping – DI – Gravity				
	Piping – DI – Force Main				
	Fittings – PVC – Gravity				
	Fittings DI – Force Main				
	Frames & Covers				
	Valve Pit and Steps				
	Valve Pit Hatch Cover				
	Wetwell Hatch Cover				
	Pumps and Controls				
	Control Panel Enclosure and Mounting Materials				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Frost-Proof Hydrant				
	Backflow Prevention Device				
	Fencing and Gate Hardware				
	Gate Valves/Plug Valves				
	Check Valves				
	Air Release/Vacuum Valves				
	Vent Pipe				
	Hoist and Hoist Sockets				
	Lifting Chain/Cable				
	Pumps Mounts/Intermediate and Upper Guide Brackets				
	Quick Disconnect				
	Electrical W/Generator Hook-up				
	Tracing Wire				
	Magnetic Tape				
	Force Main Gauges				
	Signage (Emergency #'s etc.)				
02831 – Chain Link Fences and Gates					
	Fence Fabric				
	Posts				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Hardware & Accessories				
	Layout Plan				
	Finish				
02902 – Grassing					
	Seed Mix – Temporary				
	Seed Mix – Permanent				
	Fertilizer				
	Lime				
03305 – Site Concrete					
	Mix Design				
	Curing Compounds				
	Joint Filler				
	Reinforcing Steel				
	Welded Wire Fabric				
	Dowels				
	Fiber Reinforcement				
03310 – Cast-In-Place Concrete					
	Mix Design				
	Reinforcing Steel				
	Welded Wire Fabric				
	Curing Compound				
	Fiber Reinforcement				
	Non-Shrink Grout				

Section	Submittal	Date Received by T & H	Accepted Submittal Returned to Owner/Contractor	Submittal Rejected & Returned	Comments
	Joint Filler				
03410 – Structural Precast Concrete					
	Mix Design				
	Reinforcement				
	Layout Plan				
	Design Loads				
05110 – Miscellaneous Metal-Bulkhead					
	Tie Rods				
	Bearing Plates				
	Turnbuckles				
	Bolts				
	Coating Certification				
05120 – Structural Steel					
	Materials				
	Design Loads				
	Mill Certificate				
	Mill Test Reports				
	Welder's Certificates				
09900 – Painting					
	Paint				

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

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SECTION 01400 – QUALITY CONTROL

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SECTION 01400
QUALITY CONTROL

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance – control of installation.
- B. Tolerances
- C. References and standards.
- D. Testing laboratory services.
- E. Manufacturer's field services.

1.2 RELATED SECTIONS

- A. Section 01300 – Submittals: Submission of manufacturer's instructions and certificates.
- B. Section 01410 – Testing Services.

1.3 QUALITY ASSURANCE – CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturer's instructions, including each step in sequence.
- C. Should manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. 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.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.4 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

- B. Comply with manufacturer's tolerances. Should manufacturer's tolerances conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- C. Adjust products to appropriate dimensions and position before securing in place.
- D. Accessible routes shall not exceed maximum ADA allowable slopes.

1.5 REFERENCES AND STANDARDS

- A. For products or workmanship specified by association, trade, or other consensus standards, complies with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current with date specified in the individual specification sections, except where a specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. Neither the contractual relationships, duties, nor responsibilities of the parties in Contract or those of the Architect/Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.6 TESTING SERVICES

- A. Owner will appoint, employ, and pay for specified services of an independent firm to perform testing. Contractor shall pay for all retesting of failed tests.
- B. The independent firm will perform tests and other services specified in individual specification sections and as required by the Owner.
- C. Testing and source quality control may occur on or off the project site. Perform off-site testing as required by the Owner.
- D. Reports will be submitted by the independent firm to the Engineer and Contractor, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Architect/Engineer and independent firm 48 hours prior to expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- F. Testing does not relieve Contractor to perform Work to contract requirements.

- G. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Engineer. Payment for re-testing will be made by the Contractor.

1.7 MANUFACTURER'S FIELD SERVICES

- A. Report observations and site decisions or instructions given to applicators or installers supplemental or contrary to manufacturer's written instructions.
- B. Refer to Section 01300 – SUBMITTALS, MANUFACTURER'S FIELD REPORTS article.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify utility services are available, of the correct characteristics, and in the correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

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SECTION 01410 – TESTING SERVICES

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PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

SECTION 01410

TESTING SERVICES

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Selection and payment.
- B. Contractor submittals.
- C. Testing agency responsibilities.
- D. Testing agency reports.
- E. Limits on testing authority.
- F. Contractor responsibilities.
- G. Schedule of tests.

1.2 RELATED SECTIONS

- A. Testing and approvals required by public authorities.
- B. Section 01300 – Submittals: Manufacturer's certificates.
- C. Section 01702 – Contract Closeout: Project record documents.

1.3 REFERENCES (LATEST REVISION)

- A. ASTM C 802 – Practice for Conducting an Interlaboratory Test Program to Determine the Precision of Test Methods for Construction Materials.
- B. ASTM C 1077 – Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- C. ASTM C 1093 – Practice for Accreditation of Testing Agencies for Masonry.
- D. ASTM D 3740 – Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- E. ASTM D 4561 – Practice for Quality Control Systems for Organizations Producing and Applying Bituminous Paving Materials.
- F. ASTM E 329 – Specification for Agencies Engaged in Construction Inspection and/or Testing.
- G. ASTM E 543 – Practice for Agencies Performing Nondestructive Testing.
- H. ASTM E 548 – Guide for General Criteria Used for Evaluating Laboratory Competence.

- I. ASTM E 699 – Practice for Evaluation of Agencies Involved in Testing, Quality Assurance, and Evaluating of Building Components.

1.4 SELECTION AND PAYMENT

A. Owner will employ and pay for services of an independent testing agency or laboratory to perform specified testing. Contractor shall pay for all retesting of failed tests.

- A. Employment of testing agency or laboratory in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

1.5 QUALITY ASSURANCE

- A. Comply with requirements of practices listed in paragraph 1.3.
- B. Laboratory: Authorized to operate in State in which project is located.
- C. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.
- D. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.

1.6 CONTRACTOR SUBMITTALS

- A. Prior to start of Work, submit testing laboratory name, address, and telephone number, and names of full time registered Engineer and responsible officer.
- B. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

1.7 TESTING AGENCY RESPONSIBILITIES

- A. Test samples of mixes submitted by Contractor.
- B. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
- C. Perform specified sampling and testing of products in accordance with specified standards.
- D. Ascertain compliance of materials and mixes with requirements of Contract Documents.
- E. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.

- F. Perform additional tests required by Engineer.
- G. Attend preconstruction meetings and progress meetings.

1.8 TESTING AGENCY REPORTS

- A. After each test, promptly submit two copies of report to Engineer and to Contractor.
- B. Include:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Name of inspector.
 - 4. Date and time of sampling or inspection.
 - 5. Identification of product and specifications section.
 - 6. Location in the Project.
 - 7. Type of inspection or test.
 - 8. Date of test.
 - 9. Results of tests.
 - 10. Conformance with Contract Documents.
- C. When requested by Engineer, provide interpretation of test results.

1.9 LIMITS ON TESTING AUTHORITY

- A. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Agency or laboratory may not approve or accept any portion of the Work.
- C. Agency or laboratory may not assume any duties of Contractor.
- D. Agency or laboratory has no authority to stop the Work.

1.10 CONTRACTOR RESPONSIBILITIES

- A. Deliver to agency or laboratory at designated location, adequate samples of materials proposed to be used requiring testing, along with proposed mix designs.
- B. Cooperate with laboratory personnel, and provide access to the Work and to manufacturer's facilities.
- C. Provide incidental labor and facilities:
 - 1. To provide access to Work to be tested.
 - 2. To obtain and handle samples at the site or at source of products to be tested.
 - 3. To facilitate tests.
 - 4. To provide storage and curing of test samples.
- D. Notify Engineer and laboratory 48 hours prior to expected time for operations requiring testing services.

1.11 SCHEDULE OF TESTS

Work to be performed in accordance with SCDOT Standards.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION

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SECTION 01702 – CONTRACT CLOSEOUT

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PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

SECTION 01702
CONTRACT CLOSEOUT

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Project record documents.
- C. Operation and maintenance data.
- D. Warranties and bonds.
- E. Maintenance service.

1.2 RELATED SECTIONS

- A. Section 01300 – Submittals
- B. Operation and Maintenance Data.
- C. Warranties.
- D. Bonds.

1.3 CLOSEOUT PROCEDURES

- A. Submit written verification Contract Documents being reviewed, Work has been observed at appropriate times, and Work is complete in accordance with Contract Documents and ready for Engineer's review.
- B. Provide submittals to Engineer required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.4 FINAL CLEANING

- A. Execute final cleanup prior to final project assessment.
- B. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.5 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Equipment Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Project Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 3. Where proposed and existing utilities cross, the Contractor shall measure and record the horizontal location and vertical separation between each crossing. Separation shall be measured between exteriors and pipes.
 - 4. Field changes of dimension and detail.
 - 5. Details not on original Contract drawings.
 - 6. Piling data locations, tip and cut-off elevations, and driving records.
- G. Submit documents to Engineer with claim for final Application for Payment.

1.6 WARRANTIES AND BONDS

- A. Provide duplicate notarized copies.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in three D side ring binder with durable plastic cover.
- D. Submit prior to final Application for Payment.

- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 [ten] days after acceptance, listing date of acceptance as start of warranty period.

1.7 RECORD DRAWINGS CHECKLIST

Prior to the warranty inspection the Project Engineer shall submit to the County Engineer one complete set of record drawings with each page of the set sealed by a licensed professional and showing the constructed improvements. These record drawings shall include the following:

1. "As built" certification.
2. "As built" of all roadways showing:
 - Road name, rights-of-way width, and pavement width.
 - Location of traffic signs, and any special features such as guardrails, retaining walls, existing trees, and landscaping.
 - Horizontal alignment and stationing of the roadways within the rights-of-way.
 - Centerline pavement spot elevations for roadways with normal crown, curb and gutter sections.
 - Centerline pavement spot elevations, and ditch flow line elevations for roadways with normal crown, and open ditch sections.
 - Edge of pavement spot elevations within roundabouts.
 - Edge of pavement spot elevations at all medians and divided roadway sections.
 - Edge of pavement spot elevations around all cul-de-sacs and thumbnails
 - Spot elevations across intersections and valley gutters.
 - Edge of pavement spot elevations along the intersection curve radius at all intersections.
3. "As built" of all super elevated roadways with cross sections at every 50' interval showing:
 - Centerline pavement elevations.
 - Edge of pavement elevations.
 - Roadway cross slopes.
 - Shoulder widths and slopes beyond the edge of pavement.
 - Top of bank elevations of roadside ditches (foreslope and backslope where it ties with existing grade).
 - Flow line elevations of roadside ditches.
4. "As built" profiles of all roadways including:
 - Centerline elevation at a maximum of 50' interval.
 - Centerline elevation of all cul-de-sacs and thumbnails.
 - Roadway centerline longitudinal slope.
 - Flow line elevations and longitudinal slopes of roadside ditches.

5. "As built" horizontal alignment and elevations of all storm drainage pipes, structures, outfall ditches, and swales within the rights-of-way and/or drainage easements including:
 - Widths of drainage easements.
 - Pipe sizes and materials.
 - Location of all storm drainage pipes and structures.
 - Invert elevations of all pipes entering and exiting structures.
 - Bottom elevation, top elevation, weir elevation, grate elevation and/or rim elevation for all storm drainage structures.
 - Profiles and longitudinal slopes of outfall ditches including flow line elevation, and top of bank elevation at a maximum of 50' interval.
 - Flow line spot elevation of swales at a maximum of 50' interval.

6. "As built" horizontal alignment and elevations of all storm water management basins, ponds, and pond outfall structures including:
 - Top of bank spot elevations around basins and ponds.
 - Bottom spot elevations around inlet pipes, outfall structures, and within the basins/ponds as necessary to adequately define bottom grades and sediment buildup.
 - Normal water surface elevation of basins and ponds.
 - Invert elevation and dimensions of all orifices/weirs in the outfall structure.
 - Bottom and top elevation of outfall structures.
 - Pipe size, material, and invert elevation of outfall pipes.
 - Control elevations and dimensions of emergency spillways.

7. "As built" plans of water and sanitary sewer including:
 - Horizontal alignment of all lines and structures within rights-of-way and easements.
 - Pipe sizes and materials.
 - Invert elevations of all sanitary sewer pipes entering and exiting the manholes.
 - Bottom elevation, top elevation and/or rim elevation of all the sanitary sewer manholes.
 - Location of all hydrants, valves, and water meters.

CONSTRUCTION COMPLETION CERTIFICATION

I, _____, am a Registered Professional Engineer, No. _____, in the State of South Carolina, and I hereby certify that all roadway, drainage, and other facilities for _____ have been constructed in substantial accordance with the design and plans approved by Berkeley County, and in accordance with the Berkeley County Subdivision Regulations.

(Signature)

(Date)

(Professional Seal)

AS BUILT" CERTIFICATION

I, _____, am a Registered Professional

_____, No. _____,

in the State of South Carolina, and I hereby certify that the information contained on these plans truly and accurately represents the actual lines, locations, and grades of the constructed improvements for _____

_____.

(Signature)

(Date)

(Professional Seal)

WARRANTY PERIOD AGREEMENT

This Agreement, made and entered into this _____ day of _____, 2008, by and between Berkeley County, and _____, hereinafter referred to as "Contractor", for the project identified as _____, which is further described on plans prepared by _____.

The Contractor of the project acknowledges and agrees to guarantee the roadways, storm drainage system and sidewalks free from defects and failures, and to maintain the improvements for a period of two years following Berkeley County's acceptance of the project under warranty.

The County Engineer will notify the Contractor if repair or maintenance is required during the warranty period. The Contractor shall have 30 days to submit an acceptable schedule of corrective actions and begin the corrective actions.

However, no repairs within the pavement shall be made without the approval of the County Engineer. If the repair/maintenance is not completed within the approved schedule, Berkeley County will complete the work at the Contractor's expense. The warranty period will be automatically extended until the corrective actions are completed. Defects determined to be matters of public safety may be corrected without notice and Berkeley County will be reimbursed from the Contractor.

Installation of utilities, landscaping, and/or other encroachments within rights of way or easements will require a Berkeley County encroachment permit prior to commencing any work.

The value of the improvements has been determined to be \$ _____.

BERKELEY COUNTY

Contractor

Address

County Engineer

Typed Name

Title

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

INDEX TO
SECTION 01740 – WARRANTIES

Paragraph	Title	Page
PART 1 – GENERAL		
1.1	Section Includes	01740-1
1.2	Related Sections	01740-1
1.3	Form of Submittals	01740-1
1.4	Preparation of Submittals	01740-1
1.5	Time of Submittals	01740-2
1.6	Schedule of Submittals	01740-2

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

SECTION 01740

WARRANTIES

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Preparation and submittal of warranties.
- B. Time and schedule of submittals.

1.2 RELATED SECTIONS

- A. General Conditions – EJCDC: Warranties and correction of work.
- B. Section 01702 – Contract Closeout: Contract closeout procedures.
- C. Individual Specifications Sections: Warranties required for specific Products or Work.

1.3 FORM OF SUBMITTALS

- A. Bind in commercial quality 8-1/2 x 11-inch, three D side ring binders with durable covers.
- B. Cover: Identify each binder with typed or printed title WARRANTIES with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- C. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of Product or work item.
- D. Separate each warranty with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

1.4 PREPARATION OF SUBMITTALS

- A. Obtain warranties executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
- B. Verify documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties until time specified for submittal.

1.5 TIME OF SUBMITTALS

- A. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
- B. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
- C. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

1.6 BERKELEY COUNTY WARRANTY ACCEPTANCE OF ROADWAYS AND DRAINAGE SYSTEM CONSTRUCTION

The following steps are to be followed in placing completed roadway and drainage system construction under warranty:

A. WARRANTY INSPECTION

When, in the opinion of the Engineer of Record, roadway and drainage system construction is substantially complete, he or she will review record drawings submitted by the contractor, and submit a "Construction Completion Certification" stating that all construction has been completed in accordance with the approved plans.

ENGINEER will also request that a warranty inspection be scheduled within 15 days with the Contractor and Berkeley County. (Every effort will be made to schedule the inspection as soon as practicable).

At the time of the warranty inspection, the following conditions must be satisfied:

1. Streets and gutters must be swept and clean.
2. Ditches, swales, ponds, drainage pipes, and drainage structures must be cleared of sediment and debris.
3. Grassed areas must be adequately maintained and mowed prior to inspection. Note that an adequate stand of permanent grass must be established within all areas of rights-of-way and drainage easements disturbed by construction including shoulders, ditches, swales, and ponds. Manhole covers and grates must be opened for inspection.
4. Traffic signs and street signs must be installed.

Failure to satisfy these conditions will be cause to postpone the inspection.

The Engineer of Record or his representative must be present for the warranty inspection. It is generally recommended that a representative of the Contractor, and the owner also be present. Within one week following completion of the warranty inspection, the Contractor will be notified in writing that the project was found to be acceptable or he will be advised of the need to correct specific deficiencies observed during the warranty inspection.

As-built electronic drawing files (pdf files on a CD-Rom) must be submitted following approval of paper as-built drawings.

B. WARRANTY ACCEPTANCE

After the warranty inspection, the following steps are to be followed by the Contractor to place the completed construction under warranty:

1. Correct all deficiencies noted during the warranty inspection and any subsequent follow-up inspection.
2. Submit the "Warranty Period Agreement". The agreement will be executed by Berkeley County and returned.
3. Upon receipt of the Agreement, Berkeley County will issue a letter accepting the improvements under warranty.

Acceptable forms of the Construction Completion Certification, "As Built" Certification, Warranty Period Agreement, are contained in the **Appendix**. Variations of these forms should be reviewed in advance with the Engineering Department to avoid delays in initiating the warranty period.

C. WARRANTY PERIOD

The Contractor shall guarantee the roadways, and storm drainage system free from defects and failures, and to maintain the improvements for a period of two years following Berkeley County's acceptance of the project under warranty.

The County Engineer will notify the Contractor if repair or maintenance is required during the warranty period. The Contractor shall have 30 days to submit an acceptable schedule of corrective actions and begin the corrective actions. However, no repairs within the pavement shall be made without the approval of the County Engineer. The warranty period will be automatically extended until the corrective actions are completed. Defects determined to be matters of public safety may be corrected without notice and Berkeley County will be reimbursed from the Contractor.

During the two-year warranty period, the Contractor shall be responsible for maintenance of the roads and drainage systems, including but not limited to the following:

1. Repair/replacement of defective work or materials;
2. Repair/replacement of damaged or missing work or materials;
3. Mowing and maintaining grassed shoulders, slopes, ponds, and other disturbed areas. Mowing a minimum of twice a year or as directed by the County Engineer;
4. Maintaining unobstructed gutters, pipes, ditches, and drainage structures.

Prior to the expiration of the two-year warranty period, a final inspection will be conducted. If no deficiencies are found during the inspection, or during the warranty period, the warranty period will end on the final day of the specified

warranty period and Berkeley County will assume maintenance responsibilities for the roads and drainage systems.

However, if deficiencies are found, the warranty period is automatically extended until all corrections are completed and approved.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

INDEX TO
SECTION 01741 – BONDS

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1.5	Time of Submittals	01741-2

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

SECTION 01741

BONDS

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Preparation and submittal of bonds.
- B. Time and schedule of submittals.

1.2 RELATED SECTIONS

- A. Document 00411 – Bid bonds.
- B. Document General Conditions – EJCDC: Performance bond and labor and material payment bonds.
- C. Section 01702 – Contract Closeout: Contract closeout procedures.
- D. Individual Specifications Sections: Bonds required for specific Products or Work.

1.3 FORM OF SUBMITTALS

- A. Bind in commercial quality 8-1/2 x 11 binders with durable covers.
- B. Cover: Identify each binder with typed or printed title BONDS with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.
- C. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of Product or work item.
- D. Separate each bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

1.4 PREPARATION OF SUBMITTALS

- A. Obtain bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of bond until the Date of Substantial completion is determined.
- B. Verify documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.

- D. Retain bonds until time specified for submittal.

1.5 TIME OF SUBMITTALS

- A. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
- B. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
- C. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the bond period.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

INDEX TO
SECTION 02204 – EARTHWORK

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PART 2 – PRODUCTS		
2.1	Materials	02204-2
2.2	Source Quality Control	02204-2
PART 3 – EXECUTION		

SECTION 02204**EARTHWORK****PART 1 – GENERAL****1.1 SECTION INCLUDES – SCDOT 2007 Standard Specifications for Highway Construction Sections**

- A. 202 – Removal of Structures and Obstructions
- B. 203 – Roadway and Drainage Excavation
- C. 204 – Structure Excavation
- D. 205 – Embankment Construction
- E. 208 – Subgrade
- F. 301– Cement Modified Subbase
- G. 302 – Soil–Aggregate Subbase

1.2 RELATED SECTIONS

- A. Section 01400 – Quality Control
- B. Section 01410 – Testing Services

1.3 MEASUREMENT AND PAYMENT

- A. Grading to subgrades, construction of ditches, dressing of disturbed areas, removing and replacing topsoil, disposal of waste materials excavating, backfilling and compacting to required elevations, testing, staking, and construction supervision shall be included in the contract lump sum price for “Grading.”
- B. Unsuitable Material – Payment shall be included in the contract lump sum price for “Grading.” Payment will include excavation and disposal of unsuitable material.
- C. Borrow – Payment shall be included in the contract lump sum price for “Grading.” Payment will include furnishing materials required in excess of suitable materials available on site.
- D. Earthwork – All earthwork associated with the installation of bulkheads, headwalls, wingwalls, weir structures, drainage filters, rip-rap, etc. shall not be measured for direct payment. Payment shall be included in the contract lump sum price for “Grading.”

- E. Dewatering – No direct payment shall be made for dewatering. Payment shall be included in the contract lump sum price for “Grading.”
- F. Proof Rolling – Payment shall be included in the contract lump sum price for “Grading.” Payment will include furnishing a loaded truck, truck driver, fuel and rolling the designated areas.
- G. Subbase stabilization – payment shall be included in the contract lump sum price for “Grading.”

1.4 REFERENCES (LATEST REVISION)

- A. SCDOT 2007 Standard Specifications for Highway Construction Sections.

1.5 SUBMITTALS

- A. Section 01300 – Submittals: Procedures for submittals.
- B. Materials Source: Submit gradation analysis, proctor results, and soil classification for all borrow material.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with SCDOT standards.

1.7 TESTING

- A. Perform work in accordance with SCDOT standards.
- B. The testing laboratory and Project Engineer/Project Representative shall be given a minimum of 48 hours notice prior to taking any of the tests.
- E. Testing shall be Owner's responsibility and performed at Owner's expense by a commercial testing laboratory operating in accordance with subparagraph C above.
- F. Test results shall be furnished to the Engineer prior to continuing with associated or subsequent work.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Perform work in accordance with SCDOT Standards.

2.2 SOURCE QUALITY CONTROL

- A. If tests indicate materials do not meet specified requirements, change material and retest.
- B. Provide materials of each type from same source throughout the Work.

PART 3 – EXECUTION

- A. All Earthwork construction shall be in accordance with SCDOT 2007 Standard Specifications for Highway Construction Sections.

END OF SECTION

DELINQUENT TAX AFFIDAVIT

Project name: _____

If you owe delinquent taxes your bid may be disqualified from consideration. If you wish to inquire as to your tax status, you may contact the Berkeley County Delinquent Tax Office at one of the following numbers:

Moncks Corner	(843) 761-6900 extension 4029
Charleston	(843) 723-3800 extension 4029
St. Stephen	(843) 567-3136 extension 4029

IS YOUR BUSINESS DELINQUENT IN PAYING ANY TAXES OWED TO BERKELEY COUNTY?
_____ (YES OR NO).

BIDDER SIGNATURE: _____

BIDDER NAME: _____

POSITION: _____

FIRM NAME: _____

ADDRESS: _____

TELEPHONE: _____

Subscribed and sworn to before me this the
_____ day of _____, 20__.

Notary Public for _____

My Commission Expires _____

DRUG-FREE WORKPLACE CERTIFICATION FORM

(CONTRACTOR/VENDOR OTHER THAN INDIVIDUALS)

This certification is required by the Drug-Free Workplace Act, Section 44-107-10 *et seq.* South Carolina Code of Laws (1976, as amended), which require Contractors/Vendors certify maintenance of a drug-free workplace, as defined in SC Code Section 44-107-20(1), prior to contract award. The certification below is a material requirement for the Owner's award of contract. False certification or violation of the certification shall be grounds for suspension of payments, suspension or termination of contract, or suspension or debarment from the right to submit bids or proposals for future projects. By signing this document, the Contractor/Vendor hereby certifies that it will provide a drug-free workplace by:

1. Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession or use of a controlled substance is prohibited in the Contractor's/Vendor's workplace and specifying the actions that will be taken against employees for violation of the prohibition.
2. Establishing a drug-free awareness program to inform employees about:
 - a) The damages of drug abuse in the workplace.
 - b) The Contractor's/Vendor's policy of maintaining a drug-free workplace.
 - c) Any available drug counseling, rehabilitation, and employee assistance programs and;
 - d) The penalties that may be imposed upon employees for drug violations.
3. Making it a requirement that each employee to be engaged in the performance of the contract be given a copy of the statement required by paragraph #1 above;
4. Notifying the employee in the statement required by paragraph #1 that, as a condition of employment under the contract, the employee will:
 - a) Abide by the terms of the statement; and
 - b) Notify the employer of any criminal drug statute conviction for a violation occurring in the workplace no later than five (5) days after the conviction.
5. Notifying Owner within ten (10) days after receiving notice under subparagraph #4-b, from an employee or otherwise receiving actual notice of the conviction.
6. Taking one of the following actions, within thirty (30) days of receiving notice under subparagraph #4-b with respect to any employee who is convicted:
 - a) Taking appropriate personnel action against the employee up to and including termination; or
 - b) Requiring the employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by

Federal, State, or local health, law enforcement, or other appropriate agency.

7. Making a good faith effort to continue to maintain a drug-free workplace, through implementation of paragraph #1, 2, 3, 4, 5, and 6 above.

Project Name: _____

Firm Name: _____

Address: _____

Attest: _____

Signed: _____

Date: _____

Title: _____

NON-COLLUSION AFFIDAVIT OF BIDDER

State of _____)

County of _____)

_____, being first duly sworn, deposes and says that:

1. I am the owner, partner, officer, representative or agent) of _____, the Bidder that has submitted the attached Bid for:

2. I am fully informed regarding the preparation and contents of the attached Bid and all pertinent circumstances regarding such Bid;
3. Such Bid is genuine and is not a collusive or sham Bid;
4. Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees, or parties in interest, including this affiant, has in any way colluded, conspired, connived, or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from quoting in connection with such Contract, or has in any manner directly or indirectly, sought by agreements or collusion or communication or conference with any other Bidder, firm or person to fix the price of prices in the attached Bid or of any other Bidder, or to fix any overhead, profit or cost element of the bid price or the bid price of any other Bidder or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against Berkeley County South Carolina, or any person interested in the proposed Contract, and;
5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest.

SIGNED: _____

TITLE: _____

Subscribed and sworn to before me this the

_____ day of _____, 20__.

Notary Public for _____

My Commission Expires _____

RECORD DRAWINGS CHECKLIST

Prior to the warranty inspection the Project Engineer shall submit to the County Engineer one complete set of record drawings with each page of the set sealed by a licensed professional and showing the constructed improvements. These record drawings shall include the following:

1. "As built" certification.
2. "As built" of all roadways showing:
 - Road name, rights-of-way width, and pavement width.
 - Location of traffic signs, and any special features such as guardrails, retaining walls, existing trees, and landscaping.
 - Horizontal alignment and stationing of the roadways within the rights-of-way.
 - Centerline pavement spot elevations for roadways with normal crown, curb and gutter sections.
 - Centerline pavement spot elevations, and ditch flow line elevations for roadways with normal crown, and open ditch sections.
 - Edge of pavement spot elevations within roundabouts.
 - Edge of pavement spot elevations at all medians and divided roadway sections.
 - Edge of pavement spot elevations around all cul-de-sacs and thumbnails
 - Spot elevations across intersections and valley gutters.
 - Edge of pavement spot elevations along the intersection curve radius at all intersections.
3. "As built" of all superelevated roadways with cross sections at every 50' interval showing:
 - Centerline pavement elevations.
 - Edge of pavement elevations.
 - Roadway cross slopes.
 - Shoulder widths and slopes beyond the edge of pavement.
 - Top of bank elevations of roadside ditches (foreslope and backslope where it ties with existing grade).
 - Flow line elevations of roadside ditches.
4. "As built" profiles of all roadways including:
 - Centerline elevation at a maximum of 50' interval.
 - Centerline elevation of all cul-de-sacs and thumbnails.
 - Roadway centerline longitudinal slope.
 - Flow line elevations and longitudinal slopes of roadside ditches.

5. "As built" horizontal alignment and elevations of all storm drainage pipes, structures, outfall ditches, and swales within the rights-of-way and/or drainage easements including:
 - Widths of drainage easements.
 - Pipe sizes and materials.
 - Location of all storm drainage pipes and structures.
 - Invert elevations of all pipes entering and exiting structures.
 - Bottom elevation, top elevation, weir elevation, grate elevation and/or rim elevation for all storm drainage structures.
 - Profiles and longitudinal slopes of outfall ditches including flow line elevation, and top of bank elevation at a maximum of 50' interval.
 - Flow line spot elevation of swales at a maximum of 50' interval.

6. "As built" horizontal alignment and elevations of all storm water management basins, ponds, and pond outfall structures including:
 - Top of bank spot elevations around basins and ponds.
 - Bottom spot elevations around inlet pipes, outfall structures, and within the basins/ponds as necessary to adequately define bottom grades and sediment buildup.
 - Normal water surface elevation of basins and ponds.
 - Invert elevation and dimensions of all orifices/weirs in the outfall structure.
 - Bottom and top elevation of outfall structures.
 - Pipe size, material, and invert elevation of outfall pipes.
 - Control elevations and dimensions of emergency spillways.

7. "As built" plans of water and sanitary sewer including:
 - Horizontal alignment of all lines and structures within rights-of-way and easements.
 - Pipe sizes and materials.
 - Invert elevations of all sanitary sewer pipes entering and exiting the manholes.
 - Bottom elevation, top elevation and/or rim elevation of all the sanitary sewer manholes.
 - Location of all hydrants, valves, and water meters.

**LOCAL/STATE RESIDENT VENDOR PREFERENCE AFFIDAVIT
COMPANY/BIDDER**

Personally appeared before me _____, who being duly sworn, certifies that the company/bidder identified in this bid response meet all qualifications for the local or state preference as defined in Section VII, Subsection D, number 8 of the Berkeley County Procurement Ordinance entitled "Local/State Preference" as amended.

By this written claim, company/bidder request that the Local or State resident vendor preference be exercised in consideration of contract award of this bid.

BIDDER CERTIFIED THAT HE MEETS ALL REQUIREMENTS FOR THE (CHECK ONLY ONE OF THE FOLLOWING):

1. LOCAL RESIDENT VENDOR PREFERENCE (BERKELEY COUNTY) _____

PHYSICAL ADDRESS OF LOCAL PREFERENCE: _____

OR

2. STATE RESIDENT VENDOR PREFERENCE (SOUTH CAROLINA) _____

PHYSICAL ADDRESS OF STATE PREFERENCE: _____

AUTHORIZED SIGNATURE: _____

NAME/TITLE: _____

COMPANY NAME: _____

ADDRESS: _____

Subscribed and sworn to before me this the

_____ day of _____, 20____.

Notary Public for _____

My Commission Expires _____

**LOCAL/STATE RESIDENT VENDOR PREFERENCE AFFIDAVIT
SUB-CONTRACTOR**

Use this form for each Qualifying Sub-Contractor

Personally appeared before me _____, who being duly sworn, certifies that the sub-contractor identified in this bid response meet all qualifications for the local or state preference as defined in Section VII, Subsection D, number 8 of the Berkeley County Procurement Ordinance entitled "Local/State Preference" as amended.

By this written claim, the bidder request that the Local or State resident vendor preference be exercised in consideration of contract award of this bid.

SUB-CONTRACTOR CERTIFIED THAT HE MEETS ALL REQUIREMENTS FOR THE (CHECK ONLY ONE OF THE FOLLOWING):

1. LOCAL RESIDENT VENDOR PREFERENCE (BERKELEY COUNTY) _____
PHYSICAL ADDRESS OF LOCAL PREFERENCE: _____

OR

2. STATE RESIDENT VENDOR PREFERENCE (SOUTH CAROLINA) _____
PHYSICAL ADDRESS OF STATE PREFERENCE: _____

AUTHORIZED SIGNATURE: _____

NAME/TITLE: _____

SUB-CONTRACTOR NAME: _____

ADDRESS: _____

Subscribed and sworn to before me this the
_____ day of _____, 20__.

Notary Public for _____
My Commission Expires _____

VENDOR PREFERENCE PERCENTAGE DOCUMENT

The Local/State Vendor Preference Ordinance requires fifty percent (50%) of the work be performed by the Bidder and qualifying Sub-contractor. Detail below the dollar and percentage amounts for the work to be performed by the Bidder and Sub-contractors. This form must be submitted at the time of the bid along with the Vendor Preference Affidavit(s).

BIDDER NAME _____

AMOUNT _____

PERCENT _____

QUALIFYING SUB-CONTRACTOR	DISCIPLINE	AMOUNT	PERCENT
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TOTAL BASE BID AMOUNT: \$ _____

TOTAL AMOUNT FOR LOCAL/STATE PREFERENCE: \$ _____

TOTAL PERCENT FOR LOCAL/STATE PREFERENCE: _____%



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