NORTH TOPSAIL BEACH

FEMA Phase 5 Beach Nourishment Project

Bid Documents

North Topsail Beach, NC

Winter 2019/2020

Prepared For:

Town of North Topsail Beach

Nature's Tranquil Beauty

Prepared By:

NORTH CAROLINA PROFESSIONAL SEAL 026273 ENGINEER CHRISTIAN LEE GIBSON

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NORTH TOPSAIL BEACH

FEMA Phase 5 Beach Nourishment Project

North Topsail Beach, NC

Winter 2019/2020

Section 1

Bid Documents

BID PROPOSAL FORM TO
TOWN OF NORTH TOPSAIL BEACH
NORTHTOPSAIL BEACH, NORTH CAROLINA

Proposal of Bidder:

Business Address:

Project Name: North Topsail Beach FEMA Phase 5 Nourishment Project

To: Town of North Topsail Beach
Attn: Bryan Chadwick
2008 Loggerhead Court.
North Topsail Beach, NC 28460

(1) The undersigned, as Bidder, declares that the only person or parties interested in this Proposal as principals are those named herein, that this Proposal is made without collusion with any other person, firm or corporation; that he/she has carefully examined the location of the proposed forms of Agreement and Bonds, and the Contract Plans and Specifications for the below designated work, and all other documents referred to or mentioned in the Contract Documents and Contract Plans.

(2) The Bidder proposes, and agrees, if this Proposal is accepted, that Bidder shall contract with the TOWN, in the form of the copy of the Agreement included in these Contract Documents and Specifications, to provide all necessary machinery, tools, apparatus, and other means of construction, including utility transportation, security, and safety-related services, necessary to do all the Work; and that he/she shall furnish all the materials and equipment specified or referred to in the Contract Documents and Specifications in the manner and time herein prescribed and according to the requirements of the TOWN as therein set forth.

(3) The Bidder declares that he/she has carefully examined the site of the Work and that from Bidder's own investigations, has satisfied him/herself as to the nature and location of the Work, the character, quality, and quantity of materials, and the kind and extent of equipment and other facilities needed for the performance of the Work, the general and local conditions and all difficulties to be encountered, all other items which may in any way, affect the Work or Bidder's performance.

(4) The Bidder declares he/she has examined the Contract Documents and Specifications and the following addenda:

Number	Date	Number	Date

Receipt of all of which, including copies of the Notice to Bidders and the Instructions to Bidders, Bidder hereby acknowledges.

The Bidder certifies that addendum(s) number(s) _____ through _____for this Contract have been received and that changes covered by the addendum(s) have been taken into account with the total bid price.

(5) The Bidder declares that he/she has carefully examined, and fully understands, all the component parts of the Contract Documents and Specifications, and agrees that he/he shall execute the Contract, furnish the required Payment Bond and Performance Bond, and completely perform the Work in strict accordance with the terms of the Contract and the Contract Documents and Specifications therein referred to for the following prices, to wit:

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(6) Schedule for Bid Prices

Item No.	Description	Estimated Quantity	Unit	Unit Price	Total Based on Estimated Price
001	Mobilization & Demobilization	1	L.S.		$_____
002	Beach Nourishment	168,000	C.Y.	_____	$_____
003	Payment and Performance Bonds	1	L.S.		$_____

The **TOTAL PRICE** being the total of items 1, 2, and 3 is $_____ (numerical),

_____(words).

Available Date for Commencement of Work _____

_____
(Affiant)

_____
State of Incorporation (if corporation)

_____
Official Address (if partnership)

EQUIPMENT SCHEDULE

FORM TO BE SUBMITTED WITH BID

Prospective Bidders are requested to state below the number and types of equipment to be used for the Project. This schedule shall include equipment owned and/or operated by the Contractor and by any Subcontractor responsible for more than 10% of the total work. Indicate if the equipment is owned or operated by the Bidder or Subcontractor

ITEM	NUMBER/NAME	Load Line Cert. (Y/N)	HP	PIPE DIAMETER	AGE	OWNER/OPERATOR
DREDGE						
DREDGE						
BOOSTER						
BOOSTER						
TUG						
TUG						
BARGES						

ITEM	NUMBER	TYPE	CAPCITY	OWNER/OPERATOR
BULLDOZERS				
BULLDOZERS				
EXCAVATORS				
TRUCKS				
TRUCKS				
OTHER				

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RELEVANT PROJECT EXPERIENCE

FORM TO BE SUBMITTED WITH BID

Prospective Bidders are requested to list below any Beach Nourishment, Beach Placement, or Beach Disposal projects completed in the last (5) five years with equipment used. For USACE multi-task contracts please list total combined size and number of project areas.

PROJECT NAME	OWNER	SIZE (CY)	DURATION DAYS	COMPLETION DATE

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FORM OF AFFIDAVIT

WHERE BIDDER IS A CORPORATION

(COMPLETE EITHER SHEET 3 OR SHEET 4, AS APPLICABLE)

STATE OF _____

COUNTY OF _____

_____, being duly sworn deposes and says: I am the _____ of _____, the _____ corporation described in and which executed the foregoing Proposal; that I have been duly authorized and did execute the Proposal Pursuant to the authorization, and that the matters stated therein are true.

BIDDER:

_____

Print or Type Name of Entity

By: _____

Signature and Seal

_____

Print or Type Name

_____

Date

The foregoing instrument was acknowledged before me this _____(date) by _____(name of agent or officer), of _____ _____ (Corporate name), a _____(state of incorporation) corporation, on behalf of the corporation. He/She is personally known to me or has produced_____ (ID type) as identification and who did (did not) take an oath.

_____

(Signature of person taking acknowledgement)

_____

(Name of acknowledgement, print, type, or stamp)

_____

(Title or Rank)

_____

(Serial number, if any)

WHERE BIDDER IS A PARTNERSHIP

(COMPLETE EITHER SHEET 3 OR SHEET 4, AS APPLICABLE)

STATE OF _____

COUNTY OF _____

_____, being duly sworn deposes and says: I am general/limited (strike one) partner in _____ (entity name) a Limited/General Partnership, described in and which executed the foregoing Proposal; that I have been duly authorized and did execute the Proposal Pursuant to the authorization, and that the matters stated therein are true.

BIDDER:

_____

Print or Type Name of Entity

By: _____

Signature and Seal

_____

Print or Type Name

_____

Date

The foregoing instrument was acknowledged before me this _____(date) by _____(name of agent or officer), of _____ (entity name), on behalf of the partnership. He/She is personally known to me or has produced_____ (ID type) as identification and who did (did not) take an oath.

_____

(Signature of person taking acknowledgement)

_____

(Name of acknowledgement, print, type, or stamp)

_____

(Title or Rank)

_____

(Serial number, if any)

NONCOLLUSION AFFIDAVIT

STATE OF _____

COUNTY OF _____

_____being first duly sworn, deposes and says that he/she is (Sole owner, a limited/general (strike one) partner, president, etc.) of, _____ the party making the foregoing Proposal or BID, that such BID is genuine and not collusive or sham; that said BIDDER has not colluded, conspired, connived, or agreed, directly or indirectly, with any BIDDER or person, to put in a sham BID, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the BID Price of affiant or any other BIDDER, or to fix any overhead, profit or cost element of said BID Price, or of that of any other BIDDER, or to secure any advantage against OWNER any person interested in the proposed Contract; and that all statements in said Proposal or BID are true; and further, that such BIDDER has not, directly or indirectly submitted this BID the contents thereof, or divulged information or date relative thereto to any association or to any member or agent thereof.

_____
(Affiant)

(FOR A CORPORATION)

The foregoing instrument was acknowledged before me this _____(date) by _____ (title of officer or agent) of_____ (name of corporation acknowledging), a _____(state or place of incorporation) corporation, on behalf of the corporation. He/she is personally known to me or has produced _____(ID type) as identification and who did (did not) take an oath.

_____
(Signature of person taking acknowledgement)

_____
(Name of acknowledgement, print, type, or stamp)

_____
(Title or Rank)

_____
(Serial number, if any)

FORM OF NONCOLLUSION AFFIDAVIT
(Continued)

(FOR A PARTNERSHIP)

The foregoing instrument was acknowledged before me this _____(date) by _____(name of agent or officer), of _____ (entity name), on behalf of the partnership. He/She is personally known to me or has produced_____ (ID type) as identification and who did (did not) take an oath.

_____
(Signature of person taking acknowledgement)

_____
(Name of acknowledgement, print, type, or stamp)

_____
(Title or Rank)

_____
(Serial number, if any)

(FOR ATTORNEY IN FACT)

The foregoing instrument was acknowledged before me this _____(date) by _____(name of attorney in fact), of _____ (entity name), on behalf of the partnership. He/She is personally known to me or has produced_____ (ID type) as identification and who did (did not) take an oath.

_____
(Signature of person taking acknowledgement)

_____
(Name of acknowledgement, print, type, or stamp)

_____
(Title or Rank)

_____
(Serial number, if any)

SWORN STATEMENT PURSUANT TO
NORTH CAROLINA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

This sworn statement is submitted to the Town of North Topsail Beach, North Carolina,

By _____
(individual's name and title)

By _____
(entity's name submitting statement)

whose business address is,

_____

_____

_____

and (if applicable) its Federal Employer Identification Number (FEIN) is _____
(If the entity has no FEIN, include Social Security Number of the individual signing this sworn

statement: _____

2. I understand that a "public entity crime" as defined in the North Carolina Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or of the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

3. I understand that "convicted" or "conviction" as defined in the North Carolina Statutes**,** means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, no jury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an "affiliate" as defined in North Carolina, means:
   a. A predecessor or successor of a person convicted of a public entity crime; or
   b. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in North Carolina during the preceding 36 months shall be considered an affiliate.

SWORN STATEMENT PURSUANT TO
NORTH CAROLINA STATUTES, ON PUBLIC ENTITY CRIMES - (Continued)

5. I understand that a "person" as defined in north Carolina Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors. executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

6. Based on information and belief, the statement, which I have marked below, is true in relation to the entity submitting this sworn statement. **[indicate which statement applies]**

_____Neither the entity submitting this sworn statement, nor any of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, nor any affiliate of the entity has been charged with and convicted of a public entity crime subsequent to (date).

_____The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to (date).

_____The entity submitting this sworn statement, or one or more of its officers, directors, executives, partners, shareholders, employees, members, or agents who are active in the management of the entity. or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to (date). However, there has been a subsequent proceeding before a Hearing Officer of the State of North Carolina. Division of Administrative Hearings and the Final Order entered by the Hearing Officer determined that it was not in the public interest to place the entity submitting this sworn statement on the convicted vendor list. [attach a copy of the final order]

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN THE NORTH CAROLINA STATUTES FOR A CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

_____
(Signature)

Sworn to and subscribed before me this _____day of _____, 2012.

Personally known _____ _____

OR Produced identification _____ Notary Public – State of _____

_____ My Commission Expires_____
(type of identification)

_____
(printed typed or stamped commission name of Notary Public)

STATEMENT OF LICENSE CERTIFICATE

EACH CONTRACTOR SHALL FILL IN AND SIGN THE FOLLOWING STATEMENT

This is to certify that _____ has satisfactorily met the certification requirements of Chapter 87 of the North Carolina General Statutes and the rules and regulations incorporated in Title 21 Chapter 12 of the North Carolina Administrative Code. The Contractor's certificate number and date of certification shall appear on the sealed envelope containing the bid package. Failure to include the certification will result in the bid being deemed non-responsive.

_____ was issued Certificate No. _____

on _____, by the Industry Licensing Board.

BIDDER:

_____
Print or Type Company Name

By: _____
Signature

_____
Print or Type Name

_____
Print or Type Title

_____
Date

NORTH TOPSAIL BEACH

FEMA Phase 5 Beach Nourishment Project

North Topsail Beach, NC

Winter 2019/2020

Section 2

Contract Documents

STATE OF NORTH CAROLINA

AGREEMENT

TOWN OF TOPSAIL BEACH

THIS CONTRACT, made and entered into this ____ day of February, 2014, by and between the TOWN OF NORTH TOPSAIL BEACH, hereinafter referred to as the "Owner"; and _____, a _____ corporation, hereinafter referred to as "Contractor".

W I T N E S S E T H:

That the Contractor, for the consideration hereinafter fully set out, hereby agrees with the Owner as follows:

ARTICLE I

GENERAL PROVISIONS

1. Performance. Contractor shall furnish all labor, materials, and equipment and shall perform all work in the manner and form as provided by the following enumerated specifications and documents, which are attached hereto and made a part hereof as if fully contained herein to the extent not inconsistent with this Agreement: **Addenda, Instructions to Bidders, Scope and Conditions, Drawings, Permit Conditions and Appendices of "FEMA Phase 5 Beach Renourishment Project, Town of North Topsail Beach, Contract Documents and Specifications – Winter 2019/2020".**

1.2.1 No Privity with Others. Nothing contained in this Contract shall create, or be interpreted to create, privity or any other contractual agreement between the Owner and any person or entity other than the Contractor.

1.2.2 Successors and Assigns. The Owner and the Contractor bind themselves, their successors, assigns and legal representatives to the other party hereto and to the successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in this Contract. The Contractor shall not assign this Contract without prior written consent of the Owner and any surety to this contract.

1.3 The Contractor shall have a continuing duty to read, carefully study and compare each of the contract documents, the shop drawings and the product data and shall give written notice to the Owner of any inconsistency, ambiguity, error or omission which the Contractor may discover with respect to these documents before proceeding with the affected work. The issuance, or the express or implied approval by the Engineer of the Contract Documents, Shop Drawings or Product Data shall not relieve the Contractor of the continuing duties imposed hereby, nor shall any such approval be evidence of the Contractor's compliance with this contract. HOWEVER, THE OWNER MAKES NO REPRESENTATION OR WARRANTY OF ANY NATURE WHATSOEVER TO THE CONTRACTOR CONCERNING SUCH DOCUMENTS. By the execution hereof, the Contractor acknowledges and represents that it has received, reviewed and carefully examined such documents, has found them to be complete, accurate, adequate, consistent, coordinated and sufficient for construction, and that the Contractor has not, does not, and will not rely upon any representation or warranties by the Owner concerning such documents as no such representation or warranties have been or are hereby made.

1.4 Neither the organization of any of the Contract Documents into divisions, sections, paragraphs, articles, (or other categories), nor the organization or arrangements of the Design, shall control the Contractor in dividing the Work or in establishing the extent or scope of the Work to be performed by Subcontractors.

1.5 Owner Ownership of Contract Documents. The Contract Documents shall remain the property of the Owner. The Contractor shall have the right to keep one record set of the Contract Documents upon completion of the Project; provided, however, that in no event shall Contractor use, or permit to be used, any or all of such Contract Documents on other projects without the Owner 's prior written authorization.

1.6 The Work. The Contractor shall perform all of the Work required, implied or reasonably inferable from this Contract.

1.7 The term "Work" shall mean whatever is done by or required of the Contractor to perform and complete its duties under this Contract, including the following: construction of the whole or a designated part of the Project; the provision of furnishing of any required surety bonds and insurance; and the provision of furnishing labor, supervision, services, materials, supplies, equipment, fixtures, appliances, facilities, tools, transportation, storage, power, permits and licenses required of the Contractor, including fuel, heat, light, cooling and all other utilities as required by this Contract. The Work to be performed by the Contractor is generally described in the following documents: Addenda, Instructions to Bidders, Supplemental Conditions, General & Technical Specifications and Drawings, Environmental Specifications

and Appendices of Contract Documents and Specifications dated June 2018 for the Town of North Topsail Beach FEMA Phase 5 Beach Renourishment Project – Winter 2018/2019.

1.8 Independent Contractor. It is mutually understood and agreed that Contractor is an independent contractor and not an agent of Owner, and as such, Contractor, his or her agents and employees shall not be entitled to any Owner employment benefits, such as, but not limited to, vacation, sick leave, insurance, worker's compensation, unemployment benefits, or pension or retirement benefits.

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ARTICLE II

TIME AND LIQUIDATED DAMAGES

The Contractor shall commence the Work on the date indicated on the Notice to Proceed and shall achieve Substantial Completion of the Work no later April 30, 2020 or the last day of the 2019/2020 approved environmental window, whichever is later. The number of calendar days from the date identified within the "Notice to Proceed" on which the Work is permitted to proceed, through the date set forth for Substantial Completion, shall constitute the "Contract Time."

2.1 The Contractor shall pay the Owner the sum of **Fifteen Hundred Dollars ($1500.00)** per day for each and every calendar day of unexcused delay in achieving Substantial Completion beyond the date set forth herein for Substantial Completion of the Work. Any sums due and payable hereunder by the Contractor shall be payable, not as a penalty, but as liquidated damages representing an estimate of delay damages, likely to be sustained by the Owner, estimated at or before the time of executing this Contract. When the Owner reasonably believes that Substantial Completion will be inexcusably delayed, the Owner shall be entitled, but not required, to withhold from any amounts otherwise due the Contractor an amount then believed by the Owner to be adequate to recover liquidated damages applicable to such delays. If and when the Contractor overcomes the delay in achieving Substantial Completion, or any part thereof, for which the Owner has withheld payment, the Owner shall promptly release to the Contractor those funds withheld, but no longer applicable, as liquidated damages.

2.2 Substantial Completion Defined. "Substantial Completion" shall mean that stage in the progression of the Work when the Work is sufficiently complete in accordance with this Contract, that the Owner can enjoy beneficial use or occupancy of the Work, and can utilize the Work for its intended purpose.

2.3 Time is of the Essence. All limitations of time set forth in the Contract Documents are of the essence.

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ARTICLE III

CONTRACT CHANGES

3.1 Changes Permitted. Changes in the Work within the general scope of this Contract, consisting of additions, deletions, revisions, or any combination thereof, may be ordered without invalidating this Contract, by Change Order or by Field Order.

3.2 Changes in the Work shall be performed under applicable provisions of this Contract and the Contractor shall proceed promptly with such changes.

3.3 Change Order Defined. Change Order shall mean a written order to the Contractor executed by the Owner, issued after execution of this Contract, authorizing and directing a change in the Work or an adjustment in the Contract Price or the Contract Time, or any combination thereof. The Contract price and the Contract Time may be changed only by Change Order executed by the Owner.

3.4 Changes in the Contract Price. Any change in the Contract Price resulting from a Change Order shall be determined as follows (a) by mutual agreement between the Owner and the Contractor as evidenced by (1) the change in the Contract Price being set forth in the Change Order, (2) such change in the Contract Price, together with any conditions or requirements related thereto, being initialed by both parties and (3) the Contractor's execution of the Change Order, or (b) if no mutual agreement occurs between the Owner and the Contractor, then, as provided in the Subparagraph 3.5 below.

3.5 If unit prices are provided in the Contract, and if the quantities contemplated are so changed in a proposed Change Order that application of such unit prices to the quantities of Work proposed would cause substantial inequity to the Owner or the Contractor, the applicable unit prices shall be equitably adjusted.

3.6 Minor Changes. The Owner or its Agent may order minor changes in the Work not involving a change in the Contract Price or an extension of the Contract Time and not inconsistent with the intent of this Contract. Such minor changes shall be made by written Field Order, and shall be binding upon the Owner and the Contractor. The Contractor shall promptly carry out such written Field Orders.

3.7 Effect of Executed Change Order. The execution of a Change Order by the Contractor shall constitute conclusive evidence of the Contractor's agreement to the ordered changes in the Work, this Contract as thus amended, the Contract Price and the Contract Time. The Contractor, by executing the Change Order, waives and forever releases any claim against the Owner for additional time or compensation for matters relating to or arising out of or resulting from the Work included within or affected by the executed Change Order.

3.8 Notification of Surety. All Change Orders shall require written consent of the Contractor's surety, and the amount of applicable bonds shall be adjusted accordingly. At the time of signing a Change Order, the Contractor shall be required to certify as follows:

> "I certify that all sureties will be notified that my contract has been increased by the amount of this Change Order, and that a copy of the approved Change Order will be mailed upon its receipt by me to all sureties."

No payment to the Contractor on account of any Change Order shall become due or payable, until written evidence of the surety's consent to the Change Order has been furnished to Engineer and the furnishing of such written consent is a condition precedent to such payment. Contractor shall immediately notify its sureties of any changes affecting the general scope of the work or change in the contract price (and the amount of applicable bonds shall be adjusted accordingly). The Contractor shall furnish proof of such adjustment of the surety bonds to the Engineer.

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ARTICLE IV

CONTRACT PRICE AND COMPLETION

4.1 The Contract Price. The Owner shall pay, and the Contractor shall accept, as full and complete payment for all the Work required herein in accordance to the unit price sum estimated at

$ _____.

Schedule of Prices

BASE BID – North Topsail Beach RestorationL

				Unit Price	
001	Mobilization & Demobilization	1	L.S.		$_____
002	Beach Nourishment	168,000	C.Y.	_____	$_____
003	Payment and Performance Bonds	1	L.S.		$_____

The **TOTAL PRICE** being the total of items 1, 2, and 3 is $_____ (numerical),

_____(words).

4.2 Schedule of Values. Within ten (10) calendar days of the effective date hereof, the Contractor shall submit to the Engineer a Schedule of Values allocating the Contract Price to the various portions of the Work. The Contractor's Schedule of Values shall be prepared in such form, with detail, and supported by such data as the Engineer may require to substantiate its accuracy. The Contractor shall not imbalance its Schedule of Values, nor artificially inflate any element thereof. The violation of this provision by the Contractor shall constitute a material breach of this Contract. The Schedule of Values shall be used only as a basis for the Contractor's Applications for Payment, and shall only constitute such basis, after it has been accepted and acknowledged in writing by the Engineer.

4.3 Payment Procedure. The Owner shall pay the Contract Price to the Contractor as provided below.

4.3.1 Progress Payments. Based upon the Contractor's Applications for Payment submitted to the Engineer and upon Certificates for Payment subsequently issued to the Owner by the Engineer, the Owner shall make progress payments to the Contractor toward the Contract Price.

4.3.2 On or before the 10th day of each month after commencement of the Work, The Contractor shall submit an Application for Payment for the period ending the 30th day of the month, to the Engineer in such form and manner, and with such supporting data and content, as the Engineer may require. Therein, the Contractor may request payment for ninety percent (90%) of that portion of the Contract Price properly allocable to Contract requirements properly provided, labor, materials and equipment properly incorporated in the Work plus ninety percent (90%) of that portion of the Contract Price properly allocable to the materials or equipment properly stored onsite (or elsewhere if approved in advance in writing by the Owner) for subsequent incorporation in the Work, less the total amount of previous payments received from the Owner . Payment for stored materials and equipment shall be conditioned upon the Contractor's proof satisfactory to the Owner, that the Owner has title to such materials and equipment and shall include proof of required insurance. Such Application for Payment shall be signed by the Contractor and shall constitute the Contractor's representation that the Work has progressed to the level for which payment is requested in accordance with the Schedule of Values, that the Work has been properly installed or performed in full accordance with this Contract, and that the

Contractor knows of no reason why payment should not be made as requested. Thereafter, the Engineer will review the Application for Payment and may also review the Work at the Project site or elsewhere to determine whether the quantity and quality of the Work is as represented in the Application for Payment and is as required by this Contract. The Owner shall make partial payments on account of the Contract Price to the Contractor within thirty (30) days following the Engineer's receipt of each Application for Payment, provided that said application is approved by the Engineer less such amounts, if any, otherwise owing by the Contractor to the Owner or which the Owner shall have the right to withhold as authorized by this Contract. The Engineer's certification of the Contractor's Application for Payment shall not preclude the Owner from the exercise of any of its rights as set forth in Paragraph 4.7 herein below.

4.4. The Contractor warrants that the title to all Work covered by an Application for Payment will pass to the Owner no later than at the time of payment. The Contractor further warrants that upon submittal of an Application for Payment, all Work for which payments have been received from the Owner shall be free

and clear of liens, claims, security interest or other encumbrances in favor of the Contractor or any other person or entity whatsoever.

4.5. The Contractor shall promptly pay each Subcontractor out of the amount paid to the Contractor on account of such Subcontractor's Work, the amount to which such Subcontractor is entitled. In the event the Owner becomes informed that the Contractor has not paid a Subcontractor as herein provided, the Owner shall have the right, but not the duty, to issue future checks in payment to the Contractor of amounts otherwise due, hereunder naming the Contractor and such Subcontractor as joint payees. Such joint check procedure, if employed by the Owner, shall create no rights in favor of any person or entity beyond the right of the named payees to payment of the check and shall not be deemed to commit the Owner to repeat the procedure in the future, nor shall it create privity or other contractual agreement with said entity or person.

4.6. No progress payment, nor any use or occupancy of the Project by the Owner, shall be interpreted to constitute an acceptance of any Work not in strict accordance with this Contract.

4.7. Without Payment. The Owner may decline to make payment, may withhold funds, and, if necessary, may demand the return of some or all of the amounts previously paid to the Contractor, to protect the Owner from loss because of:

(a) Defective Work not remedied by the Contractor nor, in the opinion of the Owner, likely to be remedied by the Contractor;
(b) Claims of third parties against the Owner or the Owner 's property;
(c) Failure by the Contractor to pay Subcontractors or others in a prompt and proper fashion;
(d) Evidence that the balance of the Work cannot be completed in accordance with the Contract for the unpaid balance of the Contract price;
(e) Evidence that the Work will not be completed in the time required for substantial or final completion;
(f) Failure to carry out the Work in accordance with the Contract; damage to the Owner or a third party to whom the Owner is, or may be, liable.
(g) Failure of the Contractor to maintain appropriate environmental protection measures or failure to comply with environmental permits, rules and regulations.

In the event that the Owner makes written demand upon the Contractor for amounts previously paid by the Owner as contemplated in this Section, the Contractor shall promptly comply with such demand.

4.8. Substantial Completion. When the Contractor believes that the Work is substantially complete, the Contractor shall submit to the Engineer a list of items to be completed or corrected. When the Engineer on the basis of an inspection determines that the Work is in fact substantially complete, it will prepare a Certificate of Substantial Completion, which shall establish the date of Substantial Completion, shall state the responsibilities of the Owner and the Contractor for Project security, maintenance and damage to the Work, and insurance, and shall fix the time within which the Contractor shall complete the items listed therein. Upon Substantial Completion of the Work, and execution by both the Owner and the Contractor of the Certificate of Substantial Completion, the Owner shall pay the Contractor an amount sufficient to increase total payments to the Contractor to one hundred percent (100%) of the Contract Price less three hundred percent (300%) of the reasonable cost as determined by the Engineer for completing all incomplete Work, correcting and bringing into conformance all defective and nonconforming Work, and handling all unsettled claims.

4.9. Completion and Final Payment. When all the Work is finally complete and the Contractor is ready for final inspection, it shall notify the Engineer in writing. Thereupon, the Engineer will make final inspection of the Work and, if the Work is complete in full accordance with this Contract and this Contract has been fully performed, the Owner may proceed with payment.

4.10. If the Contractor fails to achieve final completion within the time fixed by the Engineer in its Certificate of Substantial Completion, the Contractor shall pay the Owner the sum of **Fifteen Hundred ($1500.00) Dollars** per day for each and every calendar day of unexcused delay in achieving final completion beyond the date set forth herein for final completion of the Work. Any sums due and payable hereunder by the Contractor shall be payable, not as a penalty, but as liquidated damages representing an estimate of delay damages likely to be sustained by the Owner, estimated at or before the time or executing this Contract. When the Owner reasonably believes that final completion will be inexcusably delayed, the Owner shall be entitled, but not required, to withhold from any amounts otherwise due the Contractor an amount then believed by the Owner to be adequate to recover liquidated damages applicable to such delays.

If and when the Contractor overcomes the delay in achieving final completion, or any part thereof, for which the Owner has withheld payment, the Owner shall promptly release to the Contractor those funds withheld, but no longer applicable, as liquidated damages.

4.11. The Contractor shall not be entitled to final payment unless and until it submits to the Engineer:

1. Its affidavit that all payrolls, invoices for materials and equipment, and other liabilities connected with the Work for which the Owner, or the Owner ’s property might be responsible, have been fully paid or otherwise satisfied;
2. Releases and waivers of lien from all Subcontractors of the Contractor and of any and all other parties required by the Engineer;
3. Consent of Surety, if any, to final payment. If any third party fails or refuses to provide a release of claim or waiver of lien as required by the Owner, the Contractor shall furnish a bond satisfactory to the Owner to discharge any such lien or indemnify the Owner from liability.

4.12. The Owner shall make final payment of all sums due the Contractor within thirty (30) days of the Engineer’s execution of a final Certificate for Payment.

4.13. Acceptance of final payment shall constitute a waiver of all claims against the Owner by the Contractor except for those claims previously made in writing against the Owner by the Contractor, pending at the time of final payment, and identified in writing by the Contractor as unsettled at the time of its requested for final payment.

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ARTICLE V

OWNER RIGHTS AND DUTIES

5.1. Information, Services and Things Required From Owner. The Owner shall furnish to the Contractor, at the time of executing this Contract, any and all written and tangible material in its possession, if any, concerning conditions below ground at the site of the Project. Such written and tangible material is furnished to the Contractor only in order to make complete disclosure of such material and not for any other purpose. By furnishing such material, the Owner does not represent, warrant, or guarantee its accuracy either in whole, in part, implicitly or explicitly, or at all, and shall have no liability therefore. The Owner shall also furnish surveys, legal limitations and utility locations (if known), and a legal description of the Project site.

5.2. Excluding permits and fees that are the responsibility of the Contractor hereunder, the Owner shall obtain all approvals, easements, and the like required for construction.

5.3. The Owner shall furnish the Contractor, free of charge, four (4) copies of the Contract Documents for execution of the Work. The Contractor will be charged, and shall pay the Owner cost per additional set of Contract Documents, which it may require.

5.4. Right to Stop Work. If the Contractor more than twice fails or refuses to perform the Work in accordance with this Contract, the Owner may order the Contractor to stop the Work, or any described portion thereof, until the cause for stoppage has been corrected, no longer exists, or the Owner orders that the Work be resumed. In such event, the Contractor shall immediately obey such order. This shall not extend the Contractor's time to perform hereunder.

5.5. Owner's Right to Perform Work. If the Contractor's Work is stopped by the Owner under Paragraph 5.4, and the Contractor fails within seven (7) days of such stoppage to provide adequate assurance to the Owner that the cause of such stoppage will be eliminated or corrected, then the Owner may, without prejudice to any other rights or remedies the Owner may have against the Contractor, proceed to carry out the subject Work. In such a situation, an appropriate Change Order shall be issued deducting from the Contract Price the cost of correcting the subject deficiencies, plus compensation for the Engineer's additional services and expenses necessitated thereby, if any. If the unpaid portion of the Contract Price is insufficient to cover the amount due the Owner, the Contractor shall pay the difference to the Owner.

5.6. Correction of Defects. Owner shall give Contractor reasonably prompt notice of all observable defects. If Contractor fails to perform corrective work within a reasonable time, Owner may perform such work and charge Contractor for the costs thereby incurred.

5.7. No Waiver of Legal Rights. Upon completion of the contract work, Owner will promptly make final inspection and notify Contractor of final acceptance. However, final acceptance shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering overpayments from Contractor or his surety, or both. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

5.8. Owner May Accept Defective or Nonconforming Work. If the Owner chooses to accept defective or nonconforming Work, the Owner may do so. In such event, the Contract Price shall be reduced by the greater of (a) the reasonable cost of removing and correcting the defective or nonconforming Work, and (b) the difference between the fair market value of the Project as constructed and the fair market value of the Project had it not been constructed in such a manner as to include defective or nonconforming Work. If the remaining portion of the unpaid Contract Price, if any, is insufficient to compensate the Owner for its acceptance of defective or nonconforming Work, the Contractor shall, upon written demand from the Owner, pay the Owner such remaining compensation for accepting defective or nonconforming Work.

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ARTICLE VI

CONTRACTOR DUTIES

6.1. Consistent with the Contractor's continuing duty set forth herein, the Contractor shall perform no part of the Work at any time without adequate Contract Documents or, as appropriate, approved Plans, Drawing, Project Data or Samples for such portion of the Work. If the Contractor performs any of the Work knowing it involves a recognized error, inconsistency or omission in the Contract Documents without such notice the Engineer, the Contractor shall bear responsibility for such performance and shall bear the cost of correction.

6.2. The Contractor shall perform the Work strictly in accordance with this Contract.

6.3. The Contractor shall supervise and direct the Work using the Contractor's best skill, effort and attention. The Contractor shall be responsible to the Owner for any and all acts or omissions of the Contractor, its employees, subcontractors, and others engaged in the Work on behalf of the Contractor.

6.4. Warranty. The Contractor warrants to the Owner that all labor furnished to perform the Work under this Contract will be competent to perform the tasks undertaken, in a workmanlike manner, so as to meet the standards of workmanlike quality prevailing in North Carolina at the time of construction, that materials and equipment furnished will be of good quality and new unless otherwise permitted by this Contract, and that the Work will be of good quality, free from faults and defects and in strict conformance with this Contract. All Work not conforming to these requirements may be considered defective.

6.5. Supervision. The Contractor shall employ and maintain at the Project site only competent supervisory personnel. Absent written instruction from the Contractor to the contrary, the superintendent shall be deemed the Contractor's authorized representative at the site and shall be authorized to receive, execute and accept any and all communications from the Engineer.

6.6. Key supervisory personnel assigned by the Contractor to this Project are as follows:

NAME	**FUNCTION**
_____	_____
_____	_____
_____	_____
_____	_____

So long as the individuals named above remain actively employed or retained by the Contractor, they shall perform the functions indicated next to their names unless the Owner agrees to the contrary in writing. In the event one or more individuals not listed above subsequently assume one or more functions listed

above, the Contractor shall be bound by the provisions of the above Subparagraphs as though such individuals had been listed above.

6.7 Contractor, within seven (7) days of commencing the Work, shall submit to the Engineer for their information, the Contractor's schedule for completing the Work. The Contractor's schedule shall be revised no less frequently than monthly (unless the parties otherwise agree in writing) and shall be revised to reflect conditions encountered from time to time and shall be related to the entire Project. Each such revision shall be furnished to the

Engineer. Failure by the Contractor to strictly comply with the provisions of this Paragraph shall constitute a material breach of this Contract.

6.8 The Contractor shall continuously maintain at the site, for the benefit of the Engineer, one record copy of this Contract marked to record on a current basis changes, selections and modifications made during construction. Additionally, the Contractor shall maintain at the site for the Engineer the approved Shop Drawings, Product Data, Samples and other similar required submittals. Upon final completion of the Work, all of these record documents shall be delivered to the Owner.

6.9 The Contractor shall not perform any portion of the Work requiring submittal and review of Shop Drawings, Product Data or Samples unless and until such submittal shall have been approved by the Engineer. Approval by the Engineer however, shall not be evidence that Work installed pursuant thereto conforms to the requirements of this Contract.

6.10 Cleaning the Site and the Project. The Contractor shall keep the site reasonably clean during performance of the Work. Upon final completion of the Work, the Contractor shall clean the site and the Project and remove all waste, together with all of the Contractor's property there from.

6.11 Access to Work. The Engineer and Owner shall have access to the Work at all times from commencement of the Work through final completion. The Contractor shall take whatever steps are necessary to provide access when requested.

6.12 Permits and Licenses. Owner shall obtain the appropriate North Carolina Division of Coastal Management, North Carolina Division of Water Quality and U.S. Army Corps of Engineers permits and easements. Any other permits and licenses required for the prosecution of the Work shall be secured and paid for by the Contractor, specifically and without limitations. The Contractor shall obtain any and all U.S. Coast Guard dredge certifications and/or approvals as required to perform work.

6.13.1. Indemnity. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Town of Topsail Beach, Owner, from and against liability, claims, damages, losses and expenses, including attorneys' fees, arising out of or loss or expense attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting there from, but only to the extent caused in whole or in part by negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such liability, claim, damage, loss or expense is caused in part by a party indemnified hereunder.

6.13.2. For claims against any person or entity indemnified under this Paragraph Indemnity, by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Paragraph shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefits acts.

6.14.1. Insurance. Contractor shall maintain insurance from companies licensed to write business in North Carolina, with an A.M. Best rating of "A" or higher, and acceptable to Owner, of the kinds and minimum amounts specified below.

6.14.2. Certificates and Notice of Cancellation. Before commencing work under this contract, Contractor shall furnish Owner with certificates of all insurance required below. Certificates shall indicate the type, amount, class of operations covered, effective date and expiration date of all policies, and shall contain the following statement:

"The insurance covered by this certificate will not be cancelled or materially altered, except after thirty (30) days written notice has been received by the Town of Topsail Beach."

The certificate of insurance, naming the Town of Topsail Beach as an additional insured, shall be further evidenced by an actual endorsement furnished to the Owner from the insurer within thirty (30) days of the signing of the contract between the Contractor and the Owner.

6.14.3. Contractor shall provide Workers Compensation and Employers Liability Insurance covering all of the Contractor's employees to be engaged in the work under this contract; provide the required statutory benefits under North Carolina Workers Compensation Law, as well as the employer's liability insurance providing limits at least in the amount of $100,000/$500,000/$100,000 applicable to claims due to bodily injury by accident or disease.

In case any portion of the project work is sublet, Contractor shall require the each subcontractor to similarly provide worker's compensation and employer's liability insurance for all the latter's employees to be engaged in such work under the same terms and conditions required of Contractor.

6.14.4. Contractor shall provide Commercial General Liability Insurance Coverage including coverage for independent contractor operations, contractual liability assumed under the provisions of this contract, products/completed operations liability and broad form property damage liability insurance coverage. Exclusions applicable to explosion, collapse and underground hazards are to be deleted when the work involves these exposures. The policy shall provide liability limits at least in the amount of $1,000,000 per occurrence, combined single limits, applicable to claims due to bodily injury and/or property damage. The Town of Topsail Beach shall be named as an additional insured under this policy.

6.14.5. Owner's and Contractors Protective Liability Insurance is to be issued in the name of North Town of Topsail Beach, Owner. This coverage shall be provided by a separate policy and written with liability limits at least in the amount of $1,000,000 per occurrence, combined single limits, applicable to claims due to bodily injury and/or property damage arising out of work to be performed under this contract on behalf of the Owner.

6.14.6. Builder's Risk Insurance. Not Applicable

6.14.7. Automobile Liability Insurance. Contractor shall provide automobile liability insurance covering all owned, non-owned and hired vehicles to be used upon site or in connection with contract work, Contractor shall provide liability limits at least in the amount of $1,000,000 per occurrence combined single limits applicable to claims due to bodily injury and/or property damage.

6.14.8. Umbrella Liability Insurance. Contractor shall provide umbrella liability insurance providing coverage as excess above the underlying Commercial General Liability Insurance, Automobile Liability Insurance,

Employers Liability Insurance and Owners & Contractors Protective Liability Insurance policies required by this Contract. This coverage shall provide excess liability limits at least in the amount of $1,000,000 per occurrence, combined single limits, applicable to claims arising from bodily injury, personal injury and/or property damage. The parties named as additional Insureds under the primary underlying policies are to be included as additional insureds under the Umbrella Liability Insurance coverage.

6.14.9. Marine Protection & Indemnity. Contractor shall provide evidence of Ocean Marine Insurance, including Protection & Indemnity Liability with a limit of liability of at least $1,000,000 per occurrence, relative to exposures while on the water.

6.15. Subcontractors. Contractor shall be fully responsible for all acts and omissions of his or her subcontractors and of persons and organizations employed by them to the same extent that Contractor would be responsible for these acts and omissions.

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ARTICLE VII

CLAIMS

7.1 Claims by the Contractor. The Contractor shall notify the Owner of any event-giving rise to a claim within twelve (12) hours of each occurrence. The Contractor must then give written notice of the claim to the Engineer. Such written notice of the claim shall be furnished within seven (7) days after occurrence of the event, or the first appearance of the condition-giving rise to the claim.

7.2. Pending final resolution of any claim of the Contractor, the

Contractor shall diligently proceed with performance of this Contract and the

Owner shall continue to make payments to the Contractor in accordance with this Contract. The resolution of any claim under this Paragraph shall be reflected by a Change Order executed by the Engineer and the Contractor.

7.3. Claims for Concealed and Unknown Conditions. Should concealed and unknown conditions be encountered in the performance of the Work (a) below the surface of the ground or (b) in an existing structure be at variance with the conditions indicated by this Contract, or should unknown conditions of an unusual nature differing materially from those ordinarily encountered in the area and generally recognized inherent in Work of the character provided for in this Contract, be encountered, the Contract Price shall be equitably adjusted by Change Order upon the written notice and claim by either party made within seven (7) days after the first observance of the condition. As a condition precedent to the Owner having any liability to the Contractor for concealed or unknown conditions, the Contractor must give the Engineer written notice of, and an opportunity to observe, the condition prior to disturbing it. The failure by the Contractor to make the written notice and claim as provided in this Subparagraph shall constitute a waiver by the Contractor of any claim arising out of or relating to such concealed or unknown condition.

7.4. Claims for Additional Costs. If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the Engineer notice of the event-giving rise to the claim within twelve (12) hours of such occurrence, with written notice thereof within seven (7) days after the occurrence of the event-giving rise to such claim. Such notice shall be given by the Contractor prior to executing the Work or it shall constitute a waiver of any claim for additional compensation. No such claim shall be valid unless so made.

7.4.1. In connection with any claim by the Contractor against the Owner for compensation in excess of the Contract Price, any liability of the Owner for the

Contractor's costs shall be strictly limited to direct costs incurred by the Contractor and shall in no event include indirect costs or consequential damages of the Contractor. The Owner shall not be liable to the Contractor for claims of third parties, including Subcontractors, unless and until liability of the Contractor has been established in a court of competent jurisdiction.

7.4.2. Claims for Additional Time. If the Contractor is delayed in progressing any tasks which at the time of the delay is then critical or which during the delay becomes critical, as the sole result of any act or neglect to act by the Owner of someone acting in the Owner's behalf, or by changes ordered in the Work, unusual delay in transportation, unusually adverse weather conditions not reasonably anticipatable, an event constituting a hazardous work condition or making probable environmental violations specified in the permits, fire or any causes beyond the Contractor's control, upon notice to Owner within twelve (12) hours of the occurrence, then the date for achieving Substantial Completion of the Work shall be extended upon the written notice and claim of the Contractor to the Engineer for such reasonable time as the Engineer may determine by written

Change Order. A written notice and claim for an extension of time by the Contractor shall be made not more than seven (7) days after the occurrence of the event or the first appearance of the condition giving rise to the claim and shall set forth in detail the Contractor's basis for requiring additional time in which to complete the Project. In the event the delay to the Contractor is a continuing one, only one notice and claim for additional time shall be necessary. If the Contractor fails to make such claim as required in this Subparagraph, any claim for extension of time shall be waived.

7.4.3. If the Contractor alleges delay by the Engineer or employee thereof, the Contractor's sole exclusive remedy for the delay shall be to request a time extension for the completion of the Contract.

ARTICLE VIII

SUBCONTRACTORS

8.1. Subcontractors. A Subcontractor is an entity, which has a direct contract with the Contractor to perform a portion of the Work.

8.2. Award of Subcontracts. Upon execution of the Contract, the Contractor shall furnish the Owner, in writing, the names of persons or entities proposed by the Contractor to act as a subcontractor on the Project. The Owner shall within ten (10) days reply to the Contractor, in writing, stating any objections the Owner may have to such proposed subcontractor. The Contractor shall not enter into a subcontract with a proposed subcontractor with reference to whom the Owner has made timely objection. The Contractor shall not be required to subcontract with any party to whom the Contractor has objection.

8.3. All subcontracts shall afford the Contractor rights against the subcontractor, which correspond to those rights afforded to the Owner against the Contractor herein, including those rights afforded to the Owner in the Termination by Owner subparagraph.

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ARTICLE IX

TERMINATION

9.1.1. Termination by the Contractor. If the Work is stopped for a period of ninety (90) days by an order of any court or other public entity, or as a result of an act of the Government, through no fault of the Contractor or any person or entity working directly or indirectly for the Contractor, the Contractor may, upon ten (10) days' written notice to the Engineer, terminate performance under this Contract and recover from the Owner payment for the actual reasonable expenditures of the Contractor for all Work executed and for materials, equipment, tools, construction equipment and machinery actually purchased or rented solely for the work, less any salvage value of any such items.

9.1.2. If the Owner shall persistently or repeatedly fail to perform any material obligation to the contractor for a period of fifteen (15) days after receiving written notice from the Contractor of Owner's failure to perform, the Contractor may terminate performance under this Contract by written notice of ten (10) days to the Engineer. In such event, the Contractor shall be entitled to recover from the Owner as through the Owner had terminated the Contractor's performance under this Contract for convenience pursuant to the provisions herein.

9.2.1.1. Termination by the Owner – For Convenience. The Owner may for any reason whatsoever terminate performance under this Contract by the Contractor for convenience. The Owner shall give written notice of such termination to the Contractor specifying when termination becomes effective.

9.2.1.2. The Contractor shall incur no further obligations in connection with the Work and the Contractor shall stop Work when such termination becomes effective. The Contractor shall also terminate outstanding orders and subcontracts. The Contractor shall settle the liabilities and claims arising out of the termination of subcontracts and orders. The Owner may direct the Contractor to assign the Contractor's right, title and interest under terminated orders or subcontracts to the Owner or it's designee.

9.2.1.3. The Contractor shall transfer title and deliver to the Owner such completed or partially completed Work and materials, equipment, parts, fixtures, information and Contract rights as the Contractor has.

9.2.1.4. (a) The Contractor shall submit a termination claim to the Engineer specifying the amounts due because of the termination for convenience together with costs, pricing or other data required by the Engineer. If the Contractor fails to file a termination claim within one (1) year from the effective date of termination, the Owner shall pay the contractor, an amount derived in accordance with a subparagraph (c) below.

(b) The Owner and the Contractor may agree to the compensation, if any, due to the Contractor hereunder.

(c) Absent agreement to the amount due to the Contractor, the Owner shall pay the Contractor the following amounts:

(i) Contract prices for labor, materials, equipment and other services accepted under this Contract.

(ii) Reasonable costs incurred in preparing to perform and in performing the terminated portion of the Work, and in terminating the Contractor's performance, plus a fair and reasonable allowance for overhead and profit thereon (such profit shall not include anticipated profit or consequential damages); provided however, that if it appears that the Contractor would have not profited or would have sustained a loss if the entire Contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss, if any;

(iii) Reasonable costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to the herein provisions. These costs shall not include amounts paid in accordance with other provisions hereof.

9.2.2.1. For Cause. If the Contractor more than twice or repeatedly refuses or fails to prosecute the Work in a timely manner, supply enough properly skilled workers, supervisory personnel or proper equipment or materials, or if it fails to make prompt payment to Subcontractors or for materials or labor, or persistently disregards laws, ordinances, rules, regulations or orders of any public entity having jurisdiction, or fails to perform the Work in accordance with the terms hereof, then the Owner may by written notice to the Contractor, without prejudice to any other right or remedy, terminate the employment of the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor and may finish the Work by whatever methods it may deem expedient. In such case the Contractor shall not be entitled to receive any further payment until the Work is finished.

9.2.2.2. If the unpaid balance of the Contract Price exceeds the cost of finishing the work, including compensation for the Engineer additional services and expenses made necessary thereby, such excess shall be paid to the Contractor. If such cost exceeds the unpaid balance, the Contractor shall pay the difference to the Owner. This obligation for payment shall survive the termination of the Contract.

9.2.2.3. In the event employment of the Contractor is terminated by the Owner for cause pursuant to the herein provisions and it is subsequently determined by a Court of competent jurisdiction that such termination was without cause, such termination shall thereupon be deemed a Termination for Convenience, and the provisions of such paragraph shall apply.

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ARTICLE X

COMPLIANCE WITH LAWS

10.1. Laws To Be Observed. Contractor shall observe and comply with all Federal and State laws, including Department of Labor Health and Safety Regulations, and all local laws, ordinances and regulations which in any way affect the conduct of the contract work.

10.2. Contractor shall comply with N.C.G.S. Chapter 87, Article 8 and provide all notification required by statute and Contractor shall be responsible for cost of repair to all utilities damaged by construction.

10.3. Taxes. Contractor shall pay all applicable Federal, State and local taxes, including sales taxes on all equipment and materials used in the project.

Owner is qualified to receive all sales taxes paid on the project as a rebate.

Contractor shall submit a statement showing the invoice, sales taxes paid to the State, sales taxes paid to Owner of vendor's location, and name of Owner of all material and equipment used in the project. A tax statement shall be submitted with each pay request and shall be accompanied by an affidavit verifying validation.

10.4.1. Nondiscrimination. Contractor will take affirmative action not to discriminate against any employee or applicant for employment or otherwise illegally deny any person participation in or the benefits of the activities, which are the subject of this contract, because of race, creed, color, sex, age, disability, or national origin.

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ARTICLE XI

INTERPRETATION

11.1. Intent and Interpretation. The intent of this Contract is to require complete, correct and timely execution of the Work. Any Work that may be required, implied or inferred by the Contract Documents, or any one of more of them, as necessary to produce the intended result shall be provided by the Contractor for the contract price.

11.1.1 Law Applied. All of the terms and conditions in the contract documents shall be interpreted in accordance with the laws of the State of North Carolina.

11.1.2. Litigation. Arbitration of claims, disputes and questions arising under this contract may only be used when both parties agree to arbitrate. Arbitration shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association. In no event shall fewer than three (3) arbitrators be used; Owner and Contractor shall each select one (1) arbitrator and the two (2) arbitrators shall select a third. The award rendered by the arbitrators shall be final, specifically enforceable and record able as a judgment in any court having jurisdiction thereof. Any litigation filed in connection with this contract shall be filed in Onslow County Superior Court.

11.2.1. Entire Agreement. This agreement and the noted documents and specifications constitutes the entire understanding of the parties. The contract documents shall be given precedence in the following order: Agreement, Modifications, Addenda, Supplementary Conditions, Instructions to Bidders, General, Technical & Environmental Specifications and Drawings.

11.2.2. As between numbers and scaled measurements on the Drawings and in the Design, the numbers shall govern; as between larger scale and smaller scale drawings, the larger scale shall govern.

11.2.3. The contract is intended to be an integral whole and shall be interpreted as intentionally consistent. Terms required by any one-contract document shall be considered as required by the Contract.

11.2.4. Shop Drawings, Product Data and Samples. Shop Drawings, Product Data, Samples and other submittals from the Contractor do not constitute Contract Documents. Their purpose is merely to demonstrate the manner in which the Contractor intends to implement the Work in conformance with information received from the Contract Documents.

11.2.5. When a word, term or phrase is used in this contract, it shall be interpreted or construed, first, as defined herein; second, if not defined, according to its generally accepted meaning in the construction industry; and third, if there is no generally accepted meaning in the construction industry, according to its common and customary usage.

11.2.6. The words “include”, “included”, or “including”, as used in this contract, shall be deemed to be followed by the phrase, “without limitation”.

11.2.7. Words or terms used as nouns in this contract shall be inclusive of their singular and plural forms, unless the context of their usage clearly requires a contrary meaning.

11.2.8. The specification herein of any act, failure, refusal, omission, event, occurrence or condition as constituting a material breach of this contract shall not imply that any other, non-specified act, failure, refusal, omission, event, occurrence or condition shall be deemed not to constitute a material breach of this contract.

11.2.9. Dispute Resolution. The Owner hereby adopts those dispute resolutions procedures promulgated by the State Building Commission, as amended from time to time by the Commission or Owner. Said procedures shall be available to address any issues arising out of the contract or construction process wherein the matter in controversy exceeds **Fifteen Thousand ($15,000.00) dollars**. Should the Contractor herein utilize such dispute resolution procedures it must pay half of any administrative costs to be incurred by the Owner in conducting the dispute resolution.

11.3. Notices. All notices required hereunder to be sent to either party shall be sent to the following designated addresses, or to such other address or addresses as may be hereafter be designated by either party by mailing of written notice of such change of address, by Registered Mail, Return Receipt Requested.

SIGNATURE PAGE

To Owner:	To Contractor:
Town of North Topsail Beach	_____
Attn: _____	Attn: _____
Title)_____	(Title)_____
2008 Loggerhead Court	_____
North Topsail Beach, NC 28460	_____

IN WITNESS WHEREOF, the parties have caused the execution of this instrument, by Owner duly given and on the day and year first above written.

OWNER	**CONTRACTOR**
Town of North Topsail Beach	_____
By:_____	By:_____
Town Manager	President
ATTEST:	ATTEST:
_____	_____
Secretary	Secretary
[CORPORATE SEAL]	[CORPORATE SEAL]

State of North Carolina

County of Onslow, Town of North Topsail Beach

I, _____, a Notary Public of the State and County aforesaid, certify that _____ came before me this day and acknowledged that (s)he is Secretary of the Town of North Topsail Beach, a North Carolina corporation, organized under the laws of the State of North Carolina, and that by Owner duly given and as the act of the corporation, the foregoing instrument was signed in its name by its President, sealed with its corporate seal and attested by him/herself as its Secretary.

WITNESS my hand and official seal, this ____ day of December, 2013.

_____

Notary Public

My commission expires: _____

STATE OF _____

COUNTY OF _____

I, _____, a Notary Public of the State and Owner aforesaid, certify that _____ came before me this day and acknowledged that (s)he is Secretary of _____, a _____ corporation, organized under the laws of the State of _____, and that by Owner duly given and as the act of the corporation, the foregoing instrument was signed in its name by its President, sealed with its corporate seal and attested by him/herself as its Secretary.

WITNESS my hand and official seal, this _____ day of December, 2013.

_____

Notary Public

My Commission Expires: _____

NORTH TOPSAIL BEACH

FEMA Phase 5 Beach Nourishment Project

North Topsail Beach, NC

Winter 2019/2020

Section 3

Scope & Conditions

(Contract Specifications)

Table of Contents – Scope & Conditions

List of Appendices

GENERAL STATEMENTS

The Contractor shall furnish all labor, equipment, materials, and services to schedule, coordinate, supervise, perform, and provide quality control for the removal of shoaled material within Topsail Creek, Banks Channel, and New Topsail Inlet as defined by this Scope & Conditions (S&C), associated plans, and

Permit Conditions specified within North Carolina Division of Coastal Management (NCDCM) and USACE Permits.

For the Purposes of this Document, affected parties shall be known as follows:

1) The owner of the project, Town of North Topsail Beach, shall be known as the "Owner".
2) The engineer of record, TI Coastal, PLLC, shall be known as the "Engineer".
3) The offeror of construction services shall be known as the "Contractor".

1 Plans and Documents

The work shall conform to the following plans accompanying this specification and are a part thereof:

TITLE	Drawing No's
North Topsail Beach FEMA Phase 5 Nourishment Project	Sheets 1 thru 37

Five sets of full scale contract plans, maps, and specifications will be furnished to the successful Contractor without charge. Reference publications will not be furnished.

Contractor shall immediately review furnished plans and notify the Engineer of any discrepancies.

1.1 Attachments to this S&C

1) Bid forms
2) Contract Documents
3) Geotechnical Data

2 Summarization/Precedence

The summarizations contained in the following Description of Work are not intended to cover all work requirements, but are provided as a general overview of the work. The Contractor will be responsible for field verification of drawing dimensions, notes on applicable plans, and adherence to all referenced plans. Items in **boldface** or ***boldfaced italics*** within the following paragraphs are intended to draw the Contractor's attention to requirements of particular importance, or to identify work required but not shown on contract plans, respectively. Where conflicts arise between documents, the following precedence shall be followed:

1) Scope & Conditions
2) Plans

Omissions from the plans or specifications, or the misdescription of details of work which are manifestly necessary to carry out the intent of the plans and specifications, or which are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work, but shall be performed as fully and correctly set forth and described in the plans and specifications.

3 Work Under This Contract

All work shall be accomplished in accordance with all referenced drawing, procedures, documents, specifications, and this scope and conditions.

4 Order of Work

1. Mobilization.
2. Excavation of material.
3. Hauling and placement of material within beachfill template.
4. Final cleanup & dressing of beach fill.
5. Final cleanup.

(End of Section)

SCOPE AND CONDITIONS

5 Work Covered By Contract Documents

5.1 Project Description

The contract includes acquisition and hauling of approximately 168,000 cubic yards of material from the S.T. Wooten sand mine on Sutton Lake Road in Wilmington, NC, with placement along 18,000 feet of shoreline within the southern portion of the Town of North Topsail Beach. The work also consists of grading the beach and monitoring environmental concerns.

5.2 Location

The Borrow Area is the S.T. Wooten sand mine located on Sutton Lake Road in Wilmington, NC. Sutton Lake Road is located on the west side of Highway 421 approximately 0.5 miles north of the intersection of I-140 and Hwy 421.

The Beach Access/ Lay Down area is located at the east end of Grey Street in North Topsail Beach. This is a vehicular access area that is configured to allow direct “drive-on” conditions.

The preferred Truck route from the Borrow Area to the Beach is as follows:

Sutton Lake Road to Hwy 421,
HWY 421 to I-140,
I-140 to HWY 17N,
HWY 17N to HWY 172,
HWY 172 to HWY 210,
HWY 210 to Grey St.

6 Period of Performance

The work schedule shall extend from contract award until the completion of the work contained within this scope. All dredging activities shall be completed no later than April 30, 2019 or the last day allowed by state and federal regulatory agencies for the winter 2018/2019 nourishment season, whichever is later.

6.1 Commencement, Prosecution, and Completion of Work

Prior to the award of the contract, the Contractor and Engineer will agree upon the commencement, prosecution and the completion of the work. The Contractor will be required to meet the agreed upon

schedule. The work will be performed as rapidly as possible, and time is of the essence. The contractor may begin excavating material at the ST Wooten mine, or having ST Wooten begin excavating material in preparation for hauling immediately upon NTP. No material or equipment shall be allowed on the beach before November 15, 2018.

6.1.1 Liquidated Damages

In the event the Contractor does not complete all work, inclusive of final cleanup, by the completion date prescribed in the contract; the Owner shall assess the Contractor Liquidated Damages (LD's) in the amount of $1,500 per day until the work is completed. LD's shall be subtracted from the final payment for demobilization and any retained payments held by the owner.

7 Physical Data

Data and information furnished or referred to below is for the Contractor's information. The Owner shall not be responsible for any interpretation of or conclusion drawn from the data or information by the Contractor.

The indications of physical conditions on the plans and in the specifications are the result of site investigations by surveys and surface grab sampling, on the dates indicated.

7.1 Weather Conditions

The project area is subject to tropical storms and hurricanes from June through November, and to windy and/or rainy weather, including severe electrical storms and other sudden and locally severe meteorological occurrences that approach hurricane conditions, during any time of the year. The climate of the area is essentially subtropical, marine. The wet season in the project area is from May through October. In general, the winter months constitute the dry season and rainfall is usually associated with mid-latitude systems (fronts and low pressure systems) and is distributed in a spatially uniform pattern. The summer months comprise the wet season and rainfall is closely associated with convective activity. These rainfall events are normally offshore duration and amounts are quite variable spatially. Occasionally, daily rainfall in the dry season can be quite heavy as mid-latitude systems penetrate into North Carolina. The Contractor shall maintain full-time monitoring of the NOAA marine weather broadcasts, and avail themselves of such other local commercial weather forecasting services as may be available. It shall be the Contractor's responsibility to obtain information concerning the rain and wind.

7.2 Local Conditions - Water Stages and Tides

The below stated water fluctuations are for information only and are not to be utilized in conjunction with any contract related surveying. Reference should be made to the water level datum for surveying purposes as noted on the control drawing(s) of the contract plans.

The project is located within on the oceanfront of Topsail Island and thus is influenced tidally. Normal tidal range is 3.7 feet. All work on this project shall be completed in the NAVD 88 datum.

The Contractor should be aware that high tide and wind wave conditions may impact the ability to haul and/or place material on the beach intermittently.

1.20 feet	→	Mean High Water (MHW)
2.54 feet	→	NAVD 88
0.00 feet	→	Mean Low Water (MLW) in "Beaufort Datum (BFT)"

7.3 Project Datum

The Vertical Datum for the Project is NAVD88. The Horizontal Datum for the Project in NC State Plane, Zone 3200, NAD 1983.

Upon the start of construction, the Owner shall establish a bench mark in a feasible location. This benchmark shall provide the Contractor for all grading operations.

The Owner shall provide benchmarks on the beach for use by the Contractor.

7.4 Character of Materials in the Borrow Area (Sand Mine)

The materials to be excavated are geologic deposits that have been identified by borings conducted by ST Wooten. The average grain size is 0.24 mm with 0.21% of the material consisting of silt and 6.8% of the material consisting of shell. Refer to Appendix C for more information.

7.5 Transportation Facilities

The project area is served by US Highway 17, NC Highway 210. Contractor to verify height & weight restrictions for the bridges.

In addition to the information given in the contract plans, the Contractor shall make its own investigation of available roads for transportation, load limits for bridges and roads, and other road conditions affecting the transportation of materials and equipment to the project site and disposal area.

8 Layout of Work

The Engineer has established monuments, control data and elevations for the work site(s) as indicated on the contract plans.

From the monuments, control data and elevations established by the Engineer, the Contractor shall complete the layout of the work and shall be responsible for all measurements that may be required for the execution of the work to the location and limit marks prescribed in the specifications or on the contract plans, subject to such modifications as the Engineer or Owner may require to meet changed conditions or as a result of necessary modifications to the contract work.

The Contractor shall furnish, at its own expense, such stakes, templates, platforms, equipment, tools and material, and all labor as may be required in laying out any part of the work from the monuments, control data and elevations established by the Engineer. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established until authorized to remove them, and if such marks are destroyed by the Contractor or through its negligence, prior to their authorized removal, they may be replaced by the Owner, at its discretion, and the expense of replacement will be deducted from any amounts due or to become due the Contractor. The Engineer may require that work be suspended at any time when location and limit marks established by the Contractor are not reasonable adequate to permit checking of the work.

9 General Requirements

9.1 Submittal Requirements

Submittals shall be delivered to the Engineer (using Contractor Company transmittal) for approval.

9.1.1 Pre-Work Submittals

9.1.1.1 Construction Schedule

The Contractor shall submit a fully developed construction schedule within one (1) week after Award. The schedule shall be a bar chart or equivalent type schedule indicating in detail each construction activity and equipment to be utilized. The duration, man loading, and Contractor's dollar value shall be assigned to each activity (which will be used for progress payment analysis/invoice approvals).

9.1.1.2 Structures Protection Plan

The Contractor shall submit to the Engineer a "Structures Protection Plan" prior to the placement of beachfill. Approval of the plan will not relieve the Contractor of responsibility of damages to private or public property.

9.1.1.3 Environmental Protection Plan

Within 10 calendar days after the date of Notice of Award, the Contractor shall submit in writing an Environmental Protection Plan. Refer to 9.5 "Environmental Protection" for instructions.

9.1.1.4 Notice of Intent to Commence Work

Within 10 days of Contract Award and Notice to Proceed, the Contractor shall notify the Engineer of the proposed starting date for any stockpile operations at the mine or hauling operations.

9.1.1.5 Notice of Need for Pre-Fill Survey

The Contractor shall give 48 hours advance notice, in writing, to the Engineer of the need for a pre-fill survey. The surveys are required for payment and for final acceptance of the project.

9.1.1.6 List of Subcontractors

The Contractor shall provide the Engineer with a list of all Subcontractors.

9.1.2 Daily Logs

The Contractor shall prepare and submit a Daily Report of Operations for the working dredge. ***This report shall be submitted on a daily basis (by 12:00 noon the following work day) and not in groups***. A copy of this form is appended to the end of this S&C. Upon completion of the job, the Contractor shall submit a consolidated job report, combining the daily reports.

Additionally, one copy of the daily reports shall be maintained by the Contractor on the dredge for inspection purposes. Further instructions on the preparation of the report will be furnished at the Award Conference.

9.1.3 Post-Work Submittals

9.1.3.1 Notice of Need for Post-Fill Survey

The Contractor shall give 48 hours advance notice, in writing, to the Engineer of the need for a post-fill survey. The surveys are required for payment and for final acceptance of the project.

9.1.3.2 Consolidated Job Report

Upon completion of the job, the Contractor shall submit a consolidated job report, combining daily reports as discussed under 9.1.2 “Daily Logs”.

9.1.3.3 Environmental Protection Logs/Final Summary Report

Contractor shall submit as specified logs and final summary report of sightings and incidents with endangered species. Refer to 9.5 “Environmental Protection” for more information.

9.1.3.4 As-Built Contract Plans

The Contractor shall maintain a separate set of full size contract plans, marked up in red, to indicate as built conditions. Each as built contract drawing shall include the Contract Number associated with the contract. These plans shall be maintained in a current condition at all times until completion of the work and shall be available for review by the Engineer and Regulatory Agencies at all times. All variations from the contract plans, for whatever reason, including those occasioned by modifications, optional materials, and the required coordination between trades, shall be indicated. These variations shall be shown in the same general detail utilized in the contract plans. Upon completion of the work, the Contractor shall sign the marked up plans in the following manner: "**I CERTIFY THAT THESE CORRECTED PLANS INDICATE CONSTRUCTION AS ACTUALLY PERFORMED AND ARE AN ACCURATE REPRESENTATION OF THE SPECIFIED WORK. THESE CORRECTED PLANS ARE APPROVED FOR PREPARATION OF AS BUILT CONSTRUCTION PLANS.**" The marked up plans shall then be furnished to the Engineer prior to acceptance of the work. The Owner reserves the right to withhold final payment until acceptable as built contract plans have been submitted.

9.2 Field Management Personnel

The Contractor shall provide Field Management Personnel to perform the functions of Supervisor,

Quality Engineer/Inspector, and Safety/Environmental Engineer/Inspector. The Field Management Personnel are required on-site, working on this Contract, every hour/day on which this Contract has active on-going work, unless specifically notified by Engineer that an individual's attendance would not be required for a specific activity. These personnel must be employees of the Contractor (not its Subcontractor) and shall be dedicated to this Contract during all on-site work activities. Field Management Personnel must be available by phone or pager during all work periods.

9.3 Workmanship

Tasks being performed shall be accomplished by skilled and/or qualified workmen, as required in the type of work being performed, and shall be accomplished in the best standard practices for the type of work. All materials and equipment shall be installed in accordance with plans, specifications, and manufacturers' instructions, to conform to subcontract documents.

9.4 Safety andReliability

It shall be the responsibility of the Contractor's Supervisor and/or designated personnel, to ensure the safety and productivity of the craftsmen and/or technicians working on this subcontract. Failure of Contractor personnel to fulfill their duties safely and within the expected quality and professionalism as could reasonably be expected of workers skilled and/or qualified in the type of work being performed, will result in a Discrepancy Notice being filed with the Owner. Repeated or sustained lack of quality, professionalism, and/or safety may result in a formal request by the Engineer to the Contractor's management or administration to replace personnel.

9.5 Environmental Protection

9.5.1 General

This section covers prevention of environmental pollution and damage as the result of construction operations under this contract and for those measures set forth in other sections of these specifications. For the purpose of this specification, environmental pollution and damage are defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic, cultural, and/or historical purposes. The control of environmental pollution and damage requires consideration of air, water, and land, and includes management of visual esthetics, noise, solid waste, radiant energy and radioactive materials, as well as other pollutants.

9.5.2 Quality Control

The Contractor shall establish and maintain quality control for environmental protection of all items set forth herein. The Contractor shall record on daily quality control reports or attachments thereto, any problems in complying with laws, regulations and ordinances, and corrective action taken. Quality control reports shall be included in daily reports as outlined in 9.1.2 “Daily Logs”.

9.5.3 Permits and Authorizations

The Contractor shall comply with all requirements under the terms and conditions set out in the following permit(s) and authorization(s) listed below. These permit(s) and authorization(s) are appended to this Scope and Conditions.

a) North Carolina Division of Coastal Management Modification to Permit 79-10.
b) US Army Corps of Engineers Action ID # SAW 2017-02492.

9.5.4 Environmental Protection Plan

Within 10 calendar days after the date of Notice of Award, the Contractor shall submit in writing an Environmental Protection Plan. Approval of the Contractor's plan will not relieve the Contractor of its responsibility for adequate and continuing control of pollutants and other environmental protection measures. The Environmental Protection Plan shall include but not to be limited to the following:

a) Methods for protection of features to be preserved within authorized work areas. The Contractor shall prepare a listing of methods to protect resources needing protection, i.e., trees, shrubs, vines, grasses and ground cover, landscape features, air and water quality, fish and wildlife, soil, historic, archeological, and cultural resources.
b) Procedures to be implemented to provide the required environmental protection and to comply with the applicable laws and regulations. The Contractor shall provide written assurance that immediate corrective action will be taken to prevent pollution of the

environment due to accident, natural causes, or failure to follow the procedures set out in accordance with the environmental protection plan.

c) Plans showing locations of any proposed temporary excavations or embankments for haul roads, stream crossing, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials.
d) Methods of protecting surface and ground water during construction activities.
e) A description of the methods and measures for the prevention of oil spills (i.e. ground cover, containment, absorbent, etc.)
f) Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limit.

9.5.4.1 Logs/Final Summary Report

Contractor shall submit as specified logs and final summary report of sightings and incidents with endangered species.

9.5.4.2 Payment

No separate payment or direct payment will be made for the work covered under this section; all costs associated with this section shall be included in the contract unit and/or lump sum prices in the Bidding Schedule.

9.5.5 Subcontractors

Assurance of compliance with this section by subcontractors will be the responsibility of the Contractor. Subcontract labor and equipment shall not constitute more than 30% of the contract value without express written consent by the Engineer and/or Owner.

9.5.6 Notification

The Engineer will notify the Contractor in writing of any observed noncompliance with the aforementioned federal, state, or local laws or regulations, permits and other elements of the Contractor's environmental protection plan. The Contractor shall, after receipt of such notice, inform the Engineer of proposed corrective action and such action as may be approved. If the Contractor fails to comply promptly, the Engineer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or costs or damages allowed to the Contractor for any such suspension.

9.5.7 Protection of Environmental Resources

The environmental resources within the project boundaries and those affected outside the limits of permanent work under this contract shall be protected during the entire period of this contract. The Contractor shall confine its activities to areas defined by the plans and specifications. Environmental protection shall be as stated in the following subparagraphs.

9.5.7.1 Disposal of Solid Wastes

Solid wastes (excluding clearing debris) shall be placed in containers that are emptied on a regular schedule. All handling and disposal shall be conducted in accordance with Federal, State, and local regulations.

9.5.7.2 Disposal of Discarded Materials

Discarded materials other than those that can be included in the solid waste category shall be handled as directed, by the Engineer, at the Contractor's expense.

9.5.8 Preservation and Recovery of Historic, Archeological, and Cultural Resources

If, during construction activities, the Contractor observes items that may have historic or archeological value, such observations shall be reported immediately to the Engineer so that the appropriate authorities may be notified and a determination made as to their significance and what, if any, special disposition of the finds should be made. The Contractor shall cease all activities that may result in the destruction of these resources and shall prevent its employees from trespassing on, removing, or otherwise damage such resources.

9.5.9 Protection of Water Resources

The Contractor shall keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters.

9.5.9.1 Monitoring of Water Areas

All water areas affected by construction activities shall be monitored by the Contractor, at the Contractor's expense.

9.5.9.2 Turbidity

The Contractor shall conduct its beach fill and grading operations in a manner to minimize turbidity and shall conform to all water quality standards as prescribed by the North Carolina Coastal Area

Management Act (CAMA), Chapter 7H of the North Carolina Administrative Code and the North Carolina

Division of Water Quality General Permit to Discharge Sand Dredging Wastewater General Permit No. NC520000 and associated Permits.

9.5.9.3 Oil Spill Prevention

Prevent oil or other hazardous substances from entering the ground, drainage, or local bodies of water. Provide containment, diversionary structures, or equipment to prevent discharged oil from reaching a watercourse. Take immediate action to contain and clean up any spill of oily substances, petroleum products, and hazardous substances. Immediately report such spills to the Engineer.

9.5.10 Protection of Fish and Wildlife Resources

The Contractor shall keep construction activities under surveillance, management, and control to minimize interference with, disturbance to, and damage of fish and wildlife. Species that require specific attention along with measures for their protection will be listed in the Contractor's Environmental Protection Plan prior to the beginning of construction operation. Specifically, the

Contractor shall review and abide by the applicable conditions of the US Fish and Wildlife Services Biological Opinion for Topsail Beach Interim (Emergency) Nourishment Project.

9.5.11 Protection of Air Resources

The contractor shall keep construction activities under surveillance, management, and control to minimize pollution of air resources. All activities, equipment, processes and work operated or performed by the Contractor in accomplishing the specified constructions shall be in strict accordance with the applicable air pollution standards of the State of North Carolina and all Federal emission and performance laws and standards.

9.5.12 Protection of Sound Intrusions

The Contractor shall keep construction activities under surveillance and control to minimize damage to the environment by noise.

9.5.13 Preservation and Restoration of Landscape and Marine Vegetation Damages

The Contractor shall restore all landscape features and marine vegetation damaged or destroyed during construction operations outside the limits of the approved work areas. This work will be accomplished at the Contractor's expense. The placement of swing anchors shall be at the minimum distance outside the channel toes to provide for efficient maneuvering of the dredge, and to avoid damage to marsh grasses.

9.6 Payment and Performance Bonds

9.6.1 A Bid must be accompanied by a Bid Security made payable to the owner in the amount of 5% of the Bidder’s maximum bid price and in the form of a certified check or a Bid Bond. The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract

Documents, furnished the payment and performance bonds, and met the other conditions of the notice of award. If the Successful Bidder fails to meet the conditions of the Notice of award within 15 days, the Owner may annul the Notice of Award and the Bid Security will be forfeited by the Bidder.

9.6.2 At the time of Contract Award, the Contractor shall furnish payment and performance bonds, in an amount equal to 100% of the contract price as a security for the faithful execution of the contract and payment of all the Contractor's obligations under the Contract. These bonds shall remain in effect until the final completion and acceptance of the project by the Owner and the Engineer.

9.6.3 All bonds shall be executed by such sureties as are named in the current 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 Treasury. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

10 Harvest of Material and Hauling

10.1 General

The work covered by this section consists of furnishing all labor, materials, and equipment, and performing all excavation, stockpile, transportation, and placement of material from the ST Wooten Sutton Road Sand Mine to the limits of dredging indicated on the construction plans, and as specified herein.

There are necessary measures for protection of the environment. Environmental protection requirements under this contract are as important to overall completion of work as other technical aspects. Failure to meet the requirements of these specifications for environmental protection may result in work stoppages, or termination for default. No part of the time lost due to any such work stoppages shall be made the subject of claims for extension of time or for excess costs or damages by the Contractor. If the Contractor fails or refuses to promptly repair any damage caused by violation of the provisions of these specifications, the Owner may have the necessary work performed and charge the cost thereof to the Contractor.

10.2 Notices/Submittals

10.2.1 Notice of Intent to Dredge

Refer to 9.1 Submittal Requirements.

10.2.2 Construction Schedule

Refer to 9.1 Submittal Requirements.

10.2.3 Notification of Discovery of Historical Period Shipwreck Sites

This section Not Applicable to this contract.

10.2.4 Notice of Need for a Quantity Survey

Refer to 9.1 Submittal Requirements.

10.2.5 Pipeline Route Plan

Refer to 9.1 Submittal Requirements.

10.2.6 Daily/Monthly Report of Operations

Refer to 9.1 Submittal Requirements.

10.3 Dredging Restrictions

10.3.1 Method of Excavation

The material to be harvested from the mine is below the natural water table. All material excavated must be without lowering the water table within the designated borrow area. S. T. Wooten has a dredging contractor currently working on site, however it shall be the Contractor's responsibility to negotiate with S.T. Wooten the cost of the material and responsibility for all excavation and loading.

10.4 Oil and Hazardous Material Spills and Containment

a) The Contractor shall ensure that all oil and hazardous material spills are immediately reported to the Engineer.
b) All hazardous material spills shall be immediately contained and cleaned up in accordance with Federal, State and Local regulations.
c) Contractor shall use suitable methods such as dikes or curbs to prevent the spread of hazardous materials from above ground storage tanks and piping in case of leakage. Dikes and containment basins shall be impervious to spilled oil to prevent infiltration into the ground.

10.5 Pumping of Bilges

Contractors are warned that pumping oil or bilge water containing oil into navigable water, or into areas which would permit the oil to flow into such water, is prohibited by Section 13 of the River and Harbor Act of 1899, approved 3 March 1899 (30 Sat. 1152; 33 U.S.C. 407).l Violation of this prohibition is subject to the penalties under the referenced Acts.

10.6 Historical Period Shipwreck Sites

If any shipwreck, artifact, or other objects of antiquity that have scientific or historical value, or are of interest to the public, are discovered, located and/or recovered, the Contractor acknowledges that:

1) The site(s), articles, or other materials are the property of the State of North Carolina. 2) The Contractor will immediately notify the Engineer of such findings.

10.7 Permits

The Contractor's attention is directed to the paragraph 9.5.3 "Permits and Authorizations".

10.8 Fuel Oil Transfer Operations

In accordance with U.S. Coast Guard regulations (33 CFR 156.120), couplings used in fuel oil transfer operations on any vessel with a capacity of 250 or more barrels of oil shall be either a bolted or full threaded connection; or an approved quick-connect coupling or an automatic back-pressure shutoff nozzle used to fuel the vessel.

10.9 Signal Lights

The Contractor shall display signal lights and conduct operations in accordance with the General Regulations of the Department of the Army and of the Coast Guard governing lights and day signal to be displayed, vessels working on wrecks, dredges, and vessels engaged in laying cables or pipe or in submarine or bank protection operations, lights to be displayed on dredge pipe lines, and day signals to be displayed by vessels of more than 65 feet in length moored or anchored in a fairway or channel, and the passing by other vessels of floating plant working in navigable channels, as set forth in Commandant

U.S. Coast Guard Instruction M16672.2, Navigation Rules: International - Inland (COMDTINST M16672.2), or 33 CFR 81 Appendix A (International) and 33 CFR 84 through 33 CFR 89 (Inland) as applicable.

10.10 Final Cleanup

Final cleanup shall include the removal of all the Contractor's plant and equipment either for disposal or reuse. Unless otherwise approved by the Owner, USACE, and the Underlying Property Owner, the

Contractor will not be permitted to abandon any equipment in the disposal area for dredged materials or other areas adjacent to the worksite.

10.12 Work Area

The Contractor will be permitted to exclude the public from the work areas in the immediate vicinity of its dredging, transporting, and disposal operations. Enforcement shall be the Contractor's responsibility at no additional cost to the Owner. Should enforcement be required, it shall be coordinated with local enforcement agencies subject to the approval of the Owner.

10.12.1 Access

Access to the dredge area is by water only. The Contractor shall be responsible for providing access to the site for their employees and the Engineer when requested. The Contractor shall be responsible for obtaining all necessary permissions for use of landing areas to load and offload its crews.

The Contractor shall be responsible for providing and maintaining access necessary for its equipment and plant to and from the work site, mooring area, and disposal area. The Contractor shall ascertain the environmental conditions that can affect the access such as climate, winds, current, waves, depths, shoaling, and scouring tendencies.

10.13 Placement of Excavated Material

10.13.1 General

Material excavated shall be transported to and deposited on the beaches of the Town of North Topsail Beach as described in Section 11 "Beachfill and Grading" and shown on the plans.

Material Excavated from the borrow area shall be screened for debris larger than 3/4 inch prior to being placed on the beach or in the dune. It is recommended that the material be screened at the dredging discharge using what is commonly referred to as a UXO/MEC basket.

10.14 Dredge Template

10.14.1 Permitted Depth

The material actually removed from within the specific areas to be dredged to a depth of not more than the permitted depth, as shown on the plans and will be estimated in accordance with the provisions contained in Section 12 "Surveys" and Section 13 "Measurement and Payment".

10.14.2 Side Slopes

Side slopes may be formed by box cutting or dredging along the side slope. Material actually removed, within the limits approved by the Engineer, to provide for final side slopes not flatter than that shown on the contract plans, but not in excess of the amount originally lying above this limiting side slope, will be measured in accordance with the provisions contained in Section 12 “Surveys”.

10.14.3 Excessive Dredging

Materials taken from beyond the limits as described in subparagraphs “Permitted Depth” and “Side Slopes” above, will be deducted from the total amount dredged as excessive overdepth dredging, or excessive side slope dredging, for which payment will not be made. Nothing herein shall be construed to prevent payment for the removal of shoals performed in accordance with the applicable provisions of the paragraph 17 “Final Examination and Acceptance”.

10.14.4 Position Monitoring

The Contractor is advised to use an Electronic Positioning System (EPS) to ensure that the excavation area is limited to the area shown on the plans. The Contractor shall be solely responsible for any penalties or fines, which may arise from over-excavation, or excavation beyond the limits of dredging set forth in the plans.

10.14.5 Noise Control

All equipment, dredge/barges, boats, and tugs used on this work shall be equipped with satisfactory mufflers or other noise abatement devices. The Contractor shall conduct its operations so as to comply with all federal, state, and local laws pertaining to noise. The use of horns and whistle signals shall be held to the minimum necessary in order to ensure as quiet an operation as possible.

11 Beachfill and Grading

11.1 General

All materials transported from the borrow area shall be deposited on the beach within the lines, grades and construction cross sections shown on the plans except as may be modified by the Engineer. The Contractor shall maintain and protect the fill in a satisfactory condition at all times until final completion and acceptance of the work. The fill shall be free of clay lenses, rock, or silt pockets. Any existing signs, crosswalks, walkways, piers, buoys or other structures within the work lines shall be protected. Grade stakes shall be made of steel to assure their complete removal during final dressing.

11.2 Fill Areas

The fill sections are shown on the plans. The berm will be constructed to an elevation of +5.0 NAVD 88. The width of the berm will be variable, but will average approximately 50 feet. The berm slopes will be

1-foot vertical to 25-feet horizontal. The final contract fill area will be selected at the time of construction based upon the prevailing beach conditions and the contractors proposed construction schedule.

11.3 Construction

Prior to placement of fill the Contractor shall remove from the site of the work all snags, driftwood, and debris. All materials removed shall be disposed of in an area provided by the Contractor and approved by the Engineer.

The material shall be placed and brought to rest on the beach to the lines, grades and cross sections shown on the plans, unless otherwise provided for herein or directed by the Engineer. The beach is subject to change and the elevations may vary from those shown on the plans. **The Engineer reserves the right to vary the width and grade of the berm or dune from the lines and grade shown in order to establish a uniform beach.** The Contractor will not be required to dress the fill below mean high water to the slopes shown, but will be required to do the final dressing specified.

The Contractor shall take care not to damage any existing private or public structures, specifically including, but not limited to piers, crosswalks, walkways, or sand fencing. Prior to construction, the Contractor and Engineer shall survey the entire beachfill area. The Contractor shall submit to the Engineer a "Structures Protection Plan" prior to the placement of beachfill. Approval of the plan will not relieve the Contractor of responsibility of damages to private or public property.

The Contractor will not be held responsible for erosion caused by waves after the beach fill has been satisfactorily placed except that the Contractor will be required to perform the final dressing. No undrained pockets shall be left in any fill during or upon completion of the work.

11.4 Dressing

Upon completion of all filling operations, the fill shall be graded and dressed so as to eliminate any undrained pockets and abrupt humps and depressions in the beach fill surfaces. All dikes, piles, etc. shall be completely degraded. The bank caused by wave forces shall be graded down to a slope not steeper than 1-foot vertical on 15-feet horizontal.

11.5 Tolerances

Tolerance shall be strictly adhered to.
A tolerance of one-half (1/2) foot below and one-half (1/2) foot above the prescribed grades and slopes above the wave zone will be permitted in the final surface.

11.6 Misplaced Materials

If any material is deposited elsewhere than in places designated or approved, the Contractor may be required to remove such misplaced material and redeposit it where directed at his expense.

11.7 Unsuitable Materials

The geotechnical investigations conducted for the design of this project did not indicate any unsuitable materials within the dredge templates. Efforts should be made to avoid dredging material that is obviously unsuitable for beach placement. The Contractor should inspect the material prior to loading into the trucks at the mine, during any transfer process between on road and off road operations and during final grading. If material that could be deemed unsuitable for beach placement as defined by NCAC 15A 07H.312 is identified, the contractor should remove that material from the loading area so it is not hauled to the nourishment site. Or, if unsuitable material is found once it has been hauled from the mine, it shall be returned to the mine at the Contractor's expense. The engineer will sample the fill area on a daily basis for grain size and shell content and make observation at the mining area at least twice weekly. In the event that unsuitable material is delivered to the beach on two consecutive days, work may be halted and the contractor will be required to be relocate within the borrow area or stockpile until a suitable plan is implemented.

11.7.1 Grading to Control the Percentage of Shell

There is less than 1% shell content identified in the borings conducted in the borrow area. In the event shell is encounter at acceptable levels, the Contractor shall grade the beachfill area to disperse shell within the fill template such that the shell percentage at any given point is no greater than 15%.

11.8 Final Cleanup

Final cleanup shall include the removal of all the Contractor's plant and equipment either for disposal or reuse. Unless otherwise approved by the Owner, USACE, and the Underlying Property Owner, the Contractor will not be permitted to abandon any equipment in the project area or other areas adjacent to the worksite.

12 Surveys

12.1 General

Quantity surveys will be performed in accordance with 13 "Measurement and Payment", 8 "Layout of Work", and the latest edition of the Engineering Manual (EM) 1110-2-1003 entitled "HYDROGRAPHIC SURVEYING." If requested, a copy of the EM will be available for review by prospective bidders during the bid period, and a copy of the EM will be provided to the Contractor at the pre-work conference.

If acceptability is not acquired after performing one resurvey of an Acceptance Section, a meeting shall be held between the Contractor and the Engineer to expeditiously resolve the issue causing rejection of the survey. Contractor equipment and personnel standby time to resolve acceptability of the survey shall be at the Contractor's expense.

12.2 Quantity Surveys for Measurement

Quantity surveys shall be conducted by the Engineer, and the data derived from these surveys shall be used in computing the quantities of work performed and the actual construction completed and in place. Quantity surveys include

- Pre-fill survey – Topographic and hydrographic survey conducted by the Engineer of the beach within the fill area as indicated on the plans. This survey is also done within 48 hours of starting dredging activity.
- Compliance Surveys of Borrow Area- The Engineer shall conduct compliance surveys of the borrow area pit at least once every two weeks to insure that excavation is limited to the prescribed template.
- Progress surveys – Surveys conducted by the Engineer on a daily basis and will be provided to the Contractor within 24 hrs.
- Post-fill survey - Topographic and hydrographic survey conducted by the Engineer of the beach within the fill area as indicated on the plans. This survey is also done after completing dredging activity.

The Engineer will make volume computations based on the quantity surveys using the average end area method. Survey profiles shall be conducted perpendicular to the channel centerlines, and perpendicular to the beachfill baseline. The volume of material placed on the beach shall be defined as the difference between the pre-fill and post-fill surveys minus any amount placed outside the design template. Payment computations will be based on the volume of material placed on the beach as specified in 13 “Measurement and Payment” and acceptance will be made in 500-foot intervals.

Should the contractor choose to perform Surveys of the fill area for consideration by the Engineer, upon completing any survey, the Contractor shall furnish the originals of all field notes and all other records relating to the survey or to the layout of the work to the Engineer, who may choose to use them as necessary to determine the amount of progress payments. The Contractor shall retain copies of all such material furnished to the Engineer.

12.3 Post Construction (Post-Fill) Survey

The two-week survey window allowed under 13.2.2 “Measurement” will be indefinitely extended until a final survey is accepted. Any material accretion that might occur due to such a time extension will neither be measured, estimated, or paid for.

Contractor equipment and personnel standby time to resolve the acceptability of a survey when there is no identifiable collusion, fraud, or obvious error shall be at the Contractor’s expense and resultant delays shall not be the basis for time extensions of the contract.

13 Measurement and Payment

This section describes how bid items will be measured and paid for when making progress payments. Work to be measured is described in specification sections listed for each Line Item. Measurement procedures for payment, required quantity survey or procurement documentation and payment restrictions are described in applicable specification sections.

13.1 Mobilization and Demobilization (Bid Item No. 001)

Payment for the cost of mobilization and demobilization is included in this contract. Payment therefore shall include all costs incidental to mobilization and demobilization shall be included in the contract lump sum price for Bid Item No. 001 "Mobilization and Demobilization".

The Owner will pay all costs for the mobilization and demobilization of all of the Contractors plant and equipment at the contract lump sum price for this item, per the following schedule:

1) 60% of the lump sum price upon completion of the Contractors mobilization at the work site.

2) The remaining 40% upon completion of demobilization.

13.1.1 Access

No separate payment will be made for providing and maintaining access to the worksite(s) and disposal area. All such related costs shall be included in the contract unit price for Bid Item No. 001 "Mobilization and Demobilization".

Access to the Beach is through the Grey Street Access. The Contractor may, at their expense, negotiate with private landowner's to secure separate or additional laydown and access points. These shall be subject to the Engineer's approval, at the Contractor's expense, and shall be restored, including any public roads or lands, to the Town and landowner's satisfaction prior to payment of demobilization.

13.2 Dredging and Beach Fill (Bid Items No. 002)

13.2.1 Payment

All costs for excavation, transportation, and placement of material, and all appropriate costs in connection therewith and incidental thereto shall be included in the contract unit price for Bid Items No. 002, "Beach Placement". ***Payment shall be made based on the quantity of material placed, but shall not exceed 110% of the material placed within the designed beach template.***

Partial payment for material harvested from the borrow area at the ST Wooten Sand Mine and stockpiled on dry land, may be made under Bid Item 001 at a rate not to exceed 40% of the in place price, or actual costs, whichever is less, and shall be based on the bi-weekly borrow pit compliance surveys conducted by the Engineer.

In the event of a default by the contractor, Partial payment for harvesting of the material shall convey 100% ownership of the material, paid for by the Town, to the Town, regardless of actual cost.

13.2.2 Measurement

The maps and/or plans already prepared are believed to represent accurately the average existing conditions at the time of the survey. The total amount of material placed, will be measured by the cubic yard in place. Volumes will be computed using the average end area method. The volume computed shall be between the beach face surface shown by the surveys taken before fill and the beach face surface shown by the surveys taken within two weeks after the work indicated on the plans has been completed. The Contractor shall give 48 hours advance notice, in writing, to the Engineer of the need for a pre-dredge survey and post dredge payment survey for final acceptance. The quantity shall include the volume within the limits of the fill template described under 10.14.2 “Side Slopes”, less any deductions that may be required for misplaced material described in 11.6 “Misplaced Materials”. Determination of the quantities removed after having once been made, will not be reopened, except on evidence of collusion, fraud, or obvious error.

14 Inspection

The Engineer shall be notified prior to the establishment of horizontal control work (baseline layout, ranges, station flags, shore based control, etc.) and vertical control work (tide staff(s), upland cross sections, construction elevations top/invert, maximum/minimum elevations of dredged materials within disposal area, etc.), but the presence or absence of the Engineer shall not relieve the Contractor of its responsibility for proper execution of the work in accordance with the specifications. The Contractor will be required:

1) To furnish, on the request of the Engineer, the use of such boats, boatmen, laborers, and material forming a part of the ordinary and usual equipment, and crew of the dredging plant as may be reasonably necessary in inspecting and supervising the work. However, the Contractor will not be required to furnish such facilities for the surveys prescribed in the paragraph entitled "Final Examination and Acceptance”.
2) To furnish, on the request of the Engineer, suitable transportation from all points on shore designated by the Engineer to and from the various pieces of plant.

Should the Contractor refuse, neglect, or delay compliance with these requirements, the specific facilities may be furnished and maintained by the Engineer or Owner and the cost thereof will be deducted from any amounts due or to become due the Contractor.

15 Continuity of Work

No payment will be made for work done in any area designated by the Engineer until the full template required under the contract is secured in the whole of such area. Should any such nonadjacent areas be filled to full template during the operations carried under the contract, payment for all work therein may be deferred until the required fill has been made in the area intervening. The Contractor may be required to suspend fill operations at any time when, for any reason, the gauges or ranges cannot be seen or properly followed.

16 Substantial Completion

Substantial completion for each fill acceptance section shall be the transport and placement of at least 95% of the material shown within the template by the pre-fill survey. Contractor equipment and personnel standby time to resolve acceptability of the survey shall be at the Contractor's expense.

17 Final Examination and Acceptance

As soon as practicable and no later than two (2) weeks after the completion of the entire work or any section thereof (if the work is divided into sections) as in the opinion of the Engineer will not be subject to damage by further operations under the contract, such work will be thoroughly examined at the cost and expense of the Owner by survey, as determined by the Engineer. Should any valleys, trenches, or other lack of contract grade be disclosed by this examination, the Contractor will be required to fill same with additional material. The Contractor or its authorized representative will be notified when surveys are to be made and will be permitted to accompany the survey party. When the area is found to be in a satisfactory condition, it will be accepted finally.

17.1 Final Acceptance

Prior to final acceptance, each of the following requirements shall be satisfied:

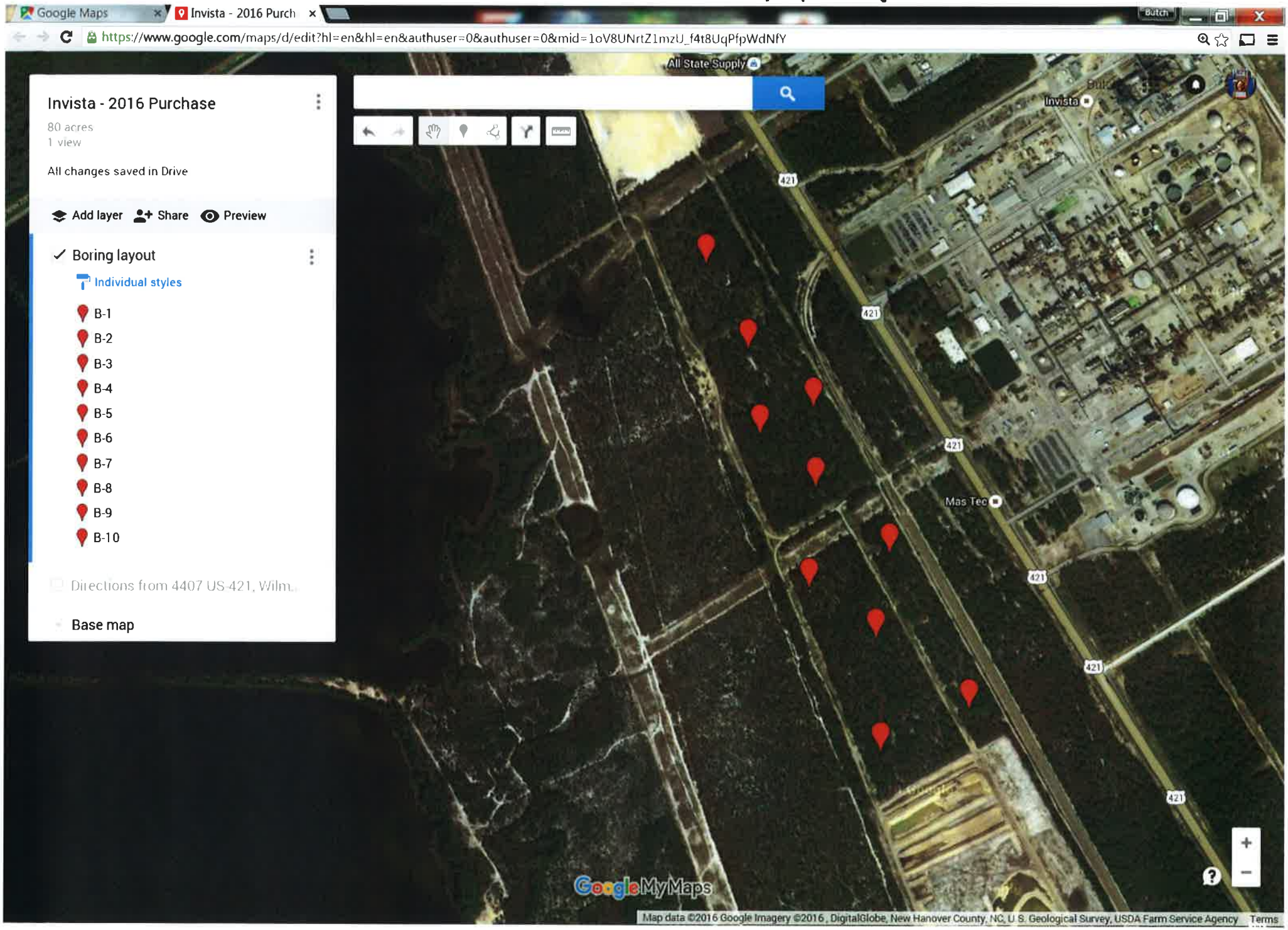
- All punch-list items are to be corrected or completed.
- PV sheets dated and signed off.
- As built redlined, submitted and approved by the Engineer.
- All other submittals as specified in 9.1 "Submittal Requirements".
- Final Inspection with Engineer conducted.
- All clean up and demobilization completed.

------End of Scope & Conditions------

(Attachments Follow as Applicable)

Appendix A: Geotechnical Data

Wilmington Property off Sutton Lake Rd. 2016 Invista Property Boring Layout 7/19/16



2014

7/19/16

Invista Property

Drill Hole # 1	
Depth	Description
5'	Fine Light Brown Sand w/ Topsoil
10'	Fine Light Brown Sand
15'	Fine to Med. Light Brown Sand
20'	Med. Light Brown Sand
25'	Med. to Coarse Sand
30'	Clay w/ some Fine Sand
35'	Fine Light Brown Sand
40'	Fine Light Brown Sand
45'	Fine to Med. Brown Sand
50'	Fine to Med. Brown Sand w/ Clay
60'	Fine Dark Brown Sand @ 62'
70'	Dark Clay w/ some Dark Brown Sand

Drill Hole # 2	
Depth	Description
5'	Topsoil w/ some Brown Sand
10'	Brown Sand w/ some Topsoil
15'	Fine to Med. Light Brown Sand
20'	Fine to Med. Light Brown Sand
25'	Fine to Med. Light Brown Sand
30'	Fine Light Brown Sand
35'	Fine Light Brown Sand
40'	Grey Clay
45'	Fine to Med. Dark Brown Sand
50'	Fine Black Sand
60'	Fine Black Sand

Drill Hole # 3	
Depth	Description
5'	Topsoil w/ some Brown Sand
10'	Fine Light Brown Sand
15'	Fine Light Brown Sand
20'	Fine Light Brown Sand
25'	Fine Light Brown Sand
30'	Fine to Med. Light Brown Sand
35'	Grey Clay
40'	Grey Clay
45'	Fine Grey Sand
50'	Fine Grey, Black Sand w/ Clay
60'	Fine Grey Sand w/ Clay

Drill Hole # 4	
Depth	Description
5'	Fine Brown Sand
10'	Fine Light Brown Sand
20'	Fine Light Brown Sand
30'	Fine to Med. Light Brown Sand
40'	Medium to Coarse Light Brown Sand
50'	Fine Grey Sand w/ Clay

Drill Hole # 5	
Depth	Description
5'	Fine Brown Sand
10'	Fine Brown Sand
20'	Fine Light Brown Sand
30'	Fine to Med. Light Brown Sand
40'	Fine to Med. Light Brown & Orange Sand
50'	Grey Solid Clay

Drill Hole # 6	
Depth	Description
5'	Fine Sand w/ Topsoil
10'	Fine Dark Brown Sand
20'	Fine to Med. Brown Sand
30'	Fine Brown Sand
40'	Med. to Fine Black, Brown, Orange Sand
50'	Fine Dark Grey Sand

Drill Hole # 7	
Depth	Description
5'	Topsoil w/ Med. to Fine Black Sand
10'	Med. to Fine Brown & Black Sand w/ Topsoil
20'	Fine Brown Sand
30'	Fine to Med. Light Brown Sand
40'	Fine to Coarse Greyish Brown Sand
50'	Fine Dark Grey Sand

Drill Hole # 8	
Depth	Description
5'	Fine Light Brown Sand
10'	Fine Light Brown Sand
20'	Fine Light Brown Sand
30'	Fine Light Brown Sand
40'	Fine to Med. Light Brown Sand
50'	Fine to Med. Light Brown & White Sand

Drill Hole # 9	
Depth	Description
5'	Topsoil & Fine Sand
10'	Fine Light Brown Sand
20'	Fine to Med. Light Brown & White Sand
30'	Grey Clay
40'	Fine Light Brown Sand
50'	Fine Black Sand
100'	Fine Black Sand w/ Clay

Drill Hole # 10	
Depth	Description
5'	Fine Light Brown Sand
10'	Fine to Med. Light Brown Sand
20'	Fine to Med. Light Brown Sand
30'	No Sample - Void
40'	Fine to Med. Red Brown Sand

QA/QC-1 Rev
(REVISED)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
HOT MIX ASPHALT QUALITY CONTROL TEST WORKSHEET

Type Mix:	Nat. Sand	QC Sample Date:	7/19/2016	JMF Pba:	0.30	MD Gb:	1.039
Plant Location:	Wilmington	QC Sample No.:	#1 (10' - 30')	JMF Gse:	2.524	Calculated Gse:	#DIV/0!
Plant Cert No:		JMF No.:	Invista Property	JMF Gsb:	2.507	Corrected Gsb:	#DIV/0!

Dry & Pan Weights		Pan Wt.
Agg Wt after Ignition	1,411.1	<0.2% of
Dry Wt after Wash	1,392.0	Dry Wt
Pan loss wt.	19.1	After Sieving?
% Loss from Sieving	0.08	Yes
Pan Weight	1,390.9	1,410.0

Furnace Weights		Furnace
Basket Wt.		Scale
Mix Wt.		Within
Mix & Basket Wt.	-	5.0 grams?
Furnace Readout		YES

% Binder (Pb)	
JMF %Binder	
% Binder from Burn	

Moisture Content	
Mix Sample Weight	
Mix Dry Weight	
Mix % Moisture	#DIV/0!

VMA	#DIV/0!
VFA	#DIV/0!
%Gmm@Nini	#DIV/0!
P0.075 / Pbe Ratio	-8.3

Gradation Data (all weights are after burn weights)

SIEVE	Accumulate Weight	Percent Retained	% Pass (A)	Correction Factor (B)	TOTAL PASS (A+B	JMF
37.5 mm						
25.0 mm						
19.0 mm						
12.5 mm						
9.5 mm						
4.75 mm	3.6	0	100		100	
2.36 mm	13.4	1	99		99	
1.18 mm	87.6	6	94		94	
.600 mm	363.2	26	74		74	
.300 mm	698.3	50	50		50	
.150.mm	1130.3	80	20		20	
.075 mm	1375.0	97.5	2.5		2.5	
PAN	1390.9	98.6	1.4	Constant =		0.070922

Hot Bin Weights (Batch Plant)	#1	#2	#3	#4	#5
Cold Feed(materials)					
Percentages					

Calibration Factor . @538

Gmm (Rice) Test Data	
A. Weight of Container	
B. Weight of Container + Mix	
C. Weight of Container + Mix In Water	
D. Weight of Container Suspended	
E. Uncorrected Maximum Specific (B - A) / (B - A) - (C - D)	#DIV/0!
Weighing Intervals	
0 Min	
15 Min	
30 Min	
45 Min	
60 Min	
75 Min	
F. Weight of Pan + Final Weight	
G. Weight of Pan	
H. Max Specific Grav (B - A) / (F - G) - (C - D)	No F or G
I. Dry Back Correction Factor	0.027
J. (E) - (I) = Corrected Value	#DIV/0!
K. Reheat Correction Factor	
L. (H) x (K) Corrected Max Specific Gravity	#VALUE!

Gyratory Compacted Specimen Test Data

Specimen Number	A). Height @ Nini	B).Height @ Ndes	C). Dry In Air	D). SSD In Air	E). Weight In Water	F). Gmb @ Ndes' Measured	G). Gmb @ Ndes' Estimated	SAMPLE VOLUME H). '@' Nini	SAMPLE VOLUME I). '@ Ndes	J). Correction Factor	K). Gmb @Nini Estimated	L). Gmb @Nini Corrected	M). Gmm Rice Grav	N). VTM @' Ndes
	Measured	Measured	Measured	Measured	Measured	C / (D-E)	C / I	Ax17.6715	Bx17.6715	F / G	C / H	J x K	Measured	(I-F) / M x 1
1													#DIV/0!	#DIV/0!
2													#DIV/0!	#DIV/0!
3													#DIV/0!	#DIV/0!
AVERAGES						0.000						0.000		#DIV/0!

*NOTE: BY PROVIDING THIS DATA UNDER MY SIGNATURE AND/OR HICAMS CERTIFICATION NUMBER, I ATTEST TO THE ACCURACY AND VALIDITY OF THE TEST DATA CONTAINED ON THIS FORM AND CERTIFY THAT NO DELIBERATE MISREPRESENTATION OF TEST RESULTS, IN ANY MANNER, HAS OCCURRED

Everett Thornton 6180
* PRINT NAME LEGIBLY w/HICAMS #

QA/QC TECHNICIANS SIGNATURE

QA/QC-1 Rev
(REVISED)

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
HOT MIX ASPHALT QUALITY CONTROL TEST WORKSHEET

Type Mix:	Nat. Sand	QC Sample Date:	12/8/2016	JMF Pba:	0.30	MD Gb:	1.039
Plant Location:	Wilmington	QC Sample No.:	Dredged	JMF Gse:	2.524	Calculated Gse:	#DIV/0!
Plant Cert No:		JMF No.:	Sutton Lake Pit	JMF Gsb:	2.507	Corrected Gsb:	#DIV/0!

Dry & Pan Weights		Pan Wt.
Agg Wt after Ignition	1,586.9	<0.2% of
Dry Wt after Wash	1,580.8	Dry Wt
Pan loss wt.	6.1	After Sieving?
% Loss from Sieving	0.04	Yes
Pan Weight	1,580.1	1,586.2

Furnace Weights		Furnace
Basket Wt.		Scale
Mix Wt.		Within
Mix & Basket Wt.	-	5.0 grams?
Furnace Readout		YES

% Binder (Pb)	
JMF %Binder	
% Binder from Burn	

Moisture Content	
Mix Sample Weight	
Mix Dry Weight	
Mix % Moisture	#DIV/0!

VMA	#DIV/0!
VFA	#DIV/0!
%Gmm@Nini	#DIV/0!
P0.075 / Pbe Ratio	-2.0

Gradation Data (all weights are after burn weights)

SIEVE	Accumulate Weight	Percent Retained	% Pass (A)	Correction Factor (B)	TOTAL PASS (A+B	JMF
37.5 mm						
25.0 mm						
19.0 mm						
12.5 mm						
9.5 mm						
4.75 mm						
2.36 mm	0.3	0	100		100	100
1.18 mm	6.1	0	100		100	97
.600 mm	118.5	8	92		92	91
.300 mm	815.1	51	49		49	37
.150.mm	1507.1	95	5		5	3
.075 mm	1577.3	99.4	0.6		0.6	2.0
PAN	1580.1	99.6	0.4	Constant =		0.0630438

Hot Bin Weights (Batch Plant)	#1	#2	#3	#4	#5
Cold Feed(materials)					
Percentages					

Calibration Factor . @538

Gmm (Rice) Test Data

A. Weight of Container		
B. Weight of Container + Mix		
C. Weight of Container + Mix In Water		
D. Weight of Container Suspended		
E. Uncorrected Maximum Specific	B - A / (B - A) - (C - D)	#DIV/0!
Weighing Intervals		
0 Min		
15 Min		
30 Min		
45 Min		
60 Min		
75 Min		
F. Weight of Pan + Final Weight		
G. Weight of Pan		
H. Max Specific Grav	B - A / (F - G) - (C - D)	No F or G
I. Dry Back Correction Factor		0.027
J. (E) - (I) = Corrected Value		#DIV/0!
K. Reheat Correction Factor		
L. (H) x (K)Corrected Max Specific Gravity		#VALUE!

Gyratory Compacted Specimen Test Data

Specimen Number	A). Height @ Nini	B).Height @ Ndes	C). Dry In Air	D). SSD In Air	E). Weight In Water	F). Gmb @ Ndes' Measured	G). Gmb @ Ndes' Estimated	SAMPLE VOLUME H). '@' Nini	SAMPLE VOLUME I). '@ Ndes	J). Correction Factor	K). Gmb @Nini Estimated	L). Gmb @Nini Corrected	M). Gmm Rice Grav	N). VTM @' Ndes
	Measured	Measured	Measured	Measured	Measured	C / (D-E)	C / I	Ax17.6715	Bx17.6715	F / G	C / H	J x K	Measured	(I-F) / M x 1
1													#DIV/0!	#DIV/0!
2													#DIV/0!	#DIV/0!
3													#DIV/0!	#DIV/0!
AVERAGES						0.000						0.000		#DIV/0!

*NOTE: BY PROVIDING THIS DATA UNDER MY SIGNATURE AND/OR HICAMS CERTIFICATION NUMBER, I ATTEST TO THE ACCURACY AND VALIDITY OF THE TEST DATA CONTAINED ON THIS FORM AND CERTIFY THAT NO DELIBERATE MISREPRESENTATION OF TEST RESULTS, IN ANY MANNER, HAS OCCURRED

Everett Thornton P2S 6180
* PRINT NAME LEGIBLY w/HICAMS #

QA/QC TECHNICIANS SIGNATURE

Sutton Lake Rd Borrow Pit
for BBI excavation

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #1 3.5-5.0	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

25 | 15 | A-3

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks	Spec. Li with	Spec. Li.
3/8 inch	0.371	0.0	0.0	0.0	100	100		100	
#4	0.185	0.0	0.0	0.0	100	95-100		90-100	
#8	0.093	0.0	0.0	0.0	100	80-100			
#16	0.046	2.7	0.9	0.9	99	45-95		40-85	
#30	0.0232	54.5	16.8	17.7	82	25-75			#40 5/n
#50	0.0116	192.1	44.7	62.5	38	5~~8~~-30		0-20	
#100	0.0058	291.6	32.3	94.8	5	0~~5~~-10			
#200	0.0029	298.5	2.2	97.04	2.96	0-3		0-3	10,
Pan		298.6	0.0	97.1	2.93				
Wash Loss		5.0	1.6						
Total			99						

Wet Weight	307.6		
Weight Before Wash	307.6	Lab Number	Bore #1 3.5-5.0
Weight After Wash	298.7	Fineness Modulus	1.76
Wash Loss	8.9	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #1 8.5-10	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	7.0	1.5	1.5	***98***	45-95	
#30	0.0232	50.8	9.4	10.9	***89***	25-75	
#50	0.0116	289.8	51.4	62.3	***38***	8-30	
#100	0.0058	431.6	30.5	92.8	7	.5-10	
#200	0.0029	440.0	1.8	94.56	***5.44***	0-3	
Pan		440.3	0.1	94.6	5.37		
Wash Loss		5.0	1.1				
Total			96				

Wet Weight	465.3		
Weight Before Wash	465.3	Lab Number	Bore #1 8.5-10
Weight After Wash	440.3	Fineness Modulus	1.67
Wash Loss	***25.0***	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #1 13.5-15	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.1	0.0	0.0	100	95-100	
#8	0.093	2.2	0.5	0.6	99	80-100	
#16	0.046	7.7	1.4	2.0	***98***	45-95	
#30	0.0232	40.0	8.4	10.4	***90***	25-75	
#50	0.0116	112.0	18.7	29.1	***71***	8-30	
#100	0.0058	324.7	55.3	84.4	***16***	5-10	
#200	0.0029	346.5	5.7	90.09	***9.91***	0-3	
Pan		350.0	0.9	91.0	9.00		
Wash Loss		5.0	1.3				
Total			92				

Wet Weight	384.6		
Weight Before Wash	384.6	Lab Number	Bore #1 13.5-15
Weight After Wash	350.0	Fineness Modulus	1.27
Wash Loss	***34.6***	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #1 18.5-20	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	2.1	0.5	0.5	99	80-100	
#16	0.046	27.2	6.3	6.9	93	45-95	
#30	0.0232	128.0	25.4	32.2	68	25-75	
#50	0.0116	286.1	39.8	72.1	28	8-30	
#100	0.0058	375.7	22.6	94.6	5	.5-10	
#200	0.0029	382.0	1.6	96.22	***3.78***	0-3	
Pan		382.5	0.1	96.3	3.65		
Wash Loss		5.0	1.3				
Total			98				

Wet Weight	397		
Weight Before Wash	397.0	Lab Number	Bore #1 18.5-20
Weight After Wash	382.7	Fineness Modulus	2.06
Wash Loss	***14.3***	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #1 23.5-25	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.9	0.2	0.2	100	95-100	
#8	0.093	9.7	2.4	2.7	97	80-100	
#16	0.046	37.1	7.6	10.3	90	45-95	
#30	0.0232	115.1	21.6	31.8	68	25-75	
#50	0.0116	264.2	41.3	73.1	27	8-30	
#100	0.0058	349.0	23.5	96.6	3	5-10	
#200	0.0029	353.5	1.2	97.81	2.19	0-3	
Pan		353.6	0.0	97.8	2.16		
Wash Loss		5.0	1.4				
Total			99				

Wet Weight	361.4		
Weight Before Wash	361.4	Lab Number	Bore #1 23.5-25
Weight After Wash	353.6	Fineness Modulus	2.15
Wash Loss	7.8	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #1 28.5-30	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	3.1	0.6	0.6	99	80-100	
#16	0.046	28.8	5.2	5.8	94	45-95	
#30	0.0232	135.2	21.4	27.2	73	25-75	
#50	0.0116	391.7	51.6	78.8	21	8-30	
#100	0.0058	472.9	16.3	95.2	5	.5-10	
#200	0.0029	476.0	0.6	95.77	***4.23***	0-3	
Pan		476.2	0.0	95.8	4.19		
Wash Loss		5.0	1.0				
Total			97				

Wet Weight	497		
Weight Before Wash	497.0	Lab Number	Bore #1 28.5-30
Weight After Wash	476.6	Fineness Modulus	2.08
Wash Loss	***20.4***	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #1 33.5-35	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.6	0.1	0.1	100	80-100	
#16	0.046	9.9	2.1	2.2	***98***	45-95	
#30	0.0232	107.4	21.9	24.2	***76***	25-75	
#50	0.0116	351.0	54.8	78.9	21	8-30	
#100	0.0058	426.8	17.0	96.0	4	5-10	
#200	0.0029	434.7	1.8	97.77	2.23	0-3	
Pan		434.9	0.0	97.8	2.18		
Wash Loss		5.0	1.1				
Total			99				

Wet Weight	444.6		
Weight Before Wash	444.6	Lab Number	Bore #1 33.5-35
Weight After Wash	434.9	Fineness Modulus	2.01
Wash Loss	9.7	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #1 38.5-40	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.1	0.1	0.1	100	95-100	
#8	0.093	0.3	0.1	0.2	100	80-100	
#16	0.046	3.4	1.9	2.0	***98***	45-95	
#30	0.0232	67.8	38.5	40.5	59	25-75	
#50	0.0116	143.6	45.3	85.8	14	8-30	
#100	0.0058	158.7	9.0	94.9	5	.5-10	
#200	0.0029	160.3	1.0	95.82	***4.18***	0-3	
Pan		160.4	0.1	95.9	4.12		
Wash Loss		5.0	3.0				
Total			99				

Wet Weight	167.3		
Weight Before Wash	167.3	Lab Number	Bore #1 38.5-40
Weight After Wash	160.6	Fineness Modulus	2.23
Wash Loss	6.7	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #1 43.5-45	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	7.6	1.6	1.6	98	95-100	
#8	0.093	22.5	3.1	4.7	95	80-100	
#16	0.046	34.8	2.6	7.2	93	45-95	
#30	0.0232	59.5	5.1	12.4	***88***	25-75	
#50	0.0116	253.0	40.2	52.6	***47***	8-30	
#100	0.0058	427.9	36.3	88.9	***11***	5-10	
#200	0.0029	448.9	4.4	93.27	***6.73***	0-3	
Pan		454.0	1.1	94.3	5.67		
Wash Loss		5.0	1.0				
Total			95				

Wet Weight	481.3		
Weight Before Wash	481.3	Lab Number	Bore #1 43.5-45
Weight After Wash	454.0	Fineness Modulus	1.67
Wash Loss	***27.3***	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #1 53.5-55	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.2	0.0	0.0	100	80-100	
#16	0.046	1.0	0.2	0.2	***100***	45-95	
#30	0.0232	3.6	0.6	0.8	***99***	25-75	
#50	0.0116	7.8	1.0	1.8	***98***	8-30	
#100	0.0058	122.0	26.4	28.3	***72***	.5-10	
#200	0.0029	158.8	8.5	36.78	***63.22***	0-3	
Pan		160.5	0.4	37.2	62.83		
Wash Loss		5.0	1.2				
Total			38				

Wet Weight	431.8		
Weight Before Wash	431.8	Lab Number	Bore #1 53.5-55
Weight After Wash	160.5	Fineness Modulus	0.31
Wash Loss	***271.3***	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 2 / 68.5-70

Date 01/12/12

Material Sand

Project

Sampled From

Time

Sampled By

Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	3.8	0.8	0.8	*99*	45-95	
#30	0.0232	82.6	15.6	16.4	*84*	25-75	
#50	0.0116	311.2	45.3	61.7	*38*	8-30	
#100	0.0058	472.9	32.1	93.8	6	.5-10	
#200	0.0029	484.8	2.4	96.13	*3.87*	0-3	
Pan		487.9	0.6	96.7	3.25		
Wash Loss		0.0	0.0				
Total			97				

Wet Weight 504.3

Weight Before Wash 504.3

Lab Number Boring 2 / 68.5-70

Weight After Wash 487.3

Fineness Modulus 1.73

Wash Loss *17.0*

Specific Gravity 2.64

Total Moisture 0.0%

Free Moisture -0.4%

Absorbtion 0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 3 / 3.5-5 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	2.0	0.5	0.5	***99***	45-95	
#30	0.0232	91.9	22.9	23.4	***77***	25-75	
#50	0.0116	303.8	54.0	77.4	23	8-30	
#100	0.0058	383.2	20.2	97.6	2	.5-10	
#200	0.0029	384.7	0.4	97.96	2.04	0-3	
Pan		384.9	0.1	98.0	1.99		
Wash Loss		0.0	0.0				
Total			98				

Wet Weight 392.7

Weight Before Wash 392.7 Lab Number Boring 3 / 3.5-5

Weight After Wash 384.9 Fineness Modulus 1.99

Wash Loss 7.8

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 3 / 8.5-10 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	0.3	0.1	0.1	***100***	45-95	
#30	0.0232	35.5	7.8	7.9	***92***	25-75	
#50	0.0116	319.8	63.0	70.9	29	8-30	
#100	0.0058	442.9	27.3	98.2	2	.5-10	
#200	0.0029	444.7	0.4	98.60	1.40	0-3	
Pan		444.8	0.0	98.6	1.37		
Wash Loss		0.0	0.0				
Total			99				

Wet Weight 451

Weight Before Wash 451.0 Lab Number Boring 3 / 8.5-10

Weight After Wash 444.8 Fineness Modulus 1.77

Wash Loss 6.2

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Boring 3 / 13.5-15	Date	01/12/12
Material	Sand	Project	
Sampled From		Time	
Sampled By		Tested By	

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	1.0	0.3	0.3	***100***	45-95	
#30	0.0232	31.1	8.4	8.7	***91***	25-75	
#50	0.0116	176.7	40.6	49.2	***51***	8-30	
#100	0.0058	320.4	40.0	89.3	***11***	.5-10	
#200	0.0029	336.0	4.3	93.62	***6.38***	0-3	
Pan		336.2	0.1	93.7	6.32		
Wash Loss		0.0	0.0				
Total			94				

Wet Weight	358.9		
Weight Before Wash	358.9	Lab Number	Boring 3 / 13.5-15
Weight After Wash	336.2	Fineness Modulus	1.47
Wash Loss	***22.7***		
		Specific Gravity	2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 3 / 18.5-20 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	0.3	0.1	0.1	***100***	45-95	
#30	0.0232	26.8	7.8	7.9	***92***	25-75	
#50	0.0116	218.0	56.5	64.4	***36***	8-30	
#100	0.0058	318.4	29.6	94.0	6	.5-10	
#200	0.0029	325.0	1.9	95.96	***4.04***	0-3	
Pan		325.0	0.0	96.0	4.04		
Wash Loss		0.0	0.0				
Total			96				

Wet Weight 338.7

Weight Before Wash 338.7 Lab Number Boring 3 / 18.5-20

Weight After Wash 325.0 Fineness Modulus 1.66

Wash Loss ***13.7***

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 3 / 23.5-25 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	0.5	0.3	0.3	***100***	45-95	
#30	0.0232	29.1	15.8	16.0	***84***	25-75	
#50	0.0116	135.4	58.6	74.6	25	8-30	
#100	0.0058	175.0	21.8	96.5	4	.5-10	
#200	0.0029	177.4	1.3	97.79	2.21	0-3	
Pan		177.6	0.1	97.9	2.09		
Wash Loss		0.0	0.0				
Total			98				

Wet Weight 181.4

Weight Before Wash 181.4 Lab Number Boring 3 / 23.5-25

Weight After Wash 177.6 Fineness Modulus 1.87

Wash Loss 3.8

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Boring 3 / 33.5-35	Date	01/12/12
Material	Sand	Project	
Sampled From		Time	
Sampled By		Tested By	

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	2.2	1.5	1.5	99	80-100	
#16	0.046	11.9	6.4	7.8	92	45-95	
#30	0.0232	41.5	19.5	27.4	73	25-75	
#50	0.0116	91.9	33.2	60.6	***39***	8-30	
#100	0.0058	141.3	32.6	93.2	7	.5-10	
#200	0.0029	146.1	3.2	96.37	***3.63***	0-3	
Pan		146.1	0.0	96.4	3.63		
Wash Loss		0.0	0.0				
Total			96				

Wet Weight	151.6		
Weight Before Wash	151.6	Lab Number	Boring 3 / 33.5-35
Weight After Wash	146.1	Fineness Modulus	1.91
Wash Loss	5.5		
		Specific Gravity	2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #413.5-15	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	0.6	0.2	0.2	***100***	45-95	
#30	0.0232	22.3	6.8	6.9	***93***	25-75	
#50	0.0116	175.9	47.9	54.8	***45***	8-30	
#100	0.0058	294.7	37.0	91.8	8	.5-10	
#200	0.0029	302.1	2.3	94.11	***5.89***	0-3	
Pan		302.4	0.1	94.2	5.79		
Wash Loss		5.0	1.6				
Total			96				

Wet Weight	321		
Weight Before Wash	321.0	Lab Number	Bore #413.5-15
Weight After Wash	302.4	Fineness Modulus	1.54
Wash Loss	***18.6***	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

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Lab No.	Bore #4 3.5-5	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	2.0	0.6	0.6	***99***	45-95	
#30	0.0232	57.3	17.4	18.0	***82***	25-75	
#50	0.0116	220.9	51.5	69.5	***31***	8-30	
#100	0.0058	301.4	25.3	94.8	5	.5-10	
#200	0.0029	304.6	1.0	95.82	***4.18***	0-3	
Pan		304.7	0.0	95.8	4.15		
Wash Loss		5.0	1.6				
Total			97				

Wet Weight	317.9		
Weight Before Wash	317.9	Lab Number	Bore #4 3.5-5
Weight After Wash	304.8	Fineness Modulus	1.83
Wash Loss	***13.1***	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #4 23.5-25	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	1.6	0.5	0.5	100	95-100	
#8	0.093	12.3	3.1	3.6	96	80-100	
#16	0.046	66.4	15.9	19.5	80	45-95	
#30	0.0232	205.3	40.8	60.3	40	25-75	
#50	0.0116	305.8	29.5	89.9	10	8-30	
#100	0.0058	331.0	7.4	97.3	3	.5-10	
#200	0.0029	334.3	1.0	98.24	1.76	0-3	
Pan		334.5	0.1	98.3	1.70		
Wash Loss		5.0	1.5				
Total			100				

Wet Weight	340.3		
Weight Before Wash	340.3	Lab Number	Bore #423.5-25
Weight After Wash	353.9	Fineness Modulus	2.71
Wash Loss	-13.6	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #4 33.5-35	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	1.3	0.3	0.3	***100***	45-95	
#30	0.0232	52.2	13.5	13.9	***86***	25-75	
#50	0.0116	241.0	50.2	64.1	***36***	8-30	
#100	0.0058	348.2	28.5	92.7	7	.5-10	
#200	0.0029	352.6	1.2	93.83	***6.17***	0-3	
Pan		353.4	0.2	94.0	5.96		
Wash Loss		5.0	1.3				
Total			95				

Wet Weight	375.8		
Weight Before Wash	375.8	Lab Number	Bore #4 33.5-35
Weight After Wash	353.9	Fineness Modulus	1.71
Wash Loss	***21.9***	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #4 43.5-45	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	2.0	0.8	0.8	99	95-100	
#8	0.093	9.9	3.1	3.9	96	80-100	
#16	0.046	47.7	15.0	18.9	81	45-95	
#30	0.0232	135.1	34.7	53.6	46	25-75	
#50	0.0116	210.5	29.9	83.5	16	8-30	
#100	0.0058	244.0	13.3	96.8	3	.5-10	
#200	0.0029	247.5	1.4	98.21	1.79	0-3	
Pan		247.6	0.0	98.3	1.75		
Wash Loss		5.0	2.0				
Total			100				

Wet Weight	252		
Weight Before Wash	252.0	Lab Number	Bore #4 43.5-45
Weight After Wash	247.6	Fineness Modulus	2.58
Wash Loss	4.4	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #4 53.5-55	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.1	0.0	0.0	100	80-100	
#16	0.046	0.7	0.2	0.3	***100***	45-95	
#30	0.0232	1.9	0.5	0.8	***99***	25-75	
#50	0.0116	4.4	1.0	1.7	***98***	8-30	
#100	0.0058	133.2	50.9	52.7	***47***	.5-10	
#200	0.0029	183.8	20.0	72.71	***27.29***	0-3	
Pan		183.9	0.0	72.7	27.25		
Wash Loss		5.0	2.0				
Total			75				

Wet Weight	252.8		
Weight Before Wash	252.8	Lab Number	Bore #4 53.5-55
Weight After Wash	183.9	Fineness Modulus	0.55
Wash Loss	***68.9***	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Bore #4 73.5-75	Date	12/29/11
Material	2S	Project	Preliminary
Sampled From	NEW INVISTA	Time	
Sampled By	Butch	Tested By	Robert

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	3.4	1.1	1.1	99	95-100	
#8	0.093	5.9	0.8	1.9	98	80-100	
#16	0.046	8.0	0.7	2.6	***97***	45-95	
#30	0.0232	10.3	0.7	3.3	***97***	25-75	
#50	0.0116	12.8	0.8	4.1	***96***	8-30	
#100	0.0058	93.1	26.0	30.1	***70***	.5-10	
#200	0.0029	152.1	19.1	49.16	***50.84***	0-3	
Pan		153.1	0.3	49.5	50.52		
Wash Loss		5.0	1.6				
Total			51				

Wet Weight	309.4		
Weight Before Wash	309.4	Lab Number	Bore #4 73.5-75
Weight After Wash	153.5	Fineness Modulus	0.43
Wash Loss	***155.9***	Specific Gravity	2.64
Total Moisture	0.0%		
Free Moisture	-0.4%	Absorbtion	0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 6/ 3.5-5 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	0.9	0.2	0.2	*100*	45-95	
#30	0.0232	40.6	10.9	11.2	*89*	25-75	
#50	0.0116	154.7	31.4	42.6	*57*	8-30	
#100	0.0058	238.1	23.0	65.5	*34*	.5-10	
#200	0.0029	246.7	2.4	67.91	*32.09*	0-3	
Pan		247.0	0.1	68.0	32.01		
Wash Loss		0.0	0.0				
Total			68				

Wet Weight 363.3

Weight Before Wash 363.3 Lab Number Boring 6/ 3.5-5

Weight After Wash 247.0 Fineness Modulus 1.20

Wash Loss *116.3*

Specific Gravity 2.64

Total Moisture 0.0%

Free Moisture -0.4% Absorbtion 0.4%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 6/ 8.5-10 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	1.0	0.3	0.3	*100*	45-95	
#30	0.0232	63.4	19.4	19.7	*80*	25-75	
#50	0.0116	224.1	49.9	69.5	30	8-30	
#100	0.0058	314.2	28.0	97.5	3	.5-10	
#200	0.0029	318.3	1.3	98.76	1.24	0-3	
Pan		318.4	0.0	98.8	1.21		
Wash Loss		0.0	0.0				
Total			99				

Wet Weight 322.3

Weight Before Wash 322.3 Lab Number Boring 6/ 8.5-10

Weight After Wash 318.5 Fineness Modulus 1.87

Wash Loss 3.8

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Boring 6/ 13.5-15	Date	01/12/12
Material	Sand	Project	
Sampled From		Time	
Sampled By		Tested By	

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	1.1	0.3	0.3	*100*	45-95	
#30	0.0232	59.9	14.3	14.6	*85*	25-75	
#50	0.0116	277.2	53.0	67.6	*32*	8-30	
#100	0.0058	388.0	27.0	94.6	5	.5-10	
#200	0.0029	400.0	2.9	97.56	2.44	0-3	
Pan		400.3	0.1	97.6	2.37		
Wash Loss		0.0	0.0				
Total			98				

Wet Weight	410		
Weight Before Wash	410.0	Lab Number	Boring 6/ 13.5-15
Weight After Wash	400.3	Fineness Modulus	1.77
Wash Loss	9.7		
		Specific Gravity	2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 6/ 18.5-20 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	3.8	1.2	1.2	*99*	45-95	
#30	0.0232	37.4	10.3	11.5	*88*	25-75	
#50	0.0116	188.6	46.5	58.0	*42*	8-30	
#100	0.0058	312.5	38.1	96.2	4	.5-10	
#200	0.0029	320.5	2.5	98.65	1.35	0-3	
Pan		320.5	0.0	98.6	1.35		
Wash Loss		0.0	0.0				
Total			99				

Wet Weight 324.9

Weight Before Wash 324.9

Lab Number Boring 6/ 18.5-20

Weight After Wash 320.5

Fineness Modulus 1.67

Wash Loss 4.4

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 6/ 23.5-25

Date 01/12/12

Material Sand

Project

Sampled From

Time

Sampled By

Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	2.9	1.1	1.1	*99*	45-95	
#30	0.0232	52.8	19.0	20.2	*80*	25-75	
#50	0.0116	161.4	41.5	61.6	*38*	8-30	
#100	0.0058	246.6	32.5	94.1	6	.5-10	
#200	0.0029	253.9	2.8	96.91	3.09	0-3	
Pan		253.9	0.0	96.9	3.09		
Wash Loss		0.0	0.0				
Total			97				

Wet Weight 262

Weight Before Wash 262.0

Lab Number Boring 6/ 23.5-25

Weight After Wash 253.9

Fineness Modulus 1.77

Wash Loss 8.1

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 6/ 28.5-30 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	1.7	0.6	0.6	*99*	45-95	
#30	0.0232	39.5	14.1	14.7	*85*	25-75	
#50	0.0116	185.0	54.1	68.9	*31*	8-30	
#100	0.0058	256.1	26.5	95.3	5	.5-10	
#200	0.0029	259.1	1.1	96.43	*3.57*	0-3	
Pan		259.1	0.0	96.4	3.57		
Wash Loss		0.0	0.0				
Total			96				

Wet Weight 268.7

Weight Before Wash 268.7 Lab Number Boring 6/ 28.5-30

Weight After Wash 259.1 Fineness Modulus 1.79

Wash Loss 9.6

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 6/ 33.5-35 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	5.2	1.8	1.8	98	80-100	
#16	0.046	32.4	9.3	11.1	89	45-95	
#30	0.0232	92.4	20.5	31.6	68	25-75	
#50	0.0116	184.9	31.6	63.2	*37*	8-30	
#100	0.0058	267.5	28.2	91.5	9	.5-10	
#200	0.0029	273.4	2.0	93.47	*6.53*	0-3	
Pan		273.7	0.1	93.6	6.43		
Wash Loss		0.0	0.0				
Total			94				

Wet Weight 292.5

Weight Before Wash 292.5 Lab Number Boring 6/ 33.5-35

Weight After Wash 274.0 Fineness Modulus 1.99

Wash Loss *18.5*

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 6/ 38.5-40

Date 01/12/12

Material Sand

Project

Sampled From

Time

Sampled By

Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	2.1	0.8	0.8	99	80-100	
#16	0.046	13.9	4.3	5.1	95	45-95	
#30	0.0232	63.9	18.4	23.5	*76*	25-75	
#50	0.0116	172.5	40.0	63.5	*36*	8-30	
#100	0.0058	256.7	31.0	94.5	5	.5-10	
#200	0.0029	263.4	2.5	97.02	2.98	0-3	
Pan		263.5	0.0	97.1	2.95		
Wash Loss		0.0	0.0				
Total			97				

Wet Weight 271.5

Weight Before Wash 271.5

Lab Number Boring 6/ 38.5-40

Weight After Wash 263.5

Fineness Modulus 1.88

Wash Loss 8.0

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 6/ 43.5-45 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	1.2	0.4	0.4	100	95-100	
#8	0.093	2.0	0.3	0.7	99	80-100	
#16	0.046	5.9	1.4	2.1	*98*	45-95	
#30	0.0232	36.8	10.9	13.0	*87*	25-75	
#50	0.0116	92.1	19.6	32.6	*67*	8-30	
#100	0.0058	220.9	45.6	78.3	*22*	.5-10	
#200	0.0029	267.6	16.5	94.83	*5.17*	0-3	
Pan		269.2	0.6	95.4	4.61		
Wash Loss		0.0	0.0				
Total			95				

Wet Weight 282.2

Weight Before Wash 282.2 Lab Number Boring 6/ 43.5-45

Weight After Wash 270.0 Fineness Modulus 1.27

Wash Loss *12.2*

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 6/ 48.5-50 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.8	0.3	0.3	100	80-100	
#16	0.046	2.0	0.5	0.8	*99*	45-95	
#30	0.0232	19.3	7.0	7.8	*92*	25-75	
#50	0.0116	109.8	36.4	44.1	*56*	8-30	
#100	0.0058	195.9	34.6	78.8	*21*	.5-10	
#200	0.0029	215.6	7.9	86.69	*13.31*	0-3	
Pan		217.1	0.6	87.3	12.71		
Wash Loss		0.0	0.0				
Total			87				

Wet Weight 248.7

Weight Before Wash 248.7 Lab Number Boring 6/ 48.5-50

Weight After Wash 217.1 Fineness Modulus 1.32

Wash Loss *31.6*

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Boring 6/ 53.5-55	Date	1/12/2012
Material	Sand	Project	
Sampled From		Time	
Sampled By		Tested By	

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0	0	0	100	100	
#4	0.185	0	0	0	100	95-100	
#8	0.093	0	0	0	100	80-100	
#16	0.046	0.5	0.2	0.2	100	45-95	
#30	0.0232	9.7	3.5	3.7	96	25-75	
#50	0.0116	153.7	55.3	59.1	41	30-Aug	
#100	0.0058	240.2	33.2	92.3	8	.5-10	
#200	0.0029	250.5	4	96.27	3.73	0-3	
Pan		250.5	0	96.3	3.73		
Wash Loss		0	0				
Total			96				

Wet Weight	260.2		
Weight Before Wash	260.2	Lab Number	Boring 6/ 53.5-55
Weight After Wash	250.5	Fineness Modulus	1.55
Wash Loss	9.7		
		Specific Gravity	2.64
Total Moisture	0.00%		
Free Moisture	-0.40%	Absorbtion	0.40%

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 6/ 58.5-60 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	1.0	0.4	0.4	*100*	45-95	
#30	0.0232	40.2	14.3	14.6	*85*	25-75	
#50	0.0116	200.2	58.3	72.9	27	8-30	
#100	0.0058	254.1	19.6	92.6	7	.5-10	
#200	0.0029	262.8	3.2	95.74	*4.26*	0-3	
Pan		26.0	-86.3	9.5	90.53		
Wash Loss		0.0	0.0				
Total			9				

Wet Weight 274.5

Weight Before Wash 274.5 Lab Number Boring 6/ 58.5-60

Weight After Wash 263.0 Fineness Modulus 1.81

Wash Loss *11.5*

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No.	Boring 7 / 3.5-5	Date	01/12/12
Material	Sand	Project	
Sampled From		Time	
Sampled By		Tested By	

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.0	0.0	0.0	100	80-100	
#16	0.046	1.1	0.4	0.4	*100*	45-95	
#30	0.0232	55.6	18.6	19.0	*81*	25-75	
#50	0.0116	211.9	53.3	72.3	28	8-30	
#100	0.0058	273.9	21.2	93.4	7	.5-10	
#200	0.0029	276.1	0.8	94.20	*5.80*	0-3	
Pan		276.2	0.0	94.2	5.77		
Wash Loss		0.0	0.0				
Total			94				

Wet Weight	293.1		
Weight Before Wash	293.1	Lab Number	Boring 7 / 3.5-5
Weight After Wash	276.2	Fineness Modulus	1.85
Wash Loss	*16.9*		
		Specific Gravity	2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 7 / 13.5-15 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.4	0.1	0.1	100	80-100	
#16	0.046	19.6	5.7	5.9	94	45-95	
#30	0.0232	88.4	20.6	26.5	74	25-75	
#50	0.0116	172.4	25.1	51.6	*48*	8-30	
#100	0.0058	299.8	38.1	89.8	10	.5-10	
#200	0.0029	307.4	2.3	92.04	*7.96*	0-3	
Pan		307.4	0.0	92.0	7.96		
Wash Loss		0.0	0.0				
Total			92				

Wet Weight 334

Weight Before Wash 334.0 Lab Number Boring 7 / 13.5-15

Weight After Wash 307.4 Fineness Modulus 1.74

Wash Loss *26.6*

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 7 / 23.5-25 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	1.7	0.6	0.6	99	80-100	
#16	0.046	11.0	3.2	3.8	*96*	45-95	
#30	0.0232	68.4	19.9	23.7	*76*	25-75	
#50	0.0116	193.2	43.2	66.8	*33*	8-30	
#100	0.0058	270.9	26.9	93.7	6	.5-10	
#200	0.0029	278.1	2.5	96.20	*3.80*	0-3	
Pan		278.4	0.1	96.3	3.70		
Wash Loss		0.0	0.0				
Total			96				

Wet Weight 289.1

Weight Before Wash 289.1 Lab Number Boring 7 / 23.5-25

Weight After Wash 278.4 Fineness Modulus 1.89

Wash Loss *10.7*

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 7 / 28.5-30 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	2.3	0.6	0.6	99	80-100	
#16	0.046	24.4	5.8	6.4	94	45-95	
#30	0.0232	148.5	32.5	38.9	61	25-75	
#50	0.0116	306.2	41.3	80.1	20	8-30	
#100	0.0058	371.6	17.1	97.3	3	.5-10	
#200	0.0029	374.2	0.7	97.93	2.07	0-3	
Pan		374.4	0.1	98.0	2.02		
Wash Loss		0.0	0.0				
Total			98				

Wet Weight 382.1

Weight Before Wash 382.1

Lab Number Boring 7 / 28.5-30

Weight After Wash 374.4

Fineness Modulus 2.23

Wash Loss 7.7

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 7 / 33.5-35 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	2.8	0.8	0.8	99	95-100	
#8	0.093	3.7	0.3	1.1	99	80-100	
#16	0.046	9.2	1.6	2.7	*97*	45-95	
#30	0.0232	56.7	14.0	16.7	*83*	25-75	
#50	0.0116	99.6	12.6	29.4	*71*	8-30	
#100	0.0058	273.4	51.2	80.6	*19*	.5-10	
#200	0.0029	322.0	14.3	94.93	*5.07*	0-3	
Pan		322.1	0.0	95.0	5.04		
Wash Loss		0.0	0.0				
Total			95				

Wet Weight 339.2

Weight Before Wash 339.2

Lab Number Boring 7 / 33.5-35

Weight After Wash 322.1

Fineness Modulus 1.31

Wash Loss *17.1*

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 7 / 43.5-45 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	0.0	0.0	0.0	100	95-100	
#8	0.093	0.5	0.2	0.2	100	80-100	
#16	0.046	16.8	5.9	6.1	94	45-95	
#30	0.0232	156.5	50.5	56.5	43	25-75	
#50	0.0116	254.5	35.4	91.9	8	8-30	
#100	0.0058	264.8	3.7	95.6	4	.5-10	
#200	0.0029	267.5	1.0	96.61	3.39	0-3	
Pan		267.6	0.0	96.6	3.36		
Wash Loss		0.0	0.0				
Total			97				

Wet Weight 276.9

Weight Before Wash 276.9 Lab Number Boring 7 / 43.5-45

Weight After Wash 267.6 Fineness Modulus 2.50

Wash Loss 9.3

Specific Gravity 2.64

S. T. Wooten Corporation

Seive Analysis
AASHTO T-27
ASTM C 33

Lab No. Boring 7 / 48.5-50 Date 01/12/12

Material Sand Project

Sampled From Time

Sampled By Tested By

Screen Size		Weight Retained	Percent Retained	Accum % Ret	Percent Pass	Spec. Limits	Remarks
3/8 inch	0.371	0.0	0.0	0.0	100	100	
#4	0.185	1.4	0.3	0.3	100	95-100	
#8	0.093	7.5	1.4	1.7	98	80-100	
#16	0.046	36.3	6.4	8.1	92	45-95	
#30	0.0232	134.1	21.8	29.8	70	25-75	
#50	0.0116	299.6	36.8	66.6	*33*	8-30	
#100	0.0058	413.3	25.3	91.9	8	.5-10	
#200	0.0029	424.1	2.4	94.33	*5.67*	0-3	
Pan		424.3	0.0	94.4	5.63		
Wash Loss		0.0	0.0				
Total			94				

Wet Weight 449.6

Weight Before Wash 449.6 Lab Number Boring 7 / 48.5-50

Weight After Wash 424.3 Fineness Modulus 1.98

Wash Loss *25.3*

Specific Gravity 2.64

June 6, 2007

S.T. Wooten Corporation
Post Office Box 2408
Wilson, North Carolina 27894

Attention: Mr. Chris Croom

Reference: **Soil Test Boring Logs and Laboratory Testing Results**
Proposed Sand Borrow Pit
Sutton Lake Road
Wilmington, North Carolina
S&ME Project No. 1061-07-123

Dear Mr. Croom:

In accordance with S&ME Proposal 163-07 dated May 10, 2007, S&ME, Inc. has completed the authorized field work and laboratory testing. As requested, two soil test borings were advanced to depths of approximately 100 feet below the existing ground surface in the proposed borrow pit area. Also, fifteen grain size analysis tests were performed on select recovered soil samples.

The soil test borings were advanced using wash boring drilling procedures with a CME-45 drill rig. Initially, the borings were washed to depths of approximately 28.5 feet below the existing ground surface. At that depth, samples were taken at 5-foot intervals using a split-spoon sampler to boring termination. Standard penetration testing was performed in conjunction with split-spoon sampling in general accordance with ASTM D 1586. At completion of the drilling operations, representative portions of the split-spoon samples were returned to our laboratory for visual classification and laboratory testing. The samples were classified in general accordance with Unified Soil Classification System guidelines. Laboratory testing consisted of grain size analysis in general accordance with the ASTM D 422.

A Boring Location Plan, which is included as Figure 1, indicates the boring locations which should be considered approximate. Test Boring Records, a Generalized Subsurface Profile (Figure 2), and laboratory test data presenting the subsurface information obtained are also included with this letter.

We appreciate having the opportunity to provide our services during this phase of the project. If you have any questions after reviewing this letter, please do not hesitate to contact us.

Sincerely,

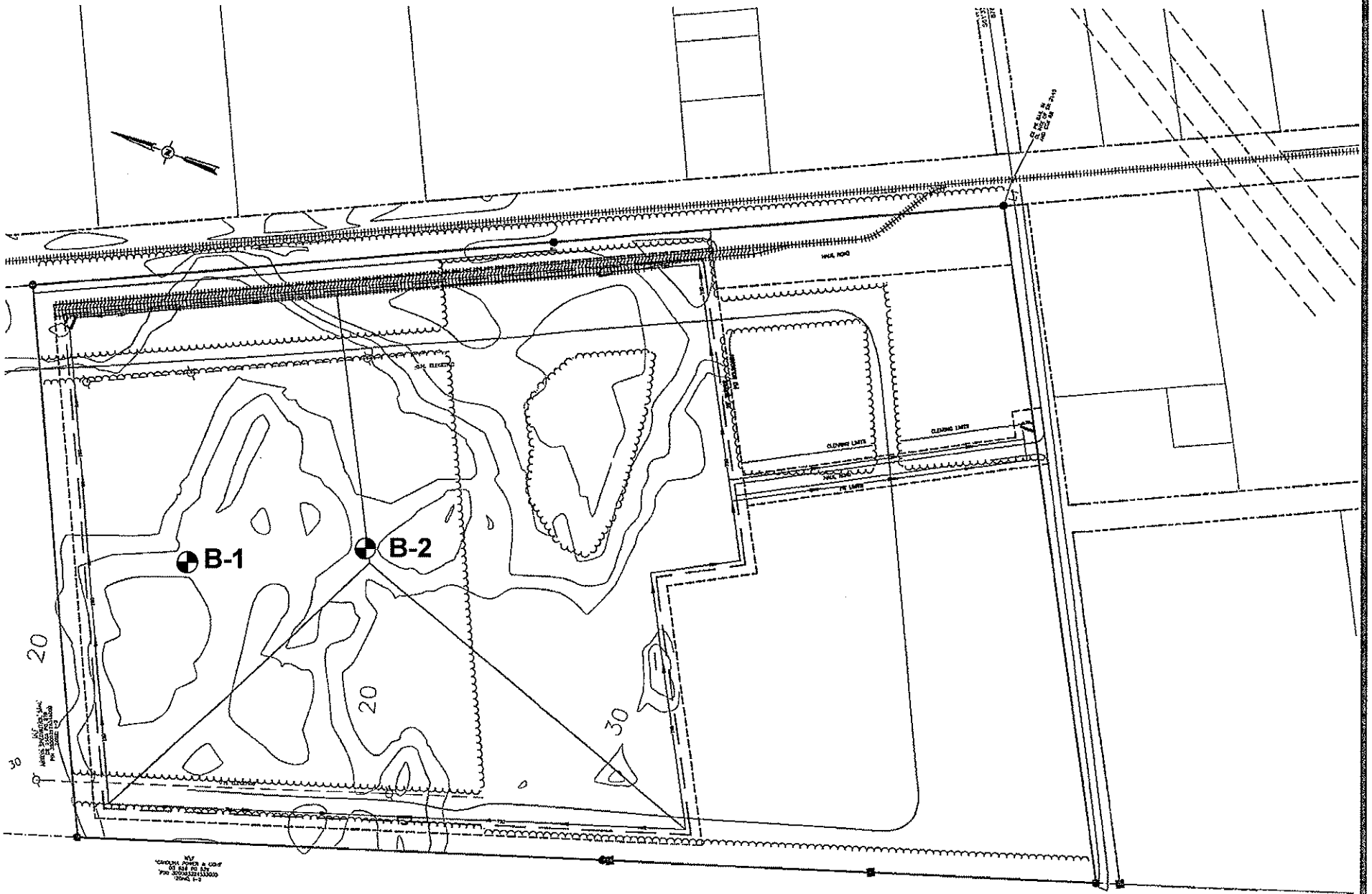
S&ME, Inc.

Philip Byrd, E.I.
Geotechnical Department Manager

Nathan Buffum
Construction Services Manager

PMB:NPB/jns

Attachments



Note: Site plan drawing provided to S&ME by S.T. Wooten Corporation personnel.

LEGEND

⊕ Approximate Boring Location

SCALE:	NOT TO SCALE
CHECKED BY:	PMB
DRAWN BY:	JNS
DATE:	6-6-07

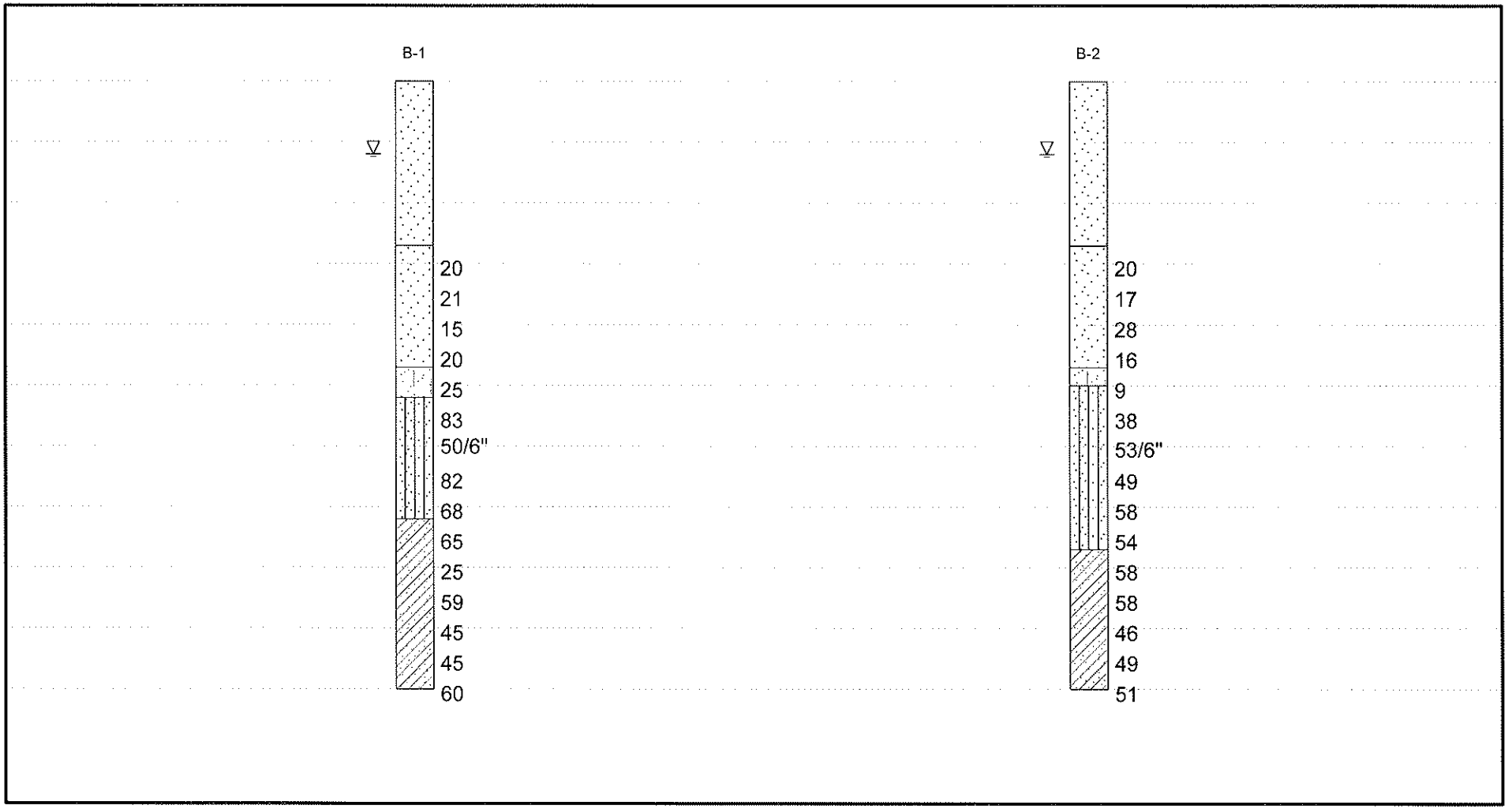
S&ME

BORING LOCATION PLAN
PROPOSED BORROW PIT
SUTTON LAKE ROAD
WILMINGTON, NORTH CAROLINA

S&ME PROJECT NUMBER: 1061-07-123

FIGURE NUMBER 1

GENERALIZED SUBSURFACE CONDITIONS



Poorly-graded Sand

SP/SM, Poorly-graded Sand with Silt

SM, Silty Sand

SC, Clayey Sand

N = Standard Penetration Test resistance value (blows per foot). The depicted stratigraphy is shown for illustrative purposes only. The actual subsurface conditions will vary between boring locations.

SCALE:	(V) 1" = 25'
CHECKED BY:	S. Dowell
DATE:	6/6/2007
JOB NO:	1061-07-123

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Wilmington, NC 28405
(910) 799-9945
(910) 799-9958 fax
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GENERALIZED SUBSURFACE CONDITIONS

Sutton Lake Borrow Pit

Wilmington, North Carolina

FIGURE NO. **2**

PROJECT: **Sutton Lake Borrow Pit**
Wilmington, North Carolina
1061-07-123

TEST BORING RECORD **B-1**

DATE DRILLED: **5/16/07**	ELEVATION: **Ground Surface**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **100.0 ft**
LOGGED BY: **S. Dowell**	WATER LEVEL: **12' @ TOB**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location is approximate. Water was noted at the time borings were performed. The site water level will fluctuate with climatic and seasonal changes and might be higher or lower at other times of the year.**

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet-MSL)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
0		**SAND**					
5							
10			▽				
15							
20							
25							
30		Medium Dense Light Gray Medium to Fine **SAND** (SP)		1			20
35				2			21
40				3			15
45				4			20
50		Medium Dense Dark Gray Slightly Silty Fine **SAND** (SP-SM)		5			25
55		Very Dense Dark Gray Silty Fine **SAND** (SM)		6			83
				7			50/6"

S&ME COMPANY STANDARD 07-123.GPJ S&ME.GDT 6/6/07

NOTES:

1. *THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.*
2. *BORING, SAMPLING AND PENETRATION TEST DATA IS IN GENERAL ACCORDANCE WITH ASTM D-1586.*
3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT: **Sutton Lake Borrow Pit**
Wilmington, North Carolina
1061-07-123

TEST BORING RECORD B-1

DATE DRILLED: **5/16/07**	ELEVATION: **Ground Surface**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **100.0 ft**
LOGGED BY: **S. Dowell**	WATER LEVEL: **12' @ TOB**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location is approximate. Water was noted at the time borings were performed. The site water level will fluctuate with climatic and seasonal changes and might be higher or lower at other times of the year.**

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet-MSL)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
65		See soil description on previous page.		8			82
70				9			68
75		Medium Dense to Very Dense Dark Gray Clayey Fine **SAND** (SC)		10			65
80				11			25
85				12			59
90				13			45
95				14			45
100		Boring terminated 100 feet below the existing ground surface.		15			60
105							
110							
115							

S&ME COMPANY STANDARD 07-123.GPJ S&ME.GDT 6/6/07

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4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT: **Sutton Lake Borrow Pit**
Wilmington, North Carolina
1061-07-123

TEST BORING RECORD **B-2**

DATE DRILLED: **5/17/07**	ELEVATION: **Ground Surface**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **100.0 ft**
LOGGED BY: **S. Dowell**	WATER LEVEL: **12' @ TOB**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location is approximate. Water was noted at the time borings were performed. The site water level will fluctuate with climatic and seasonal changes and might be higher or lower at other times of the year.**

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet-MSL)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
0		**SAND**					
5							
10			▽				
15							
20							
25							
30		Medium Dense Light Gray Medium to Fine **SAND** (SP)		1			20
35				2			17
40				3			28
45				4			16
50		Loose Gray Slightly Silty Coarse to Fine **SAND** (SP-SM)		5			9
55		Dense to Very Dense Dark Gray Silty Fine **SAND** (SM)		6			38
				7			53/

S&ME COMPANY STANDARD 07-123.GPJ S&ME.GDT 6/6/07

NOTES:

1. *THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.*
2. *BORING, SAMPLING AND PENETRATION TEST DATA IS IN GENERAL ACCORDANCE WITH ASTM D-1586.*
3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT:	Sutton Lake Borrow Pit Wilmington, North Carolina 1061-07-123	TEST BORING RECORD	B-2
DATE DRILLED:	5/17/07	ELEVATION:	Ground Surface
DRILLING METHOD:	Wash Boring	BORING DEPTH:	100.0 ft
LOGGED BY:	S. Dowell	WATER LEVEL:	12' @ TOB
DRILLER:	G. Eister	DRILL RIG:	CME-45

NOTES: **Boring location is approximate. Water was noted at the time borings were performed. The site water level will fluctuate with climatic and seasonal changes and might be higher or lower at other times of the year.**

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet-MSL)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
65		See soil description on previous page.		8		6"	49
70				9			58
75				10			54
80		Dense to Very Dense Dark Gray Clayey Fine **SAND** (SC)		11			58
85				12			58
90				13			46
95				14			49
100		Boring terminated 100 feet below the existing ground surface.		15			51
105							
110							
115							

S&ME COMPANY STANDARD 07-123.GPJ S&ME.GDT 6/6/07

NOTES:

1. *THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.*
2. *BORING, SAMPLING AND PENETRATION TEST DATA IS IN GENERAL ACCORDANCE WITH ASTM D-1586.*
3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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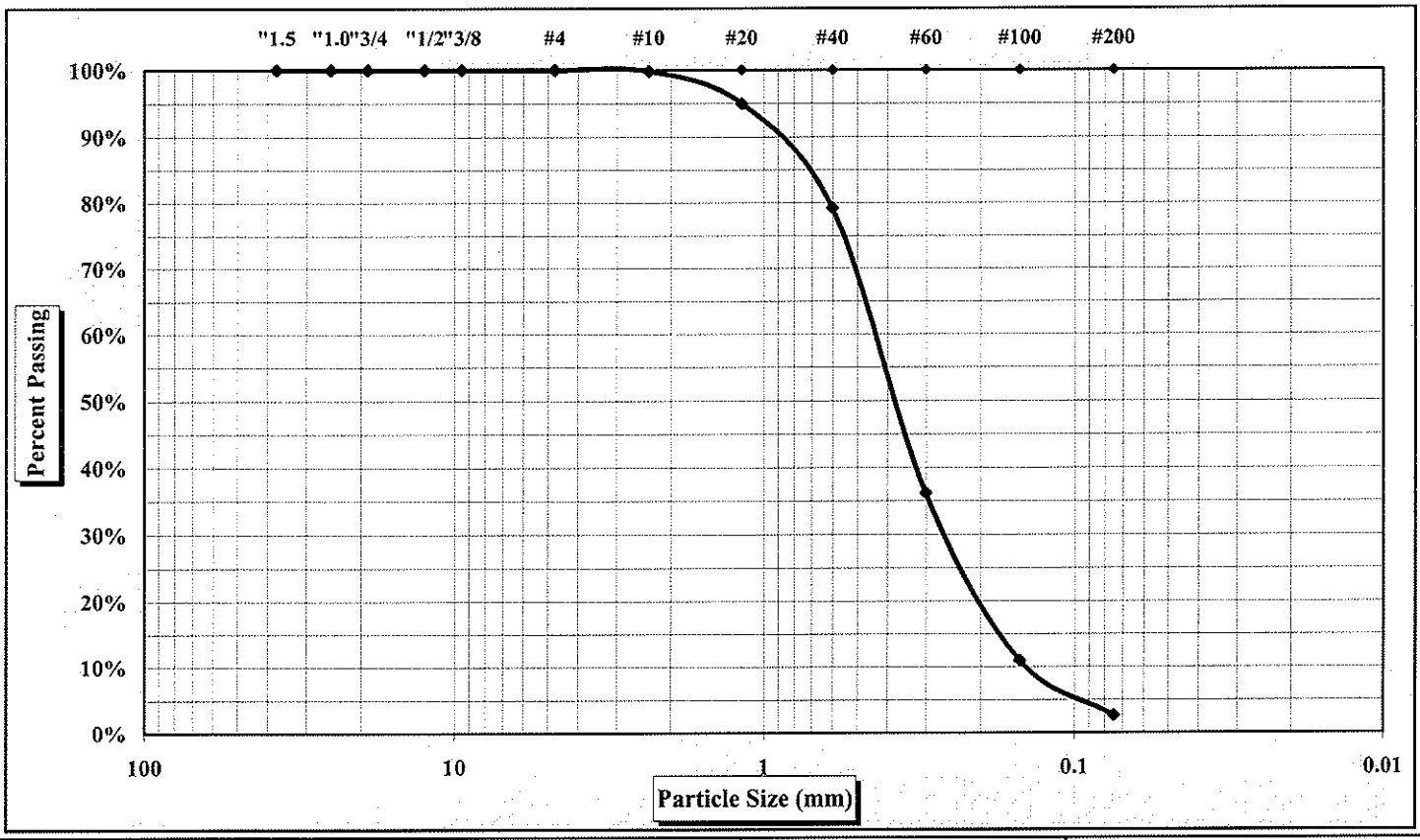
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-07-123**
Project Name: **Sutton Lake Road Borrow Pit**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: May 30, 2007
Test Date(s): May 22-29, 2007

Boring #:	B-1	Sample #:	S8	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	28.5'-30.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	21%
Silt & Clay (% Passing #200)	2.6%	Coarse Sand	0%	Fine Sand	77%
Apparent Relative Density	N/A	Natural Moisture Content	23.3%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-1 Sample #: S8 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 28.5'-30.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	263.88
B	Total Sample Dry Wt. + Tare Wt.	214.1	C	Dry Weight + Tare Wt.	214.10
C	Total Sample Dry Weight (B-A)	214.1	D	Water Wt. (B-C)	49.78
D	Total Sample Wt. After #200 Wash	209.9	E	Dry Wt.(C-A)	214.10
E	Percent Passing #200 (1-D/C)x100	2.0%	Moisture Content (100 x D/E) (%)		23.3%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.36	0.2%	**99.8%**
1.18	#16	10.90	5.1%	**94.9%**
0.60	#30	44.61	20.8%	**79.2%**
0.30	#50	136.73	63.9%	**36.1%**
0.15	#100	190.68	89.1%	**10.9%**
0.075	#200	208.49	97.4%	**2.6%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.2%**
Liquid Limit	N/A	Fineness Modulus 1.79	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**20.7%**
Plastic Limit	N/A	Cu = D60/D10: **2.6**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**76.5%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60): **1.1**	% Silt and Clay	< 0.075 mm	**2.6%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
					Organic Content

D10 = **0.16** D30 = **0.27** D60 = **0.42** D50 = **0.39** D90 = **0.9**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

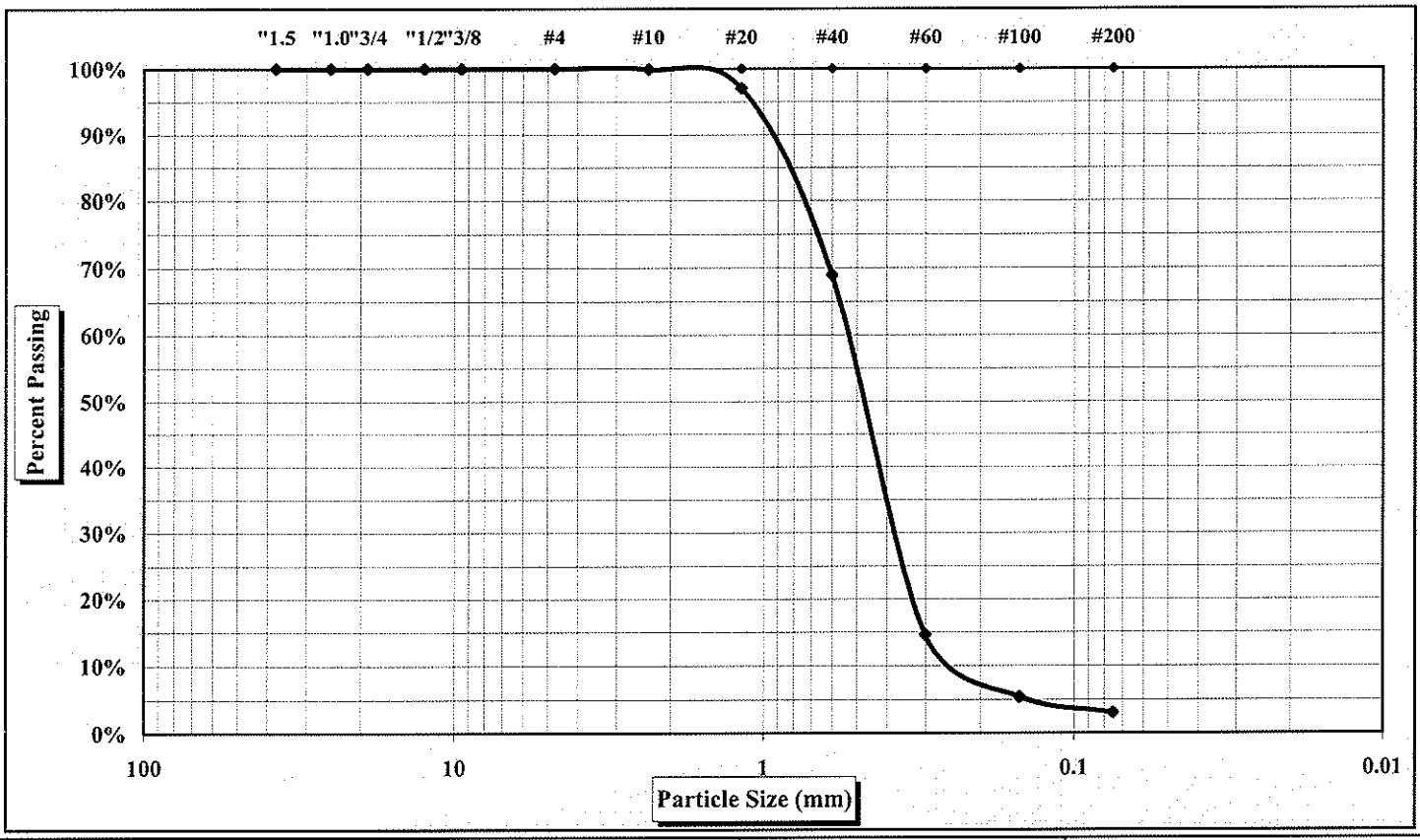
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S10	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	38.5'-40.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	31%
Silt & Clay (% Passing #200)	3.0%	Coarse Sand	0%	Fine Sand	66%
Apparent Relative Density	N/A	Natural Moisture Content	24.8%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-1 | Sample #: S10 | Sample Date: 5-16-07
Location: Wilmington, NC | Offset: N/A | Depth: 38.5'-40.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	309.27
B	Total Sample Dry Wt. + Tare Wt.	247.9	C	Dry Weight + Tare Wt.	247.91
C	Total Sample Dry Weight (B-A)	247.9	D	Water Wt. (B-C)	61.36
D	Total Sample Wt. After #200 Wash	240.7	E	Dry Wt.(C-A)	247.91
E	Percent Passing #200 (1-D/C)x100	2.9%	Moisture Content (100 x D/E) (%)		24.8%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.24	0.1%	**99.9%**
1.18	#16	7.29	2.9%	**97.1%**
0.60	#30	77.05	31.1%	**68.9%**
0.30	#50	211.75	85.4%	**14.6%**
0.15	#100	234.63	94.6%	**5.4%**
0.075	#200	240.42	97.0%	**3.0%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	2.14
Plastic Limit	N/A	Cu = D60/D10:	**2.1**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60):	**1.2**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.1%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**31.0%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**65.9%**
% Silt and Clay	< 0.075 mm	**3.0%**

Description of Sand & Gravel: Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.25** D30 = **0.39** D60 = **0.52** D50 = **0.49** D90 = **0.91**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

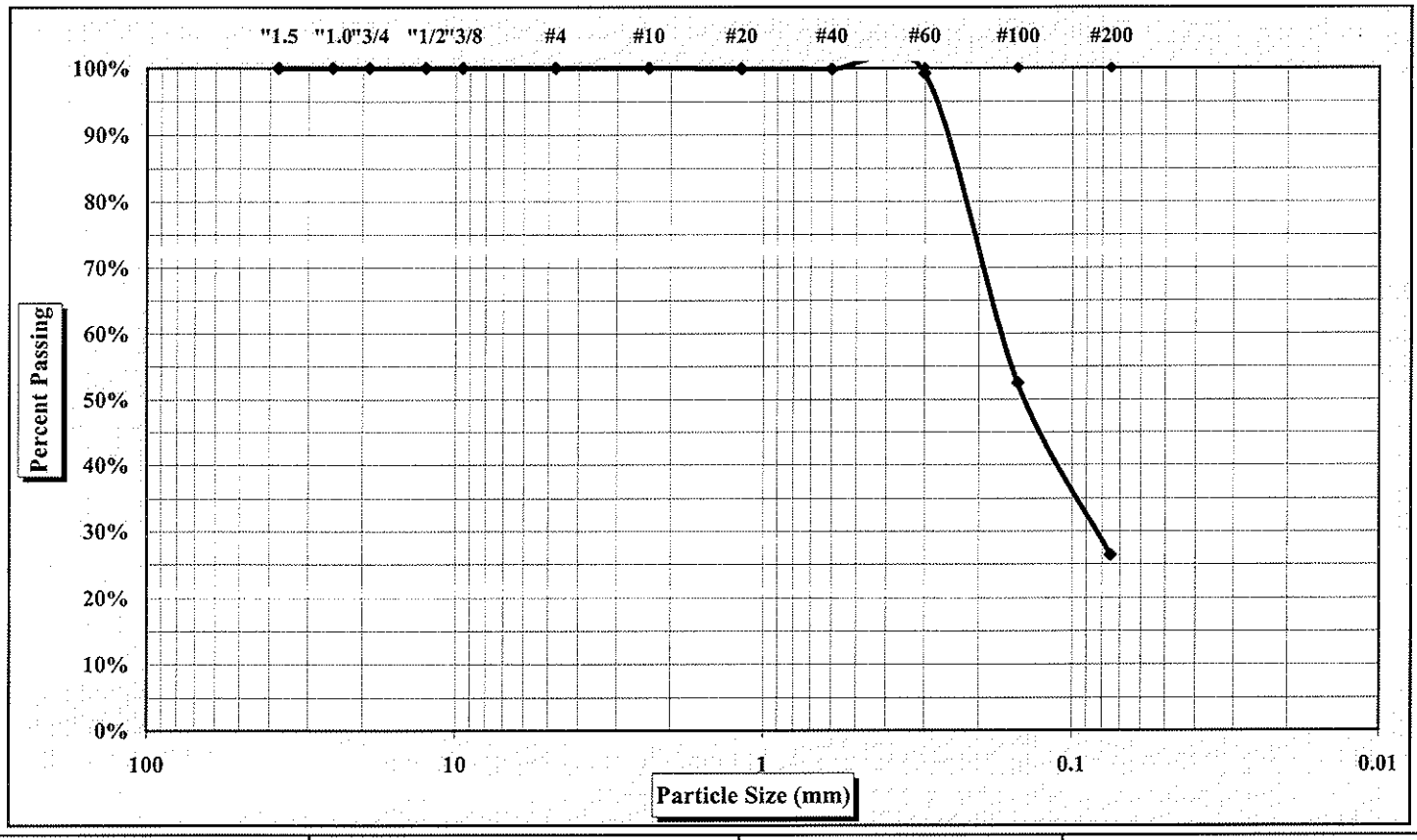
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S13	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	53.5'-55.0'
Sample Description:	Dark Gray Silty Fine SAND (SM)				



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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	26.3%	Coarse Sand	0%	Fine Sand	73%
Apparent Relative Density	N/A	Natural Moisture Content	21.4%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-1 Sample #: S13 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 53.5'-55.0'
Sample Description: Dark Gray Silty Fine SAND (SM)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	255.60
B	Total Sample Dry Wt. + Tare Wt.	210.5	C	Dry Weight + Tare Wt.	210.52
C	Total Sample Dry Weight (B-A)	210.5	D	Water Wt. (B-C)	45.08
D	Total Sample Wt. After #200 Wash	157.7	E	Dry Wt.(C-A)	210.52
E	Percent Passing #200 (1-D/C)x100	25.1%	Moisture Content (100 x D/E) (%)		21.4%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.02	0.0%	**100.0%**
1.18	#16	0.18	0.1%	**99.9%**
0.60	#30	0.37	0.2%	**99.8%**
0.30	#50	1.73	0.8%	**99.2%**
0.15	#100	100.13	47.6%	**52.4%**
0.075	#200	155.06	73.7%	**26.3%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus 0.49	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.2%**
Plastic Limit	N/A	Cu = D60/D10: **#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**73.5%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60): **#DIV/0!**	% Silt and Clay	< 0.075 mm	**26.3%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
					Organic Content

D10 = D30 = **0.082** D60 = **0.18** D50 = **0.15** D90 = **0.25**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

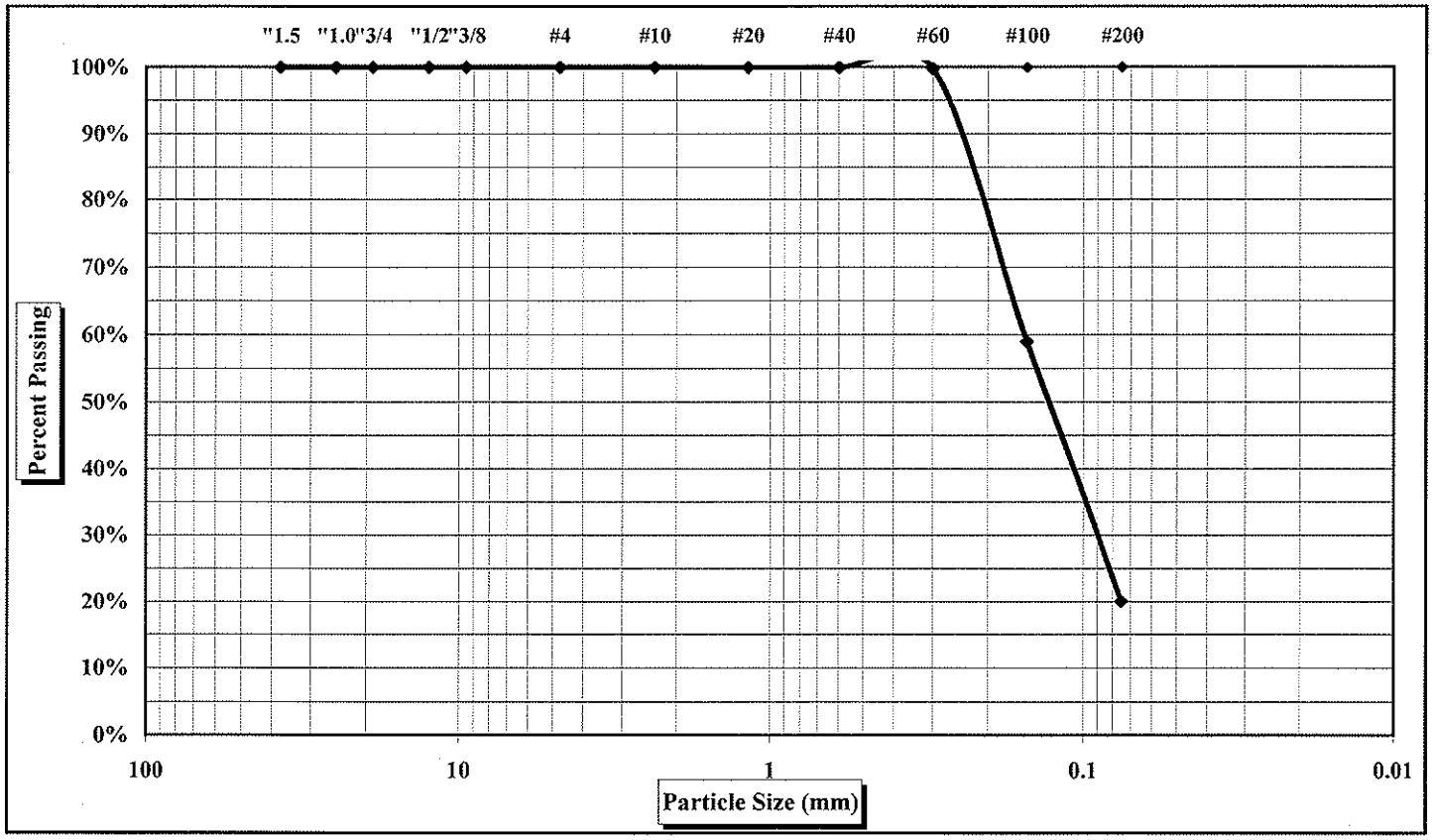
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S16	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	68.5'-70.0'
Sample Description:	Dark Gray Silty Fine SAND (SM)				



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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	20.0%	Coarse Sand	0%	Fine Sand	80%
Apparent Relative Density	N/A	Natural Moisture Content	24.4%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-1 Sample #: S16 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 68.5'-70.0'
Sample Description: Dark Gray Silty Fine SAND (SM)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	293.67
B	Total Sample Dry Wt. + Tare Wt.	236.1	C	Dry Weight + Tare Wt.	236.06
C	Total Sample Dry Weight (B-A)	236.1	D	Water Wt. (B-C)	57.61
D	Total Sample Wt. After #200 Wash	196.9	E	Dry Wt.(C-A)	236.06
E	Percent Passing #200 (1-D/C)x100	16.6%	Moisture Content (100 x D/E) (%)		24.4%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.10	0.0%	**100.0%**
0.60	#30	0.12	0.1%	**99.9%**
0.30	#50	0.55	0.2%	**99.8%**
0.15	#100	96.96	41.1%	**58.9%**
0.075	#200	188.81	80.0%	**20.0%**

Notes: Maximum Particle Size

Apparent Relative Density

Liquid Limit N/A Fineness Modulus 0.41

Plastic Limit N/A Cu = D60/D10: **#DIV/0!**

Plastic Index N/A Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.1%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**79.9%**
% Silt and Clay	< 0.075 mm	**20.0%**

Description of Sand & Gravel Rounded ☐ Angular ☐

Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Organic Content

D10 = D30 = **0.09** D60 = **0.16** D50 = **0.14** D90 = **0.25**

ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

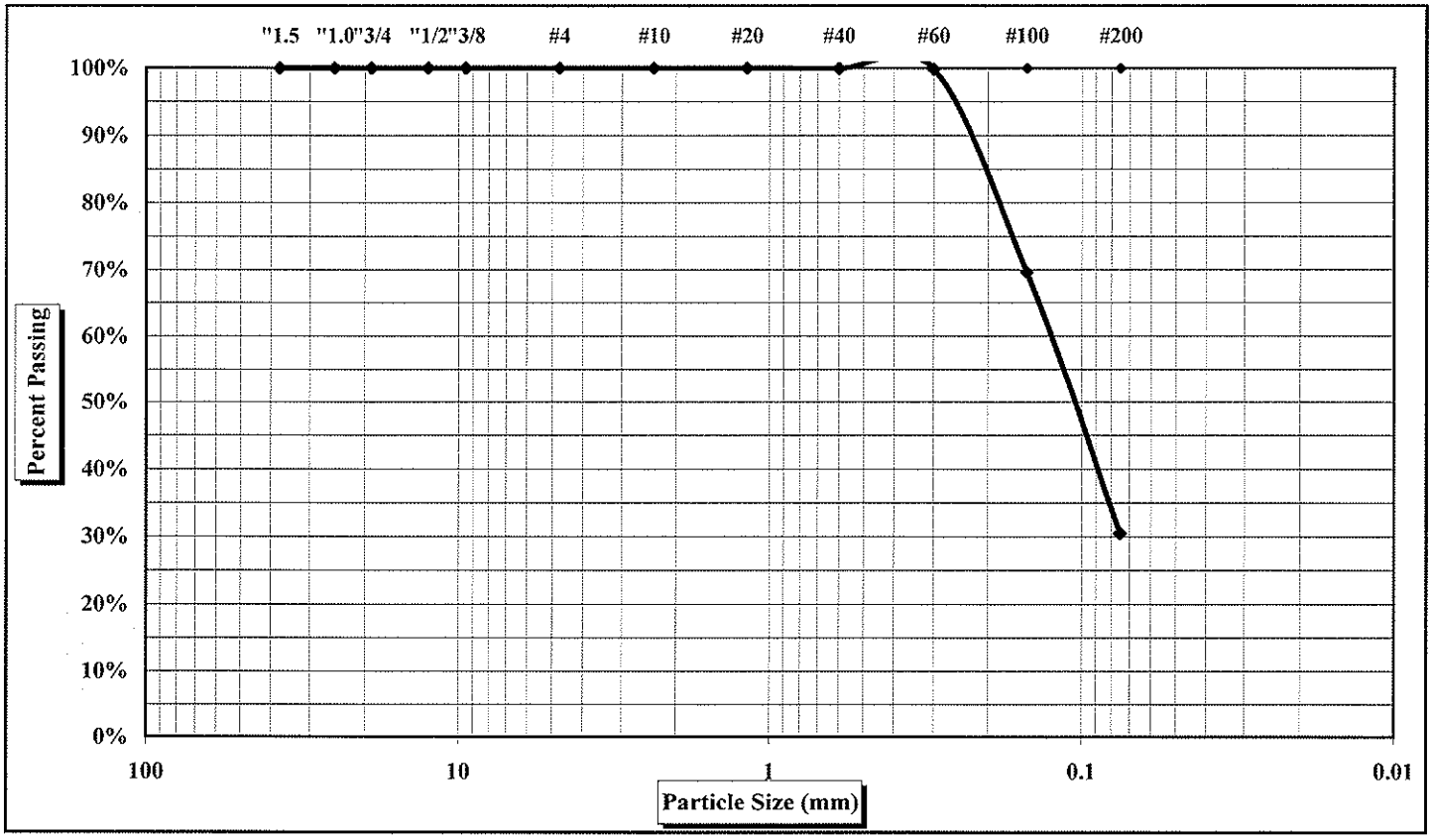
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S17	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	73.5'-75.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	30.5%	Coarse Sand	0%	Fine Sand	69%
Apparent Relative Density	N/A	Natural Moisture Content	29.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-1 | Sample #: S17 | Sample Date: 5-16-07
Location: Wilmington, NC | Offset: N/A | Depth: 73.5'-75.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	272.09
B	Total Sample Dry Wt. + Tare Wt.	210.6	C	Dry Weight + Tare Wt.	210.58
C	Total Sample Dry Weight (B-A)	210.6	D	Water Wt. (B-C)	61.51
D	Total Sample Wt. After #200 Wash	156.9	E	Dry Wt.(C-A)	210.58
E	Percent Passing #200 (1-D/C)x100	25.5%		Moisture Content (100 x D/E) (%)	29.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.10	0.0%	**100.0%**
0.30	#50	0.25	0.1%	**99.9%**
0.15	#100	63.93	30.4%	**69.6%**
0.075	#200	146.41	69.5%	**30.5%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus 0.31	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.0%**
Plastic Limit	N/A	Cu = D60/D10: **#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**69.5%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**	% Silt and Clay	< 0.075 mm	**30.5%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
					Organic Content

D10 = D30 = **0.075** D60 = **0.13** D50 = **0.11** D90 = **0.21**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

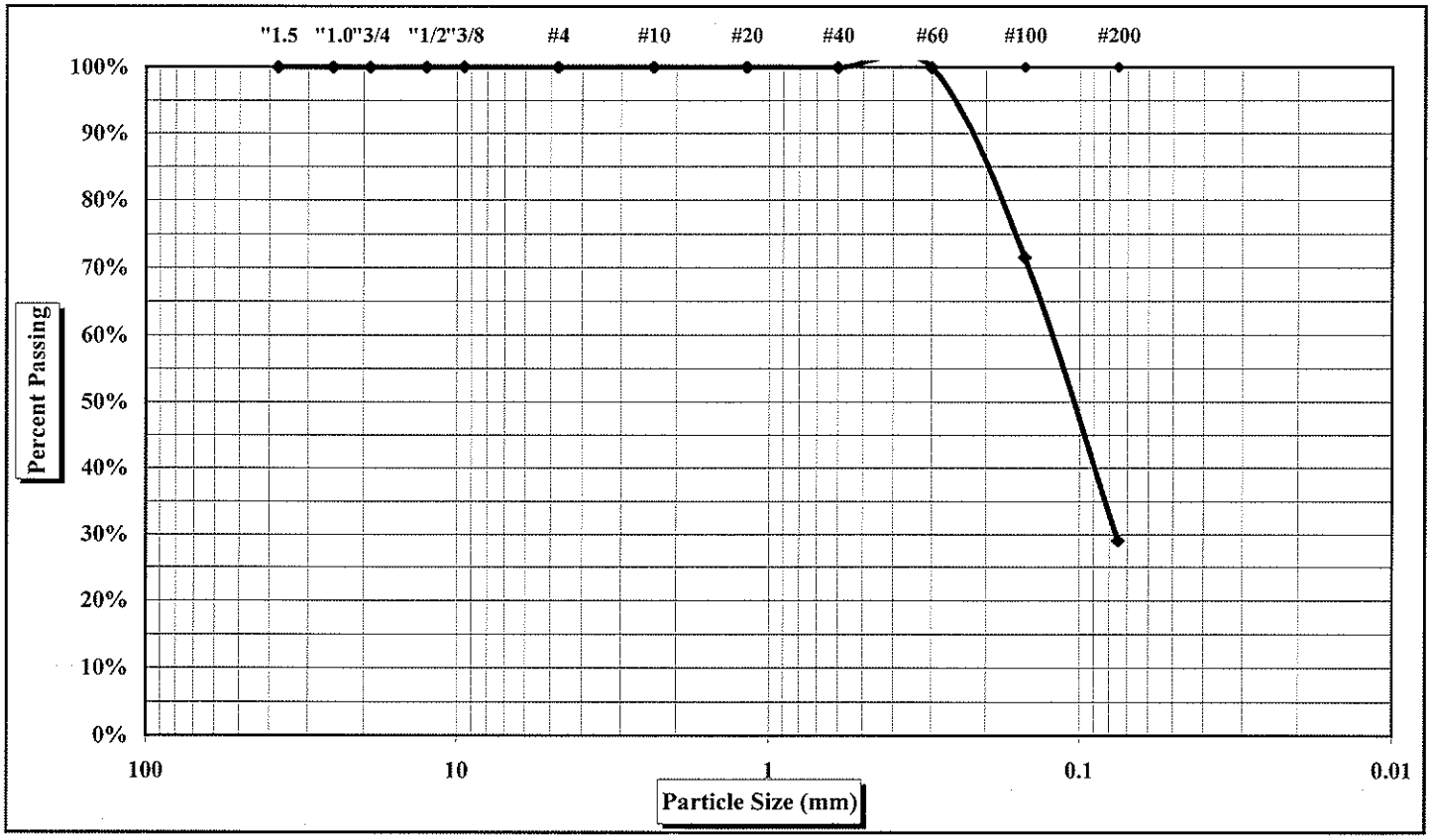
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S19	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	83.5'-85.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	29.0%	Coarse Sand	0%	Fine Sand	71%
Apparent Relative Density	N/A	Natural Moisture Content	28.0%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: **1061-07-123**
Project Name: **Sutton Lake Road Borrow Pit**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-1 Sample #: S19 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 83.5'-85.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	264.09
B	Total Sample Dry Wt. + Tare Wt.	206.3	C	Dry Weight + Tare Wt.	206.31
C	Total Sample Dry Weight (B-A)	206.3	D	Water Wt. (B-C)	57.78
D	Total Sample Wt. After #200 Wash	155.0	E	Dry Wt.(C-A)	206.31
E	Percent Passing #200 (1-D/C)x100	24.9%	Moisture Content (100 x D/E) (%)		28.0%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.05	0.0%	**100.0%**
0.30	#50	0.17	0.1%	**99.9%**
0.15	#100	58.78	28.5%	**71.5%**
0.075	#200	146.41	71.0%	**29.0%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)		**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)		**0.0%**
Liquid Limit	N/A	Fineness Modulus 0.29	Medium Sand	< 2.00 mm and > 0.425 mm (#40)		**0.0%**
Plastic Limit	N/A	Cu = D60/D10: **#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)		**70.9%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**	% Silt and Clay	< 0.075 mm		**29.0%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐	
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐	
					Organic Content	

D10 = D30 = **0.075** D60 = **0.13** D50 = **0.11** D90 = **0.21**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

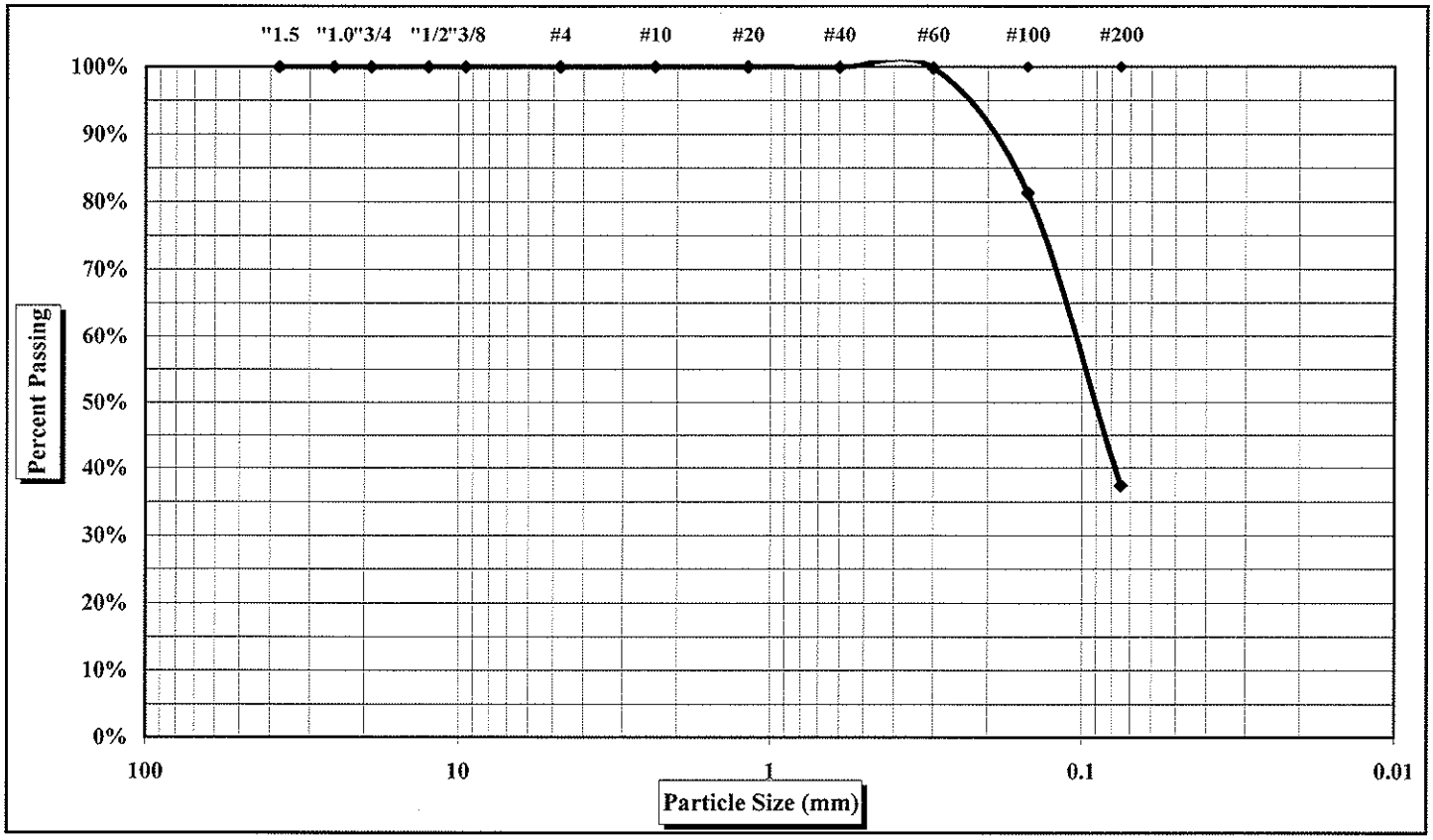
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S21	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	93.5'-95.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	37.4%	Coarse Sand	0%	Fine Sand	63%
Apparent Relative Density	N/A	Natural Moisture Content	28.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-1 Sample #: S21 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 93.5'-95.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	282.81
B	Total Sample Dry Wt. + Tare Wt.	220.6	C	Dry Weight + Tare Wt.	220.63
C	Total Sample Dry Weight (B-A)	220.6	D	Water Wt. (B-C)	62.18
D	Total Sample Wt. After #200 Wash	147.6	E	Dry Wt.(C-A)	220.63
E	Percent Passing #200 (1-D/C)x100	33.1%	Moisture Content (100 x D/E) (%)		28.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.12	0.1%	**99.9%**
0.30	#50	0.43	0.2%	**99.8%**
0.15	#100	41.29	18.7%	**81.3%**
0.075	#200	138.15	62.6%	**37.4%**

Notes:	Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
	Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	0.19	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.1%**
Plastic Limit	N/A	Cu = D60/D10:	**#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**62.6%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**#DIV/0!**	% Silt and Clay	< 0.075 mm	**37.4%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = D30 = D60 = **0.11** D50 = **0.09** D90 = **0.19**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

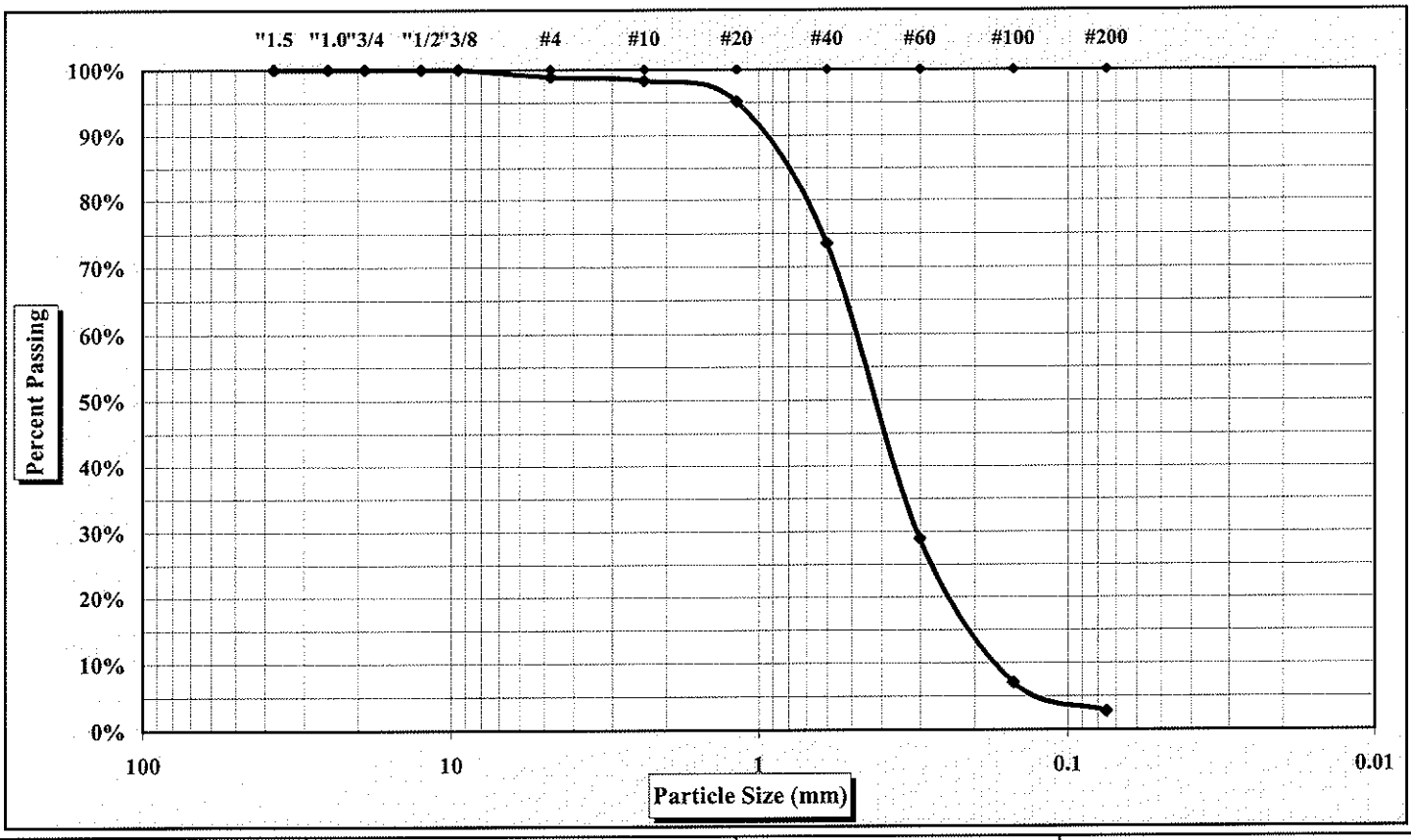
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-07-123**
Project Name: **Sutton Lake Road Borrow Pit**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: May 30, 2007
Test Date(s): May 22-29, 2007

Boring #:	B-2	Sample #:	S9	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	33.5'-35.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	1%	Medium Sand	25%
Silt & Clay (% Passing #200)	2.7%	Coarse Sand	1%	Fine Sand	71%
Apparent Relative Density	N/A	Natural Moisture Content	23.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-2 | Sample #: S9 | Sample Date: 5-16-07
Location: Wilmington, NC | Offset: N/A | Depth: 33.5'-35.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	225.9
C	Total Sample Dry Weight (B-A)	225.9
D	Total Sample Wt. After #200 Wash	220.0
E	Percent Passing #200 (1-D/C)x100	2.6%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	278.34
C	Dry Weight + Tare Wt.	225.86
D	Water Wt. (B-C)	52.48
E	Dry Wt.(C-A)	225.86
Moisture Content (100 x D/E) (%)		23.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	2.54	1.1%	**98.9%**
2.36	#8	3.82	1.7%	**98.3%**
1.18	#16	11.07	4.9%	**95.1%**
0.60	#30	59.97	26.6%	**73.4%**
0.30	#50	160.53	71.1%	**28.9%**
0.15	#100	210.03	93.0%	**7.0%**
0.075	#200	219.70	97.3%	**2.7%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.98
Plastic Limit	N/A	Cu = D60/D10:	**2.7**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60):	**1.0**

Gravel	< 75 mm and > 4.75 mm (#4)	**1.1%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.6%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**24.9%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**70.7%**
% Silt and Clay	< 0.075 mm	**2.7%**
Description of Sand & Gravel	Rounded ☐	Angular ☐
Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
		Organic Content

D10 = **0.18** D30 = **0.3** D60 = **0.49** D50 = **0.41** D90 = **0.96**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

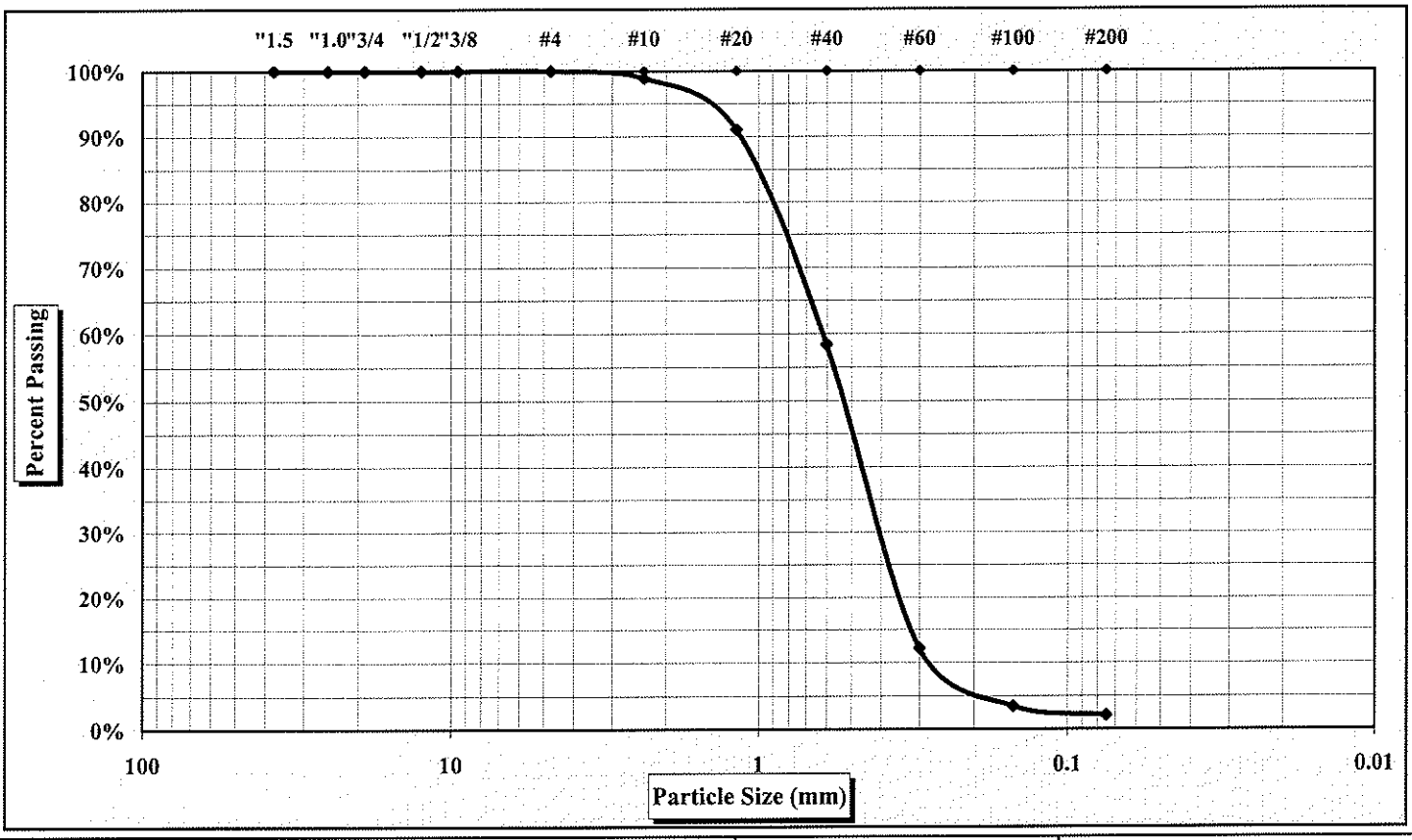
Technical Responsibility: Randy Martin, P.E. — Branch Manager (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-2	Sample #:	S11	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	43.5'-45.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	40%
Silt & Clay (% Passing #200)	2.0%	Coarse Sand	1%	Fine Sand	56%
Apparent Relative Density	N/A	Natural Moisture Content	22.4%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-2 | Sample #: S11 | Sample Date: 5-16-07
Location: Wilmington, NC | Offset: N/A | Depth: 43.5'-45.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	287.84
B	Total Sample Dry Wt. + Tare Wt.	235.2	C	Dry Weight + Tare Wt.	235.17
C	Total Sample Dry Weight (B-A)	235.2	D	Water Wt. (B-C)	52.67
D	Total Sample Wt. After #200 Wash	230.7	E	Dry Wt.(C-A)	235.17
E	Percent Passing #200 (1-D/C)x100	1.9%	Moisture Content (100 x D/E) (%)		22.4%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	2.68	1.1%	**98.9%**
1.18	#16	21.19	9.0%	**91.0%**
0.60	#30	97.84	41.6%	**58.4%**
0.30	#50	206.67	87.9%	**12.1%**
0.15	#100	227.10	96.6%	**3.4%**
0.075	#200	230.38	98.0%	**2.0%**

Notes:						
Maximum Particle Size				Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density				Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**1.1%**
Liquid Limit	N/A	Fineness Modulus	2.36	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**40.5%**
Plastic Limit	N/A	Cu = D60/D10:	**2.2**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**56.4%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60):	**0.9**	% Silt and Clay	< 0.075 mm	**2.0%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.28** D30 = **0.4** D60 = **0.61** D50 = **0.51** D90 = **1.2**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

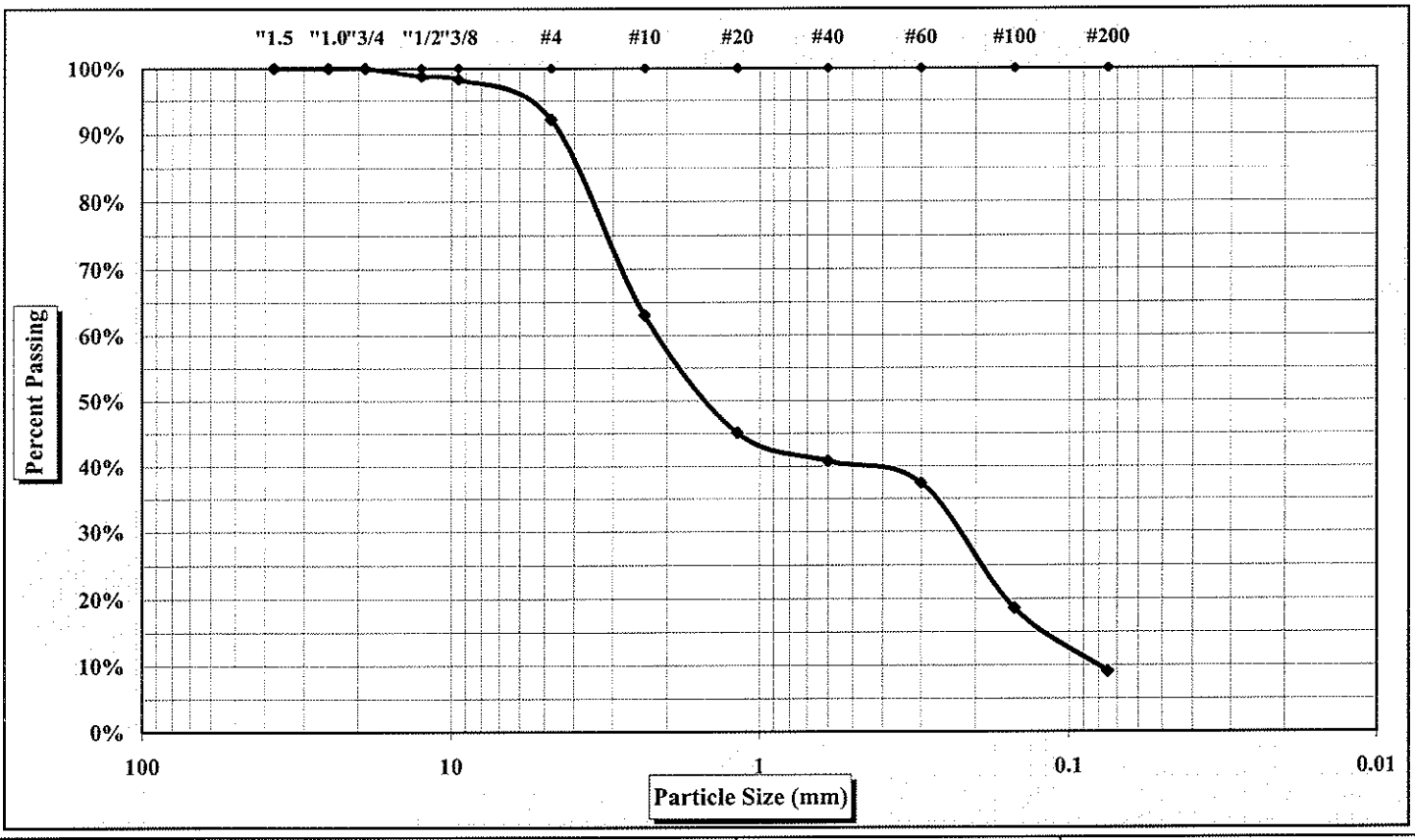
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-07-123**
Project Name: **Sutton Lake Road Borrow Pit**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: May 30, 2007
Test Date(s): May 22-29, 2007

Boring #:	B-2	Sample #:	S12	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	48.5'-50.0'
Sample Description:	Gray Slightly Silty Coarse to Fine SAND (SP-SM)				



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	0.0%	Gravel	8%	Medium Sand	22%
Silt & Clay (% Passing #200)	9.0%	Coarse Sand	29%	Fine Sand	32%
Apparent Relative Density	N/A	Natural Moisture Content	16.5%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-2 Sample #: S12 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 48.5'-50.0'
Sample Description: Gray Slightly Silty Coarse to Fine SAND (SP-SM)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	296.42
B	Total Sample Dry Wt. + Tare Wt.	254.4	C	Dry Weight + Tare Wt.	254.38
C	Total Sample Dry Weight (B-A)	254.4	D	Water Wt. (B-C)	42.04
D	Total Sample Wt. After #200 Wash	232.8	E	Dry Wt.(C-A)	254.38
E	Percent Passing #200 (1-D/C)x100	8.5%	Moisture Content (100 x D/E) (%)		16.5%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	3.16	1.2%	**98.8%**
9.50	3/8"	4.50	1.8%	**98.2%**
4.75	#4	19.91	7.8%	**92.2%**
2.36	#8	94.01	37.0%	**63.0%**
1.18	#16	139.78	54.9%	**45.1%**
0.60	#30	150.72	59.2%	**40.8%**
0.30	#50	159.27	62.6%	**37.4%**
0.15	#100	207.33	81.5%	**18.5%**
0.075	#200	231.41	91.0%	**9.0%**

Notes:

Maximum Particle Size				Gravel	< 75 mm and > 4.75 mm (#4)	**7.8%**
Apparent Relative Density				Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**29.1%**
Liquid Limit	N/A	Fineness Modulus	3.06	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**22.3%**
Plastic Limit	N/A	Cu = D60/D10:	**26.3**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**31.7%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60):	**0.3**	% Silt and Clay	< 0.075 mm	**9.0%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.08** D30 = **0.21** D60 = **2.1** D50 = **1.7** D90 = **4.4**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

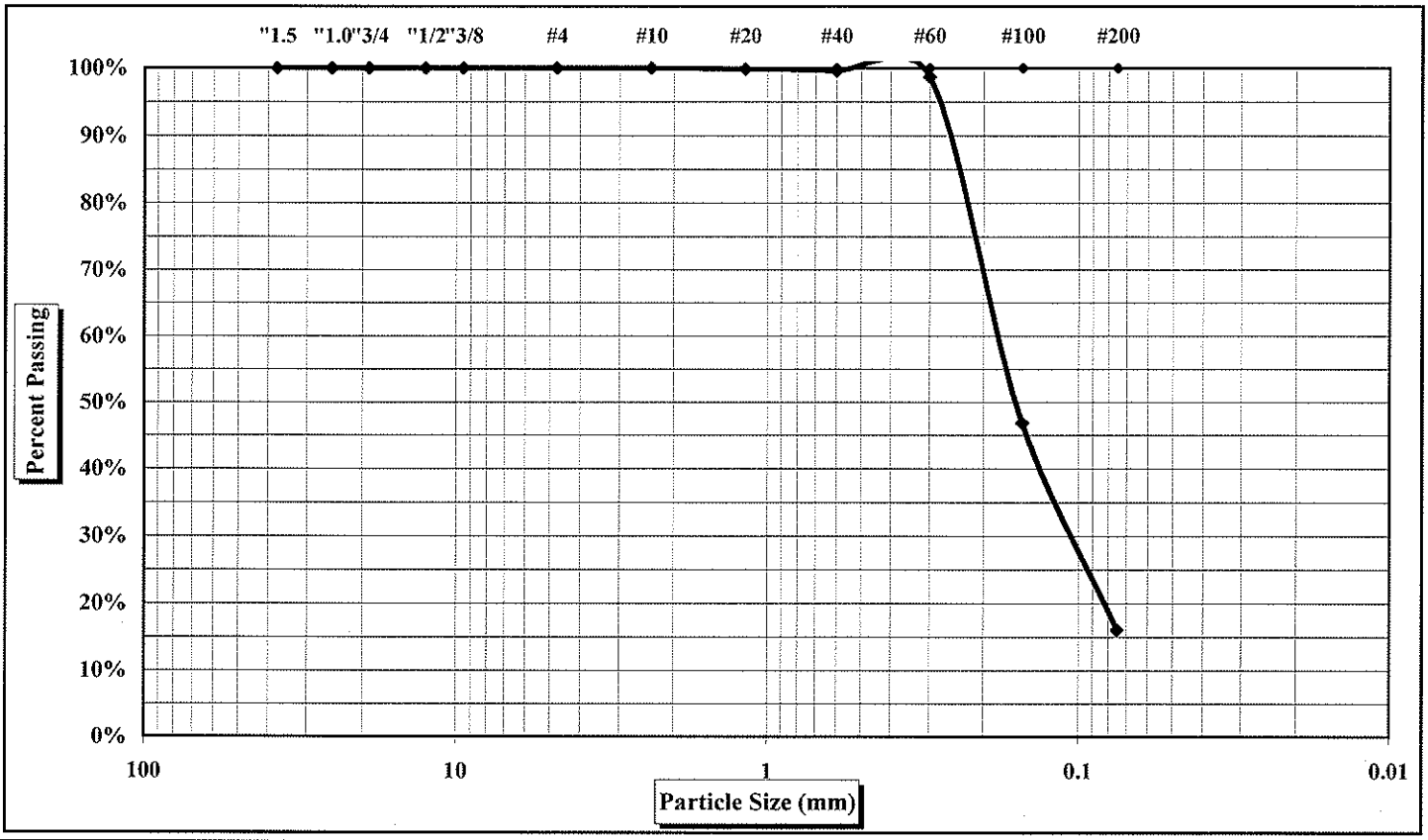
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-2	Sample #:	S14	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	58.5'-60.0'
Sample Description:	Dark Gray Silty Fine SAND (SM)				



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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	16.1%	Coarse Sand	0%	Fine Sand	84%
Apparent Relative Density	N/A	Natural Moisture Content	27.4%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-2 Sample #: S14 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 58.5'-60.0'
Sample Description: Dark Gray Silty Fine SAND (SM)

Particle Size Analysis / Without Hydrometer Analysis				Moisture Content	Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	278.01
B	Total Sample Dry Wt. + Tare Wt.	218.2	C	Dry Weight + Tare Wt.	218.23
C	Total Sample Dry Weight (B-A)	218.2	D	Water Wt. (B-C)	59.78
D	Total Sample Wt. After #200 Wash	187.0	E	Dry Wt.(C-A)	218.23
E	Percent Passing #200 (1-D/C)x100	14.3%		Moisture Content (100 x D/E) (%)	27.4%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.26	0.1%	**99.9%**
0.60	#30	0.88	0.4%	**99.6%**
0.30	#50	2.77	1.3%	**98.7%**
0.15	#100	116.15	53.2%	**46.8%**
0.075	#200	183.16	83.9%	**16.1%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus 0.55	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.4%**
Plastic Limit	N/A	Cu = D60/D10: **#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**83.5%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**	% Silt and Clay	< 0.075 mm	**16.1%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
					Organic Content

D10 = D30 = **0.11** D60 = **0.19** D50 = **0.17** D90 = **0.26**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

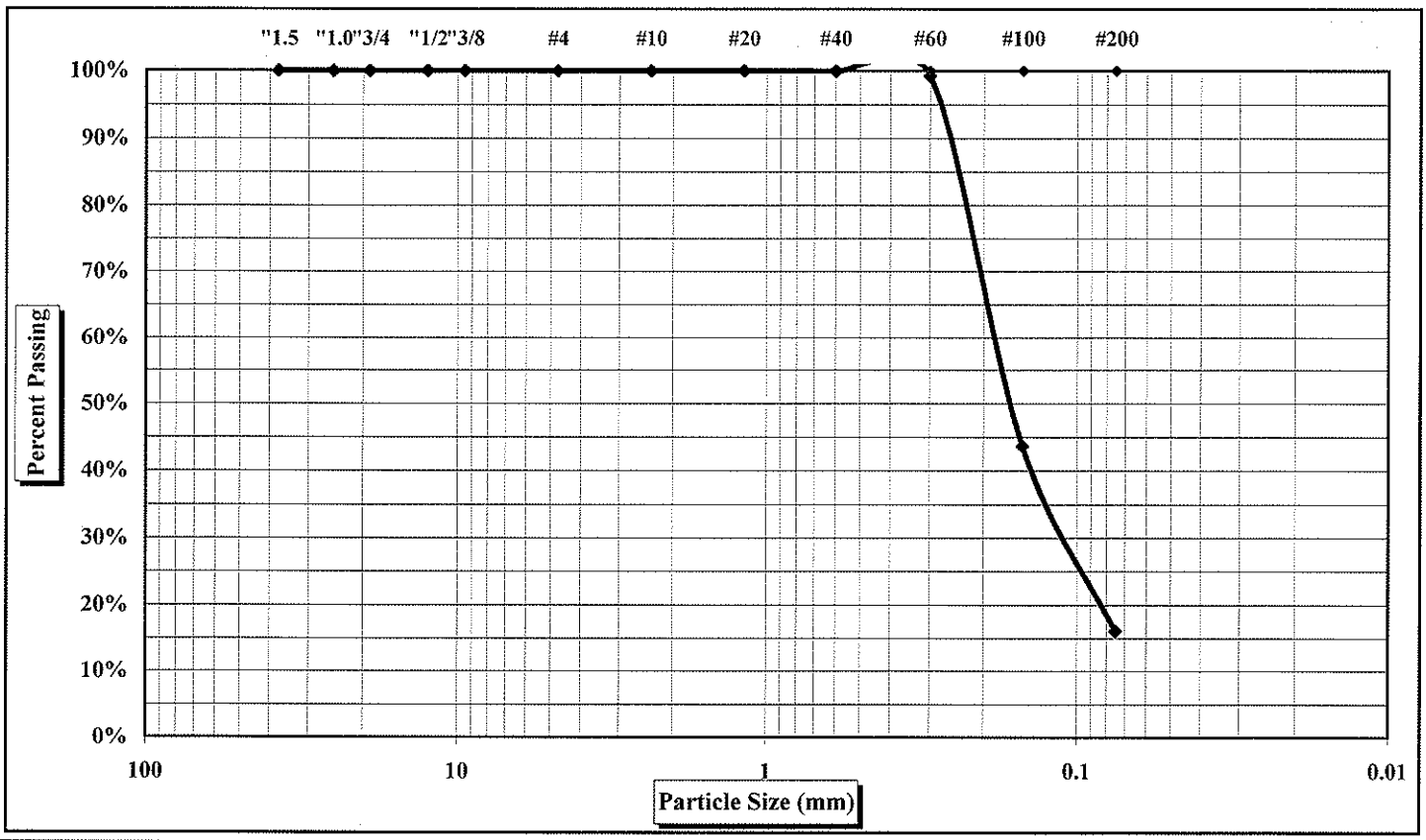
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-2	Sample #:	S15	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	63.5'-65.0'
Sample Description:	Dark Gray Silty Fine SAND (SM)				



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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	16.2%	Coarse Sand	0%	Fine Sand	84%
Apparent Relative Density	N/A	Natural Moisture Content	23.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-2 Sample #: S15 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 63.5'-65.0'
Sample Description: Dark Gray Silty Fine SAND (SM)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	283.92
B	Total Sample Dry Wt. + Tare Wt.	230.4	C	Dry Weight + Tare Wt.	230.38
C	Total Sample Dry Weight (B-A)	230.4	D	Water Wt. (B-C)	53.54
D	Total Sample Wt. After #200 Wash	196.4	E	Dry Wt.(C-A)	230.38
E	Percent Passing #200 (1-D/C)x100	14.7%	Moisture Content (100 x D/E) (%)		23.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.07	0.0%	**100.0%**
0.30	#50	1.62	0.7%	**99.3%**
0.15	#100	129.79	56.3%	**43.7%**
0.075	#200	193.15	83.8%	**16.2%**

Notes:						
Maximum Particle Size				Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density				Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	0.57	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.0%**
Plastic Limit	N/A	Cu = D60/D10:	**#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**83.8%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**#DIV/0!**	% Silt and Clay	< 0.075 mm	**16.2%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = D30 = **0.12** D60 = **0.19** D50 = **0.17** D90 = **0.26**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

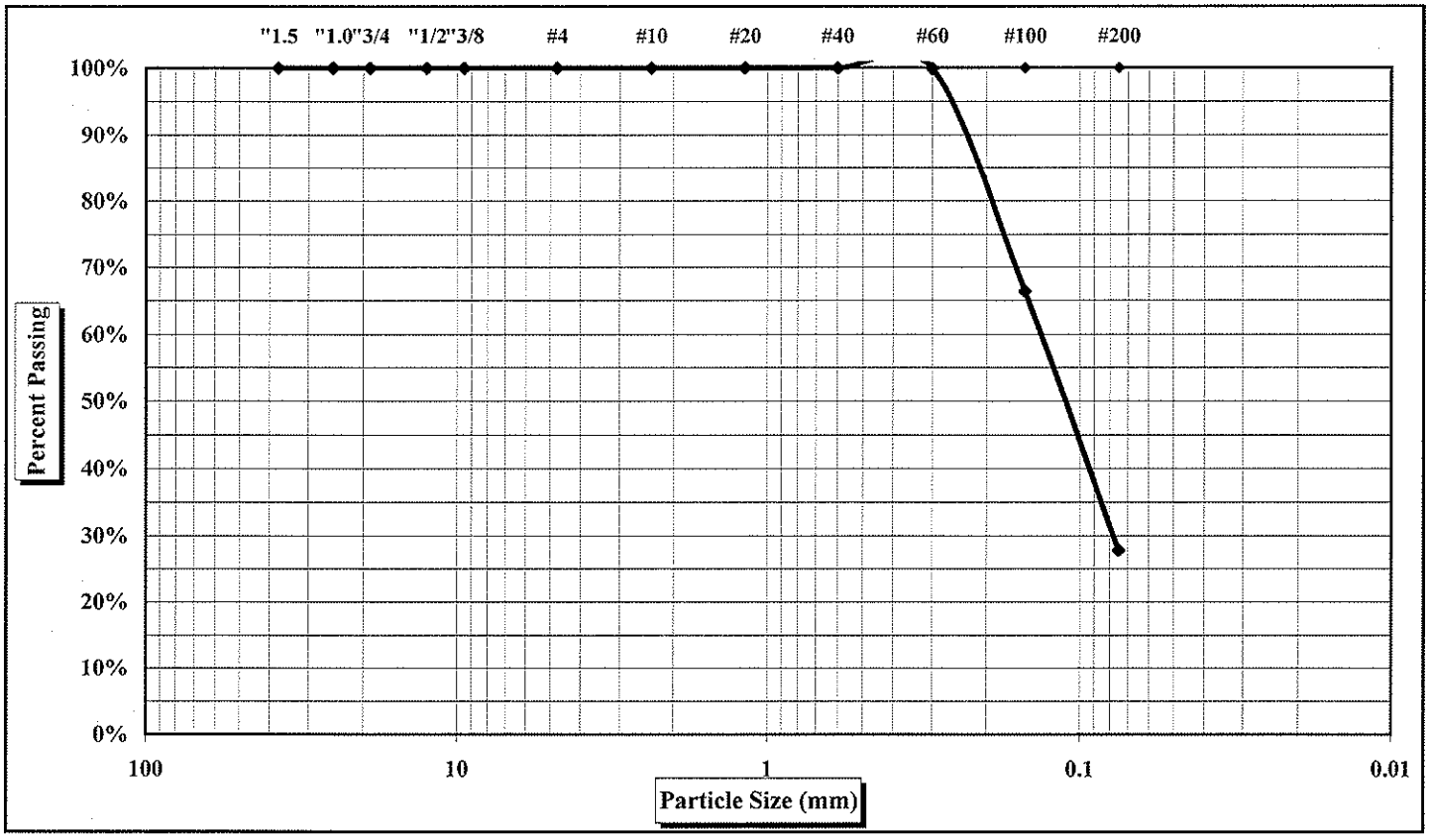
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-2	Sample #:	S18	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	78.5'-80.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	27.8%	Coarse Sand	0%	Fine Sand	72%
Apparent Relative Density	N/A	Natural Moisture Content	25.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-2 Sample #: S18 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 78.5'-80.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	268.72
B	Total Sample Dry Wt. + Tare Wt.	214.6	C	Dry Weight + Tare Wt.	214.60
C	Total Sample Dry Weight (B-A)	214.6	D	Water Wt. (B-C)	54.12
D	Total Sample Wt. After #200 Wash	162.8	E	Dry Wt.(C-A)	214.60
E	Percent Passing #200 (1-D/C)x100	24.1%	Moisture Content (100 x D/E) (%)		25.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.02	0.0%	**100.0%**
0.30	#50	0.16	0.1%	**99.9%**
0.15	#100	72.19	33.6%	**66.4%**
0.075	#200	154.94	72.2%	**27.8%**

Notes:						
Maximum Particle Size				Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density				Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	0.34	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.0%**
Plastic Limit	N/A	Cu = D60/D10:	**#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**72.2%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60):	**#DIV/0!**	% Silt and Clay	< 0.075 mm	**27.8%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = D30 = **0.079** D60 = **0.14** D50 = **0.12** D90 = **0.22**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

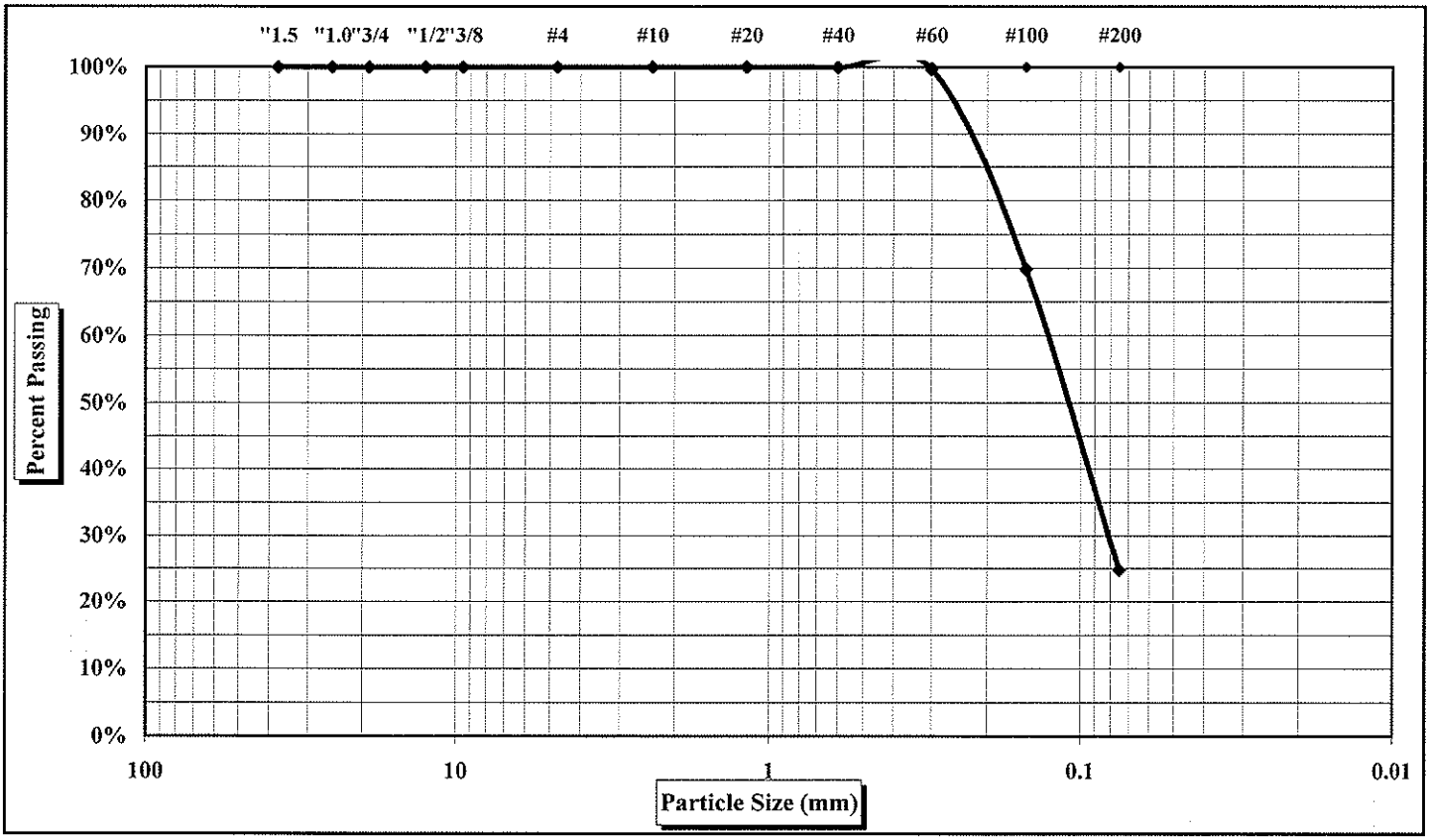
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-2	Sample #:	S20	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	88.5'-90.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	24.8%	Coarse Sand	0%	Fine Sand	75%
Apparent Relative Density	N/A	Natural Moisture Content	32.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-2 Sample #: S20 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 88.5'-90.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	294.86
B	Total Sample Dry Wt. + Tare Wt.	223.0	C	Dry Weight + Tare Wt.	222.99
C	Total Sample Dry Weight (B-A)	223.0	D	Water Wt. (B-C)	71.87
D	Total Sample Wt. After #200 Wash	177.1	E	Dry Wt.(C-A)	222.99
E	Percent Passing #200 (1-D/C)x100	20.6%	Moisture Content (100 x D/E) (%)		32.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.05	0.0%	**100.0%**
0.60	#30	0.15	0.1%	**99.9%**
0.30	#50	0.76	0.3%	**99.7%**
0.15	#100	67.33	30.2%	**69.8%**
0.075	#200	167.73	75.2%	**24.8%**

Notes: Maximum Particle Size

Apparent Relative Density

Liquid Limit N/A Fineness Modulus 0.31
Plastic Limit N/A Cu = D60/D10: **#DIV/0!**
Plastic Index N/A Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.1%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**75.2%**
% Silt and Clay	< 0.075 mm	**24.8%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = D30 = **0.08** D60 = **0.14** D50 = **0.12** D90 = **0.22**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

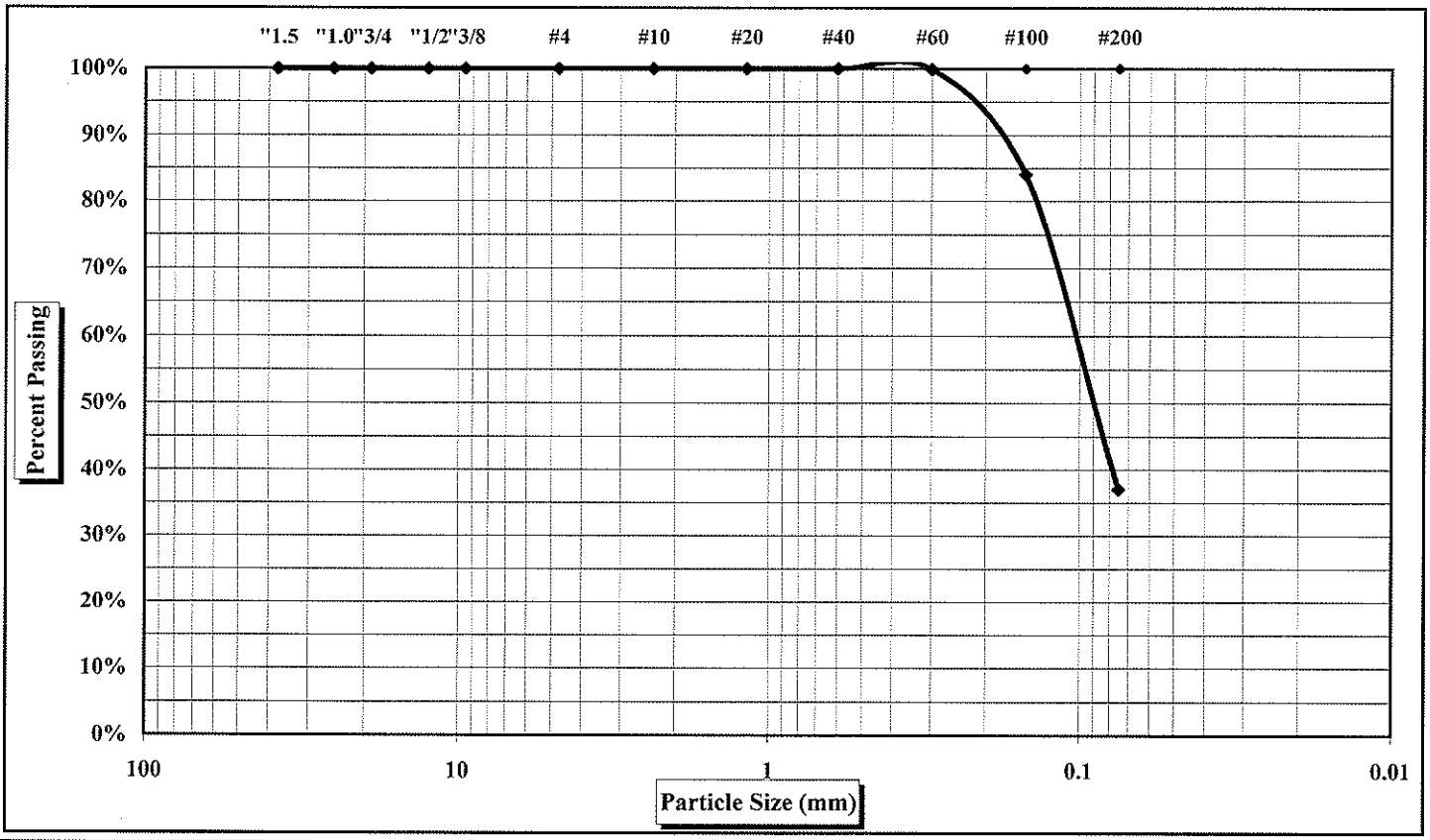
S&ME Project #: **1061-07-123** Report Date: May 30, 2007

Project Name: **Sutton Lake Road Borrow Pit** Test Date(s): May 22-29, 2007

Client Name: S.T. Wooten Corporation

Client Address: PO Box 2408, Wilson, NC 27894

Boring #:	B-2	Sample #:	S22	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	98.5'-100.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	37.0%	Coarse Sand	0%	Fine Sand	63%
Apparent Relative Density	N/A	Natural Moisture Content	28.6%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-2 Sample #: S22 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 98.5'-100.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	236.84
B	Total Sample Dry Wt. + Tare Wt.	184.2	C	Dry Weight + Tare Wt.	184.23
C	Total Sample Dry Weight (B-A)	184.2	D	Water Wt. (B-C)	52.61
D	Total Sample Wt. After #200 Wash	126.7	E	Dry Wt.(C-A)	184.23
E	Percent Passing #200 (1-D/C)x100	31.2%	Moisture Content (100 x D/E) (%)		28.6%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.03	0.0%	**100.0%**
0.30	#50	0.14	0.1%	**99.9%**
0.15	#100	29.35	15.9%	**84.1%**
0.075	#200	116.06	63.0%	**37.0%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus 0.16	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.0%**
Plastic Limit	N/A	Cu = D60/D10: **#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**63.0%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**	% Silt and Clay	< 0.075 mm	**37.0%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
					Organic Content

D10 = D30 = D60 = **0.11** D50 = **0.09** D90 = **0.18**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

S&ME

October 20, 2005

S.T. Wooten Corporation
Post Office Box 2408
Wilson, North Carolina 27894

Attention: Mr. Chris Croom

Reference: **Soil Test Boring Logs and Laboratory Testing**
Proposed Asphalt Plant – Sand Pit Borrow Area
Sutton Lake Road
Wilmington, North Carolina
Job No. 1061-05-536

Dear Mr. Croom:

In accordance with S&ME Proposal 969-05 dated September 19, 2005 and revised scope of services dated October 10, 2005, S&ME, Inc. has completed the authorized field work and laboratory testing. Subsurface conditions within the sandpit borrow area were evaluated with 10 soil test borings at locations selected by S.T. Wooten personnel. Two additional requested borings, B-6 and B-7, have not been performed due to flooding at the site. We understand from our conversation with Mr. Reade Dawson that these borings may be eliminated from our scope of work.

These borings were advanced to depths of approximately 20 to 75 feet below the existing ground surface using wash boring drilling procedures with a CME-45 drill rig mounted on a tow-behind trailer. Within each boring, samples of subsurface soils were taken at 2.5-foot intervals above a depth of 10 feet and at 5-foot intervals below 10 feet using a split-spoon sampler. Standard penetration testing was performed in conjunction with split-spoon sampling in general accordance with ASTM D 1586. At completion of the drilling operations, representative portions of the split-spoon samples were returned to our laboratory for visual classification and laboratory testing. The samples were classified in general accordance with Unified Soil Classification System guidelines. Laboratory testing consisted of grain size analysis in general accordance with the ASTM D422.

A Boring Location Plan, which is included as Figure 1, indicates the boring locations which should be considered approximate. Test Boring Records, a Generalized Subsurface Profile (Figure 2), and laboratory test data presenting the subsurface information obtained are also included in this letter.

S&ME, Inc.
6409 Amsterdam Way, Building B-3
Wilmington, North Carolina 28405

(910) 799-9945
(910) 799-9958 fax
www.smeinc.com

We appreciate having the opportunity to provide our services during this phase of the project. If you have any questions after reviewing this letter, please do not hesitate to contact us.

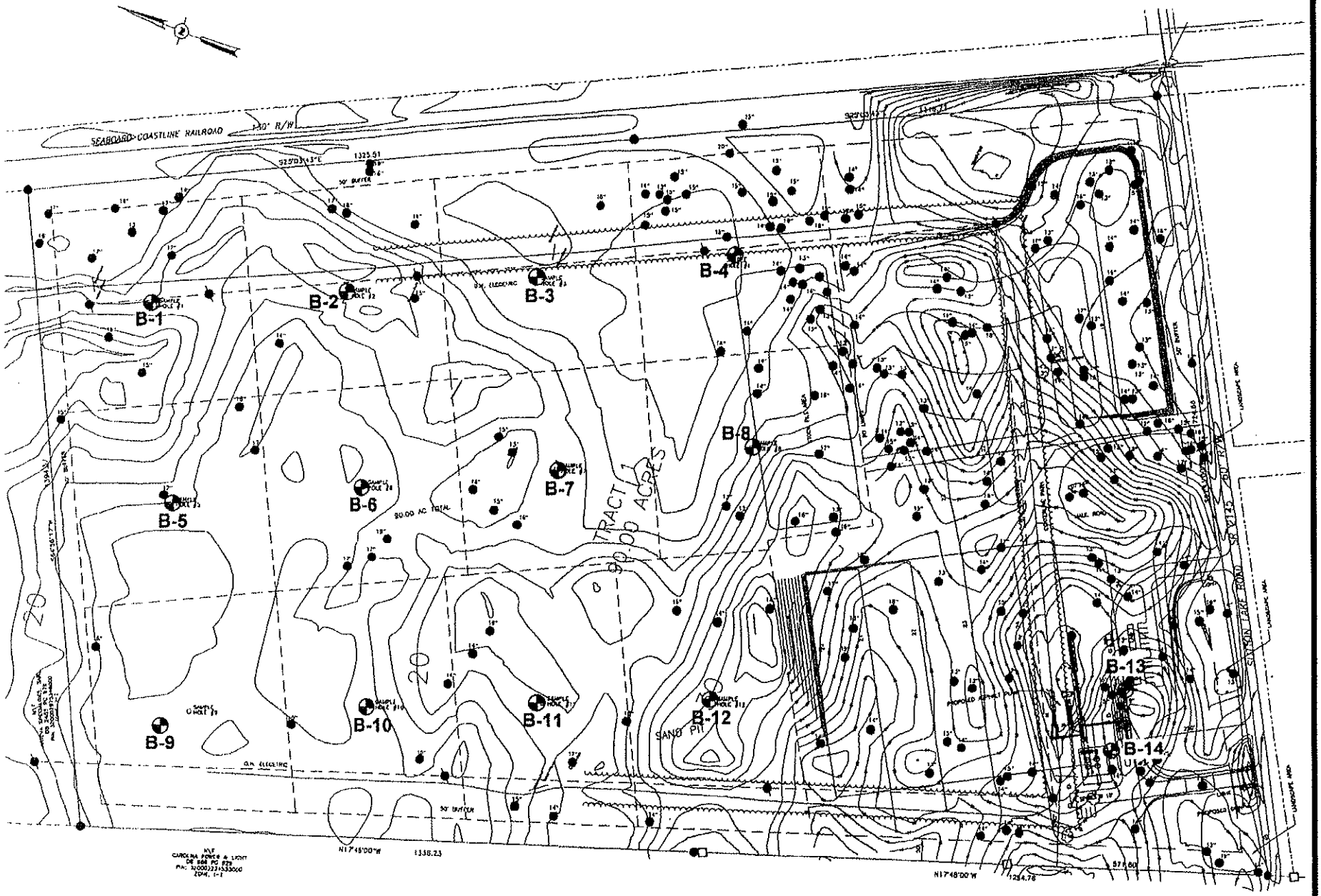
Sincerely,

S&ME, INC.

Philip M. Byrd
Geotechnical Department Manager

Randy Martin, P.E.
Branch Manager

PMB:RGM /jns
Attachments



Note: Site plan drawing provided to S&ME by S.T. Wooten Corporation personnel.

LEGEND

Approximate Boring Location

SCALE:	NOT TO SCALE
CHECKED BY:	PMB
DRAWN BY:	JNS
DATE:	10-13-05

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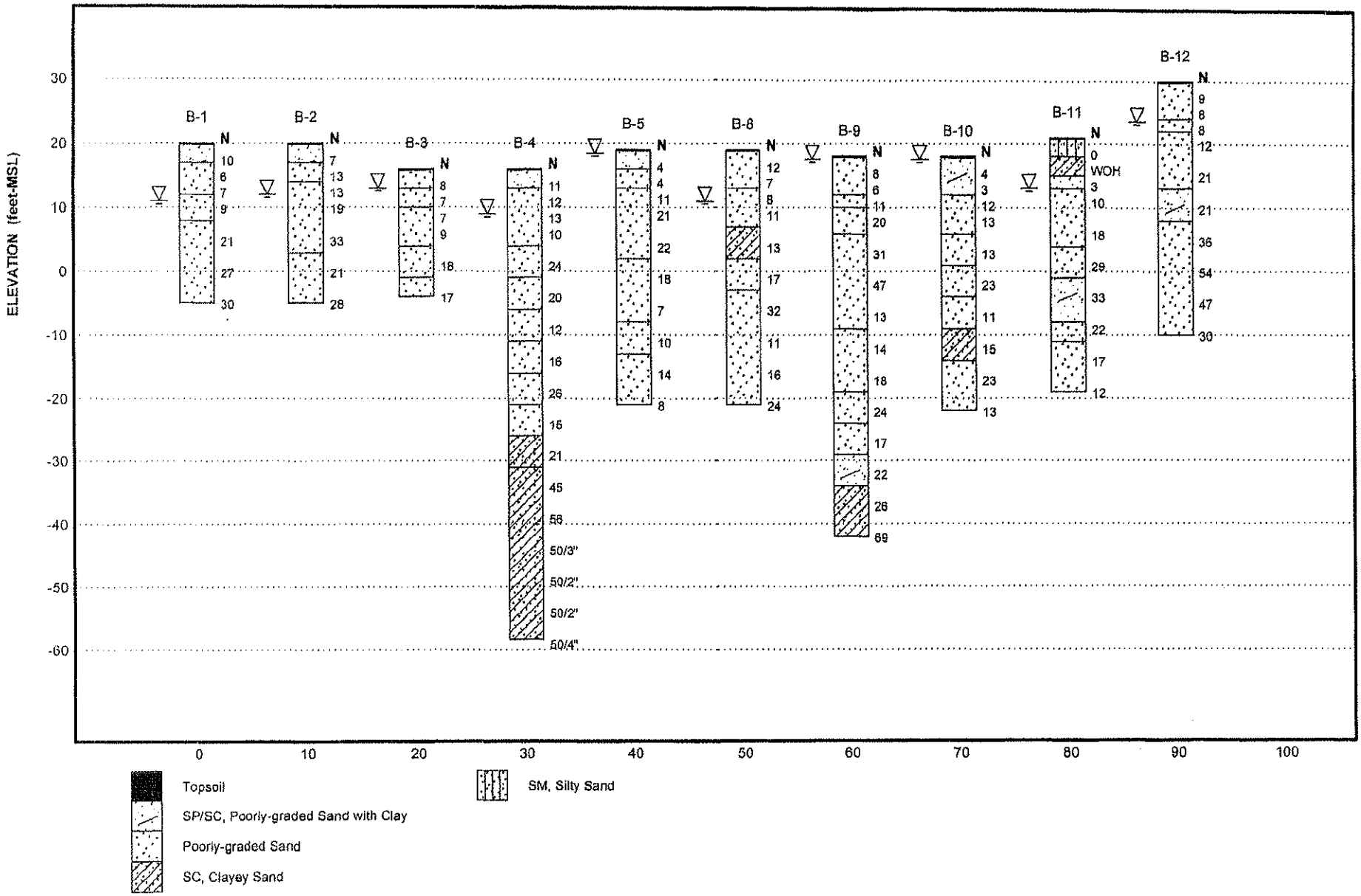
BORING LOCATION PLAN
PROPOSED ASPHALT PLANT
SUTTON LAKE ROAD
WILMINGTON, NORTH CAROLINA

JOB NUMBER: 1061-05-536

FIGURE NUMBER
1

GENERALIZED SUBSURFACE CONDITIONS



N = Standard Penetration Test resistance value (blows per foot). The depicted stratigraphy is shown for illustrative purposes only. The actual subsurface conditions will vary between boring locations.

SCALE:	(V) 1" = 22'
CHECKED BY:	P. Byrd
DATE:	10/21/2005
JOB NO:	1061-05-536

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GENERALIZED SUBSURFACE CONDITIONS

Sutton Lake Road - Asphalt Plant

Wilmington, North Carolina

FIGURE NO. **2**

PROJECT: **Sutton Lake Road - Asphalt Plant**
Wilmington, North Carolina
1061-05-536

TEST BORING RECORD B-1

DATE DRILLED: **10/6/05**	ELEVATION: **20.0 ft**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **25.0 ft**
LOGGED BY: **P. Byrd**	WATER LEVEL: **9'**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	MATERIAL DESCRIPTION	ELEVATION (feet)	N-Value
0	Topsoil	20.0	
	Loose Tan-Brown Slightly Clayey Fine **SAND** (SP-SC)		10
5	Loose Brown Medium to Fine **SAND** (SP)	15.0	6
			7
10	Loose Tan-Brown Medium to Fine **SAND** (SP)	10.0	9
	Medium Dense Light Gray Medium to Fine **SAND** (SP)	5.0	21
15			
20		0.0	27
25	Boring terminated 25 feet below the existing ground surface.	-5.0	30
30		-10.0	

STANDARD PENETRATION TEST DATA (blows/ft)
10 20 30 60 80

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/18/05

NOTES:

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2. *BORING, SAMPLING AND PENETRATION TEST DATA IS IN GENERAL ACCORDANCE WITH ASTM D-1586.*
3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT: **Sutton Lake Road - Asphalt Plant**
Wilmington, North Carolina
1061-05-536

TEST BORING RECORD B-2

DATE DRILLED: **10/6/05**	ELEVATION: **20.0 ft**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **25.0 ft**
LOGGED BY: **P. Byrd**	WATER LEVEL: **8'**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	MATERIAL DESCRIPTION	ELEVATION (feet)	N-Value
0	Topsoil		
	Loose Tan-Brown Slightly Clayey Fine **SAND** (SP-SC)		7
5	Medium Dense Brown Medium to Fine **SAND** with Rock Fragments (SP)	15.0	13
	Medium Dense to Dense Tan Medium to Fine **SAND** (SP)		13
10		10.0	19
15		5.0	33
	Medium Dense Light Gray Fine **SAND** (SP)		21
20		0.0	
25	Boring terminated 25 feet below the existing ground surface.	-5.0	28
30		-10.0	

STANDARD PENETRATION TEST DATA (blows/ft)
10 20 30 60 80

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/19/05

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3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT: **Sutton Lake Road - Asphalt Plant**
Wilmington, North Carolina
1061-05-536

TEST BORING RECORD B-3

DATE DRILLED: **10/6/05**	ELEVATION: **16.0 ft**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **20.0 ft**
LOGGED BY: **P. Byrd**	WATER LEVEL: **3'**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	MATERIAL DESCRIPTION	ELEVATION (feet)	N-Value
0	Topsoil		
	Loose Dark Gray Fine to Medium **SAND** (SP)		8
	Loose Tan-Gray Medium to Fine **SAND** (SP)	11.0	7
5			7
	Loose Tan Medium to Fine **SAND** (SP)	6.0	9
10			
	Medium Dense Light Gray Medium to Fine **SAND** (SP)	1.0	18
15			
	Medium Dense Tan and Orange Medium to Fine **SAND** (SP)	-4.0	17
20	Boring terminated 20 feet below the existing ground surface.		
25		-9.0	
30		-14.0	

STANDARD PENETRATION TEST DATA (blows/ft)
10 20 30 60 80

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/18/05

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3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT: **Sutton Lake Road - Asphalt Plant**
Wilmington, North Carolina
1061-05-536

TEST BORING RECORD B-4

DATE DRILLED: **10/6/05**	ELEVATION: **16.0 ft**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **74.4 ft**
LOGGED BY: **P. Byrd**	WATER LEVEL: **7'**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	MATERIAL DESCRIPTION	ELEVATION (feet)	N-Value
0	Topsoil		
	Medium Dense Dark Gray Slightly Clayey Fine to Medium **SAND** (SP-SC)		11
5	Medium Dense to Loose Tan Medium to Fine **SAND** (SP)	11.0	12
			13
10		6.0	10
15	Medium Dense Light Gray Medium to Fine **SAND** (SP)	1.0	24
20	Medium Dense Light Gray Medium to Fine **SAND** with Trace of Small Sized Gravel/Coarse Sand (SP)	-4.0	20
25	Medium Dense Tan Medium to Fine **SAND** (SP)	-9.0	12
30	Medium Dense Light Gray Medium to Fine **SAND** (SP)	-14.0	16
	Medium Dense Light Gray Medium to Fine **SAND** (SP)		26

STANDARD PENETRATION TEST DATA (blows/ft) — 10 20 30 60 80

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/19/05

NOTES:

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3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT: **Sutton Lake Road - Asphalt Plant**
Wilmington, North Carolina
1061-05-536

TEST BORING RECORD B-4

DATE DRILLED: **10/6/05**	ELEVATION: **16.0 ft**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **74.4 ft**
LOGGED BY: **P. Byrd**	WATER LEVEL: **7'**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	MATERIAL DESCRIPTION	ELEVATION (feet)	N-Value
	See soil description on previous page.		
40	Medium Dense Tan Medium to Fine **SAND** with Clay Layers (SP)	-24.0	15
45	Medium Dense Dark Gray Clayey Medium to Coarse **SAND** with Some Small Sized Gravel (SC)	-29.0	21
50	Dense to Very Dense Dark Gray Clayey Fine **SAND** (SC)	-34.0	45
55		-39.0	56
60		-44.0	50/ 3"
65		-49.0	50/ 2"
			50/ 2"

STANDARD PENETRATION TEST DATA (blows/ft): 10, 20, 30, 60, 80

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/19/05

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3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT:	Sutton Lake Road - Asphalt Plant Wilmington, North Carolina 1061-05-536	TEST BORING RECORD	B-4
DATE DRILLED:	10/6/05	ELEVATION:	16.0 ft
DRILLING METHOD:	Wash Boring	BORING DEPTH:	74.4 ft
LOGGED BY:	P. Byrd	WATER LEVEL:	7'
DRILLER:	G. Eister	DRILL RIG:	CME-45

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
		See soil description on previous page.					
75		Boring terminated 74.4 feet below the existing ground surface.			-59.0		50/4"
80					-64.0		
85					-69.0		
90					-74.0		
95					-79.0		
100					-84.0		

S&ME COMPANY STANDARD 05-530.GPJ S&ME.GDT 10/19/05

NOTES:

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3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT: **Sutton Lake Road - Asphalt Plant**
Wilmington, North Carolina
1061-05-536

TEST BORING RECORD B-5

DATE DRILLED: **10/11/05**	ELEVATION: **19.0 ft**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **40.0 ft**
LOGGED BY: **P. Byrd**	WATER LEVEL: **0.5'**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	MATERIAL DESCRIPTION	ELEVATION (feet)	N-Value
0	Topsoil		
	Very Loose Dark Brown Slightly Clayey Fine to Medium **SAND** (SP-SC)		4
	Very Loose Tan Medium to Fine **SAND** (SP)		4
5		14.0	
	Medium Dense Tan to Brown Fine **SAND** (SP)		11
			21
10		9.0	
			22
15		4.0	
	Medium Dense to Loose Tan Medium to Fine **SAND** (SP)		18
20		-1.0	
			7
25		-6.0	
	Loose Tan Medium to Fine **SAND** (SP)		10
30		-11.0	
	Loose Tan Medium to Fine **SAND** (SP)		14

STANDARD PENETRATION TEST DATA (blows/ft): 10 20 30 60 80

WATER LEVEL | SAMPLE NO/TYPE

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/19/05

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3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT: **Sutton Lake Road - Asphalt Plant**
Wilmington, North Carolina
1061-05-536

TEST BORING RECORD B-5

DATE DRILLED: **10/11/05**	ELEVATION: **19.0 ft**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **40.0 ft**
LOGGED BY: **P. Byrd**	WATER LEVEL: **0.5'**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
		See soil description on previous page.					
40		Boring terminated 40 feet below the existing ground surface.			-21.0		8
45					-26.0		
50					-31.0		
55					-36.0		
60					-41.0		
65					-46.0		

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/19/05

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PROJECT: **Sutton Lake Road - Asphalt Plant**
Wilmington, North Carolina
1061-05-536

TEST BORING RECORD B-8

DATE DRILLED: **10/11/05**	ELEVATION: **19.0 ft**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **40.0 ft**
LOGGED BY: **P. Byrd**	WATER LEVEL: **8'**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	MATERIAL DESCRIPTION	ELEVATION (feet)	N-Value
0	Topsoil		
	Medium Dense to Loose Tan-Brown Medium to Fine **SAND** (SP)		12
5		14.0	7
	Loose to Medium Dense Tan-Brown Medium to Fine **SAND** (SP)		8
10		9.0	11
	Medium Dense Gray Clayey Medium to Fine **SAND** (SC)		13
15		4.0	
	Medium Dense Tan Medium to Fine **SAND** (SP)		17
20		-1.0	
	Dense to Medium Dense Tan and Light Gray Medium to Fine **SAND** (SP)		32
25		-6.0	
			11
30		-11.0	
			16

STANDARD PENETRATION TEST DATA (blows/ft) — 10 20 30 60 80

WATER LEVEL ▽

SAMPLE NO/TYPE

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/19/05

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PROJECT: **Sutton Lake Road - Asphalt Plant**
Wilmington, North Carolina
1061-05-536

TEST BORING RECORD B-8

DATE DRILLED: **10/11/05**	ELEVATION: **19.0 ft**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **40.0 ft**
LOGGED BY: **P. Byrd**	WATER LEVEL: **8'**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
		See soil description on previous page.					
40		Boring terminated 40 feet below the existing ground surface.			-21.0		24
45					-26.0		
50					-31.0		
55					-36.0		
60					-41.0		
65					-46.0		

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/19/05

NOTES:

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2. BORING, SAMPLING AND PENETRATION TEST DATA IS IN GENERAL ACCORDANCE WITH ASTM D-1586.
3. PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.
4. STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.
5. WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.

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PROJECT: **Sutton Lake Road - Asphalt Plant**
Wilmington, North Carolina
1061-05-536

TEST BORING RECORD B-9

DATE DRILLED: 10/11/05	ELEVATION: 18.0 ft
DRILLING METHOD: Wash Boring	BORING DEPTH: 60.0 ft
LOGGED BY: P. Byrd	WATER LEVEL: 0.5'
DRILLER: G. Eister	DRILL RIG: CME-45

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	MATERIAL DESCRIPTION	ELEVATION (feet)	N-Value
0	Topsoil		
	Loose Tan-Brown Medium to Fine **SAND** (SP)		8
5			6
	Medium Dense Tan Medium to Fine **SAND** (SP)	13.0	11
	Medium Dense Tan Medium to Fine **SAND** (SP)		20
10		8.0	
	Dense Tan Medium to Fine **SAND** (SP)		31
15		3.0	
			47
20		-2.0	
			13
25		-7.0	
	Medium Dense Light Gray Medium to Fine **SAND** (SP)		14
30		-12.0	
			18

STANDARD PENETRATION TEST DATA (blows/ft): 10 20 30 60 80

WATER LEVEL | SAMPLE NO/TYPE

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/19/05

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3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT: **Sutton Lake Road - Asphalt Plant**
Wilmington, North Carolina
1061-05-536

TEST BORING RECORD B-9

DATE DRILLED: **10/11/05**	ELEVATION: **18.0 ft**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **60.0 ft**
LOGGED BY: **P. Byrd**	WATER LEVEL: **0.5'**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.**

DEPTH (feet)	MATERIAL DESCRIPTION	ELEVATION (feet)	N-Value
	See soil description on previous page.		
40	Medium Dense Light Gray Medium to Fine **SAND** (SP)	-22.0	24
45	Medium Dense Light Gray Medium to Fine **SAND** (SP)	-27.0	17
50	Medium Dense Light Gray Slightly Clayey Medium to Fine **SAND** (SP-SC)	-32.0	22
55	Medium Dense to Very Dense Dark Gray Clayey Fine **SAND** (SC)	-37.0	26
60	Boring terminated 60 feet below the existing ground surface.	-42.0	69
65		-47.0	

STANDARD PENETRATION TEST DATA (blows/ft) — 10 20 30 60 80

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/19/05

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4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
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PROJECT:	Sutton Lake Road - Asphalt Plant Wilmington, North Carolina 1061-05-536	TEST BORING RECORD	B-10

DATE DRILLED: 10/11/05	ELEVATION: 18.0 ft	NOTES: Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.
DRILLING METHOD: Wash Boring	BORING DEPTH: 40.0 ft	
LOGGED BY: P. Byrd	WATER LEVEL: 0.5'	
DRILLER: G. Eister	DRILL RIG: CME-45	

DEPTH (feet)	MATERIAL DESCRIPTION	ELEVATION (feet)	N-Value
	Topsoil		
	Very Loose Tan-Brown Slightly Clayey Medium to Fine **SAND** (SP-SC)		4
5		13.0	3
	Loose to Medium Dense Light Gray Medium to Fine **SAND** (SP)		12
10		8.0	13
	Medium Dense Dark Brown Fine **SAND** (SP)		13
15		3.0	
	Medium Dense Tan Medium to Fine **SAND** (SP)		23
20		-2.0	
	Medium Dense Tan Medium to Fine **SAND** (SP)		11
25		-7.0	
	Medium Dense Light Gray Clayey Fine **SAND** with Clay Layers (SC)		15
30		-12.0	
	Medium Dense Light Gray Medium to Fine **SAND** (SP)		23

STANDARD PENETRATION TEST DATA (blows/ft)
10 20 30 60 80

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/21/05

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4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT:	Sutton Lake Road - Asphalt Plant Wilmington, North Carolina 1061-05-536	TEST BORING RECORD	B-10

DATE DRILLED:	10/11/05	ELEVATION:	18.0 ft
DRILLING METHOD:	Wash Boring	BORING DEPTH:	40.0 ft
LOGGED BY:	P. Byrd	WATER LEVEL:	0.5'
DRILLER:	G. Eister	DRILL RIG:	CME-45

NOTES: Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
		See soil description on previous page.					
40		Boring terminated 40 feet below the existing ground surface.			-22.0		13
45					-27.0		
50					-32.0		
55					-37.0		
60					-42.0		
65					-47.0		

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/21/05

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PROJECT:	Sutton Lake Road - Asphalt Plant Wilmington, North Carolina 1061-05-536	TEST BORING RECORD	B-12

DATE DRILLED:	10/11/05	ELEVATION:	30.0 ft
DRILLING METHOD:	Wash Boring	BORING DEPTH:	40.0 ft
LOGGED BY:	P. Byrd	WATER LEVEL:	6.5'
DRILLER:	G. Eister	DRILL RIG:	CME-45

NOTES: Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
0		Topsoil					
		Loose Tan-Brown Medium to Fine **SAND** (SP)					9
5					25.0		8
		Loose Tan-Brown Medium to Fine **SAND** (SP)	▽				8
		Medium Dense Tan-Brown Medium to Fine **SAND** (SP)					12
10					20.0		
							21
15					15.0		
		Medium Dense Brown Slightly Clayey Medium to Fine **SAND** (SP-SC)					21
20					10.0		
		Medium Dense to Very Dense Tan and Light Gray Medium to Fine **SAND** (SP)					36
25					5.0		
							54
30					0.0		
							47

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/21/05

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3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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PROJECT:	Sutton Lake Road - Asphalt Plant Wilmington, North Carolina 1061-05-536	TEST BORING RECORD	B-12
DATE DRILLED:	10/11/05	ELEVATION:	30.0 ft
DRILLING METHOD:	Wash Boring	BORING DEPTH:	40.0 ft
LOGGED BY:	P. Byrd	WATER LEVEL:	6.5'
DRILLER:	G. Eister	DRILL RIG:	CME-45

NOTES: Boring location and elevation should be considered approximate. Water levels were taken at time of boring. Water levels fluctuate with seasonal and climatic changes and may be higher at other times of the year.

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
		See soil description on previous page.					
40		Boring terminated 40 feet below the existing ground surface.			-10.0		30
45					-15.0		
50					-20.0		
55					-25.0		
60					-30.0		
65					-35.0		

S&ME COMPANY STANDARD 05-536.GPJ S&ME.GDT 10/21/05

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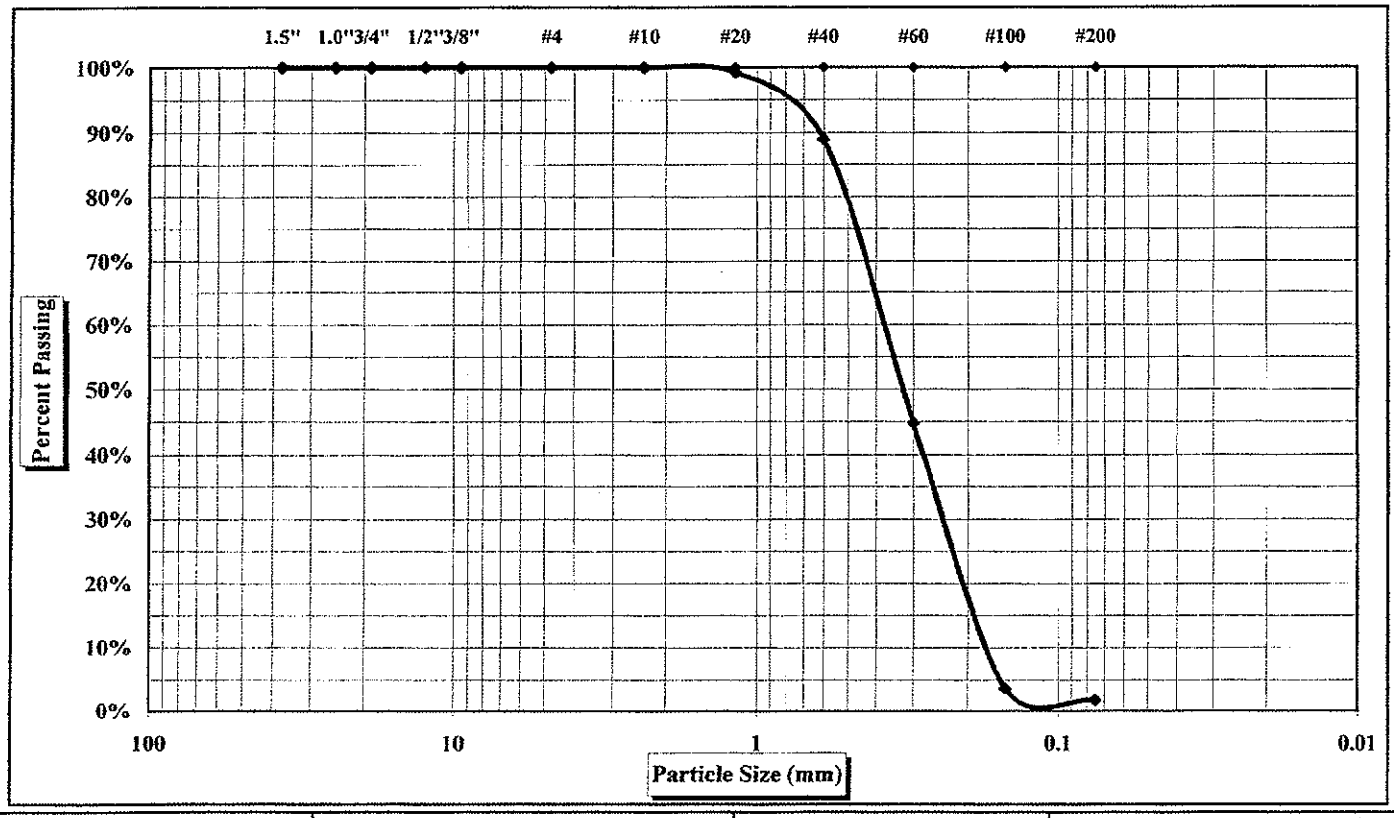
Wilmington, NC 28405

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-05-536**	Report Date:	October 17, 2005
Project Name:	**Sutton Lake Road Asphalt Plant**	Test Date(s):	October 13-14, 2005
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S3	Sample Date:	10-6-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	6.0'-7.5'
Sample Description:	Brown Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	11%
Silt & Clay (% Passing #200)	1.8%	Coarse Sand	0%	Fine Sand	87%
Apparent Relative Density	N/A	Natural Moisture Content	11.1%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 13-14, 2005
Report Date: October 17, 2005

Boring #: B-1 Sample #: S3 Sample Date: 10-6-05
Location: Wilmington, NC Offset: N/A Depth: 6.0'-7.5'
Sample Description: Brown Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	199.85
B	Total Sample Dry Wt. + Tare Wt.	179.9	C	Dry Weight + Tare Wt.	179.89
C	Total Sample Dry Weight (B-A)	179.9	D	Water Wt. (B-C)	19.96
D	Total Sample Wt. After #200 Wash	176.7	E	Dry Wt.(C-A)	179.89
E	Percent Passing #200 (1-D/C)x100	1.8%		Moisture Content (100 x D/E) (%)	11.1%

	Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
	37.50	1.5"	0.0	0.0%	**100.0%**
	25.00	1.0"	0.00	0.0%	**100.0%**
	19.00	3/4"	0.00	0.0%	**100.0%**
	12.50	1/2"	0.00	0.0%	**100.0%**
3/8	9.50	3/8"	0.00	0.0%	**100.0%**
4	4.75	#4	0.00	0.0%	**100.0%**
8	2.36	#8	0.00	0.0%	**100.0%**
16	1.18	#16	1.36	0.8%	**99.2%**
30	0.60	#30	19.81	11.0%	**89.0%**
50	0.30	#50	99.35	55.2%	**44.8%**
100	0.15	#100	173.35	96.4%	**3.6%**
200	0.075	#200	176.72	98.2%	**1.8%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.63
Plastic Limit	N/A	Cu = D60/D10:	**2.2**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.9**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**11.0%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**87.2%**
% Silt and Clay	< 0.075 mm	**1.8%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.18** D30 = **0.25** D60 = **0.39** D50 = **0.32** D90 = **0.6**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

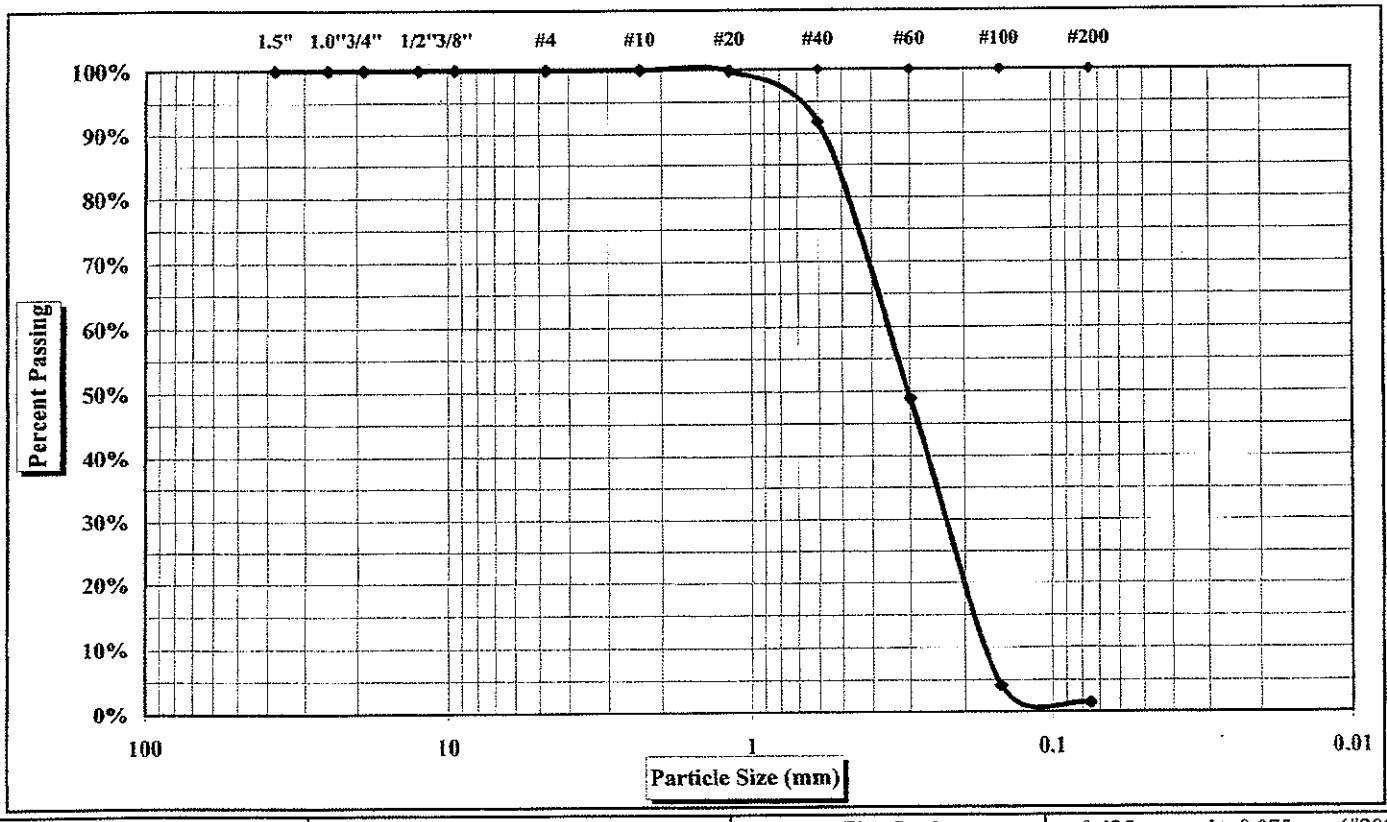
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-05-536**	Report Date:	October 17, 2005
Project Name:	**Sutton Lake Road Asphalt Plant**	Test Date(s):	October 13-14, 2005
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S6	Sample Date:	10-6-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	18.5'-20.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	8%
Silt & Clay (% Passing #200)	1.5%	Coarse Sand	0%	Fine Sand	90%
Apparent Relative Density	N/A	Natural Moisture Content	24.7%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 13-14, 2005
Report Date: October 17, 2005

Boring #: B-1 | Sample #: *S6* | Sample Date: 10-6-05
Location: Wilmington, NC | Offset: N/A | Depth: 18.5'-20.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	215.03
B	Total Sample Dry Wt. + Tare Wt.	172.5	C	Dry Weight + Tare Wt.	172.49
C	Total Sample Dry Weight (B-A)	172.5	D	Water Wt. (B-C)	42.54
D	Total Sample Wt. After #200 Wash	170.1	E	Dry Wt.(C-A)	172.49
E	Percent Passing #200 (1-D/C)x100	1.4%	Moisture Content (100 x D/E) (%)		24.7%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.37	0.2%	**99.8%**
0.60	#30	14.14	8.2%	**91.8%**
0.30	#50	88.24	51.2%	**48.8%**
0.15	#100	165.40	95.9%	**4.1%**
0.075	#200	169.94	98.5%	**1.5%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.56
Plastic Limit	N/A	Cu = D60/D10:	**1.9**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.7**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**8.2%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**90.3%**
% Silt and Clay	< 0.075 mm	**1.5%**

Description of Sand & Gravel: Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.18** D30 = **0.21** D60 = **0.35** D50 = **0.3** D90 = **0.59**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. — Branch Manager (*Position*)

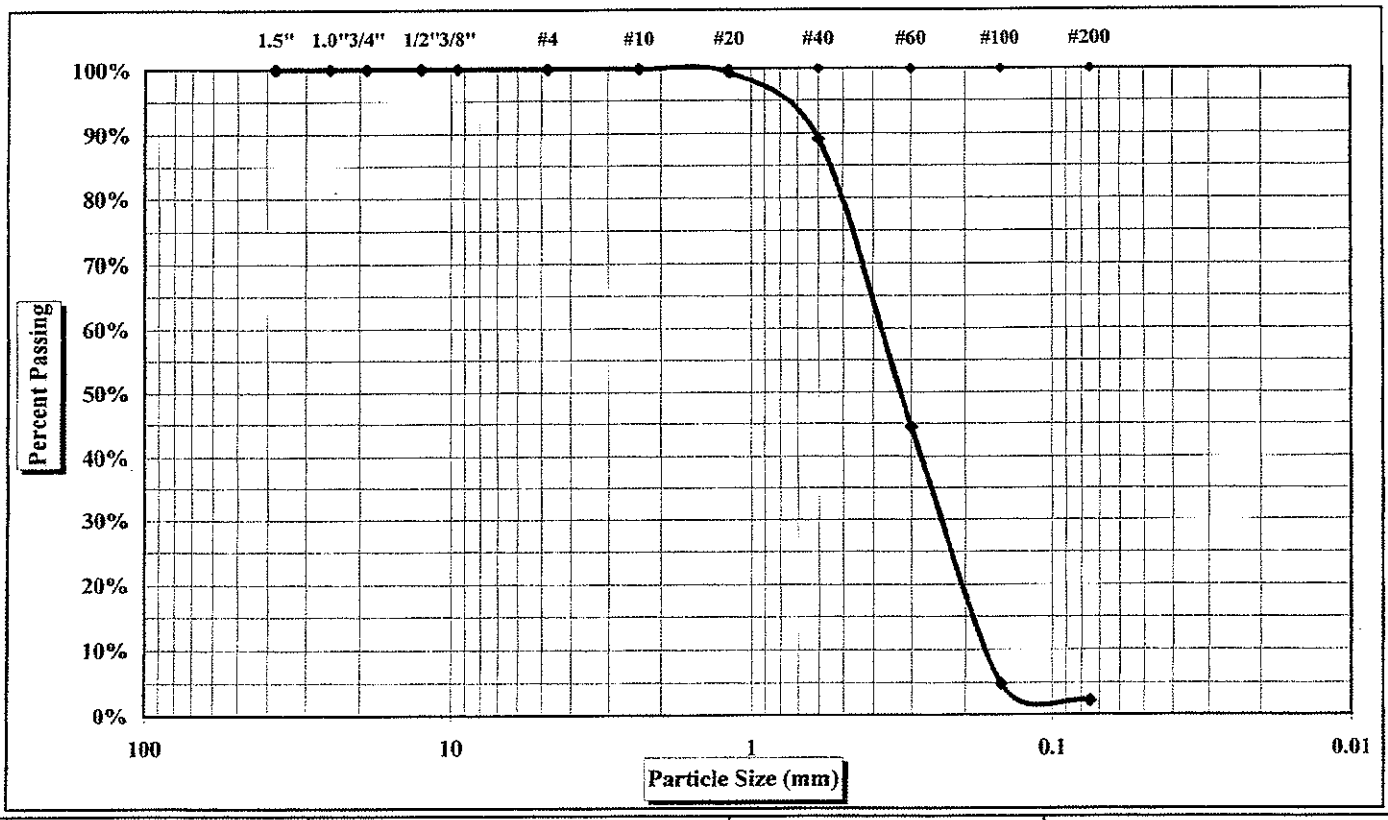
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 17, 2005
Test Date(s): October 13-14, 2005

Boring #:	B-2	Sample #:	S3	Sample Date:	10-6-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	6.0'-7.5'
Sample Description:	Tan Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	11%
Silt & Clay (% Passing #200)	2.2%	Coarse Sand	0%	Fine Sand	87%
Apparent Relative Density	N/A	Natural Moisture Content	20.5%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 13-14, 2005
Report Date: October 17, 2005

Boring #: B-2 Sample #: *S3* Sample Date: 10-6-05
Location: Wilmington, NC Offset: N/A Depth: 6.0'-7.5'
Sample Description: Tan Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	205.32
B	Total Sample Dry Wt. + Tare Wt.	170.3	C	Dry Weight + Tare Wt.	170.33
C	Total Sample Dry Weight (B-A)	170.3	D	Water Wt. (B-C)	34.99
D	Total Sample Wt. After #200 Wash	166.7	E	Dry Wt.(C-A)	170.33
E	Percent Passing #200 (1-D/C)x100	2.1%	Moisture Content (100 x D/E) (%)		20.5%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	1.05	0.6%	**99.4%**
0.60	#30	18.57	10.9%	**89.1%**
0.30	#50	94.52	55.5%	**44.5%**
0.15	#100	162.05	95.1%	**4.9%**
0.075	#200	166.58	97.8%	**2.2%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.62
Plastic Limit	N/A	Cu = D60/D10:	**2.2**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.9**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**10.9%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**86.9%**
% Silt and Clay	< 0.075 mm	**2.2%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.18** D30 = **0.25** D60 = **0.39** D50 = **0.32** D90 = **0.6**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

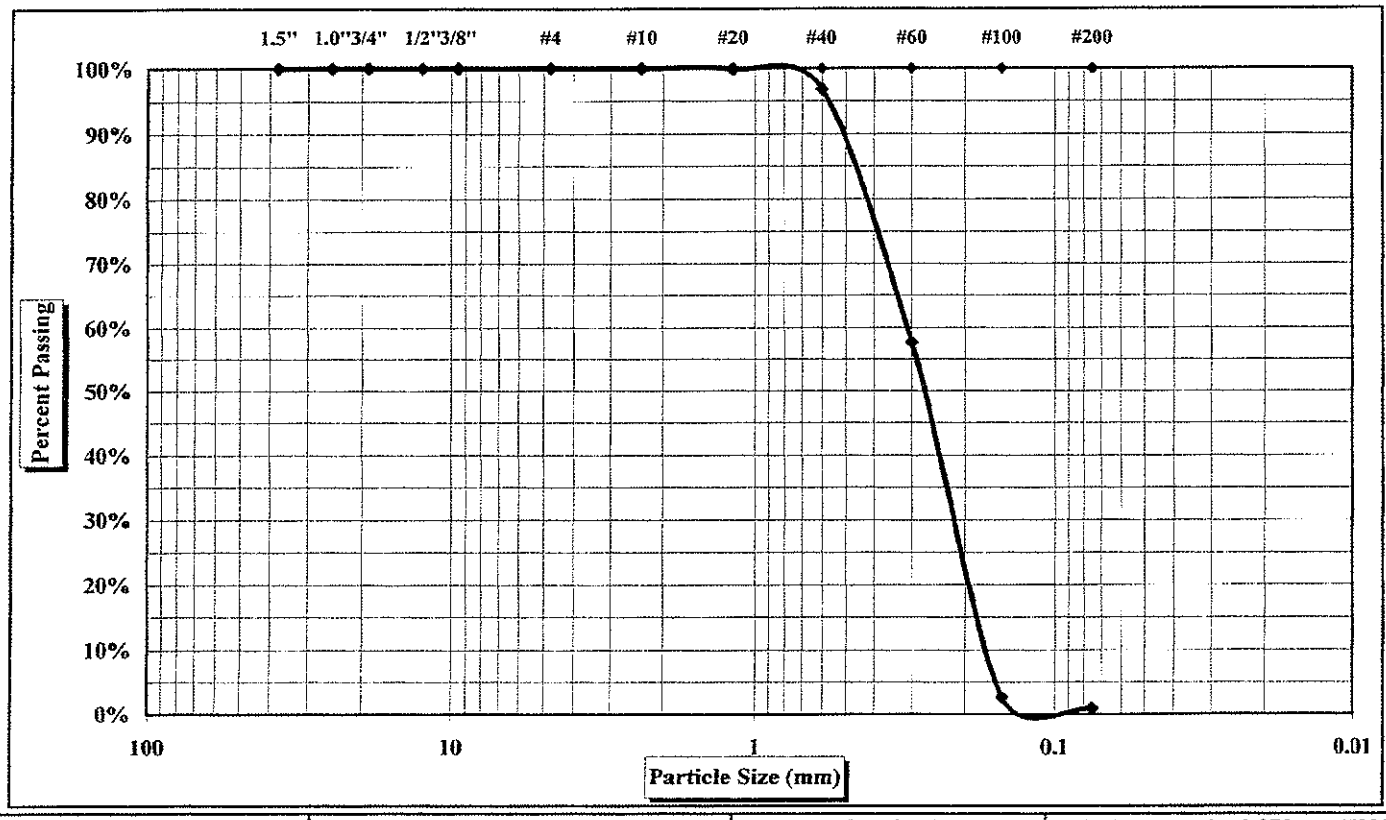
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-05-536**	Report Date:	October 17, 2005
Project Name:	**Sutton Lake Road Asphalt Plant**	Test Date(s):	October 13-14, 2005
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-2	Sample #:	S6	Sample Date:	10-6-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	18.5'-20.0'
Sample Description:	Light Gray Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	3%
Silt & Clay (% Passing #200)	0.9%	Coarse Sand	0%	Fine Sand	96%
Apparent Relative Density	N/A	Natural Moisture Content	27.6%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 13-14, 2005
Report Date: October 17, 2005

Boring #: B-2 Sample #: *S6* Sample Date: 10-6-05
Location: Wilmington, NC Offset: N/A Depth: 18.5'-20.0'
Sample Description: Light Gray Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	201.98
B	Total Sample Dry Wt. + Tare Wt.	158.3	C	Dry Weight + Tare Wt.	158.29
C	Total Sample Dry Weight (B-A)	158.3	D	Water Wt. (B-C)	43.69
D	Total Sample Wt. After #200 Wash	156.9	E	Dry Wt.(C-A)	158.29
E	Percent Passing #200 (1-D/C)x100	0.9%	Moisture Content (100 x D/E) (%)		27.6%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.12	0.1%	**99.9%**
0.60	#30	5.03	3.2%	**96.8%**
0.30	#50	67.02	42.3%	**57.7%**
0.15	#100	154.18	97.4%	**2.6%**
0.075	#200	156.88	99.1%	**0.9%**

Notes:				Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
	Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	1.43	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**3.2%**
Plastic Limit	N/A	Cu = D60/D10:	**1.7**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**95.9%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.8**	% Silt and Clay	< 0.075 mm	**0.9%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.18** D30 = **0.21** D60 = **0.31** D50 = **0.28** D90 = **0.5**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

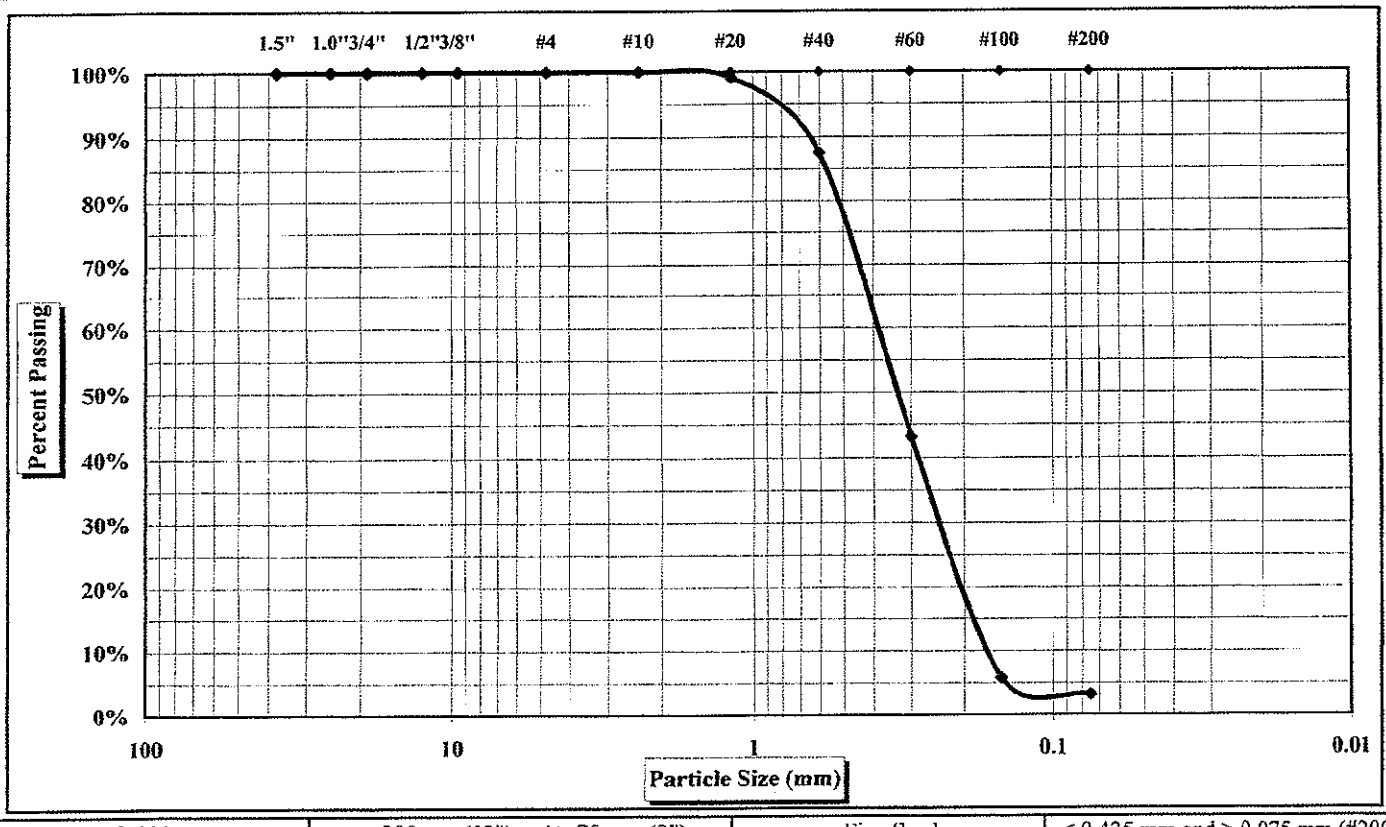
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 17, 2005
Test Date(s): October 13-14, 2005

Boring #:	B-3	Sample #:	S2	Sample Date:	10-6-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	3.5'-5.0'
Sample Description:	Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	12%
Silt & Clay (% Passing #200)	3.1%	Coarse Sand	0%	Fine Sand	84%
Apparent Relative Density	N/A	Natural Moisture Content	22.0%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 13-14, 2005
Report Date: October 17, 2005

Boring #: B-3 Sample #: *S2* Sample Date: 10-6-05
Location: Wilmington, NC Offset: N/A Depth: 3.5'-5.0'
Sample Description: Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	214.82
B	Total Sample Dry Wt. + Tare Wt.	176.1	C	Dry Weight + Tare Wt.	176.05
C	Total Sample Dry Weight (B-A)	176.1	D	Water Wt. (B-C)	38.77
D	Total Sample Wt. After #200 Wash	170.7	E	Dry Wt.(C-A)	176.05
E	Percent Passing #200 (1-D/C)x100	3.0%	Moisture Content (100 x D/E) (%)		22.0%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	1.51	0.9%	**99.1%**
0.60	#30	21.91	12.4%	**87.6%**
0.30	#50	100.01	56.8%	**43.2%**
0.15	#100	165.86	94.2%	**5.8%**
0.075	#200	170.51	96.9%	**3.1%**

Notes:

Maximum Particle Size				Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density				Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	1.64	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**12.4%**
Plastic Limit	N/A	Cu = D60/D10:	**2.2**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**84.4%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.8**	% Silt and Clay	< 0.075 mm	**3.1%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.18** D30 = **0.24** D60 = **0.39** D50 = **0.35** D90 = **0.64**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

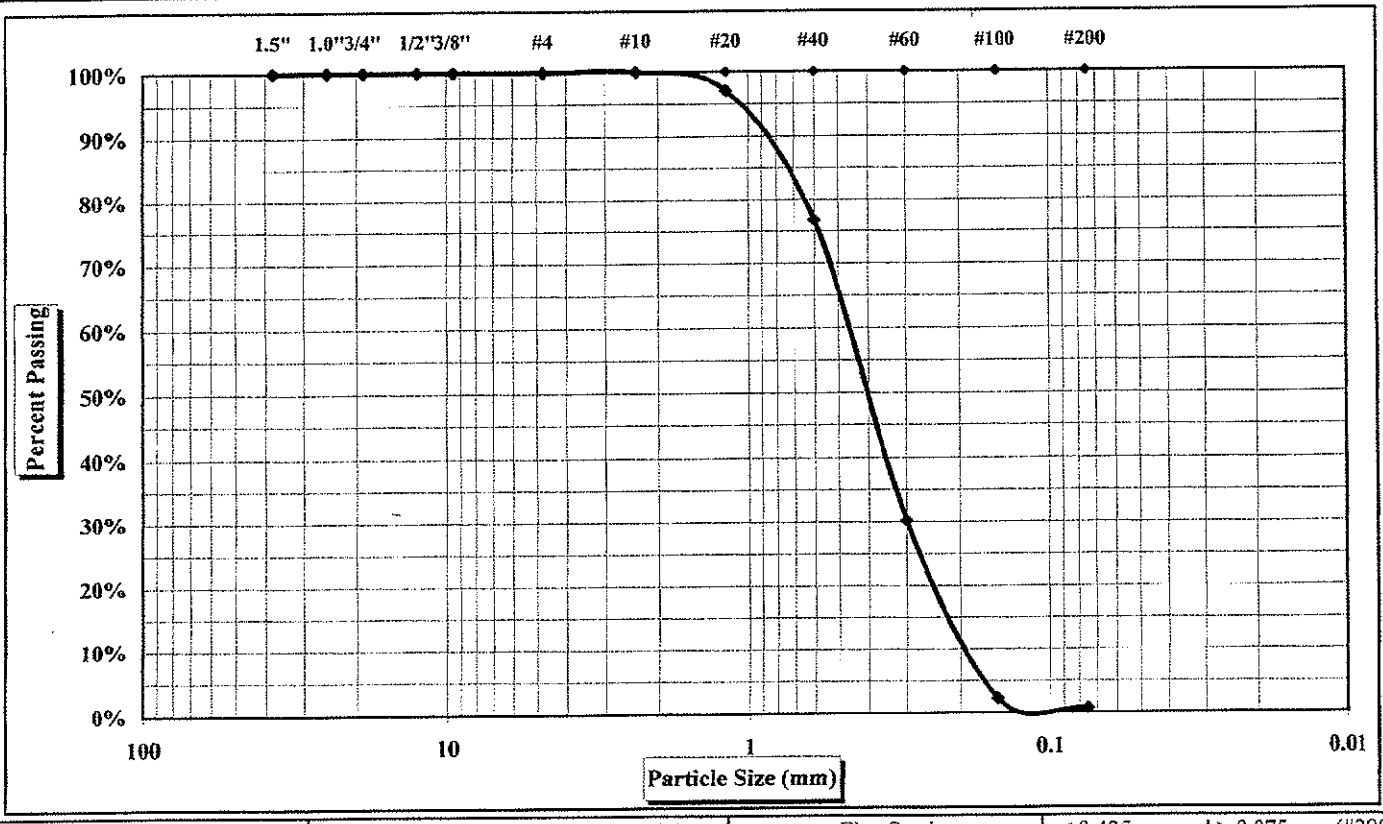
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 17, 2005
Test Date(s): October 13-14, 2005

Boring #:	B-3	Sample #:	S4	Sample Date:	10-6-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	8.5'-10.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	23%
Silt & Clay (% Passing #200)	0.7%	Coarse Sand	0%	Fine Sand	76%
Apparent Relative Density	N/A	Natural Moisture Content	21.7%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 13-14, 2005
Report Date: October 17, 2005

Boring #: B-3 Sample #: ***S4*** Sample Date: 10-6-05
Location: Wilmington, NC Offset: N/A Depth: 8.5'-10.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	220.22
B	Total Sample Dry Wt. + Tare Wt.	181.0	C	Dry Weight + Tare Wt.	181.00
C	Total Sample Dry Weight (B-A)	181.0	D	Water Wt. (B-C)	39.22
D	Total Sample Wt. After #200 Wash	179.8	E	Dry Wt.(C-A)	181.00
E	Percent Passing #200 (1-D/C)x100	0.7%	Moisture Content (100 x D/E) (%)		21.7%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	5.28	2.9%	**97.1%**
0.60	#30	42.11	23.3%	**76.7%**
0.30	#50	126.44	69.9%	**30.1%**
0.15	#100	176.95	97.8%	**2.2%**
0.075	#200	179.69	99.3%	**0.7%**

Notes:				Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
	Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	1.94	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**23.3%**
Plastic Limit	N/A	Cu = D60/D10:	**2.3**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**76.0%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**1.0**	% Silt and Clay	< 0.075 mm	**0.7%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
					Organic Content	

D10 = **0.2** D30 = **0.3** D60 = **0.45** D50 = **0.4** D90 = **0.89**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

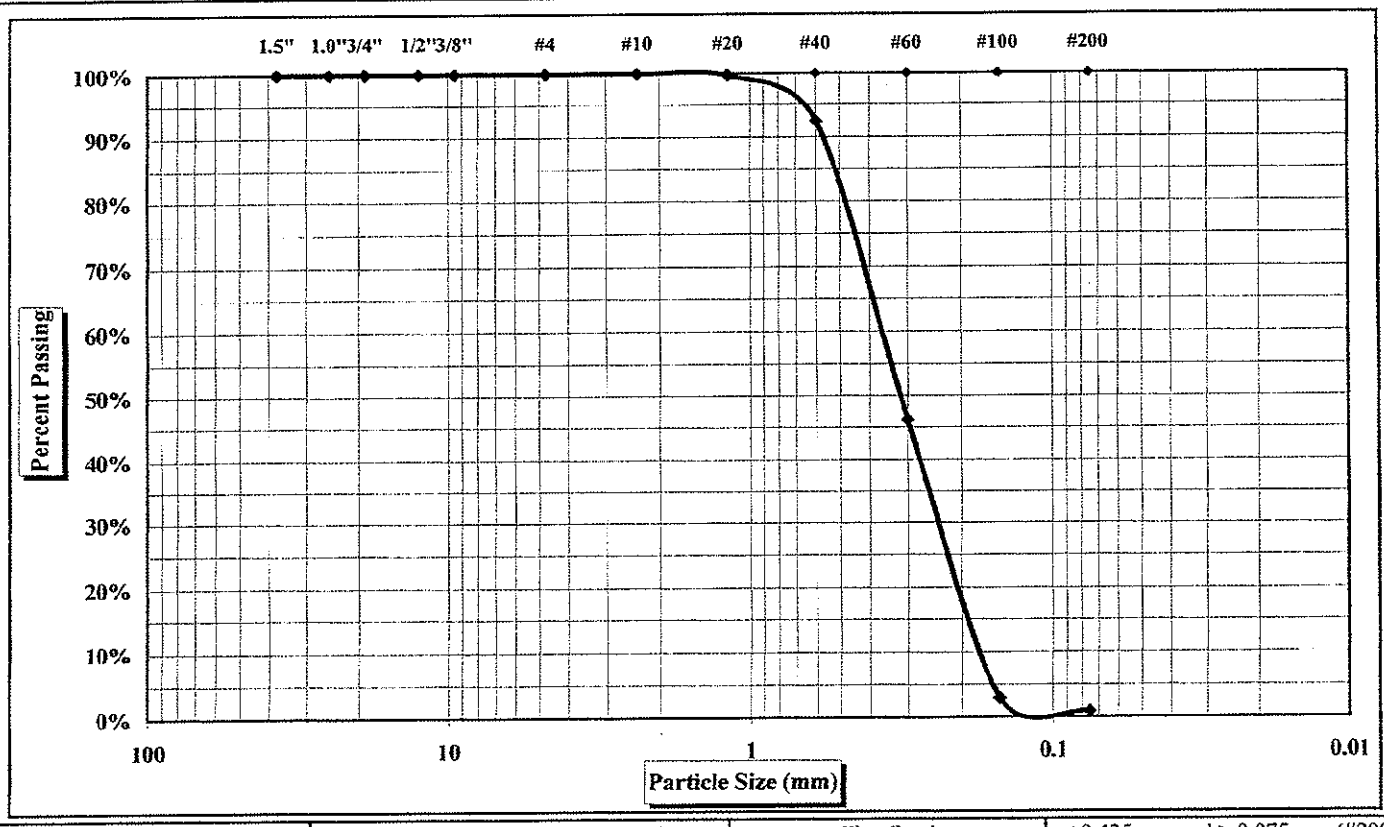
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 17, 2005
Test Date(s): October 13-14, 2005

Boring #:	B-4	Sample #:	S3	Sample Date:	10-6-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	6.0'-7.5'
Sample Description:	Tan Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	8%
Silt & Clay (% Passing #200)	0.9%	Coarse Sand	0%	Fine Sand	92%
Apparent Relative Density	N/A	Natural Moisture Content	24.6%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 13-14, 2005
Report Date: October 17, 2005

Boring #: B-4 Sample #: *S3* Sample Date: 10-6-05
Location: Wilmington, NC Offset: N/A Depth: 6.0'-7.5'
Sample Description: Tan Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	179.0
C	Total Sample Dry Weight (B-A)	179.0
D	Total Sample Wt. After #200 Wash	177.5
E	Percent Passing #200 (1-D/C)x100	0.8%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	223.09
C	Dry Weight + Tare Wt.	179.02
D	Water Wt. (B-C)	44.07
E	Dry Wt.(C-A)	179.02
Moisture Content (100 x D/E) (%)		24.6%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.58	0.3%	**99.7%**
0.60	#30	13.52	7.6%	**92.4%**
0.30	#50	96.40	53.8%	**46.2%**
0.15	#100	173.75	97.1%	**2.9%**
0.075	#200	177.38	99.1%	**0.9%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.59
Plastic Limit	N/A	Cu = D60/D10:	**2.1**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.9**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**7.6%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**91.5%**
% Silt and Clay	< 0.075 mm	**0.9%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.18** D30 = **0.24** D60 = **0.37** D50 = **0.31** D90 = **0.58**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

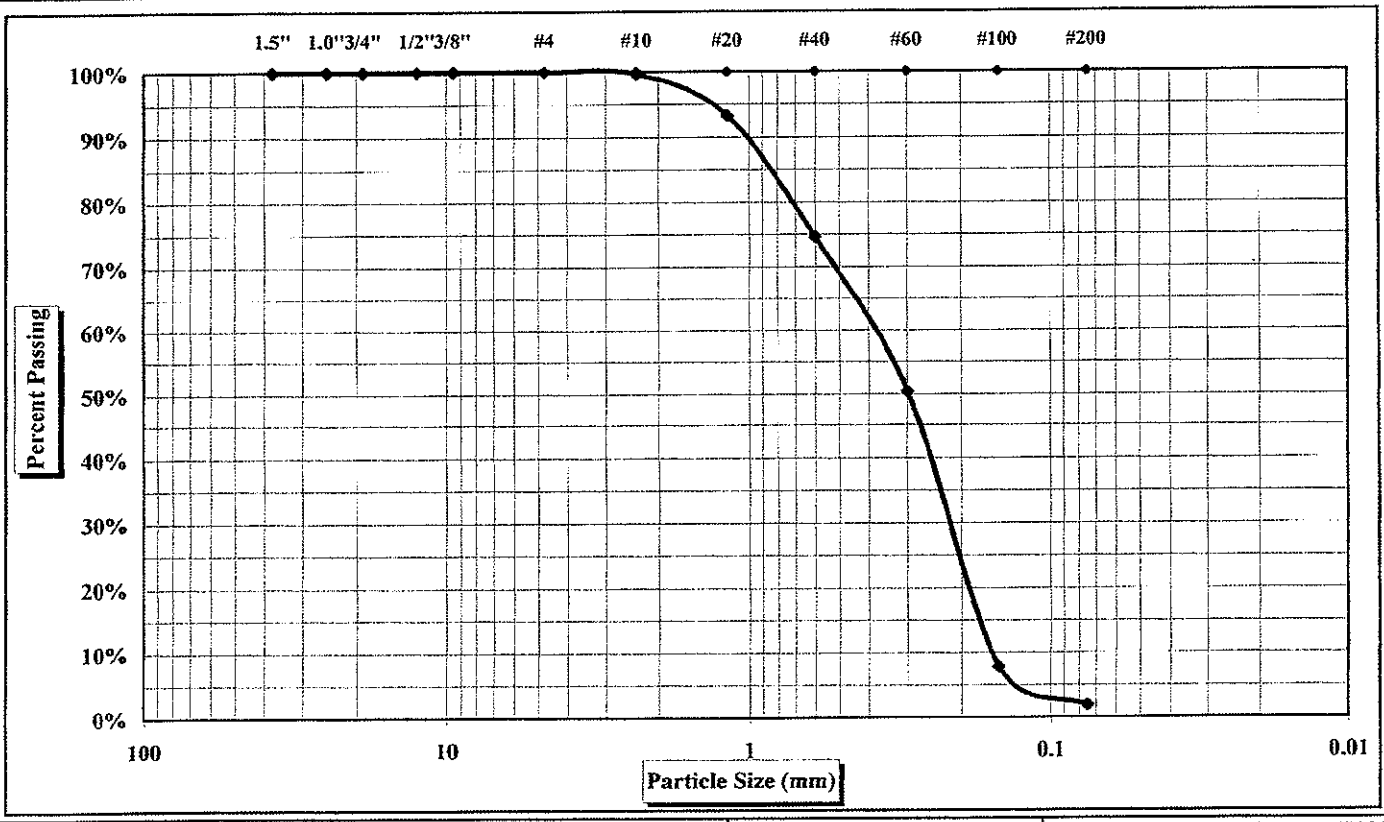
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-05-536**	Report Date:	October 17, 2005
Project Name:	**Sutton Lake Road Asphalt Plant**	Test Date(s):	October 13-14, 2005
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-4	Sample #:	S5	Sample Date:	10-6-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	13.5'-15.0'
Sample Description:	Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	25%
Silt & Clay (% Passing #200)	1.9%	Coarse Sand	0%	Fine Sand	73%
Apparent Relative Density	N/A	Natural Moisture Content	21.8%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples

ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 13-14, 2005
Report Date: October 17, 2005

Boring #: B-4 Sample #: ***S5*** Sample Date: 10-6-05
Location: Wilmington, NC Offset: N/A Depth: 13.5'-15.0'
Sample Description: Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	179.5
C	Total Sample Dry Weight (B-A)	179.5
D	Total Sample Wt. After #200 Wash	176.4
E	Percent Passing #200 (1-D/C)x100	1.7%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	218.62
C	Dry Weight + Tare Wt.	179.54
D	Water Wt. (B-C)	39.08
E	Dry Wt.(C-A)	179.54
Moisture Content (100 x D/E) (%)		21.8%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.57	0.3%	**99.7%**
1.18	#16	12.07	6.7%	**93.3%**
0.60	#30	45.64	25.4%	**74.6%**
0.30	#50	88.97	49.6%	**50.4%**
0.15	#100	165.53	92.2%	**7.8%**
0.075	#200	176.16	98.1%	**1.9%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.74
Plastic Limit	N/A	Cu = D60/D10:	**2.2**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.6**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.3%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**25.1%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**72.7%**
% Silt and Clay	< 0.075 mm	**1.9%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.18** D30 = **0.21** D60 = **0.39** D50 = **0.3** D90 = **1.1**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

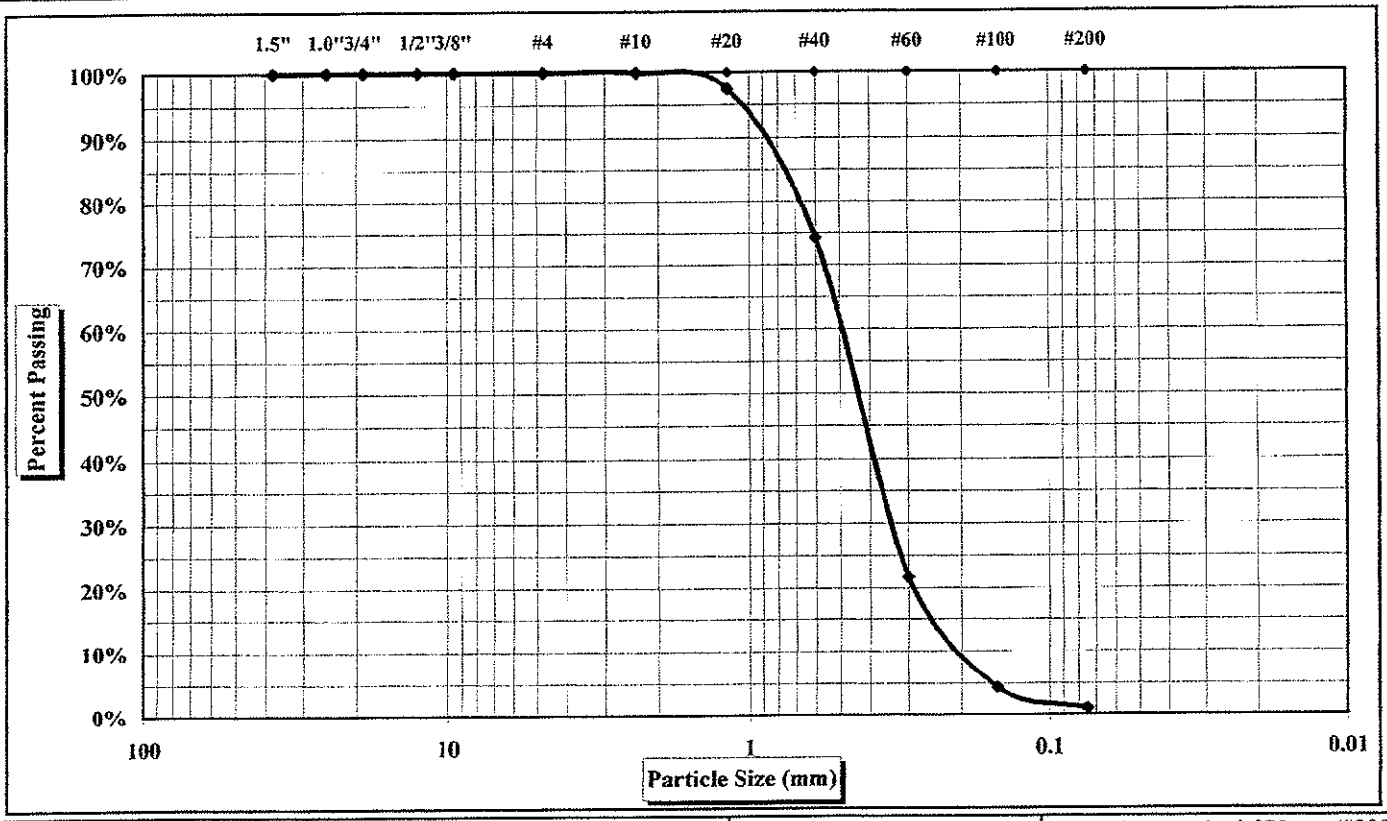
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 17, 2005
Test Date(s): October 14-17, 2005

Boring #:	B-4	Sample #:	S8	Sample Date:	10-6-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	28.5'-30.0'
Sample Description:	Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	26%
Silt & Clay (% Passing #200)	1.1%	Coarse Sand	0%	Fine Sand	73%
Apparent Relative Density	N/A	Natural Moisture Content	23.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 14-17, 2005
Report Date: October 17, 2005

Boring #: B-4 Sample #: *S8* Sample Date: 10-6-05
Location: Wilmington, NC Offset: N/A Depth: 28.5'-30.0'
Sample Description: Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	207.82
B	Total Sample Dry Wt. + Tare Wt.	168.7	C	Dry Weight + Tare Wt.	168.65
C	Total Sample Dry Weight (B-A)	168.7	D	Water Wt. (B-C)	39.17
D	Total Sample Wt. After #200 Wash	167.0	E	Dry Wt.(C-A)	168.65
E	Percent Passing #200 (1-D/C)x100	1.0%	Moisture Content (100 x D/E) (%)		23.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.07	0.0%	**100.0%**
1.18	#16	4.26	2.5%	**97.5%**
0.60	#30	43.44	25.8%	**74.2%**
0.30	#50	132.08	78.3%	**21.7%**
0.15	#100	161.39	95.7%	**4.3%**
0.075	#200	166.87	98.9%	**1.1%**

Notes:						
Maximum Particle Size				Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density				Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	2.02	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**25.7%**
Plastic Limit	N/A	Cu = D60/D10:	**2.4**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**73.2%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.5**	% Silt and Clay	< 0.075 mm	**1.1%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.21** D30 = **0.24** D60 = **0.5** D50 = **0.42** D90 = **0.89**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

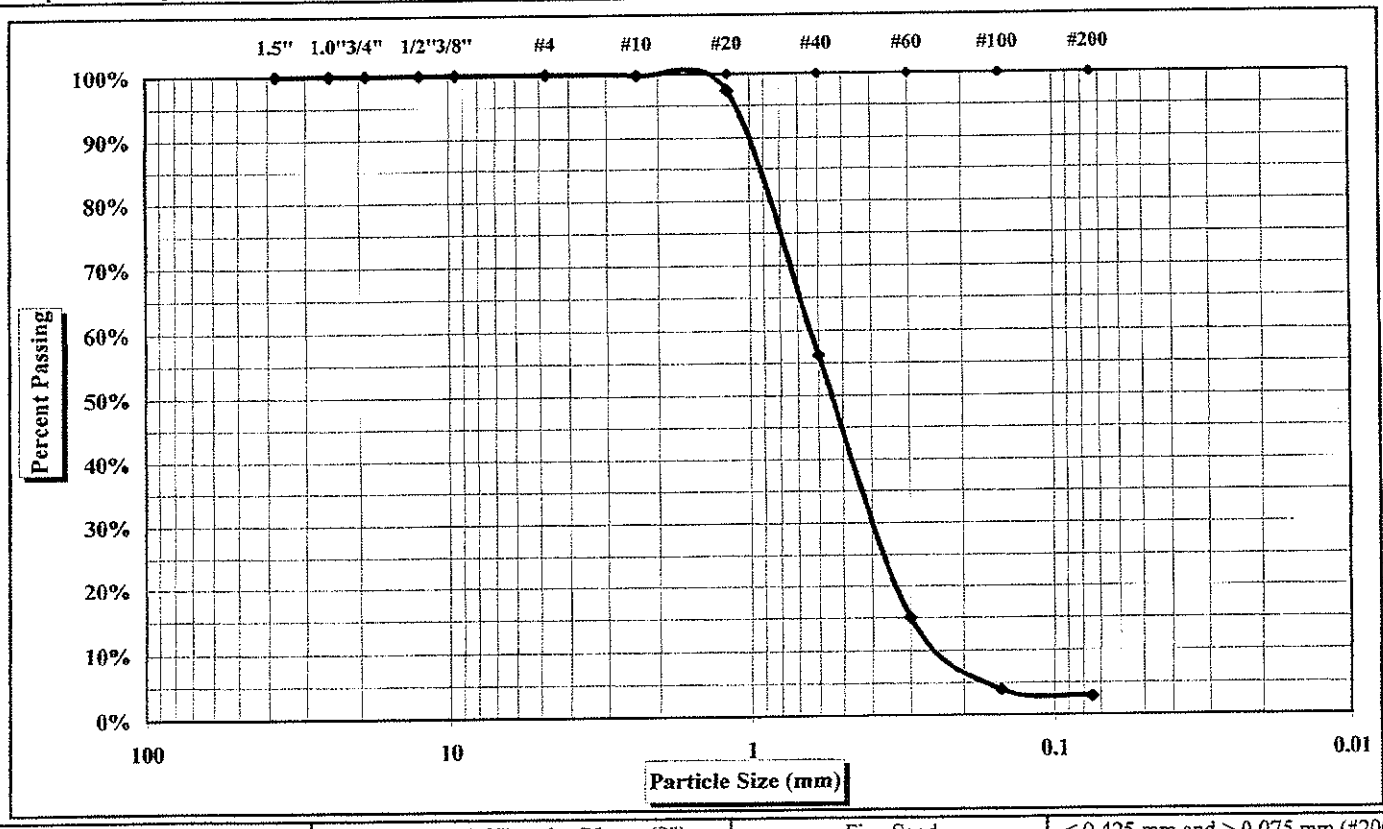
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 17, 2005
Test Date(s): October 14-17, 2005

Boring #:	B-4	Sample #:	S10	Sample Date:	10-6-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	38.5'-40.0'
Sample Description:	Tan Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	44%
Silt & Clay (% Passing #200)	2.9%	Coarse Sand	0%	Fine Sand	53%
Apparent Relative Density	N/A	Natural Moisture Content	23.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 14-17, 2005
Report Date: October 17, 2005

Boring #: B-4 Sample #: ***S10*** Sample Date: 10-6-05
Location: Wilmington, NC Offset: N/A Depth: 38.5'-40.0'
Sample Description: Tan Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	191.6
C	Total Sample Dry Weight (B-A)	191.6
D	Total Sample Wt. After #200 Wash	186.2
E	Percent Passing #200 (1-D/C)x100	2.8%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	236.03
C	Dry Weight + Tare Wt.	191.59
D	Water Wt. (B-C)	44.44
E	Dry Wt.(C-A)	191.59
	Moisture Content (100 x D/E) (%)	23.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	Percent Passing Total Sample
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.41	0.2%	**99.8%**
1.18	#16	5.06	2.6%	**97.4%**
0.60	#30	83.84	43.8%	**56.2%**
0.30	#50	162.81	85.0%	**15.0%**
0.15	#100	184.07	96.1%	**3.9%**
0.075	#200	186.05	97.1%	**2.9%**

Notes:

	Maximum Particle Size		
	Apparent Relative Density		
Liquid Limit	N/A	Fineness Modulus	2.28
Plastic Limit	N/A	Cu = D60/D10:	**2.4**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**1.0**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.2%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**43.5%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**53.3%**
% Silt and Clay	< 0.075 mm	**2.9%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.25** D30 = **0.4** D60 = **0.61** D50 = **0.53** D90 = 1

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

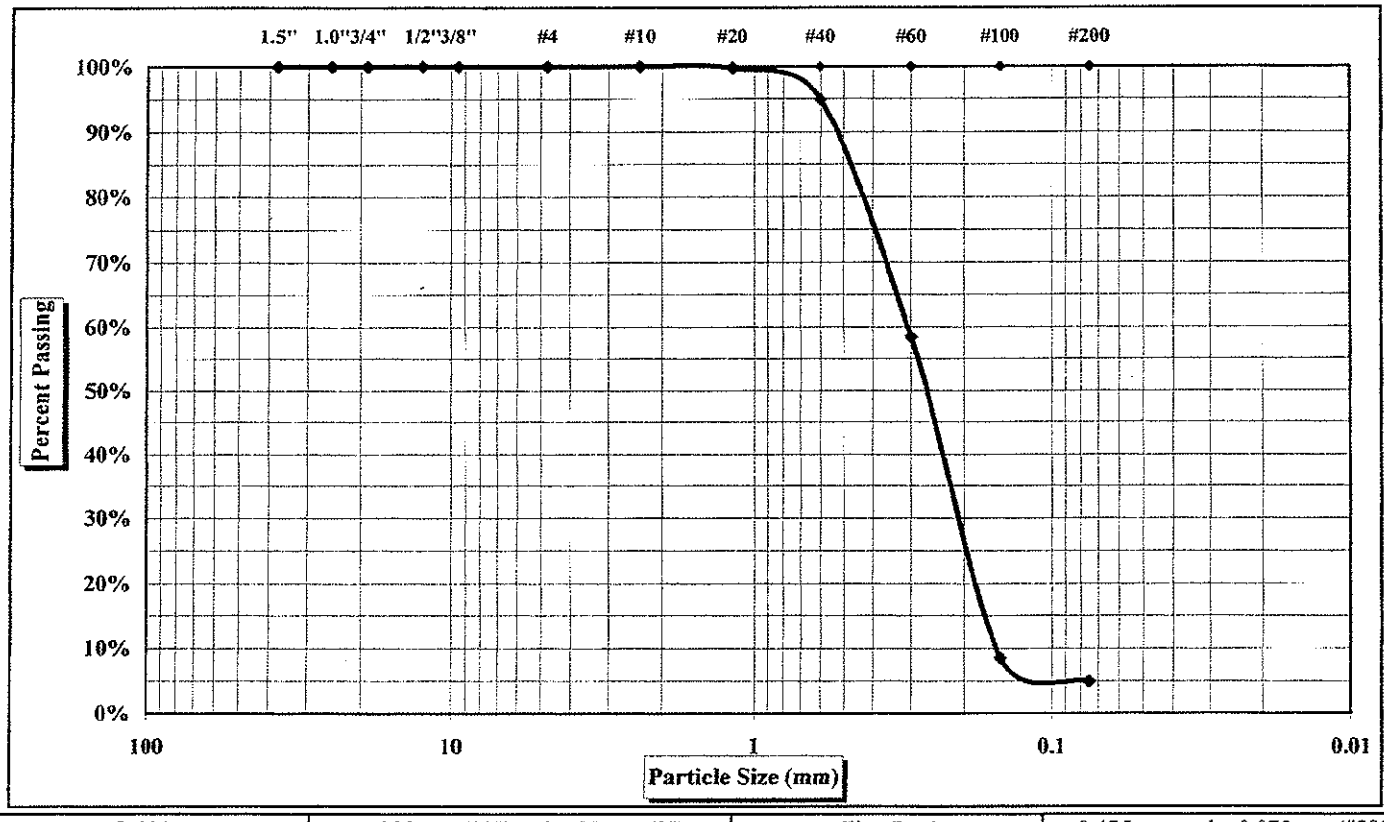
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-05-536**	Report Date:	October 17, 2005
Project Name:	**Sutton Lake Road Asphalt Plant**	Test Date(s):	October 14-17, 2005
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-5	Sample #:	S3	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	6.0'-7.5'
Sample Description:	Tan Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	5%
Silt & Clay (% Passing #200)	4.9%	Coarse Sand	0%	Fine Sand	90%
Apparent Relative Density	N/A	Natural Moisture Content	22.3%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 14-17, 2005
Report Date: October 17, 2005

Boring #: B-5 Sample #: *S3* Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 6.0'-7.5'
Sample Description: Tan Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	322.04
B	Total Sample Dry Wt. + Tare Wt.	263.3	C	Dry Weight + Tare Wt.	263.34
C	Total Sample Dry Weight (B-A)	263.3	D	Water Wt. (B-C)	58.70
D	Total Sample Wt. After #200 Wash	250.8	E	Dry Wt.(C-A)	263.34
E	Percent Passing #200 (1-D/C)x100	4.8%	Moisture Content (100 x D/E) (%)		22.3%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.63	0.2%	**99.8%**
0.60	#30	13.33	5.1%	**94.9%**
0.30	#50	109.64	41.6%	**58.4%**
0.15	#100	240.97	91.5%	**8.5%**
0.075	#200	250.35	95.1%	**4.9%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.38
Plastic Limit	N/A	Cu = D60/D10:	**1.8**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.8**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**5.1%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**90.0%**
% Silt and Clay	< 0.075 mm	**4.9%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.17** D30 = **0.2** D60 = **0.31** D50 = **0.28** D90 = **0.51**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

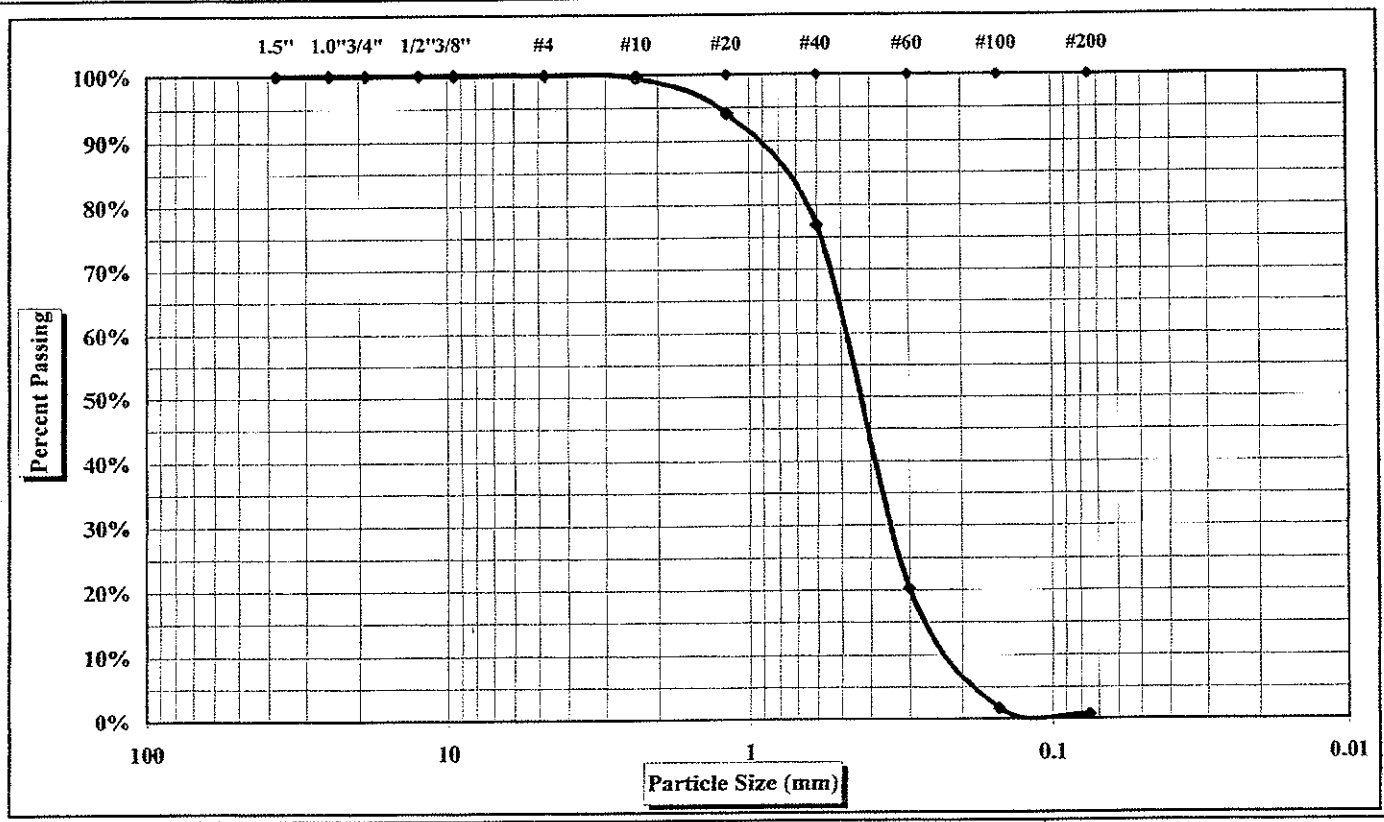
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 17, 2005
Test Date(s): October 14-17, 2005

Boring #:	B-5	Sample #:	S8	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	28.5'-30.0'
Sample Description:	Light Gray/Tan Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	23%
Silt & Clay (% Passing #200)	0.8%	Coarse Sand	0%	Fine Sand	76%
Apparent Relative Density	N/A	Natural Moisture Content	24.3%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. — Branch Manager (Position)

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 14-17, 2005
Report Date: October 17, 2005

Boring #: B-5 Sample #: ***S8*** Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 28.5'-30.0'
Sample Description: Light Gray/Tan Medium to Fine SAND (SP)

	Particle Size Analysis / Without Hydrometer Analysis			Moisture Content	Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	348.73
B	Total Sample Dry Wt. + Tare Wt.	280.6	C	Dry Weight + Tare Wt.	280.58
C	Total Sample Dry Weight (B-A)	280.6	D	Water Wt. (B-C)	68.15
D	Total Sample Wt. After #200 Wash	278.6	E	Dry Wt.(C-A)	280.58
E	Percent Passing #200 (1-D/C)x100	0.7%		Moisture Content (100 x D/E) (%)	24.3%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	1.29	0.5%	**99.5%**
1.18	#16	16.41	5.8%	**94.2%**
0.60	#30	64.85	23.1%	**76.9%**
0.30	#50	223.82	79.8%	**20.2%**
0.15	#100	275.89	98.3%	**1.7%**
0.075	#200	278.37	99.2%	**0.8%**

Notes:	Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
	Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.5%**
Liquid Limit	N/A	Fineness Modulus	2.08	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**22.7%**
Plastic Limit	N/A	Cu = D60/D10:	**2.2**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**76.1%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**1.1**	% Silt and Clay	< 0.075 mm	**0.8%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.22** D30 = **0.35** D60 = **0.49** D50 = **0.42** D90 = **0.9**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

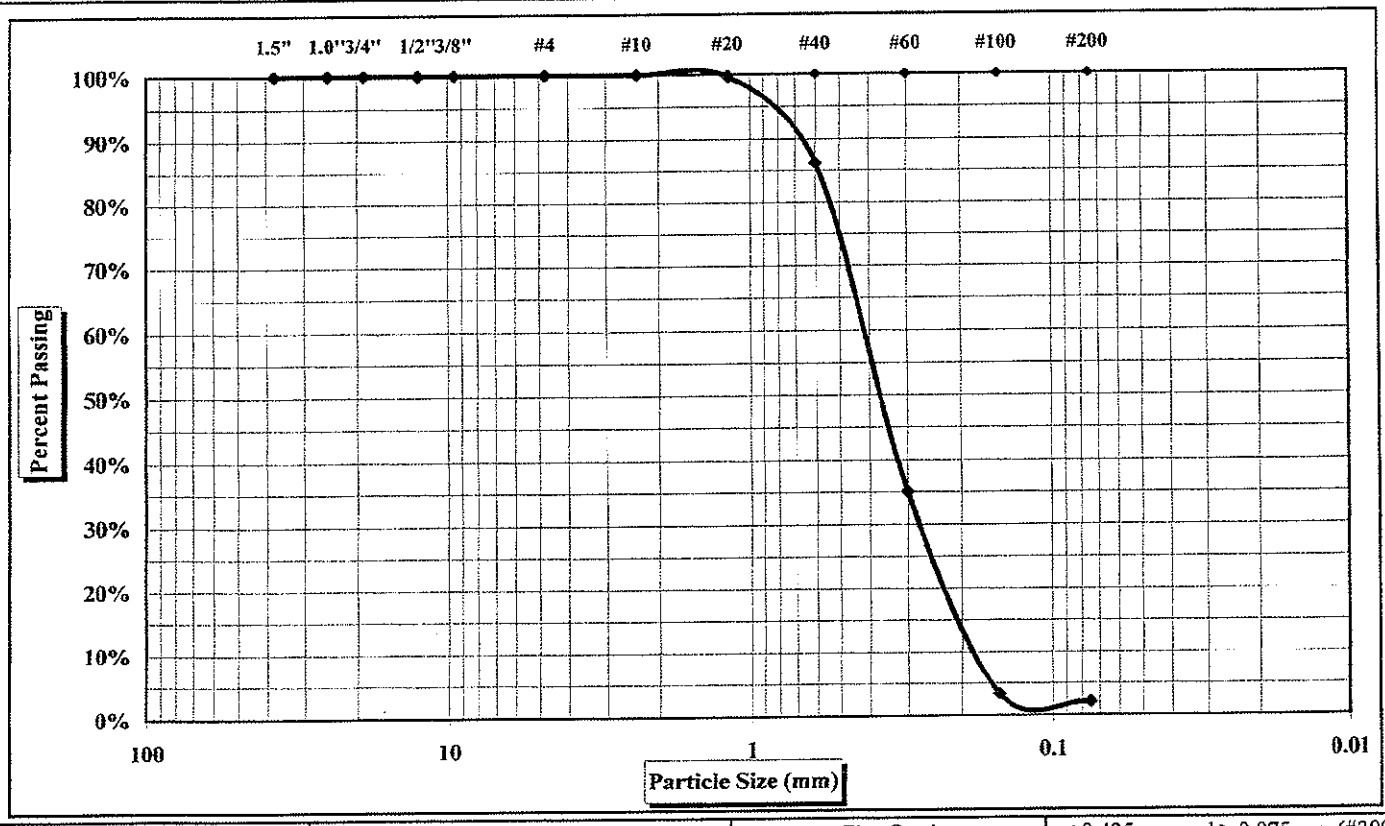
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 17, 2005
Test Date(s): October 14-17, 2005

Boring #:	B-8	Sample #:	S2	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	3.5'-5.0'
Sample Description:	Light Brown Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	14%
Silt & Clay (% Passing #200)	2.1%	Coarse Sand	0%	Fine Sand	84%
Apparent Relative Density	N/A	Natural Moisture Content	17.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 14-17, 2005
Report Date: October 17, 2005

Boring #: B-8 Sample #: *S2* Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 3.5'-5.0'
Sample Description: Light Brown Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	313.80
B	Total Sample Dry Wt. + Tare Wt.	267.9	C	Dry Weight + Tare Wt.	267.85
C	Total Sample Dry Weight (B-A)	267.9	D	Water Wt. (B-C)	45.95
D	Total Sample Wt. After #200 Wash	262.3	E	Dry Wt.(C-A)	267.85
E	Percent Passing #200 (1-D/C)x100	2.1%	Moisture Content (100 x D/E) (%)		17.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.91	0.3%	**99.7%**
0.60	#30	37.03	13.8%	**86.2%**
0.30	#50	174.02	65.0%	**35.0%**
0.15	#100	258.87	96.6%	**3.4%**
0.075	#200	262.17	97.9%	**2.1%**

Notes:	Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
	Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	1.76	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**13.8%**
Plastic Limit	N/A	Cu = D60/D10:	**2.2**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**84.1%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**1.1**	% Silt and Clay	< 0.075 mm	**2.1%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.19** D30 = **0.29** D60 = **0.41** D50 = **0.39** D90 = **0.69**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

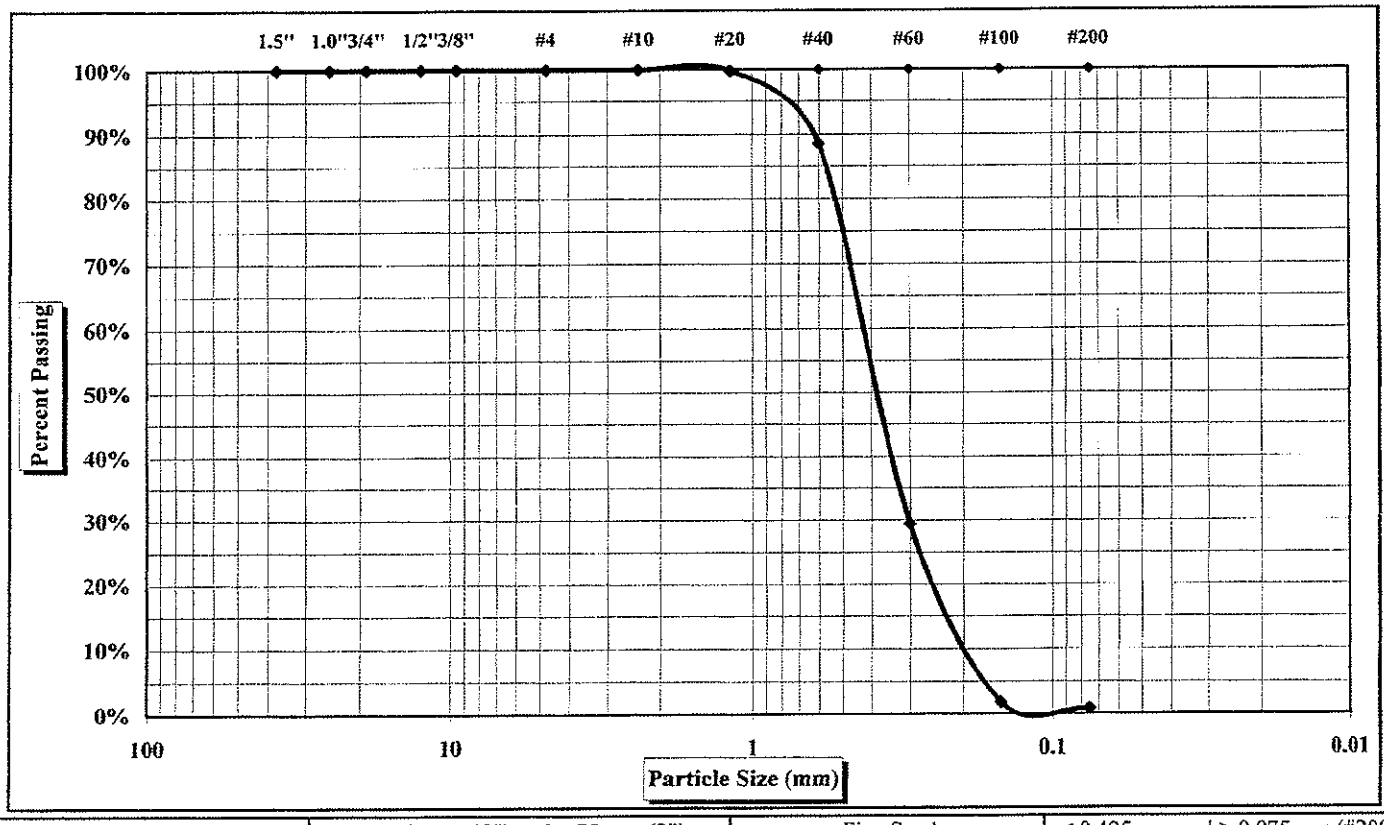
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 17, 2005
Test Date(s): October 14-17, 2005

Boring #:	B-8	Sample #:	S8	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	28.5'-30.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	11%
Silt & Clay (% Passing #200)	0.9%	Coarse Sand	0%	Fine Sand	88%
Apparent Relative Density	N/A	Natural Moisture Content	24.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 14-17, 2005
Report Date: October 17, 2005

Boring #: B-8 Sample #: *S8* Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 28.5'-30.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	329.15
B	Total Sample Dry Wt. + Tare Wt.	265.0	C	Dry Weight + Tare Wt.	265.04
C	Total Sample Dry Weight (B-A)	265.0	D	Water Wt. (B-C)	64.11
D	Total Sample Wt. After #200 Wash	262.9	E	Dry Wt.(C-A)	265.04
E	Percent Passing #200 (1-D/C)x100	0.8%	Moisture Content (100 x D/E) (%)		24.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.49	0.2%	**99.8%**
0.60	#30	30.42	11.5%	**88.5%**
0.30	#50	187.27	70.7%	**29.3%**
0.15	#100	260.08	98.1%	**1.9%**
0.075	#200	262.77	99.1%	**0.9%**

Notes:						
Maximum Particle Size				Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density				Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	1.81	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**11.5%**
Plastic Limit	N/A	Cu = D60/D10:	**2.1**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**87.7%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**1.1**	% Silt and Clay	< 0.075 mm	**0.9%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.2** D30 = **0.3** D60 = **0.42** D50 = **0.39** D90 = **0.61**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

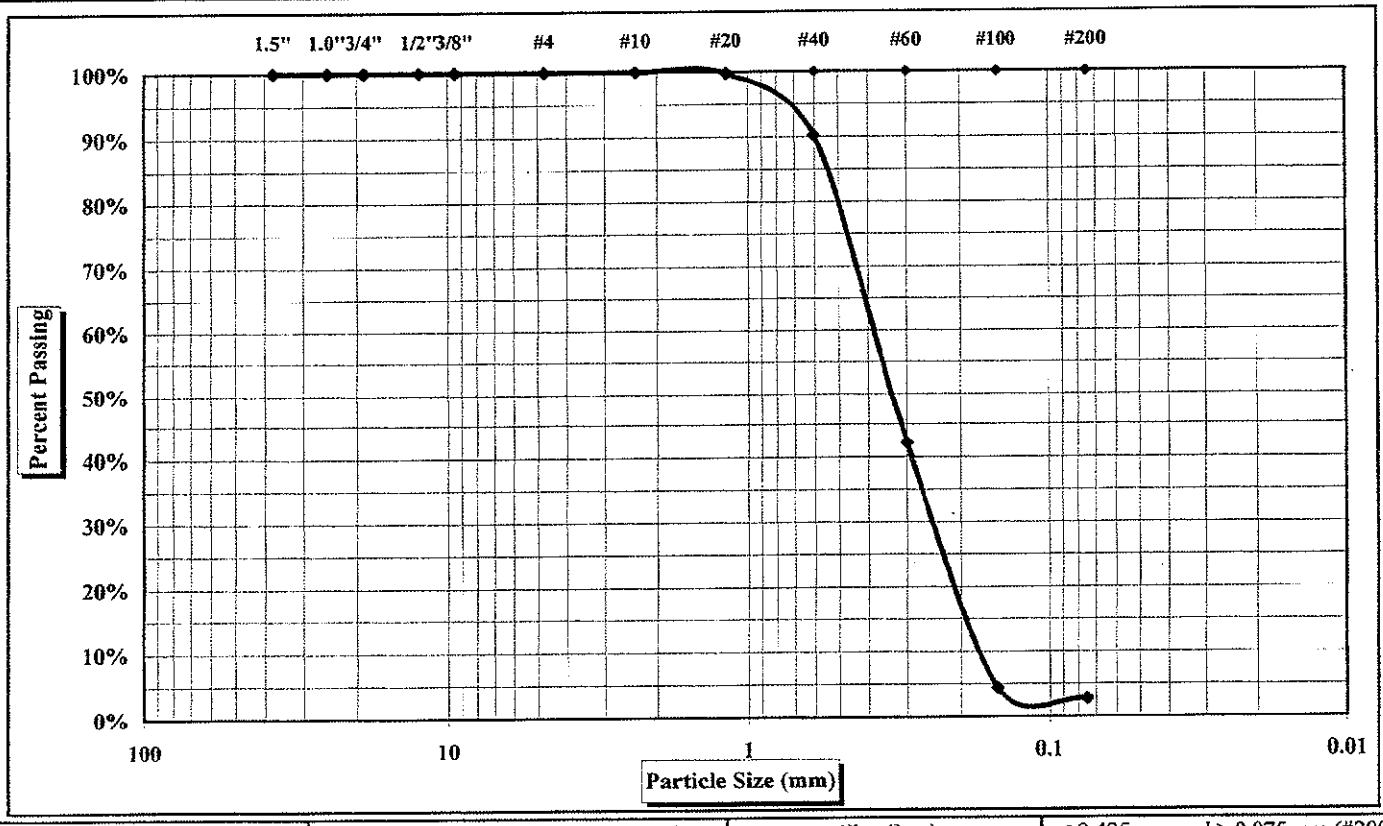
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 17, 2005
Test Date(s): October 14-17, 2005

Boring #:	B-9	Sample #:	S2	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	3.5'-5.0'
Sample Description:	Brown Slightly Silty Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	10%
Silt & Clay (% Passing #200)	2.7%	Coarse Sand	0%	Fine Sand	87%
Apparent Relative Density	N/A	Natural Moisture Content	21.7%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536 Test Date(s): October 14-17, 2005
Project Name: Sutton Lake Road Asphalt Plant Report Date: October 17, 2005
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-9 Sample #: ***S2*** Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 3.5'-5.0'
Sample Description: Brown Slightly Silty Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	329.09
B	Total Sample Dry Wt. + Tare Wt.	270.4	C	Dry Weight + Tare Wt.	270.41
C	Total Sample Dry Weight (B-A)	270.4	D	Water Wt. (B-C)	58.58
D	Total Sample Wt. After #200 Wash	263.1	E	Dry Wt.(C-A)	270.41
E	Percent Passing #200 (1-D/C)x100	2.7%	Moisture Content (100 x D/E) (%)		21.7%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.71	0.3%	**99.7%**
0.60	#30	26.51	9.8%	**90.2%**
0.30	#50	156.50	57.9%	**42.1%**
0.15	#100	258.64	95.6%	**4.4%**
0.075	#200	262.99	97.3%	**2.7%**

Notes:	Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
	Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	1.64	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**9.8%**
Plastic Limit	N/A	Cu = D60/D10:	**2.3**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**87.5%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**1.1**	% Silt and Clay	< 0.075 mm	**2.7%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.17** D30 = **0.27** D60 = **0.39** D50 = **0.34** D90 = **0.6**

ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

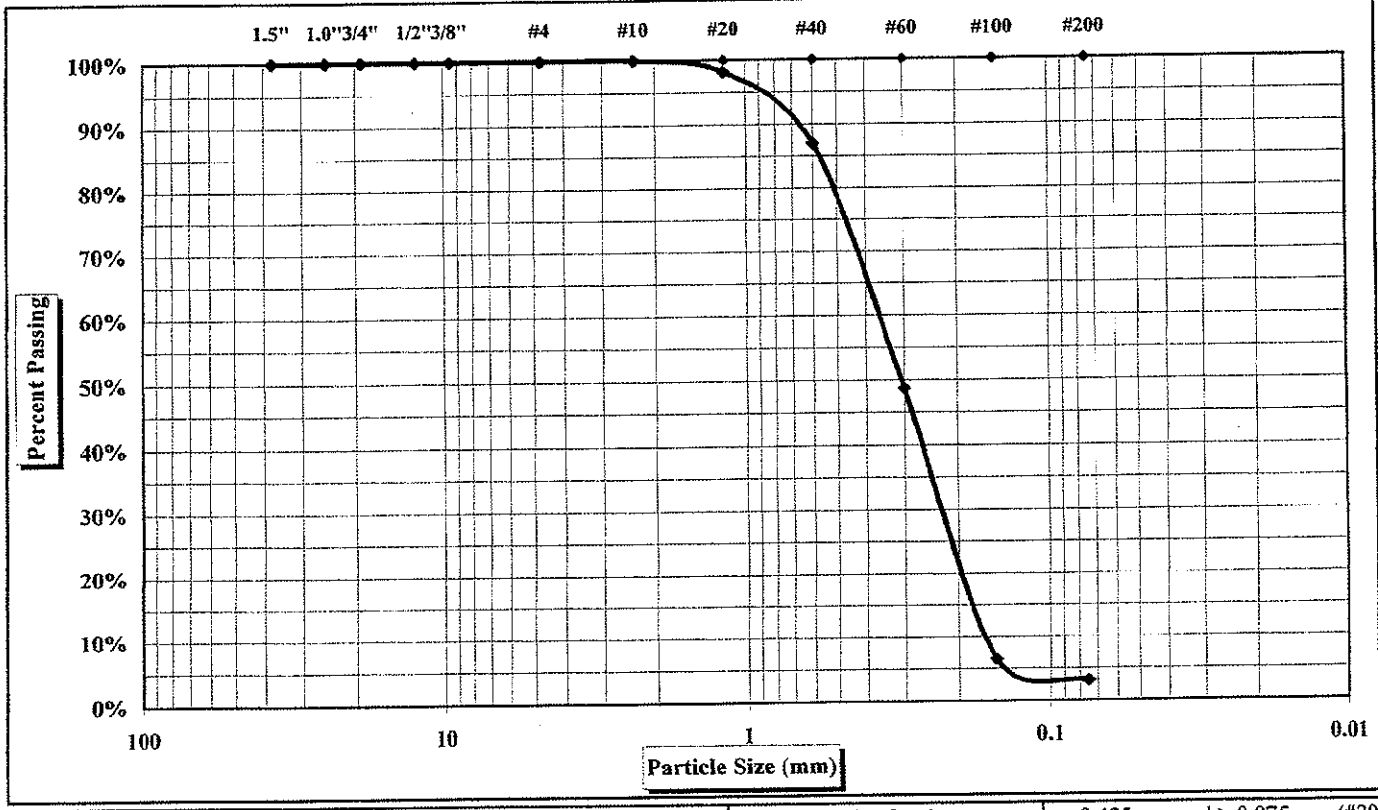
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 17, 2005
Test Date(s): October 14-17, 2005

Boring #:	B-9	Sample #:	S4	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	8.5'-10.0'
Sample Description:	Tan Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	13%
Silt & Clay (% Passing #200)	3.1%	Coarse Sand	0%	Fine Sand	84%
Apparent Relative Density	N/A	Natural Moisture Content	20.9%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 14-17, 2005
Report Date: October 17, 2005

Boring #: B-9 Sample #: ***S4*** Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 8.5'-10.0'
Sample Description: Tan Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	278.3
C	Total Sample Dry Weight (B-A)	278.3
D	Total Sample Wt. After #200 Wash	270.1
E	Percent Passing #200 (1-D/C)x100	2.9%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	336.44
C	Dry Weight + Tare Wt.	278.28
D	Water Wt. (B-C)	58.16
E	Dry Wt.(C-A)	278.28
Moisture Content (100 x D/E) (%)		20.9%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	5.05	1.8%	**98.2%**
0.60	#30	36.12	13.0%	**87.0%**
0.30	#50	142.78	51.3%	**48.7%**
0.15	#100	260.26	93.5%	**6.5%**
0.075	#200	269.58	96.9%	**3.1%**

Notes:
Maximum Particle Size
Apparent Relative Density
Liquid Limit N/A Fineness Modulus 1.60
Plastic Limit N/A Cu = D60/D10: **2.2**
Plastic Index N/A $Cc = (D30)^2/(D10 \times D60)$: **0.8**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**13.0%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**83.9%**
% Silt and Clay	< 0.075 mm	**3.1%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.17** D30 = **0.22** D60 = **0.37** D50 = **0.31** D90 = **0.68**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

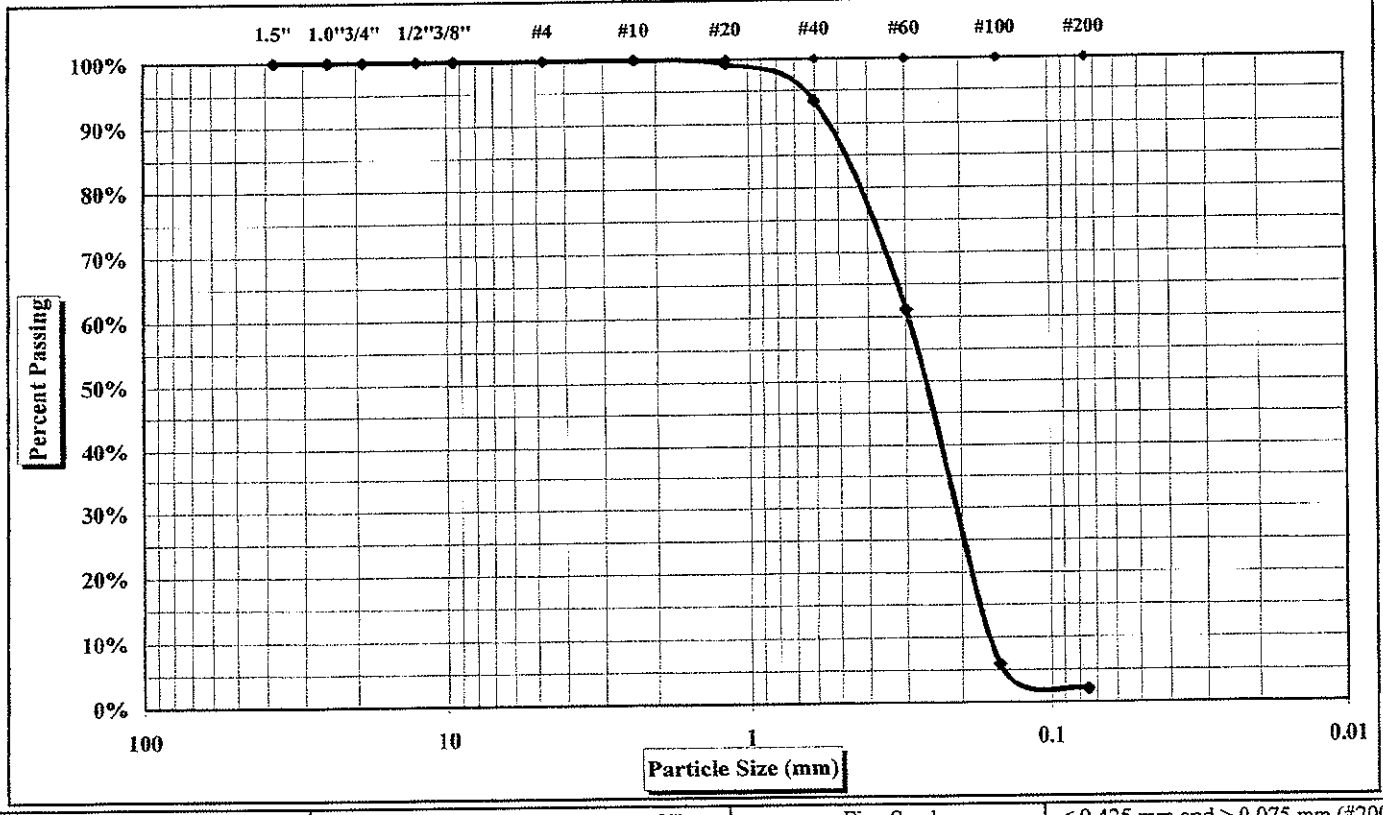
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 19, 2005
Test Date(s): October 17-19, 2005

Boring #:	B-9	Sample #:	S10	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	38.5'-40.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	7%
Silt & Clay (% Passing #200)	2.0%	Coarse Sand	0%	Fine Sand	91%
Apparent Relative Density	N/A	Natural Moisture Content	27.0%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 17-19, 2005
Report Date: October 19, 2005

Boring #: B-9 Sample #: ***S10*** Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 38.5'-40.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	258.2
C	Total Sample Dry Weight (B-A)	258.2
D	Total Sample Wt. After #200 Wash	253.4
E	Percent Passing #200 (1-D/C)x100	1.9%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	327.98
C	Dry Weight + Tare Wt.	258.18
D	Water Wt. (B-C)	69.80
E	Dry Wt.(C-A)	258.18
Moisture Content (100 x D/E) (%)		27.0%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	Percent Passing Total Sample
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	1.94	0.8%	**99.2%**
0.60	#30	16.92	6.6%	**93.4%**
0.30	#50	100.38	38.9%	**61.1%**
0.15	#100	243.08	94.2%	**5.8%**
0.075	#200	252.99	98.0%	**2.0%**

Notes: Maximum Particle Size
Apparent Relative Density

Liquid Limit	N/A	Fineness Modulus	1.41
Plastic Limit	N/A	Cu = D60/D10:	**1.8**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.8**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**6.6%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**91.4%**
% Silt and Clay	< 0.075 mm	**2.0%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.17** D30 = **0.2** D60 = **0.3** D50 = **0.28** D90 = **0.52**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

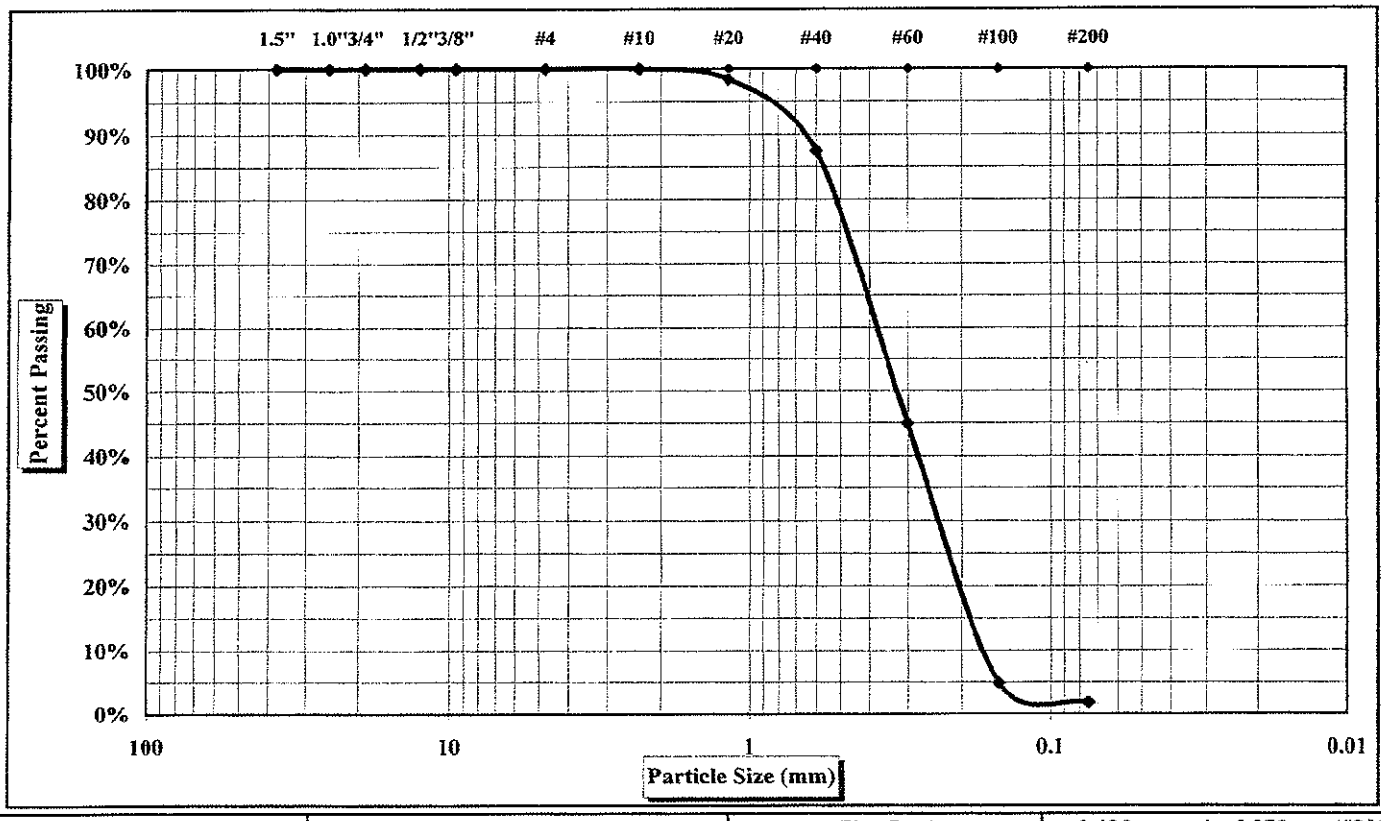
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 19, 2005
Test Date(s): October 17-19, 2005

Boring #:	B-10	Sample #:	S4	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	8.5'-10.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	13%
Silt & Clay (% Passing #200)	1.8%	Coarse Sand	0%	Fine Sand	86%
Apparent Relative Density	N/A	Natural Moisture Content	21.6%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 17-19, 2005
Report Date: October 19, 2005

Boring #: B-10 Sample #: *S4* Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 8.5'-10.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	276.5
C	Total Sample Dry Weight (B-A)	276.5
D	Total Sample Wt. After #200 Wash	272.1
E	Percent Passing #200 (1-D/C)x100	1.6%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	336.17
C	Dry Weight + Tare Wt.	276.54
D	Water Wt. (B-C)	59.63
E	Dry Wt.(C-A)	276.54
Moisture Content (100 x D/E) (%)		21.6%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	Percent Passing Total Sample
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	4.51	1.6%	**98.4%**
0.60	#30	34.78	12.6%	**87.4%**
0.30	#50	152.36	55.1%	**44.9%**
0.15	#100	263.14	95.2%	**4.8%**
0.075	#200	271.61	98.2%	**1.8%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.65
Plastic Limit	N/A	Cu = D60/D10:	**2.2**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.8**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**12.6%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**85.6%**
% Silt and Clay	< 0.075 mm	**1.8%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.18** D30 = **0.24** D60 = **0.39** D50 = **0.32** D90 = **0.65**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

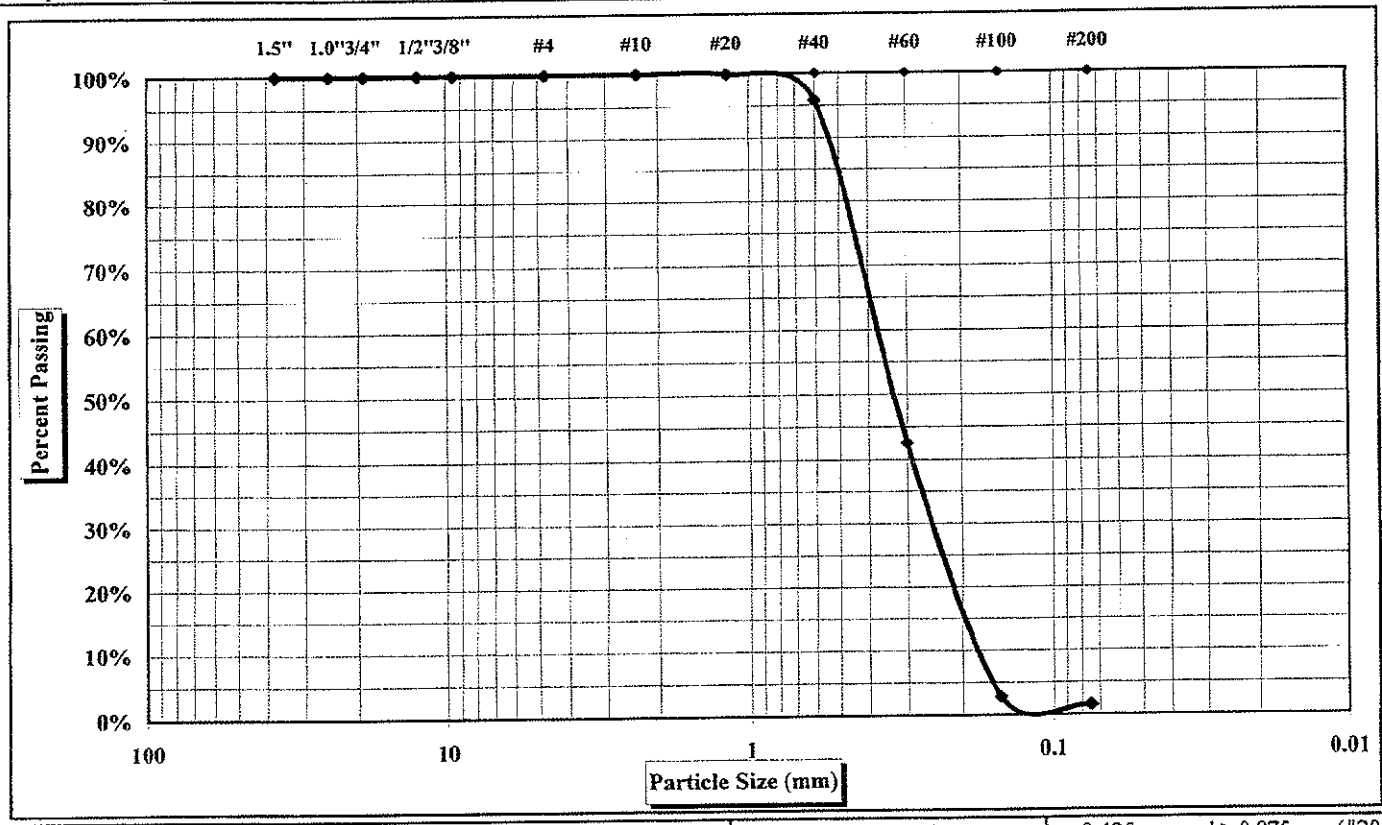
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 19, 2005
Test Date(s): October 17-19, 2005

Boring #:	B-10	Sample #:	S5	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	13.5'-15.0'
Sample Description:	Brown Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	4%
Silt & Clay (% Passing #200)	1.6%	Coarse Sand	0%	Fine Sand	94%
Apparent Relative Density	N/A	Natural Moisture Content	24.9%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. — Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 17-19, 2005
Report Date: October 19, 2005

Boring #: B-10 Sample #: *S5* Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 13.5'-15.0'
Sample Description: Brown Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	268.5
C	Total Sample Dry Weight (B-A)	268.5
D	Total Sample Wt. After #200 Wash	264.5
E	Percent Passing #200 (1-D/C)x100	1.5%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	335.23
C	Dry Weight + Tare Wt.	268.47
D	Water Wt. (B-C)	66.76
E	Dry Wt.(C-A)	268.47
Moisture Content (100 x D/E) (%)		24.9%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.27	0.1%	**99.9%**
0.60	#30	11.24	4.2%	**95.8%**
0.30	#50	154.16	57.4%	**42.6%**
0.15	#100	260.82	97.2%	**2.8%**
0.075	#200	264.29	98.4%	**1.6%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.59
Plastic Limit	N/A	Cu = D60/D10:	**2.1**
Plastic Index	N/A	$Cc = (D30)^2 / (D10 \times D60)$:	**0.8**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**4.2%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**94.3%**
% Silt and Clay	< 0.075 mm	**1.6%**
Description of Sand & Gravel	Rounded ☐	Angular ☐
Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
		Organic Content

D10 = **0.19** D30 = **0.25** D60 = **0.39** D50 = **0.33** D90 = **0.52**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

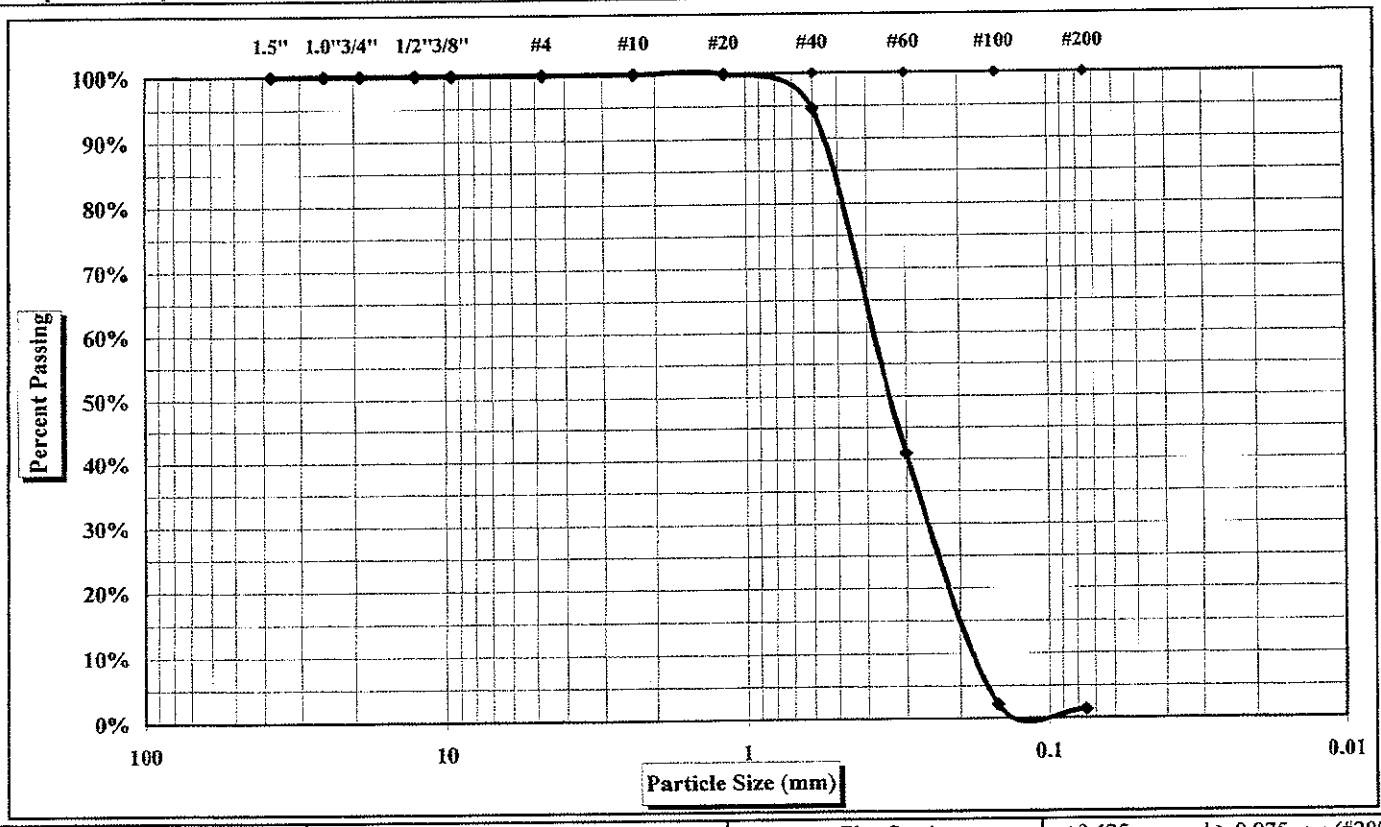
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 19, 2005
Test Date(s): October 17-19, 2005

Boring #:	B-11	Sample #:	S4	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	8.5'-10.0'
Sample Description:	Tan Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	5%
Silt & Clay (% Passing #200)	1.4%	Coarse Sand	0%	Fine Sand	93%
Apparent Relative Density	N/A	Natural Moisture Content	26.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 854: Specific Gravity of Soils

Hydrometer portion of test method not utilized.

Technical Responsibility: Randy Martin, P.E. — Branch Manager (Position)

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 17-19, 2005
Report Date: October 19, 2005

Boring #: B-11 Sample #: *S4* Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 8.5'-10.0'
Sample Description: Tan Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	332.06
B	Total Sample Dry Wt. + Tare Wt.	263.1	C	Dry Weight + Tare Wt.	263.09
C	Total Sample Dry Weight (B-A)	263.1	D	Water Wt. (B-C)	68.97
D	Total Sample Wt. After #200 Wash	259.6	E	Dry Wt.(C-A)	263.09
E	Percent Passing #200 (1-D/C)x100	1.3%	Moisture Content (100 x D/E) (%)		26.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.14	0.1%	**99.9%**
0.60	#30	14.08	5.4%	**94.6%**
0.30	#50	155.40	59.1%	**40.9%**
0.15	#100	257.37	97.8%	**2.2%**
0.075	#200	259.48	98.6%	**1.4%**

Notes:	Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
	Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	1.62	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**5.4%**
Plastic Limit	N/A	Cu = D60/D10:	**2.1**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**93.3%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**1.0**	% Silt and Clay	< 0.075 mm	**1.4%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.19** D30 = **0.27** D60 = **0.39** D50 = **0.32** D90 = **0.55**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

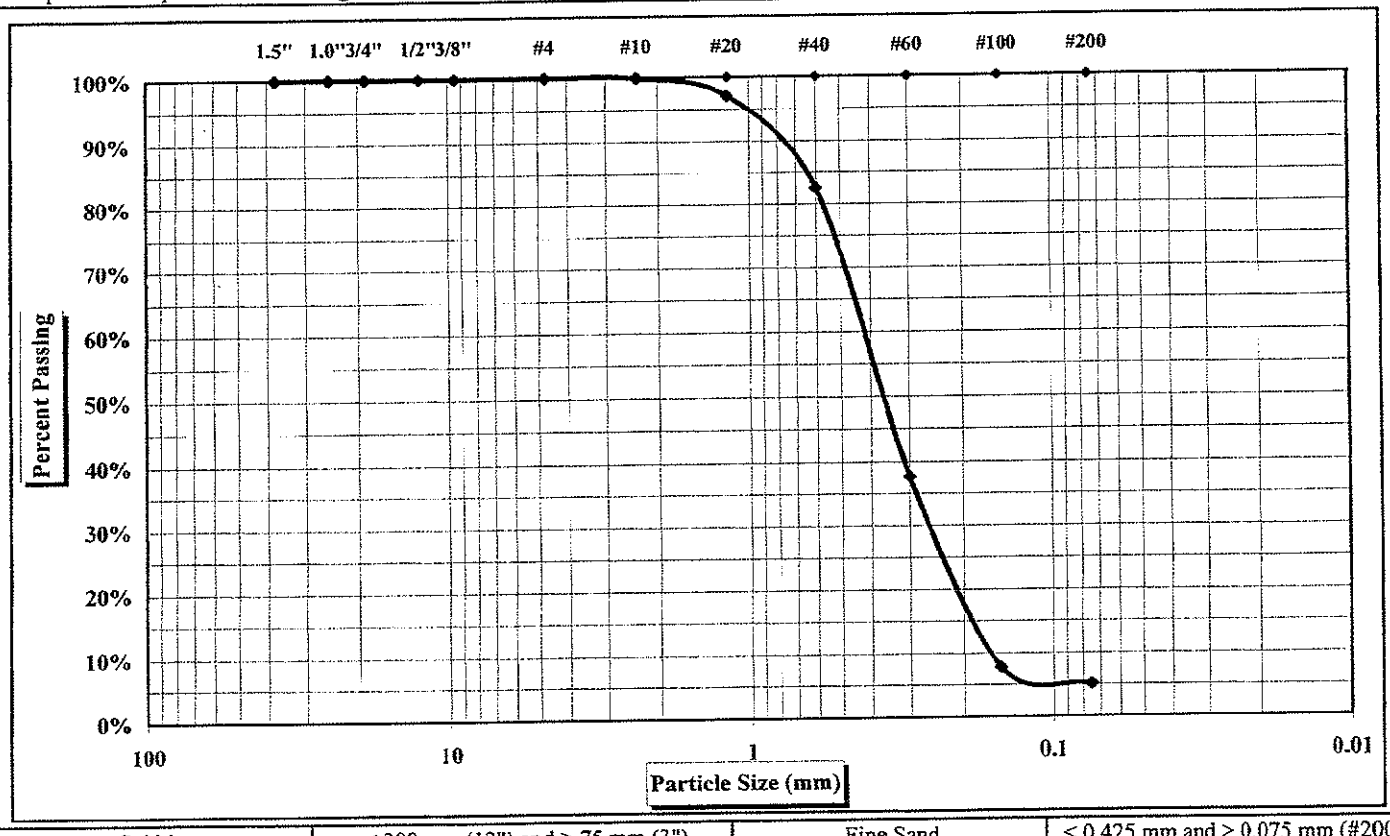
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 19, 2005
Test Date(s): October 17-19, 2005

Boring #:	B-11	Sample #:	S7	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	23.5'-25.0'
Sample Description:	Light Gray/Tan Slightly Clayey Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	17%
Silt & Clay (% Passing #200)	5.1%	Coarse Sand	0%	Fine Sand	77%
Apparent Relative Density	N/A	Natural Moisture Content	19.0%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel
Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Hydrometer portion of test method not utilized.

References: ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 17-19, 2005
Report Date: October 19, 2005

Boring #: B-11 Sample #: *S7* Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 23.5'-25.0'
Sample Description: Light Gray/Tan Slightly Clayey Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	265.8
C	Total Sample Dry Weight (B-A)	265.8
D	Total Sample Wt. After #200 Wash	253.5
E	Percent Passing #200 (1-D/C)x100	4.6%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	316.33
C	Dry Weight + Tare Wt.	265.76
D	Water Wt. (B-C)	50.57
E	Dry Wt.(C-A)	265.76
Moisture Content (100 x D/E) (%)		19.0%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.22	0.1%	**99.9%**
1.18	#16	7.73	2.9%	**97.1%**
0.60	#30	46.36	17.4%	**82.6%**
0.30	#50	165.80	62.4%	**37.6%**
0.15	#100	244.93	92.2%	**7.8%**
0.075	#200	252.31	94.9%	**5.1%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.75
Plastic Limit	N/A	Cu = D60/D10:	**2.3**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60):	**1.0**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.1%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**17.4%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**77.5%**
% Silt and Clay	< 0.075 mm	**5.1%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.18** D30 = **0.27** D60 = **0.41** D50 = **0.38** D90 = 0.79

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

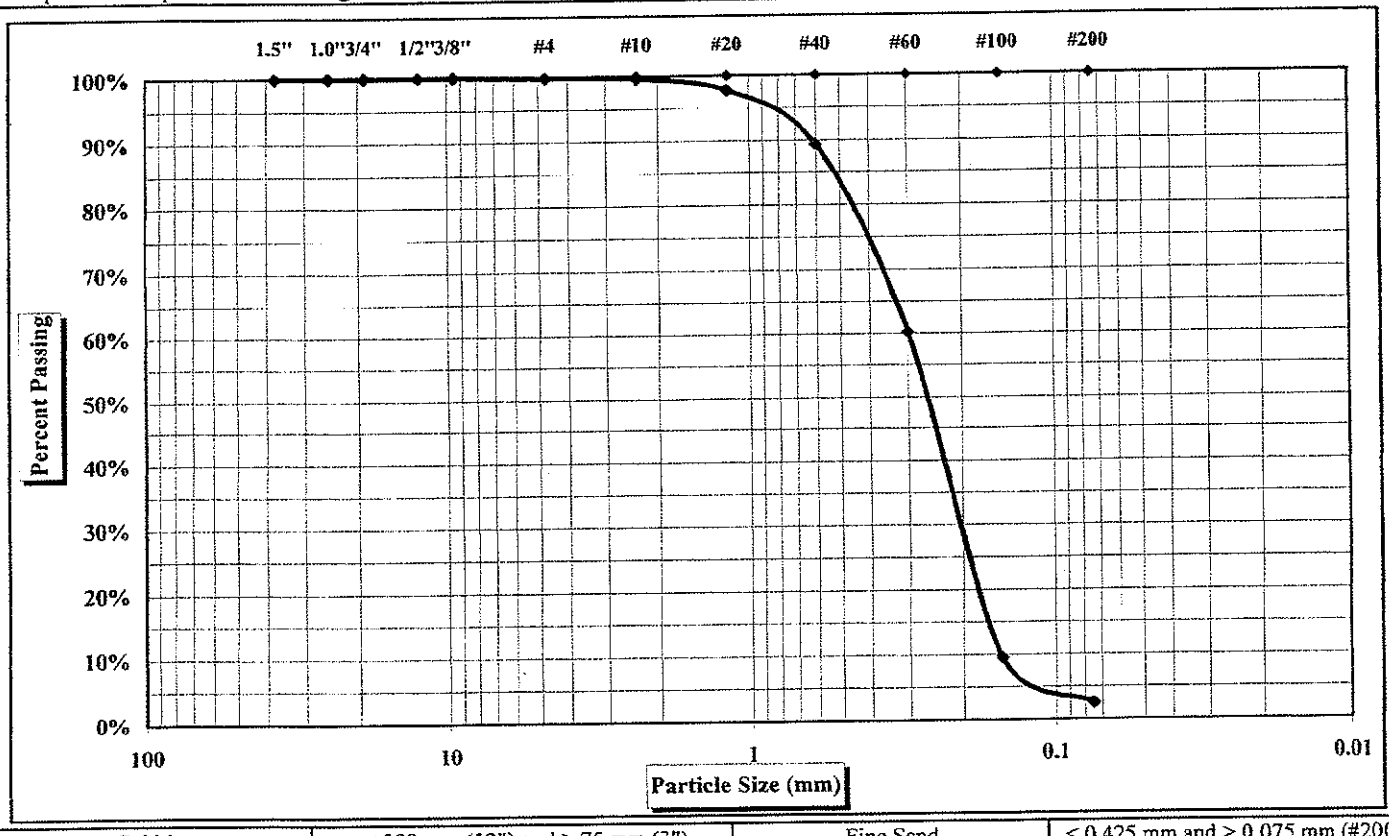
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 19, 2005
Test Date(s): October 17-19, 2005

Boring #:	B-11	Sample #:	S9	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	33.5'-35.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	10%
Silt & Clay (% Passing #200)	2.5%	Coarse Sand	0%	Fine Sand	87%
Apparent Relative Density	N/A	Natural Moisture Content	22.4%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel
Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 17-19, 2005
Report Date: October 19, 2005

Boring #: B-11 Sample #: ***S9*** Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 33.5'-35.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	258.1
C	Total Sample Dry Weight (B-A)	258.1
D	Total Sample Wt. After #200 Wash	252.1
E	Percent Passing #200 (1-D/C)x100	2.3%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	316.05
C	Dry Weight + Tare Wt.	258.11
D	Water Wt. (B-C)	57.94
E	Dry Wt.(C-A)	258.11
Moisture Content (100 x D/E) (%)		22.4%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.48	0.2%	**99.8%**
2.36	#8	1.00	0.4%	**99.6%**
1.18	#16	5.77	2.2%	**97.8%**
0.60	#30	27.65	10.7%	**89.3%**
0.30	#50	102.74	39.8%	**60.2%**
0.15	#100	233.45	90.4%	**9.6%**
0.075	#200	251.58	97.5%	**2.5%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.44
Plastic Limit	N/A	Cu = D60/D10:	**1.9**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.8**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.2%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.2%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**10.3%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**86.8%**
% Silt and Clay	< 0.075 mm	**2.5%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.16** D30 = **0.2** D60 = **0.3** D50 = **0.28** D90 = **0.61**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

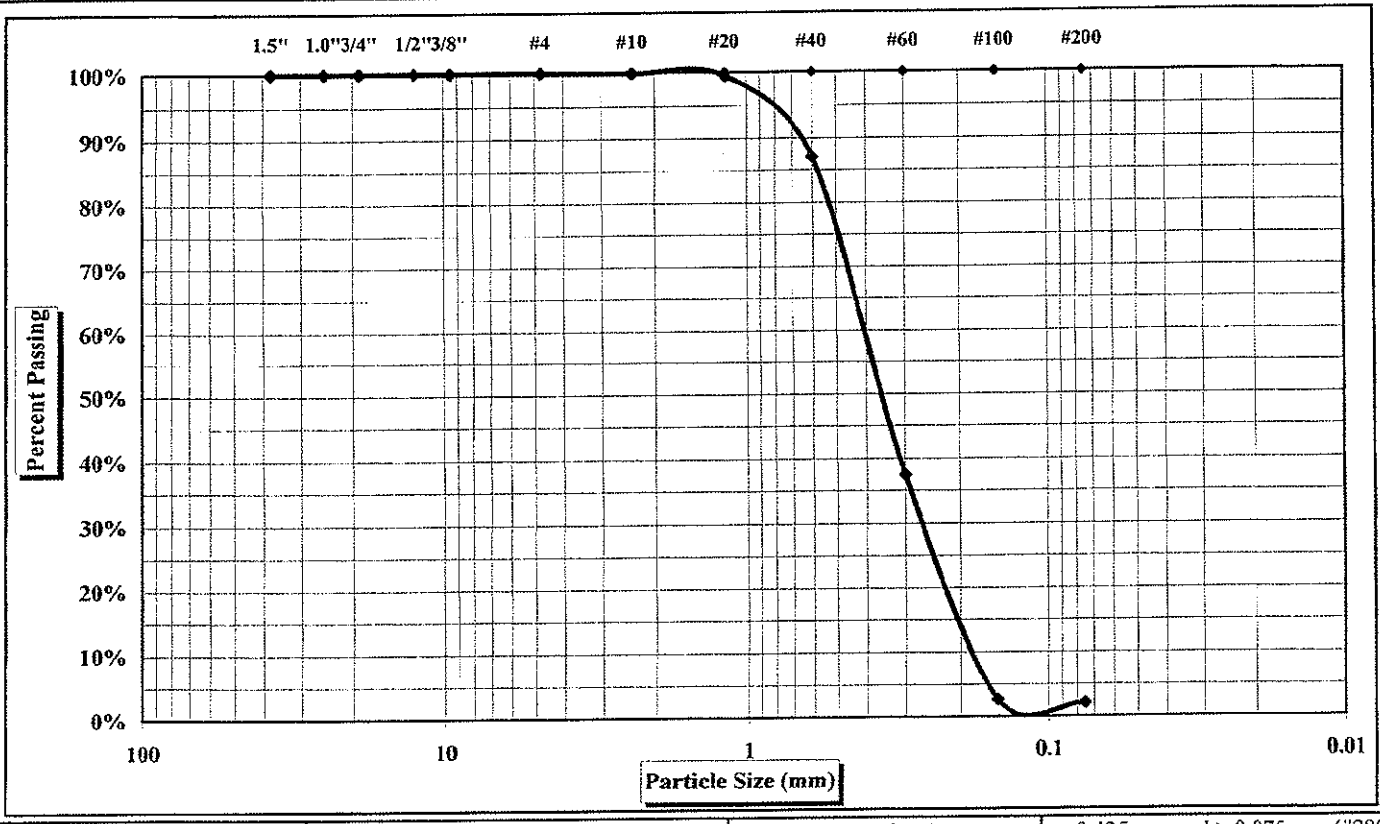
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-05-536**
Project Name: **Sutton Lake Road Asphalt Plant**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: October 19, 2005
Test Date(s): October 17-19, 2005

Boring #:	B-12	Sample #:	S3	Sample Date:	10-11-05
Location:	Wilmington, NC	Offset:	N/A	Depth:	6.0'-7.5'
Sample Description:	Brown Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	13%
Silt & Clay (% Passing #200)	2.1%	Coarse Sand	0%	Fine Sand	85%
Apparent Relative Density	N/A	Natural Moisture Content	24.7%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 17-19, 2005
Report Date: October 19, 2005

Boring #: B-12 Sample #: *S3* Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 6.0'-7.5'
Sample Description: Brown Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	248.3
C	Total Sample Dry Weight (B-A)	248.3
D	Total Sample Wt. After #200 Wash	243.4
E	Percent Passing #200 (1-D/C)x100	2.0%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	309.77
C	Dry Weight + Tare Wt.	248.33
D	Water Wt. (B-C)	61.44
E	Dry Wt.(C-A)	248.33
Moisture Content (100 x D/E) (%)		24.7%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.27	0.1%	**99.9%**
1.18	#16	1.19	0.5%	**99.5%**
0.60	#30	31.98	12.9%	**87.1%**
0.30	#50	155.37	62.6%	**37.4%**
0.15	#100	241.78	97.4%	**2.6%**
0.075	#200	243.23	97.9%	**2.1%**

Notes: Maximum Particle Size
Apparent Relative Density

Liquid Limit	N/A	Fineness Modulus	1.74
Plastic Limit	N/A	Cu = D60/D10:	**2.1**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**1.0**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.1%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**12.8%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**85.1%**
% Silt and Clay	< 0.075 mm	**2.1%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.19** D30 = **0.28** D60 = **0.4** D50 = **0.37** D90 = **0.65**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-05-536
Project Name: Sutton Lake Road Asphalt Plant
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): October 17-19, 2005
Report Date: October 19, 2005

Boring #: B-12 Sample #: ***S9*** Sample Date: 10-11-05
Location: Wilmington, NC Offset: N/A Depth: 33.5'-35.0'
Sample Description: Light Gray/Tan Medium to Fine SAND (SP)

	Particle Size Analysis / Without Hydrometer Analysis	
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	281.6
C	Total Sample Dry Weight (B-A)	281.6
D	Total Sample Wt. After #200 Wash	273.1
E	Percent Passing #200 (1-D/C)x100	3.0%

	Moisture Content	Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	331.33
C	Dry Weight + Tare Wt.	281.59
D	Water Wt. (B-C)	49.74
E	Dry Wt.(C-A)	281.59
	Moisture Content (100 x D/E) (%)	17.7%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	Percent Passing Total Sample
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.49	0.2%	**99.8%**
2.36	#8	3.32	1.2%	**98.8%**
1.18	#16	33.40	11.9%	**88.1%**
0.60	#30	94.73	33.6%	**66.4%**
0.30	#50	187.24	66.5%	**33.5%**
0.15	#100	261.44	92.8%	**7.2%**
0.075	#200	272.61	96.8%	**3.2%**

Notes:

	Maximum Particle Size		
	Apparent Relative Density		
Liquid Limit	N/A	Fineness Modulus	2.06
Plastic Limit	N/A	Cu = D60/D10:	**2.8**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**0.9**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.2%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**1.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**32.5%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**63.2%**
% Silt and Clay	< 0.075 mm	**3.2%**
Description of Sand & Gravel	Rounded ☐	Angular ☐
Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
		Organic Content

D10 = **0.18** D30 = **0.29** D60 = **0.51** D50 = **0.41** D90 = **1.3**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

June 6, 2007

S.T. Wooten Corporation
Post Office Box 2408
Wilson, North Carolina 27894

Attention: Mr. Chris Croom

Reference: **Soil Test Boring Logs and Laboratory Testing Results**
Proposed Sand Borrow Pit
Sutton Lake Road
Wilmington, North Carolina
S&ME Project No. 1061-07-123

Dear Mr. Croom:

In accordance with S&ME Proposal 163-07 dated May 10, 2007, S&ME, Inc. has completed the authorized field work and laboratory testing. As requested, two soil test borings were advanced to depths of approximately 100 feet below the existing ground surface in the proposed borrow pit area. Also, fifteen grain size analysis tests were performed on select recovered soil samples.

The soil test borings were advanced using wash boring drilling procedures with a CME-45 drill rig. Initially, the borings were washed to depths of approximately 28.5 feet below the existing ground surface. At that depth, samples were taken at 5-foot intervals using a split-spoon sampler to boring termination. Standard penetration testing was performed in conjunction with split-spoon sampling in general accordance with ASTM D 1586. At completion of the drilling operations, representative portions of the split-spoon samples were returned to our laboratory for visual classification and laboratory testing. The samples were classified in general accordance with Unified Soil Classification System guidelines. Laboratory testing consisted of grain size analysis in general accordance with the ASTM D 422.

A Boring Location Plan, which is included as Figure 1, indicates the boring locations which should be considered approximate. Test Boring Records, a Generalized Subsurface Profile (Figure 2), and laboratory test data presenting the subsurface information obtained are also included with this letter.

We appreciate having the opportunity to provide our services during this phase of the project. If you have any questions after reviewing this letter, please do not hesitate to contact us.

Sincerely,

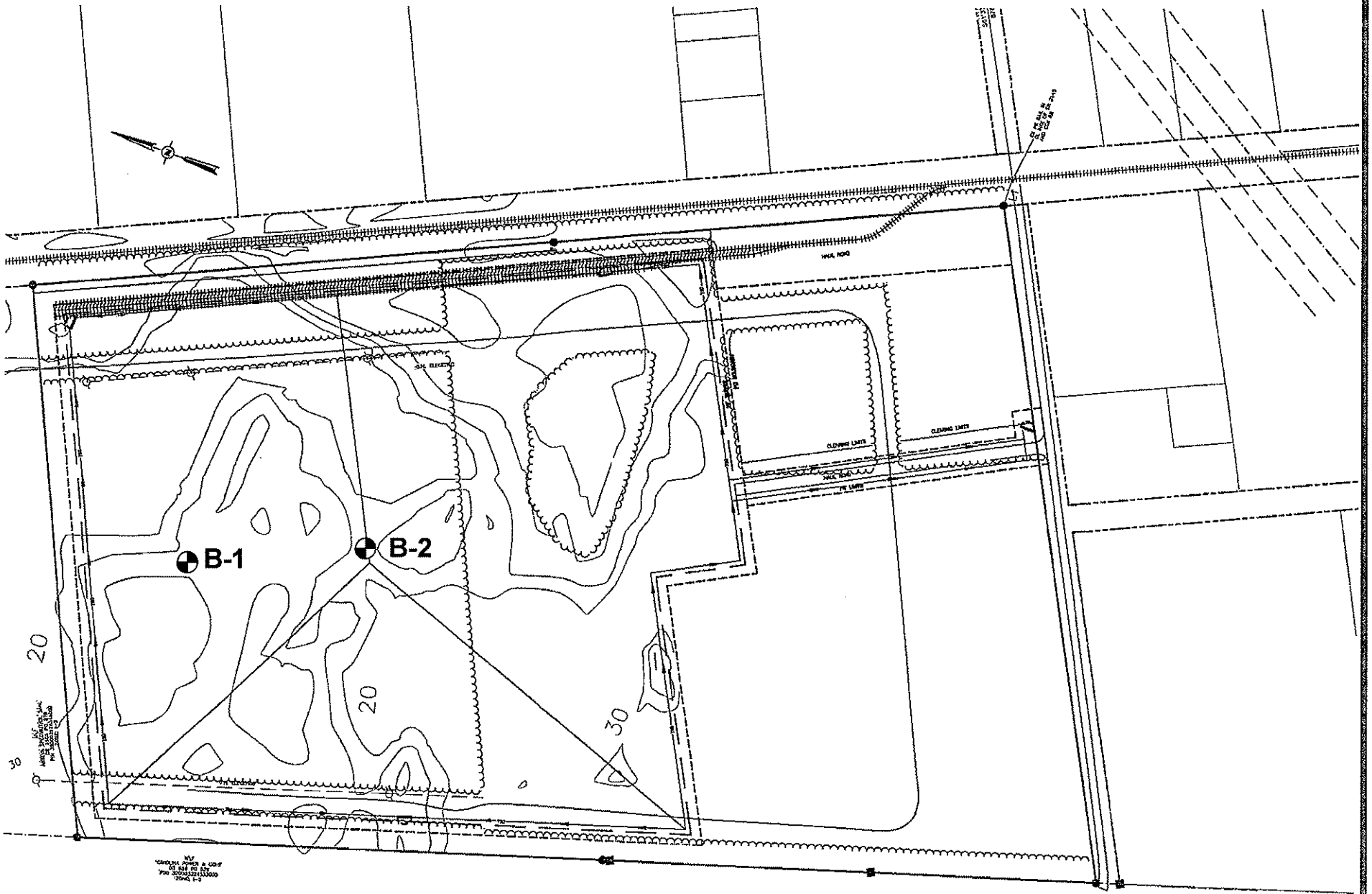
S&ME, Inc.

Philip Byrd, E.I.
Geotechnical Department Manager

Nathan Buffum
Construction Services Manager

PMB:NPB/jns

Attachments



Note: Site plan drawing provided to S&ME by S.T. Wooten Corporation personnel.

LEGEND

⊕ Approximate Boring Location

SCALE:	NOT TO SCALE
CHECKED BY:	PMB
DRAWN BY:	JNS
DATE:	6-6-07

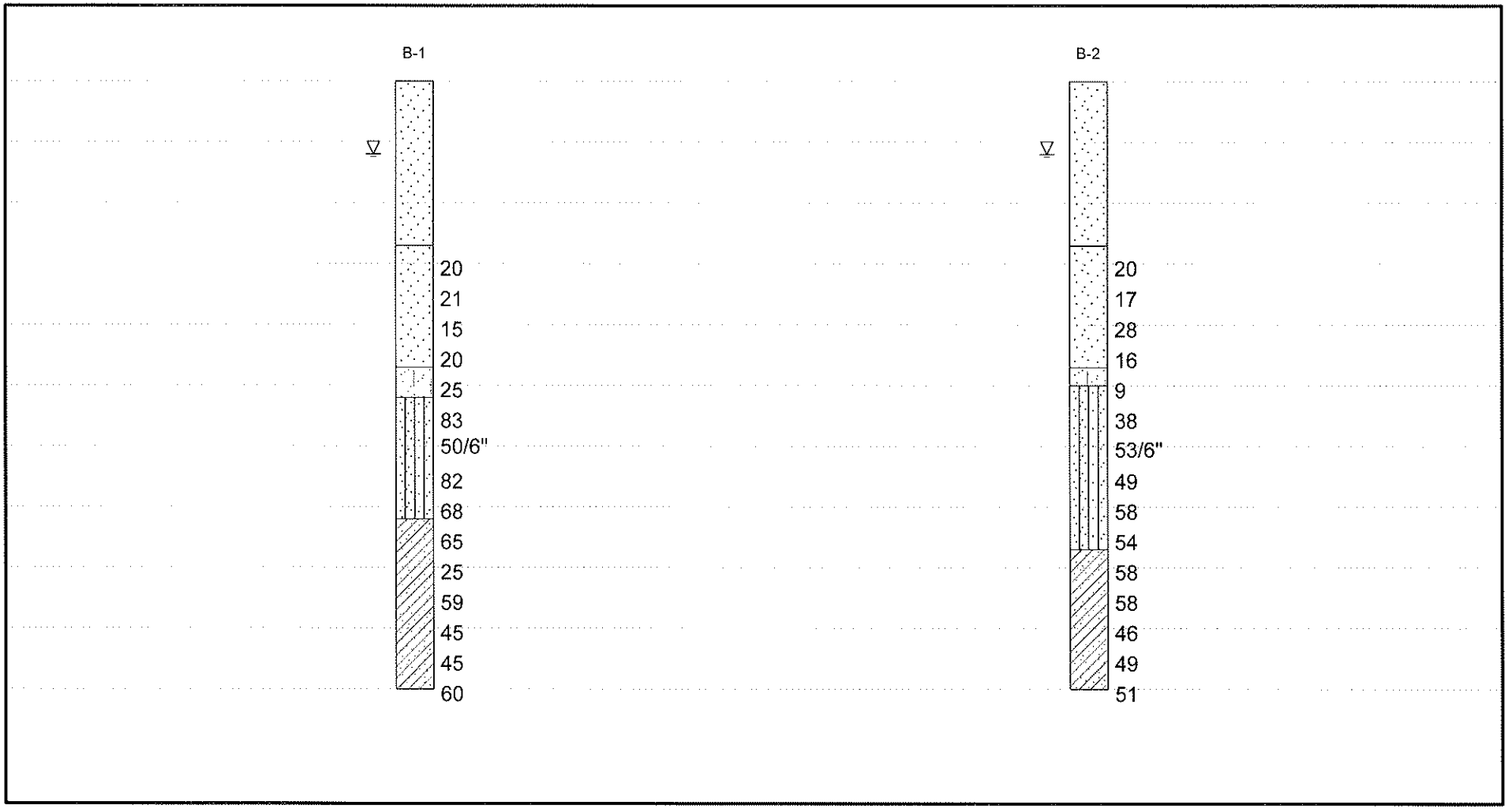
S&ME

BORING LOCATION PLAN
PROPOSED BORROW PIT
SUTTON LAKE ROAD
WILMINGTON, NORTH CAROLINA

S&ME PROJECT NUMBER: 1061-07-123

FIGURE NUMBER 1

GENERALIZED SUBSURFACE CONDITIONS



Poorly-graded Sand

SP/SM, Poorly-graded Sand with Silt

SM, Silty Sand

SC, Clayey Sand

N = Standard Penetration Test resistance value (blows per foot). The depicted stratigraphy is shown for illustrative purposes only. The actual subsurface conditions will vary between boring locations.

SCALE:	(V) 1" = 25'
CHECKED BY:	S. Dowell
DATE:	6/6/2007
JOB NO:	1061-07-123

S&ME
ENGINEERING · TESTING
ENVIRONMENTAL SERVICES

6409 Amsterdam Way
Wilmington, NC 28405
(910) 799-9945
(910) 799-9958 fax
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GENERALIZED SUBSURFACE CONDITIONS

Sutton Lake Borrow Pit

Wilmington, North Carolina

FIGURE NO. **2**

PROJECT: **Sutton Lake Borrow Pit**
Wilmington, North Carolina
1061-07-123

TEST BORING RECORD **B-1**

DATE DRILLED: **5/16/07**	ELEVATION: **Ground Surface**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **100.0 ft**
LOGGED BY: **S. Dowell**	WATER LEVEL: **12' @ TOB**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location is approximate. Water was noted at the time borings were performed. The site water level will fluctuate with climatic and seasonal changes and might be higher or lower at other times of the year.**

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet-MSL)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
0		**SAND**					
5							
10			▽				
15							
20							
25							
30		Medium Dense Light Gray Medium to Fine **SAND** (SP)		1			20
35				2			21
40				3			15
45				4			20
50		Medium Dense Dark Gray Slightly Silty Fine **SAND** (SP-SM)		5			25
55		Very Dense Dark Gray Silty Fine **SAND** (SM)		6			83
				7			50/6"

S&ME COMPANY STANDARD 07-123.GPJ S&ME.GDT 6/6/07

NOTES:

1. *THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.*
2. *BORING, SAMPLING AND PENETRATION TEST DATA IS IN GENERAL ACCORDANCE WITH ASTM D-1586.*
3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

S&ME
ENGINEERING · TESTING
ENVIRONMENTAL SERVICES
6409 Amsterdam Way, Building E
Wilmington, NC 28405

PROJECT: **Sutton Lake Borrow Pit**
Wilmington, North Carolina
1061-07-123

TEST BORING RECORD B-1

DATE DRILLED: **5/16/07**	ELEVATION: **Ground Surface**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **100.0 ft**
LOGGED BY: **S. Dowell**	WATER LEVEL: **12' @ TOB**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location is approximate. Water was noted at the time borings were performed. The site water level will fluctuate with climatic and seasonal changes and might be higher or lower at other times of the year.**

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet-MSL)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
65		See soil description on previous page.		8			82
70				9			68
75		Medium Dense to Very Dense Dark Gray Clayey Fine **SAND** (SC)		10			65
80				11			25
85				12			59
90				13			45
95				14			45
100		Boring terminated 100 feet below the existing ground surface.		15			60
105							
110							
115							

S&ME COMPANY STANDARD 07-123.GPJ S&ME.GDT 6/6/07

NOTES:

1. *THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.*
2. *BORING, SAMPLING AND PENETRATION TEST DATA IS IN GENERAL ACCORDANCE WITH ASTM D-1586.*
3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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Wilmington, NC 28405

PROJECT: **Sutton Lake Borrow Pit**
Wilmington, North Carolina
1061-07-123

TEST BORING RECORD **B-2**

DATE DRILLED: **5/17/07**	ELEVATION: **Ground Surface**
DRILLING METHOD: **Wash Boring**	BORING DEPTH: **100.0 ft**
LOGGED BY: **S. Dowell**	WATER LEVEL: **12' @ TOB**
DRILLER: **G. Eister**	DRILL RIG: **CME-45**

NOTES: **Boring location is approximate. Water was noted at the time borings were performed. The site water level will fluctuate with climatic and seasonal changes and might be higher or lower at other times of the year.**

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet-MSL)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
0		**SAND**					
5							
10			▽				
15							
20							
25							
30		Medium Dense Light Gray Medium to Fine **SAND** (SP)		1			20
35				2			17
40				3			28
45				4			16
50		Loose Gray Slightly Silty Coarse to Fine **SAND** (SP-SM)		5			9
55		Dense to Very Dense Dark Gray Silty Fine **SAND** (SM)		6			38
				7			53/

S&ME COMPANY STANDARD 07-123.GPJ S&ME.GDT 6/6/07

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2. *BORING, SAMPLING AND PENETRATION TEST DATA IS IN GENERAL ACCORDANCE WITH ASTM D-1586.*
3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
5. *WATER LEVEL IS AT TIME OF EXPLORATION AND WILL VARY.*

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Wilmington, NC 28405

PROJECT:	Sutton Lake Borrow Pit Wilmington, North Carolina 1061-07-123	TEST BORING RECORD	B-2
DATE DRILLED:	5/17/07	ELEVATION:	Ground Surface
DRILLING METHOD:	Wash Boring	BORING DEPTH:	100.0 ft
LOGGED BY:	S. Dowell	WATER LEVEL:	12' @ TOB
DRILLER:	G. Eister	DRILL RIG:	CME-45

NOTES: **Boring location is approximate. Water was noted at the time borings were performed. The site water level will fluctuate with climatic and seasonal changes and might be higher or lower at other times of the year.**

DEPTH (feet)	GRAPHIC LOG	MATERIAL DESCRIPTION	WATER LEVEL	SAMPLE NO/TYPE	ELEVATION (feet-MSL)	STANDARD PENETRATION TEST DATA (blows/ft) 10 20 30 60 80	N-Value
65		See soil description on previous page.		8		6"	49
70				9			58
75				10			54
80		Dense to Very Dense Dark Gray Clayey Fine **SAND** (SC)		11			58
85				12			58
90				13			46
95				14			49
100		Boring terminated 100 feet below the existing ground surface.		15			51
105							
110							
115							

S&ME COMPANY STANDARD 07-123.GPJ S&ME.GDT 6/6/07

NOTES:

1. *THIS LOG IS ONLY A PORTION OF A REPORT PREPARED FOR THE NAMED PROJECT AND MUST ONLY BE USED TOGETHER WITH THAT REPORT.*
2. *BORING, SAMPLING AND PENETRATION TEST DATA IS IN GENERAL ACCORDANCE WITH ASTM D-1586.*
3. *PENETRATION (N-VALUE) IS THE NUMBER OF BLOWS OF 140 LB. HAMMER FALLING 30 IN. REQUIRED TO DRIVE 1.4 IN. I.D. SAMPLER 1 FT.*
4. *STRATIFICATION AND GROUNDWATER DEPTHS ARE NOT EXACT.*
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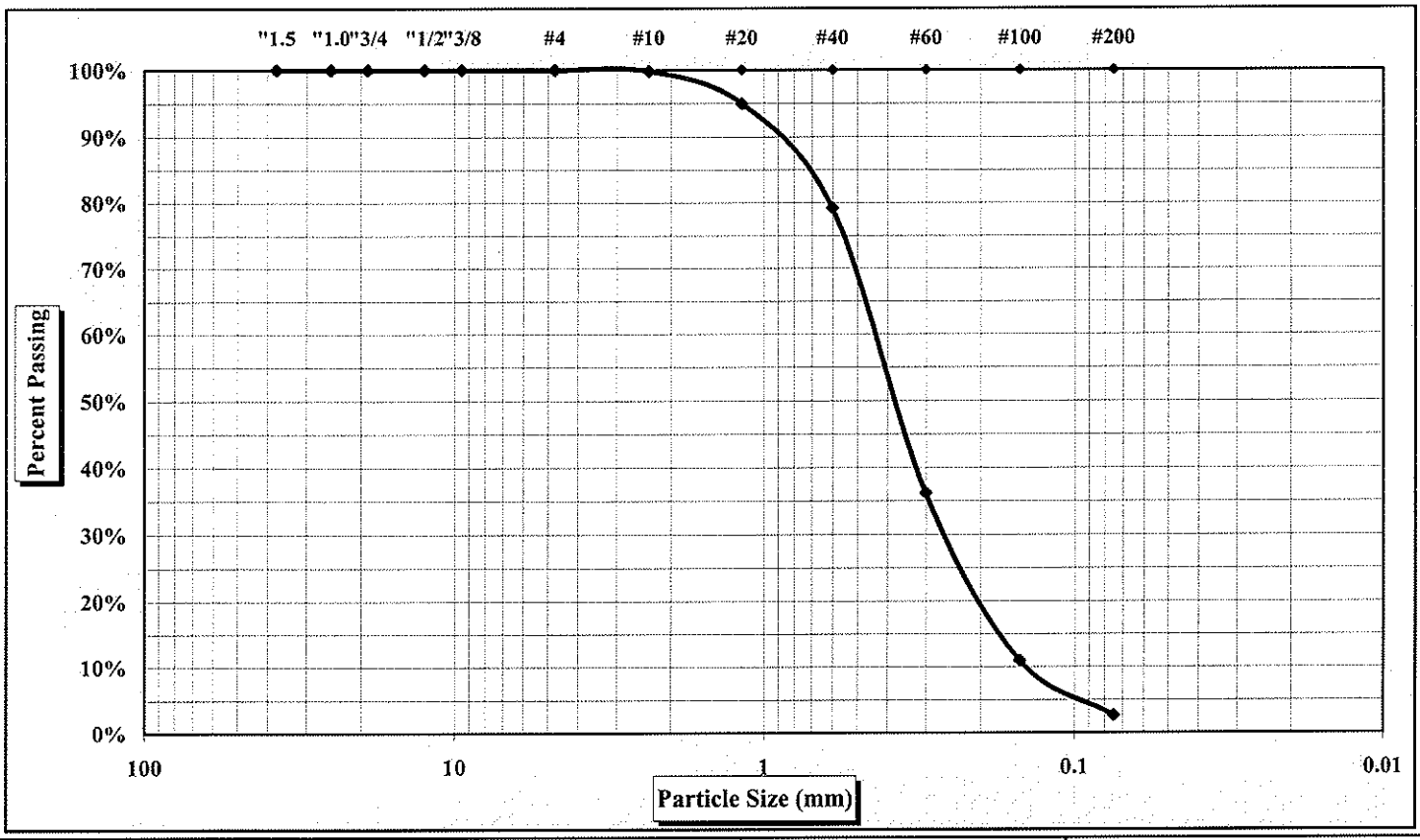
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-07-123**
Project Name: **Sutton Lake Road Borrow Pit**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: May 30, 2007
Test Date(s): May 22-29, 2007

Boring #:	B-1	Sample #:	S8	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	28.5'-30.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	21%
Silt & Clay (% Passing #200)	2.6%	Coarse Sand	0%	Fine Sand	77%
Apparent Relative Density	N/A	Natural Moisture Content	23.3%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-1 Sample #: S8 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 28.5'-30.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	263.88
B	Total Sample Dry Wt. + Tare Wt.	214.1	C	Dry Weight + Tare Wt.	214.10
C	Total Sample Dry Weight (B-A)	214.1	D	Water Wt. (B-C)	49.78
D	Total Sample Wt. After #200 Wash	209.9	E	Dry Wt.(C-A)	214.10
E	Percent Passing #200 (1-D/C)x100	2.0%	Moisture Content (100 x D/E) (%)		23.3%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.36	0.2%	**99.8%**
1.18	#16	10.90	5.1%	**94.9%**
0.60	#30	44.61	20.8%	**79.2%**
0.30	#50	136.73	63.9%	**36.1%**
0.15	#100	190.68	89.1%	**10.9%**
0.075	#200	208.49	97.4%	**2.6%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.2%**
Liquid Limit	N/A	Fineness Modulus 1.79	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**20.7%**
Plastic Limit	N/A	Cu = D60/D10: **2.6**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**76.5%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60): **1.1**	% Silt and Clay	< 0.075 mm	**2.6%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
					Organic Content

D10 = **0.16** D30 = **0.27** D60 = **0.42** D50 = **0.39** D90 = **0.9**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

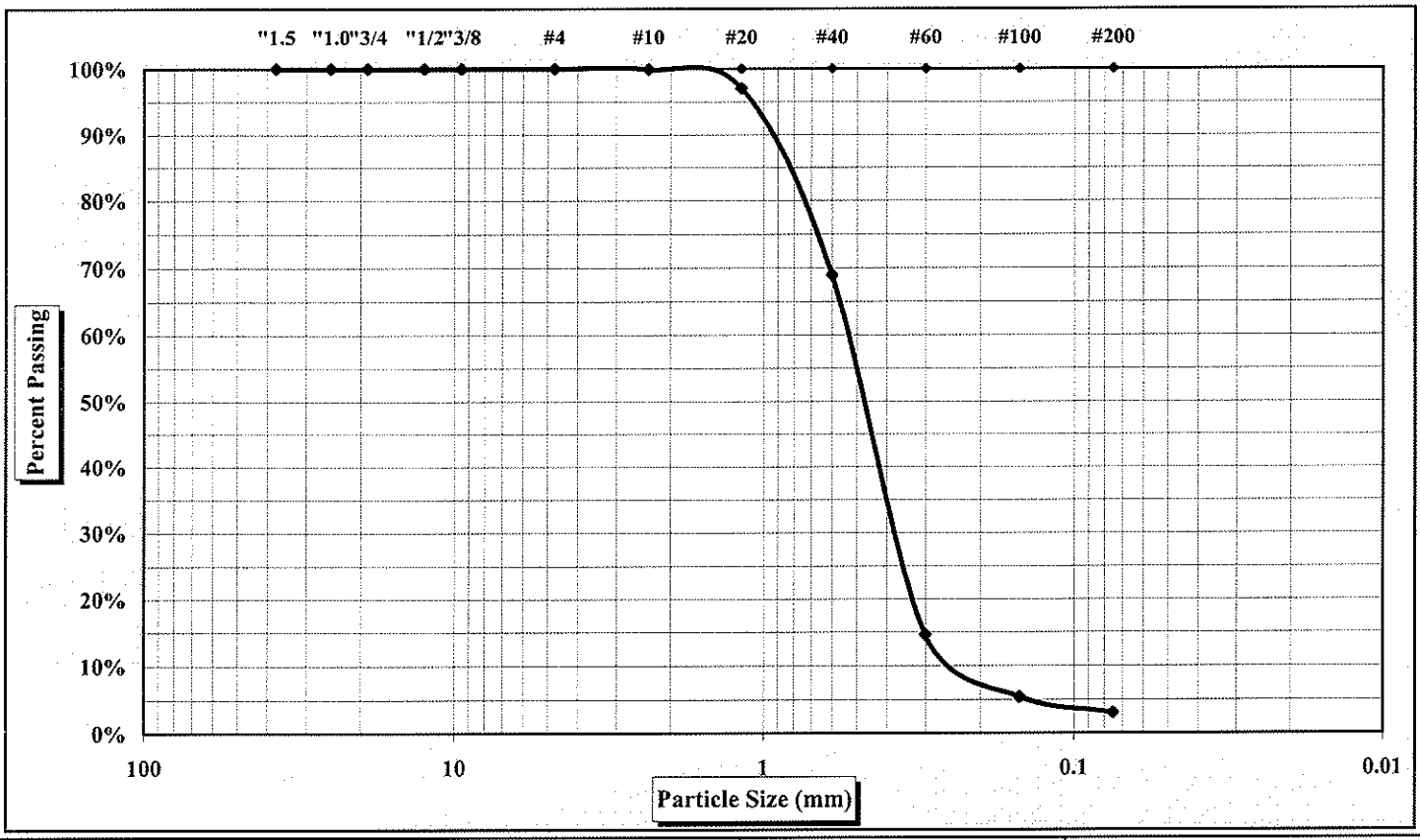
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S10	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	38.5'-40.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	31%
Silt & Clay (% Passing #200)	3.0%	Coarse Sand	0%	Fine Sand	66%
Apparent Relative Density	N/A	Natural Moisture Content	24.8%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-1 | Sample #: S10 | Sample Date: 5-16-07
Location: Wilmington, NC | Offset: N/A | Depth: 38.5'-40.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	309.27
B	Total Sample Dry Wt. + Tare Wt.	247.9	C	Dry Weight + Tare Wt.	247.91
C	Total Sample Dry Weight (B-A)	247.9	D	Water Wt. (B-C)	61.36
D	Total Sample Wt. After #200 Wash	240.7	E	Dry Wt.(C-A)	247.91
E	Percent Passing #200 (1-D/C)x100	2.9%	Moisture Content (100 x D/E) (%)		24.8%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.24	0.1%	**99.9%**
1.18	#16	7.29	2.9%	**97.1%**
0.60	#30	77.05	31.1%	**68.9%**
0.30	#50	211.75	85.4%	**14.6%**
0.15	#100	234.63	94.6%	**5.4%**
0.075	#200	240.42	97.0%	**3.0%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	2.14
Plastic Limit	N/A	Cu = D60/D10:	**2.1**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60):	**1.2**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.1%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**31.0%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**65.9%**
% Silt and Clay	< 0.075 mm	**3.0%**

Description of Sand & Gravel: Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = **0.25** D30 = **0.39** D60 = **0.52** D50 = **0.49** D90 = **0.91**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

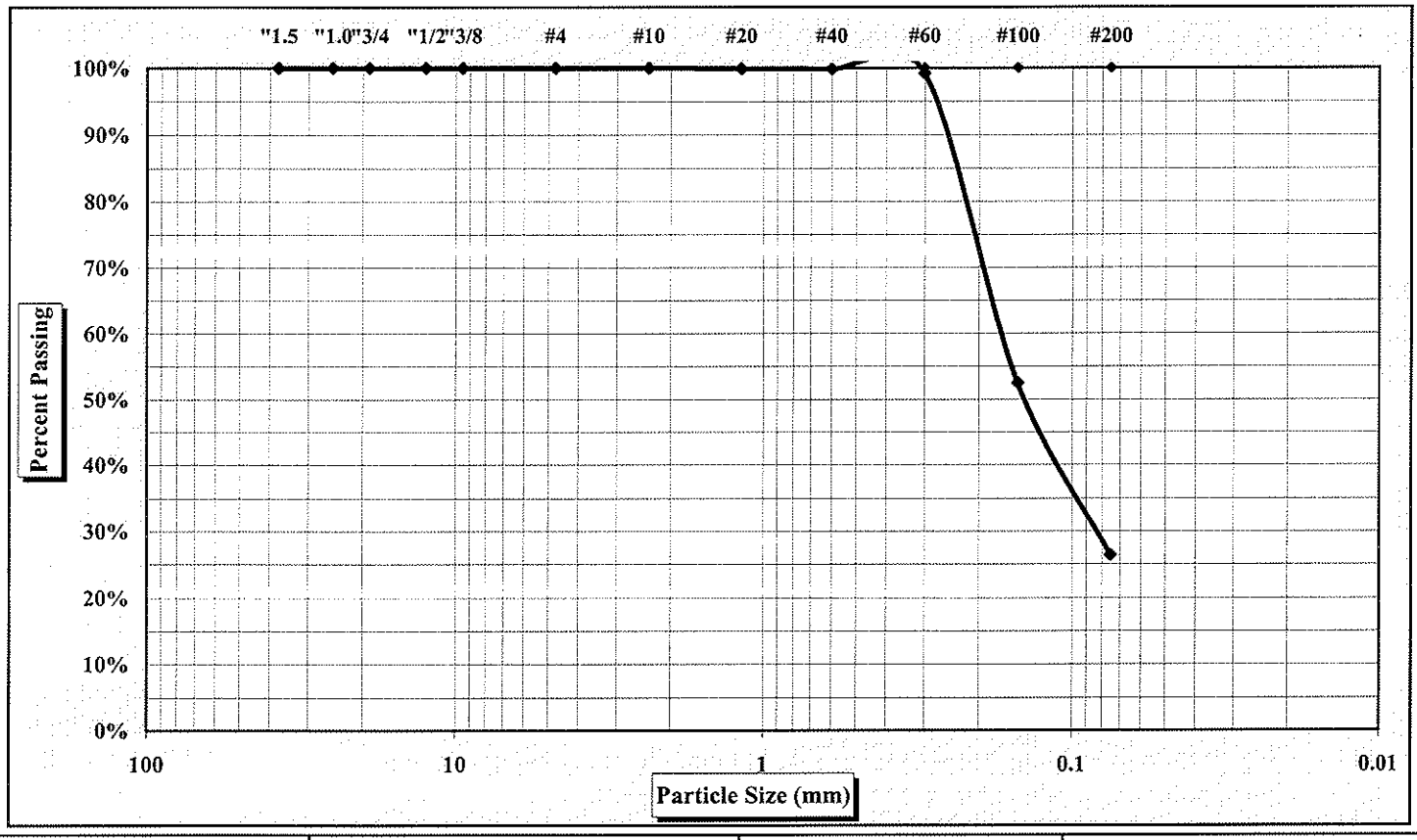
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S13	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	53.5'-55.0'
Sample Description:	Dark Gray Silty Fine SAND (SM)				



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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	26.3%	Coarse Sand	0%	Fine Sand	73%
Apparent Relative Density	N/A	Natural Moisture Content	21.4%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-1 Sample #: S13 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 53.5'-55.0'
Sample Description: Dark Gray Silty Fine SAND (SM)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	255.60
B	Total Sample Dry Wt. + Tare Wt.	210.5	C	Dry Weight + Tare Wt.	210.52
C	Total Sample Dry Weight (B-A)	210.5	D	Water Wt. (B-C)	45.08
D	Total Sample Wt. After #200 Wash	157.7	E	Dry Wt.(C-A)	210.52
E	Percent Passing #200 (1-D/C)x100	25.1%	Moisture Content (100 x D/E) (%)		21.4%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.02	0.0%	**100.0%**
1.18	#16	0.18	0.1%	**99.9%**
0.60	#30	0.37	0.2%	**99.8%**
0.30	#50	1.73	0.8%	**99.2%**
0.15	#100	100.13	47.6%	**52.4%**
0.075	#200	155.06	73.7%	**26.3%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus 0.49	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.2%**
Plastic Limit	N/A	Cu = D60/D10: **#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**73.5%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60): **#DIV/0!**	% Silt and Clay	< 0.075 mm	**26.3%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
					Organic Content

D10 = D30 = **0.082** D60 = **0.18** D50 = **0.15** D90 = **0.25**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

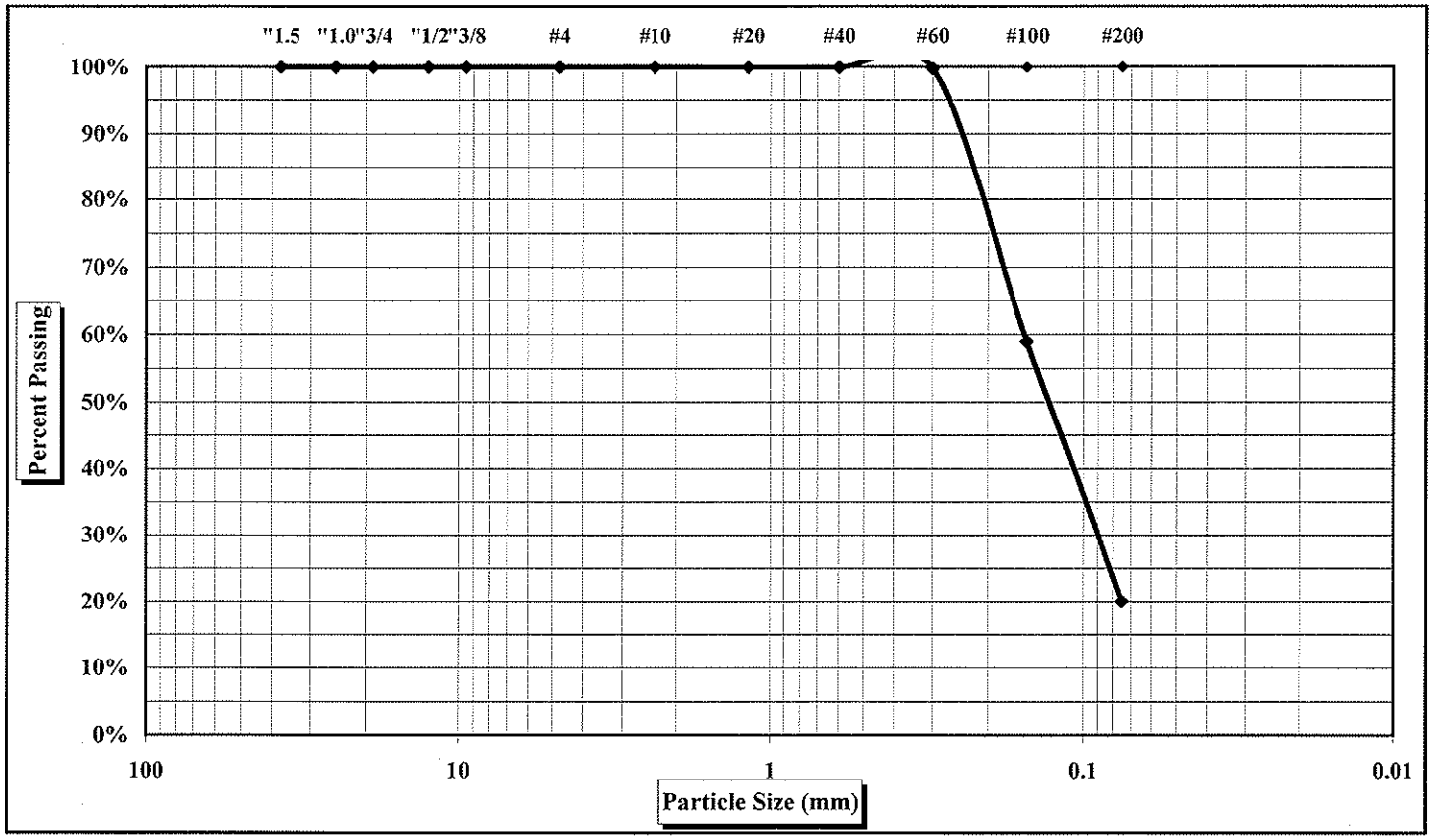
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S16	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	68.5'-70.0'
Sample Description:	Dark Gray Silty Fine SAND (SM)				



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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	20.0%	Coarse Sand	0%	Fine Sand	80%
Apparent Relative Density	N/A	Natural Moisture Content	24.4%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-1 Sample #: S16 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 68.5'-70.0'
Sample Description: Dark Gray Silty Fine SAND (SM)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	293.67
B	Total Sample Dry Wt. + Tare Wt.	236.1	C	Dry Weight + Tare Wt.	236.06
C	Total Sample Dry Weight (B-A)	236.1	D	Water Wt. (B-C)	57.61
D	Total Sample Wt. After #200 Wash	196.9	E	Dry Wt.(C-A)	236.06
E	Percent Passing #200 (1-D/C)x100	16.6%	Moisture Content (100 x D/E) (%)		24.4%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.10	0.0%	**100.0%**
0.60	#30	0.12	0.1%	**99.9%**
0.30	#50	0.55	0.2%	**99.8%**
0.15	#100	96.96	41.1%	**58.9%**
0.075	#200	188.81	80.0%	**20.0%**

Notes: Maximum Particle Size

Apparent Relative Density

Liquid Limit N/A Fineness Modulus 0.41

Plastic Limit N/A Cu = D60/D10: **#DIV/0!**

Plastic Index N/A Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.1%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**79.9%**
% Silt and Clay	< 0.075 mm	**20.0%**

Description of Sand & Gravel Rounded ☐ Angular ☐

Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

Organic Content

D10 = D30 = **0.09** D60 = **0.16** D50 = **0.14** D90 = **0.25**

ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

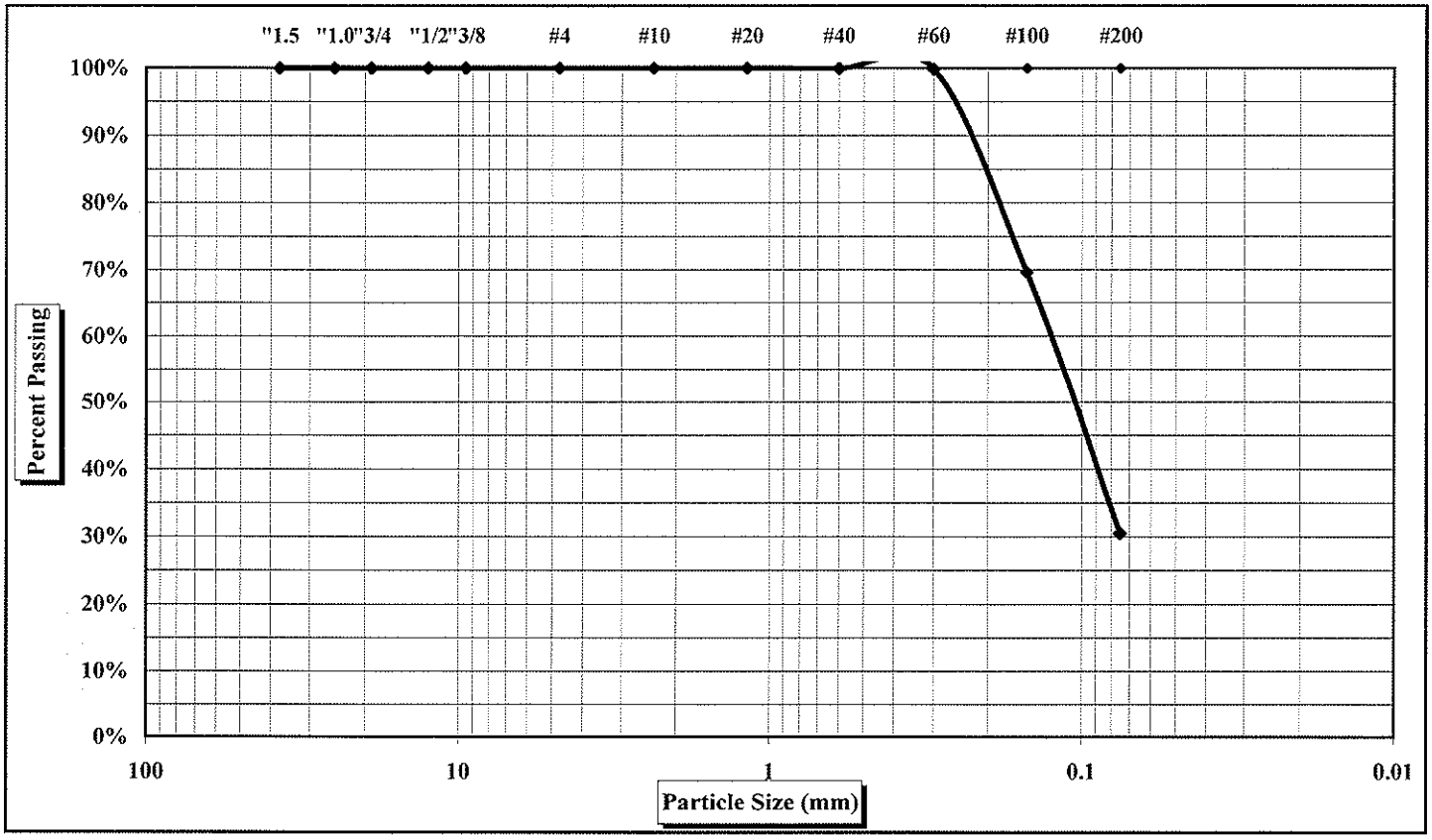
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S17	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	73.5'-75.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	30.5%	Coarse Sand	0%	Fine Sand	69%
Apparent Relative Density	N/A	Natural Moisture Content	29.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-1 | Sample #: S17 | Sample Date: 5-16-07
Location: Wilmington, NC | Offset: N/A | Depth: 73.5'-75.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	272.09
B	Total Sample Dry Wt. + Tare Wt.	210.6	C	Dry Weight + Tare Wt.	210.58
C	Total Sample Dry Weight (B-A)	210.6	D	Water Wt. (B-C)	61.51
D	Total Sample Wt. After #200 Wash	156.9	E	Dry Wt.(C-A)	210.58
E	Percent Passing #200 (1-D/C)x100	25.5%		Moisture Content (100 x D/E) (%)	29.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.10	0.0%	**100.0%**
0.30	#50	0.25	0.1%	**99.9%**
0.15	#100	63.93	30.4%	**69.6%**
0.075	#200	146.41	69.5%	**30.5%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus 0.31	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.0%**
Plastic Limit	N/A	Cu = D60/D10: **#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**69.5%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**	% Silt and Clay	< 0.075 mm	**30.5%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
					Organic Content

D10 = D30 = **0.075** D60 = **0.13** D50 = **0.11** D90 = **0.21**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

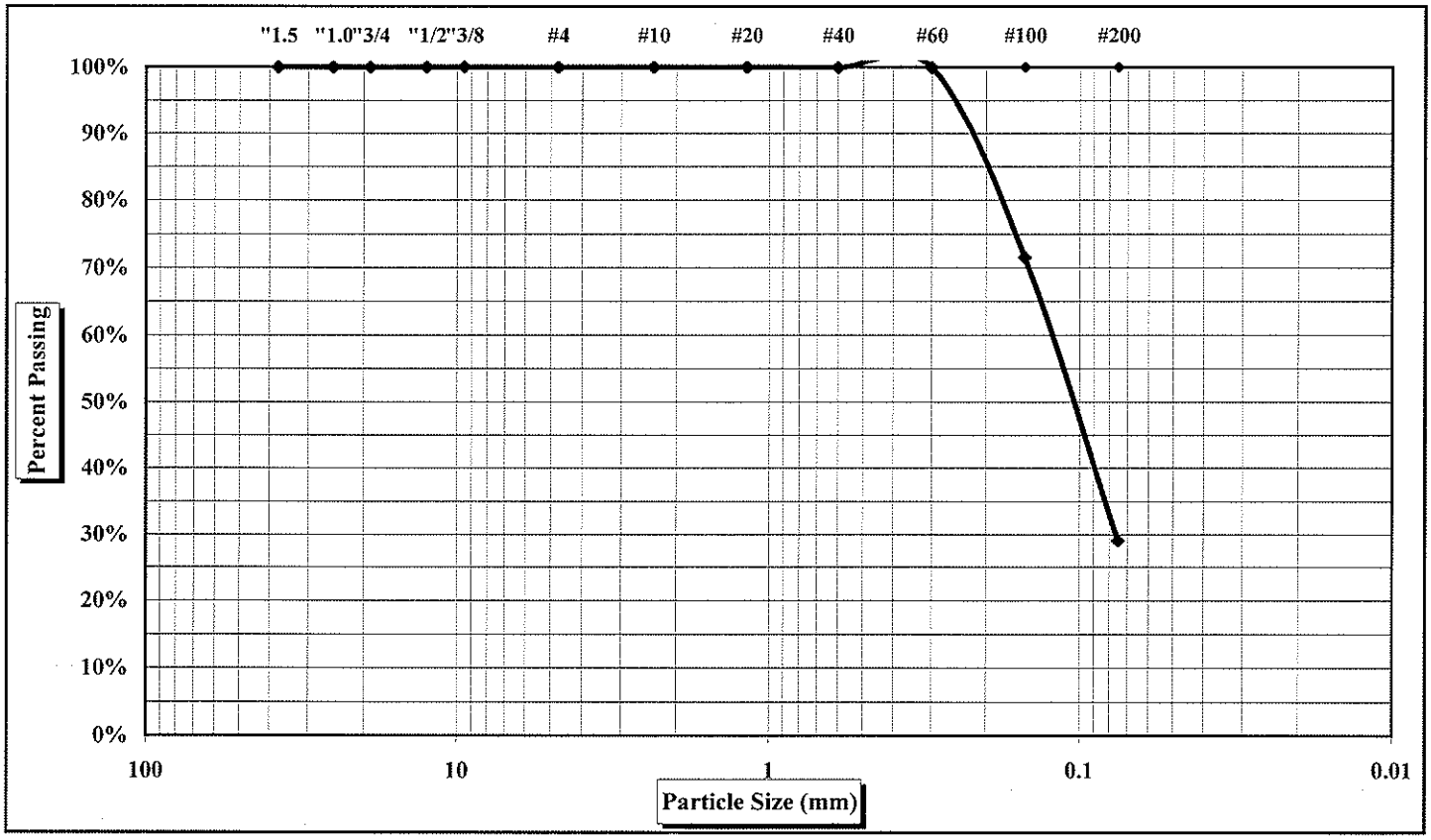
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S19	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	83.5'-85.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	29.0%	Coarse Sand	0%	Fine Sand	71%
Apparent Relative Density	N/A	Natural Moisture Content	28.0%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: **1061-07-123**
Project Name: **Sutton Lake Road Borrow Pit**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-1 Sample #: S19 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 83.5'-85.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	264.09
B	Total Sample Dry Wt. + Tare Wt.	206.3	C	Dry Weight + Tare Wt.	206.31
C	Total Sample Dry Weight (B-A)	206.3	D	Water Wt. (B-C)	57.78
D	Total Sample Wt. After #200 Wash	155.0	E	Dry Wt.(C-A)	206.31
E	Percent Passing #200 (1-D/C)x100	24.9%	Moisture Content (100 x D/E) (%)		28.0%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.05	0.0%	**100.0%**
0.30	#50	0.17	0.1%	**99.9%**
0.15	#100	58.78	28.5%	**71.5%**
0.075	#200	146.41	71.0%	**29.0%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)		**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)		**0.0%**
Liquid Limit	N/A	Fineness Modulus 0.29	Medium Sand	< 2.00 mm and > 0.425 mm (#40)		**0.0%**
Plastic Limit	N/A	Cu = D60/D10: **#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)		**70.9%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**	% Silt and Clay	< 0.075 mm		**29.0%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐	
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐	
					Organic Content	

D10 = D30 = **0.075** D60 = **0.13** D50 = **0.11** D90 = **0.21**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

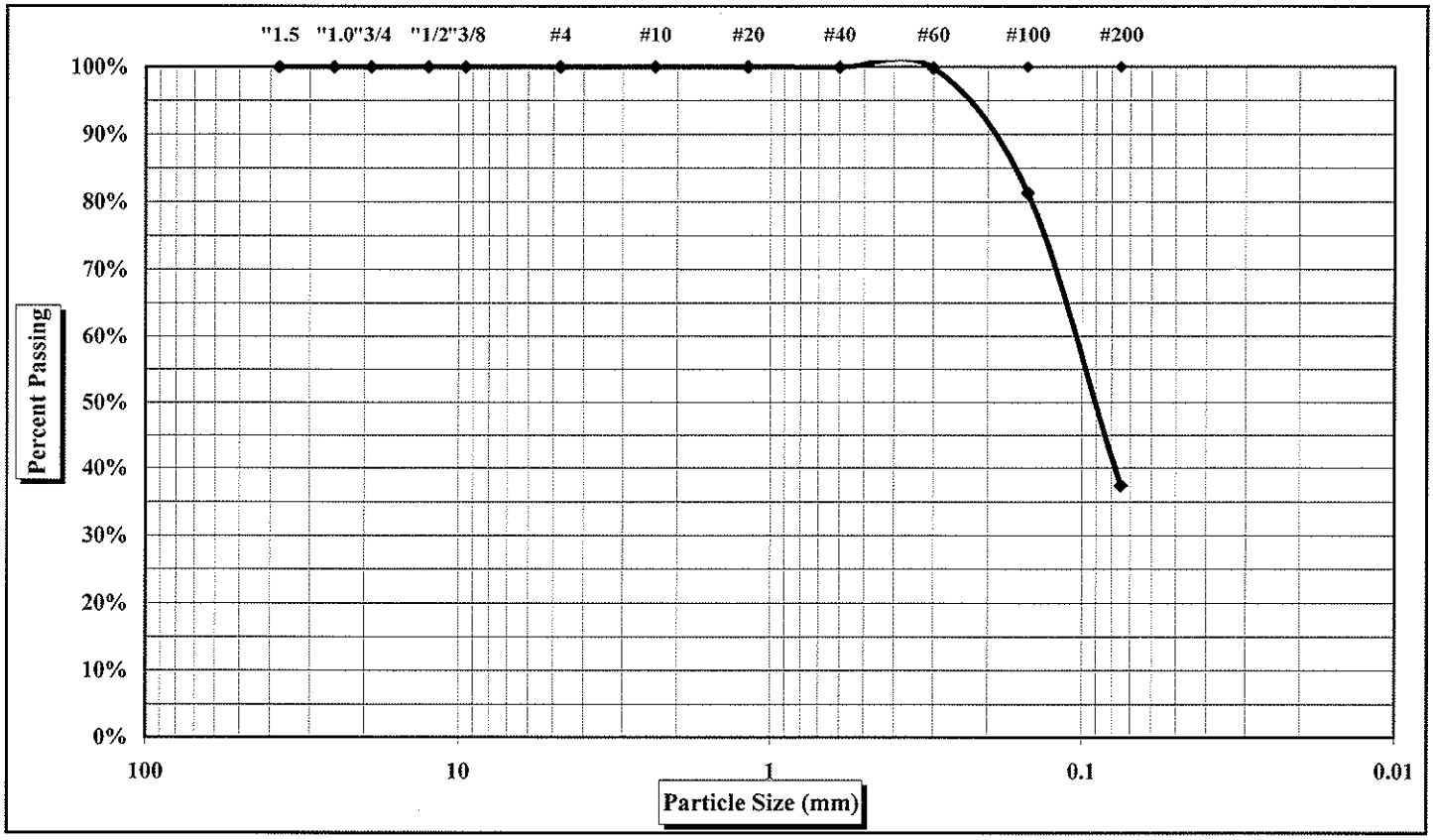
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-1	Sample #:	S21	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	93.5'-95.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	37.4%	Coarse Sand	0%	Fine Sand	63%
Apparent Relative Density	N/A	Natural Moisture Content	28.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-1 Sample #: S21 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 93.5'-95.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	282.81
B	Total Sample Dry Wt. + Tare Wt.	220.6	C	Dry Weight + Tare Wt.	220.63
C	Total Sample Dry Weight (B-A)	220.6	D	Water Wt. (B-C)	62.18
D	Total Sample Wt. After #200 Wash	147.6	E	Dry Wt.(C-A)	220.63
E	Percent Passing #200 (1-D/C)x100	33.1%	Moisture Content (100 x D/E) (%)		28.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.12	0.1%	**99.9%**
0.30	#50	0.43	0.2%	**99.8%**
0.15	#100	41.29	18.7%	**81.3%**
0.075	#200	138.15	62.6%	**37.4%**

Notes:	Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
	Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	0.19	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.1%**
Plastic Limit	N/A	Cu = D60/D10:	**#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**62.6%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**#DIV/0!**	% Silt and Clay	< 0.075 mm	**37.4%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = D30 = D60 = **0.11** D50 = **0.09** D90 = **0.19**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

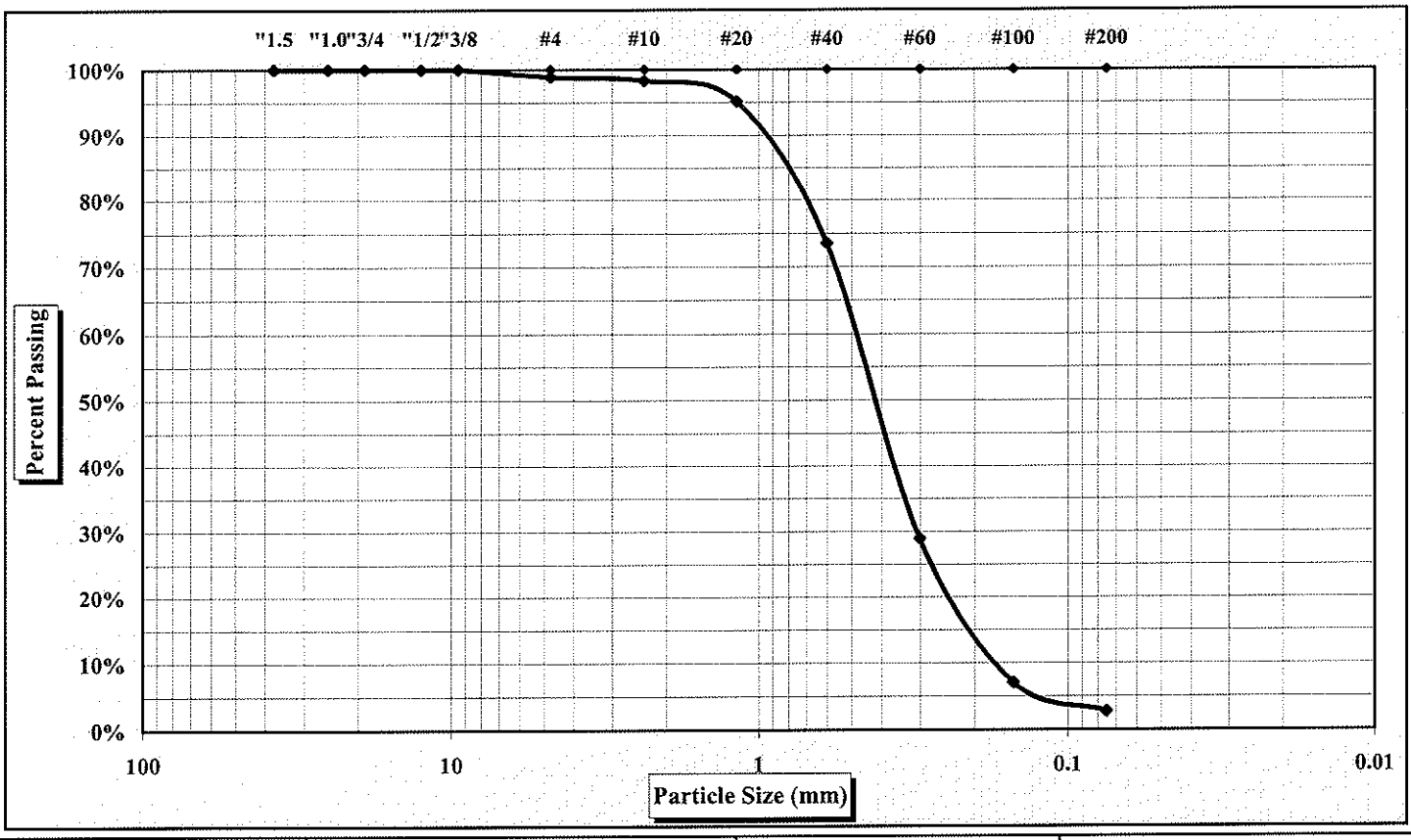
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-07-123**
Project Name: **Sutton Lake Road Borrow Pit**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: May 30, 2007
Test Date(s): May 22-29, 2007

Boring #:	B-2	Sample #:	S9	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	33.5'-35.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	1%	Medium Sand	25%
Silt & Clay (% Passing #200)	2.7%	Coarse Sand	1%	Fine Sand	71%
Apparent Relative Density	N/A	Natural Moisture Content	23.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-2 | Sample #: S9 | Sample Date: 5-16-07
Location: Wilmington, NC | Offset: N/A | Depth: 33.5'-35.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis		
	Tare Number	
A	Tare Weight	
B	Total Sample Dry Wt. + Tare Wt.	225.9
C	Total Sample Dry Weight (B-A)	225.9
D	Total Sample Wt. After #200 Wash	220.0
E	Percent Passing #200 (1-D/C)x100	2.6%

Moisture Content		Natural
	Tare #	
A	Tare Weight	
B	Wet Weight + Tare Wt.	278.34
C	Dry Weight + Tare Wt.	225.86
D	Water Wt. (B-C)	52.48
E	Dry Wt.(C-A)	225.86
Moisture Content (100 x D/E) (%)		23.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	2.54	1.1%	**98.9%**
2.36	#8	3.82	1.7%	**98.3%**
1.18	#16	11.07	4.9%	**95.1%**
0.60	#30	59.97	26.6%	**73.4%**
0.30	#50	160.53	71.1%	**28.9%**
0.15	#100	210.03	93.0%	**7.0%**
0.075	#200	219.70	97.3%	**2.7%**

Notes:

Maximum Particle Size			
Apparent Relative Density			
Liquid Limit	N/A	Fineness Modulus	1.98
Plastic Limit	N/A	Cu = D60/D10:	**2.7**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60):	**1.0**

Gravel	< 75 mm and > 4.75 mm (#4)	**1.1%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.6%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**24.9%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**70.7%**
% Silt and Clay	< 0.075 mm	**2.7%**
Description of Sand & Gravel	Rounded ☐	Angular ☐
Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
		Organic Content

D10 = **0.18** D30 = **0.3** D60 = **0.49** D50 = **0.41** D90 = **0.96**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

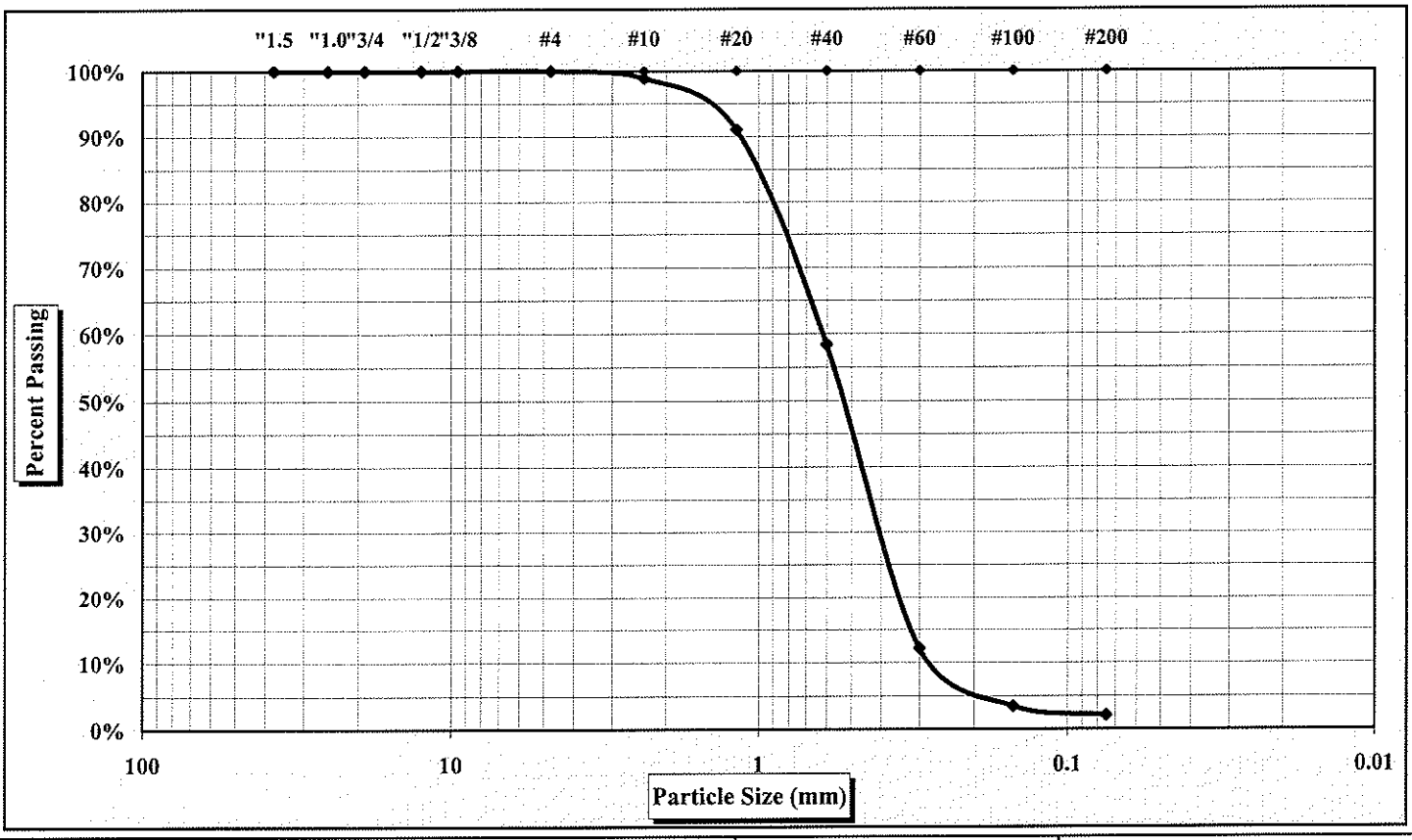
Technical Responsibility: Randy Martin, P.E. — Branch Manager (Position)

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-2	Sample #:	S11	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	43.5'-45.0'
Sample Description:	Light Gray Medium to Fine SAND (SP)				



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	0.0%	Gravel	0%	Medium Sand	40%
Silt & Clay (% Passing #200)	2.0%	Coarse Sand	1%	Fine Sand	56%
Apparent Relative Density	N/A	Natural Moisture Content	22.4%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-2 | Sample #: S11 | Sample Date: 5-16-07
Location: Wilmington, NC | Offset: N/A | Depth: 43.5'-45.0'
Sample Description: Light Gray Medium to Fine SAND (SP)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	287.84
B	Total Sample Dry Wt. + Tare Wt.	235.2	C	Dry Weight + Tare Wt.	235.17
C	Total Sample Dry Weight (B-A)	235.2	D	Water Wt. (B-C)	52.67
D	Total Sample Wt. After #200 Wash	230.7	E	Dry Wt.(C-A)	235.17
E	Percent Passing #200 (1-D/C)x100	1.9%	Moisture Content (100 x D/E) (%)		22.4%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	2.68	1.1%	**98.9%**
1.18	#16	21.19	9.0%	**91.0%**
0.60	#30	97.84	41.6%	**58.4%**
0.30	#50	206.67	87.9%	**12.1%**
0.15	#100	227.10	96.6%	**3.4%**
0.075	#200	230.38	98.0%	**2.0%**

Notes:						
Maximum Particle Size				Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density				Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**1.1%**
Liquid Limit	N/A	Fineness Modulus	2.36	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**40.5%**
Plastic Limit	N/A	Cu = D60/D10:	**2.2**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**56.4%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60):	**0.9**	% Silt and Clay	< 0.075 mm	**2.0%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.28** D30 = **0.4** D60 = **0.61** D50 = **0.51** D90 = **1.2**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

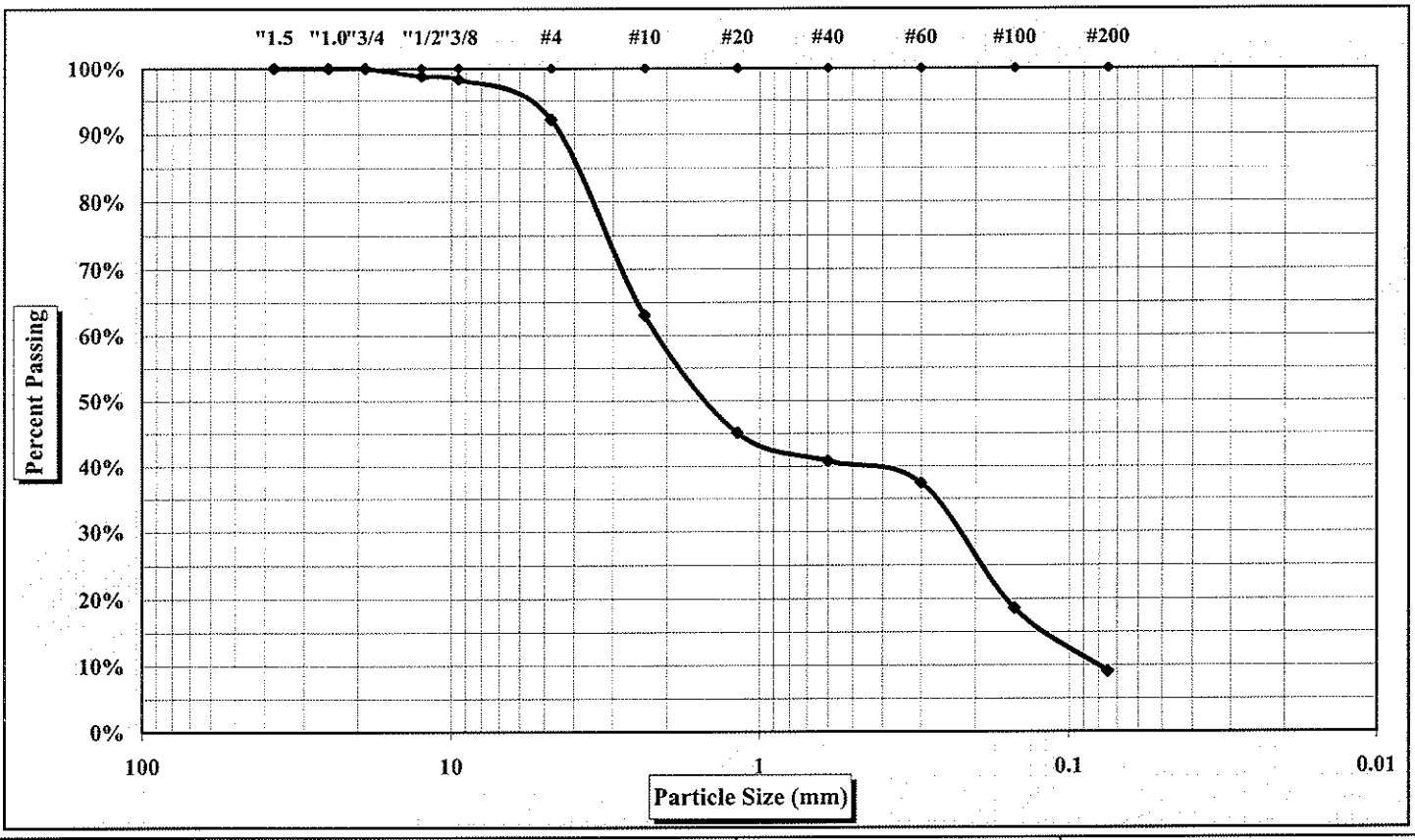
Particle Size Analysis of Soils

ASTM D 422

S&ME Project #: **1061-07-123**
Project Name: **Sutton Lake Road Borrow Pit**
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Report Date: May 30, 2007
Test Date(s): May 22-29, 2007

Boring #:	B-2	Sample #:	S12	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	48.5'-50.0'
Sample Description:	Gray Slightly Silty Coarse to Fine SAND (SP-SM)				



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	0.0%	Gravel	8%	Medium Sand	22%
Silt & Clay (% Passing #200)	9.0%	Coarse Sand	29%	Fine Sand	32%
Apparent Relative Density	N/A	Natural Moisture Content	16.5%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-2 Sample #: S12 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 48.5'-50.0'
Sample Description: Gray Slightly Silty Coarse to Fine SAND (SP-SM)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	296.42
B	Total Sample Dry Wt. + Tare Wt.	254.4	C	Dry Weight + Tare Wt.	254.38
C	Total Sample Dry Weight (B-A)	254.4	D	Water Wt. (B-C)	42.04
D	Total Sample Wt. After #200 Wash	232.8	E	Dry Wt.(C-A)	254.38
E	Percent Passing #200 (1-D/C)x100	8.5%	Moisture Content (100 x D/E) (%)		16.5%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	3.16	1.2%	**98.8%**
9.50	3/8"	4.50	1.8%	**98.2%**
4.75	#4	19.91	7.8%	**92.2%**
2.36	#8	94.01	37.0%	**63.0%**
1.18	#16	139.78	54.9%	**45.1%**
0.60	#30	150.72	59.2%	**40.8%**
0.30	#50	159.27	62.6%	**37.4%**
0.15	#100	207.33	81.5%	**18.5%**
0.075	#200	231.41	91.0%	**9.0%**

Notes:

Maximum Particle Size				Gravel	< 75 mm and > 4.75 mm (#4)	**7.8%**
Apparent Relative Density				Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**29.1%**
Liquid Limit	N/A	Fineness Modulus	3.06	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**22.3%**
Plastic Limit	N/A	Cu = D60/D10:	**26.3**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**31.7%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60):	**0.3**	% Silt and Clay	< 0.075 mm	**9.0%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = **0.08** D30 = **0.21** D60 = **2.1** D50 = **1.7** D90 = **4.4**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

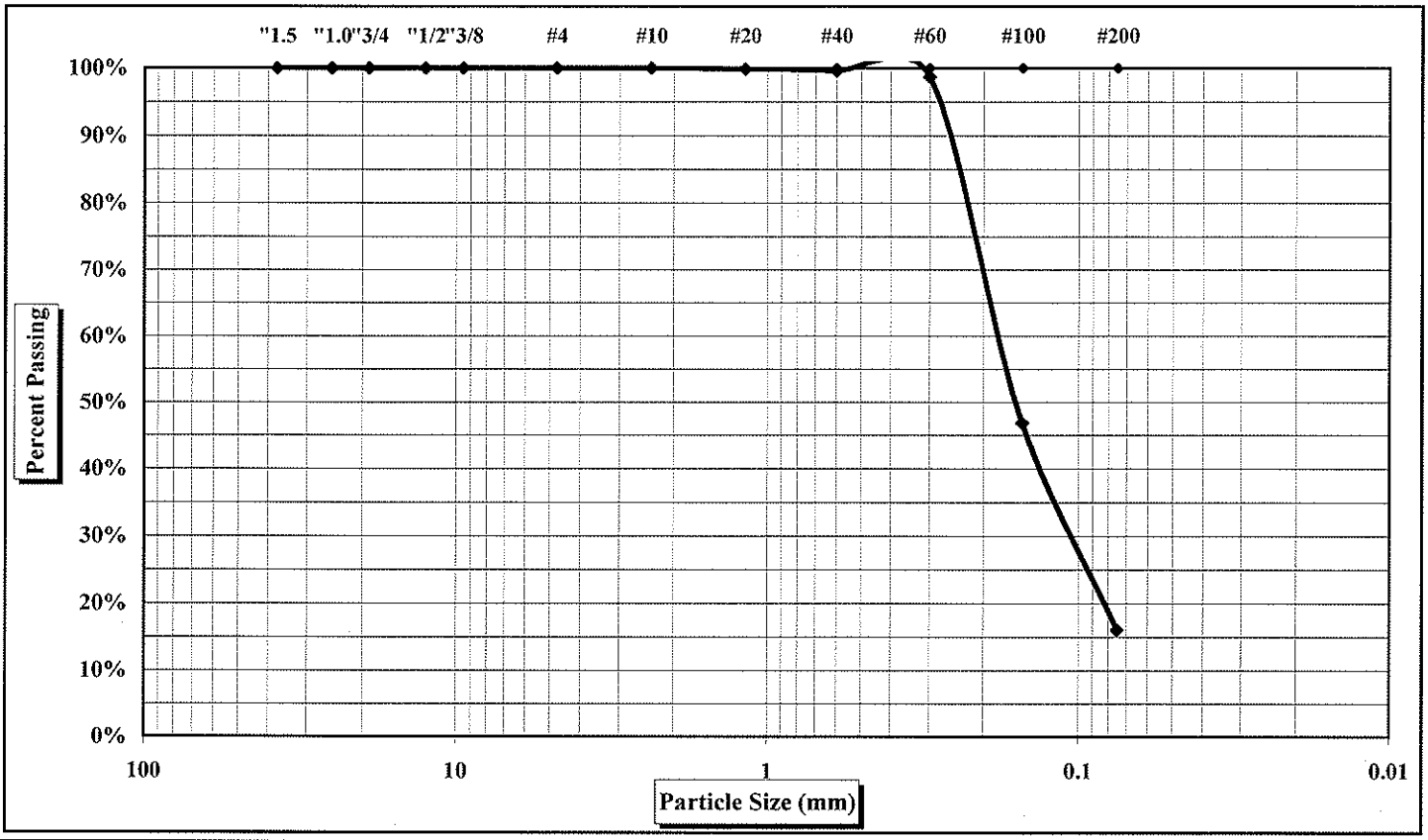
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-2	Sample #:	S14	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	58.5'-60.0'
Sample Description:	Dark Gray Silty Fine SAND (SM)				



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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	16.1%	Coarse Sand	0%	Fine Sand	84%
Apparent Relative Density	N/A	Natural Moisture Content	27.4%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-2 Sample #: S14 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 58.5'-60.0'
Sample Description: Dark Gray Silty Fine SAND (SM)

Particle Size Analysis / Without Hydrometer Analysis				Moisture Content	Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	278.01
B	Total Sample Dry Wt. + Tare Wt.	218.2	C	Dry Weight + Tare Wt.	218.23
C	Total Sample Dry Weight (B-A)	218.2	D	Water Wt. (B-C)	59.78
D	Total Sample Wt. After #200 Wash	187.0	E	Dry Wt.(C-A)	218.23
E	Percent Passing #200 (1-D/C)x100	14.3%		Moisture Content (100 x D/E) (%)	27.4%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.26	0.1%	**99.9%**
0.60	#30	0.88	0.4%	**99.6%**
0.30	#50	2.77	1.3%	**98.7%**
0.15	#100	116.15	53.2%	**46.8%**
0.075	#200	183.16	83.9%	**16.1%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus 0.55	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.4%**
Plastic Limit	N/A	Cu = D60/D10: **#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**83.5%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**	% Silt and Clay	< 0.075 mm	**16.1%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
					Organic Content

D10 = D30 = **0.11** D60 = **0.19** D50 = **0.17** D90 = **0.26**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

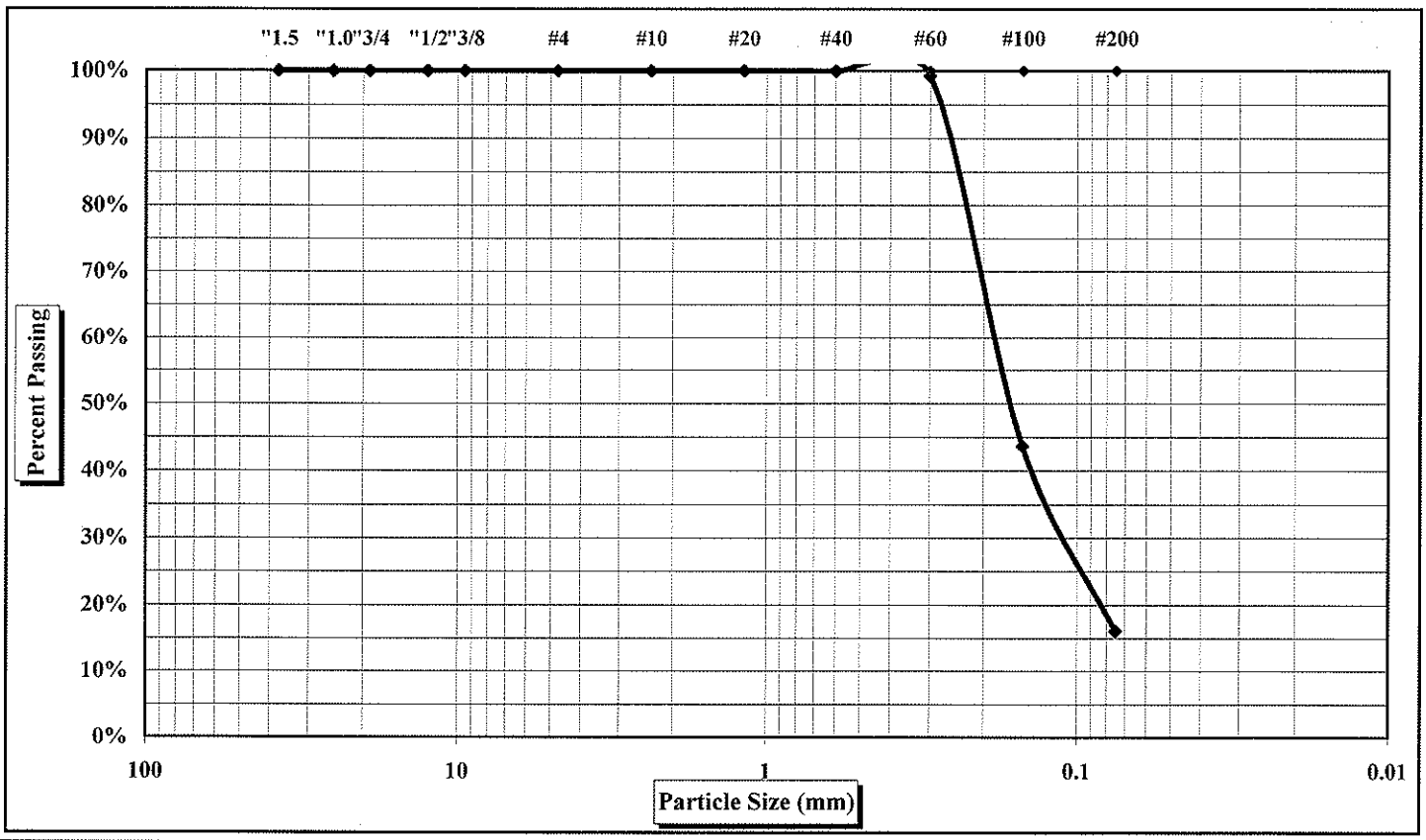
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-2	Sample #:	S15	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	63.5'-65.0'
Sample Description:	Dark Gray Silty Fine SAND (SM)				



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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	16.2%	Coarse Sand	0%	Fine Sand	84%
Apparent Relative Density	N/A	Natural Moisture Content	23.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-2 Sample #: S15 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 63.5'-65.0'
Sample Description: Dark Gray Silty Fine SAND (SM)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	283.92
B	Total Sample Dry Wt. + Tare Wt.	230.4	C	Dry Weight + Tare Wt.	230.38
C	Total Sample Dry Weight (B-A)	230.4	D	Water Wt. (B-C)	53.54
D	Total Sample Wt. After #200 Wash	196.4	E	Dry Wt.(C-A)	230.38
E	Percent Passing #200 (1-D/C)x100	14.7%	Moisture Content (100 x D/E) (%)		23.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.07	0.0%	**100.0%**
0.30	#50	1.62	0.7%	**99.3%**
0.15	#100	129.79	56.3%	**43.7%**
0.075	#200	193.15	83.8%	**16.2%**

Notes:						
Maximum Particle Size				Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density				Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	0.57	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.0%**
Plastic Limit	N/A	Cu = D60/D10:	**#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**83.8%**
Plastic Index	N/A	Cc =(D30)^2/ (D10xD60):	**#DIV/0!**	% Silt and Clay	< 0.075 mm	**16.2%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = D30 = **0.12** D60 = **0.19** D50 = **0.17** D90 = **0.26**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

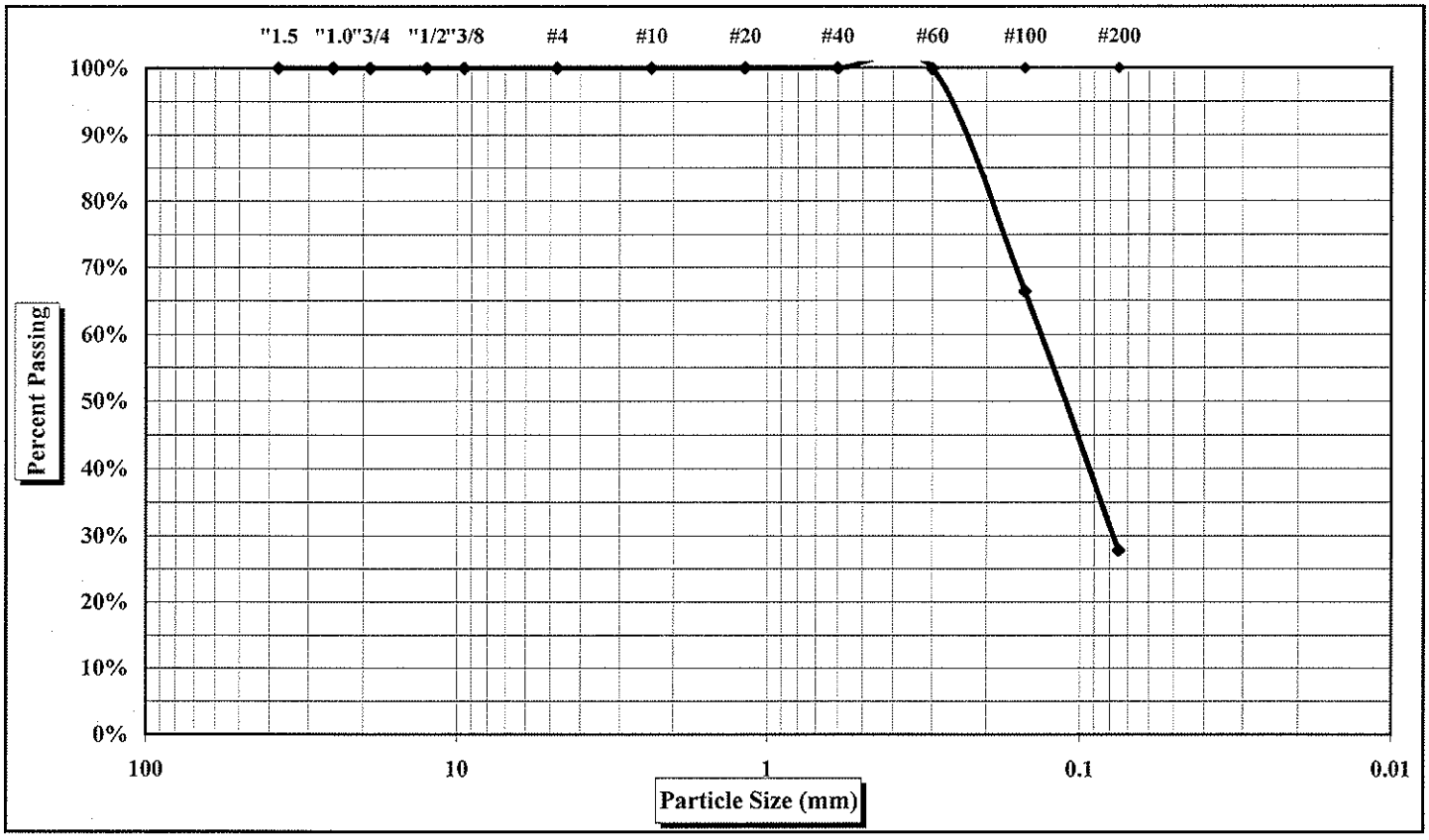
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-2	Sample #:	S18	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	78.5'-80.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	27.8%	Coarse Sand	0%	Fine Sand	72%
Apparent Relative Density	N/A	Natural Moisture Content	25.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*
ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-2 Sample #: S18 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 78.5'-80.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	268.72
B	Total Sample Dry Wt. + Tare Wt.	214.6	C	Dry Weight + Tare Wt.	214.60
C	Total Sample Dry Weight (B-A)	214.6	D	Water Wt. (B-C)	54.12
D	Total Sample Wt. After #200 Wash	162.8	E	Dry Wt.(C-A)	214.60
E	Percent Passing #200 (1-D/C)x100	24.1%	Moisture Content (100 x D/E) (%)		25.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.02	0.0%	**100.0%**
0.30	#50	0.16	0.1%	**99.9%**
0.15	#100	72.19	33.6%	**66.4%**
0.075	#200	154.94	72.2%	**27.8%**

Notes:						
Maximum Particle Size				Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density				Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus	0.34	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.0%**
Plastic Limit	N/A	Cu = D60/D10:	**#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**72.2%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60):	**#DIV/0!**	% Silt and Clay	< 0.075 mm	**27.8%**
				Description of Sand & Gravel	Rounded ☐	Angular ☐
				Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
						Organic Content

D10 = D30 = **0.079** D60 = **0.14** D50 = **0.12** D90 = **0.22**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

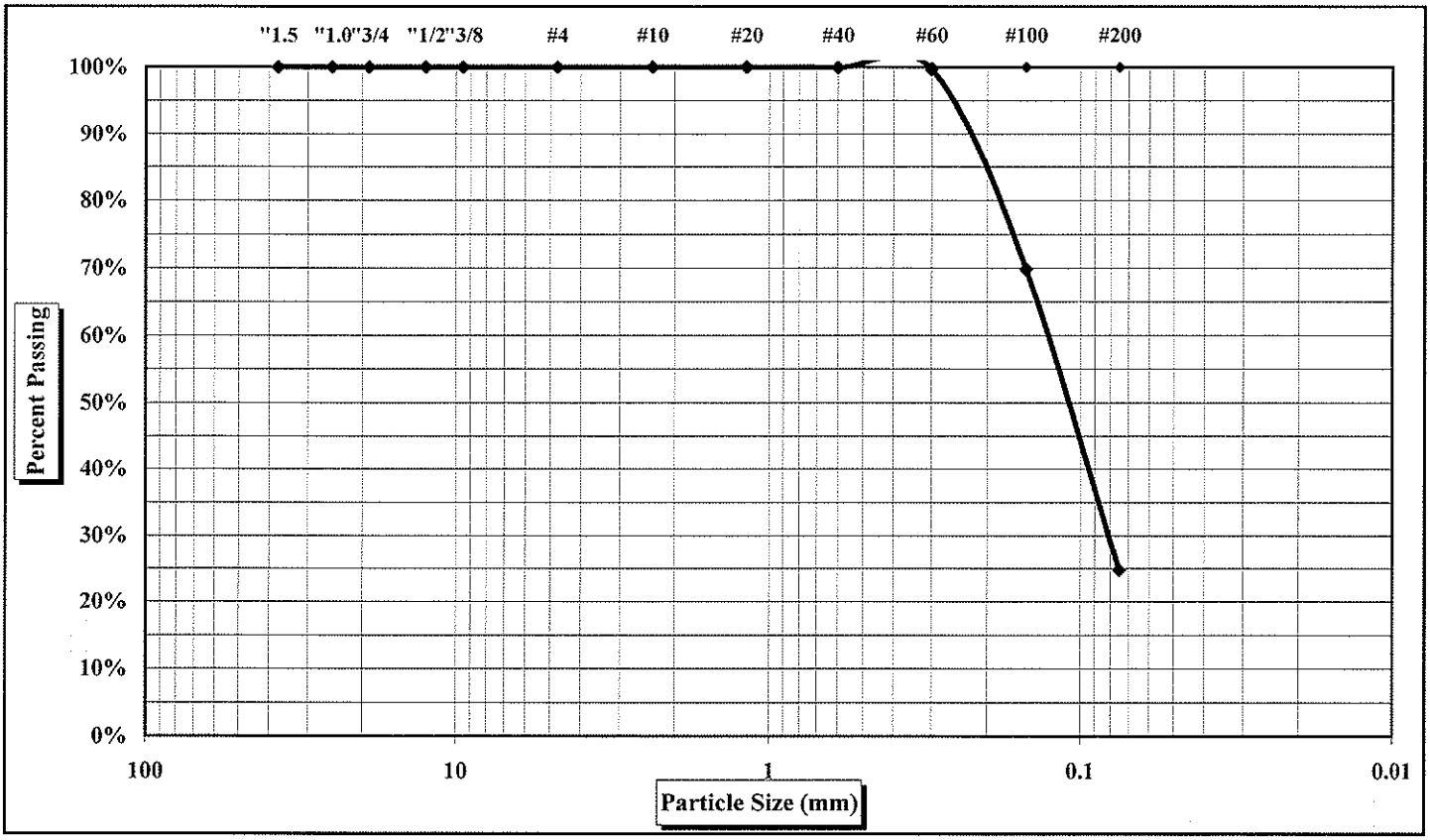
Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

S&ME Project #:	**1061-07-123**	Report Date:	May 30, 2007
Project Name:	**Sutton Lake Road Borrow Pit**	Test Date(s):	May 22-29, 2007
Client Name:	S.T. Wooten Corporation		
Client Address:	PO Box 2408, Wilson, NC 27894		

Boring #:	B-2	Sample #:	S20	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	88.5'-90.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	24.8%	Coarse Sand	0%	Fine Sand	75%
Apparent Relative Density	N/A	Natural Moisture Content	32.2%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123
Project Name: Sutton Lake Road Borrow Pit
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Test Date(s): May 22-29, 2007
Report Date: May 30, 2007

Boring #: B-2 Sample #: S20 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 88.5'-90.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	294.86
B	Total Sample Dry Wt. + Tare Wt.	223.0	C	Dry Weight + Tare Wt.	222.99
C	Total Sample Dry Weight (B-A)	223.0	D	Water Wt. (B-C)	71.87
D	Total Sample Wt. After #200 Wash	177.1	E	Dry Wt.(C-A)	222.99
E	Percent Passing #200 (1-D/C)x100	20.6%	Moisture Content (100 x D/E) (%)		32.2%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.05	0.0%	**100.0%**
0.60	#30	0.15	0.1%	**99.9%**
0.30	#50	0.76	0.3%	**99.7%**
0.15	#100	67.33	30.2%	**69.8%**
0.075	#200	167.73	75.2%	**24.8%**

Notes: Maximum Particle Size

Apparent Relative Density

Liquid Limit N/A Fineness Modulus 0.31
Plastic Limit N/A Cu = D60/D10: **#DIV/0!**
Plastic Index N/A Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**

Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.1%**
Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**75.2%**
% Silt and Clay	< 0.075 mm	**24.8%**

Description of Sand & Gravel Rounded ☐ Angular ☐
Hard & Durable ☐ Soft ☐ Weathered & Friable ☐
Organic Content

D10 = D30 = **0.08** D60 = **0.14** D50 = **0.12** D90 = **0.22**

ASTM D 422: Particle Size Analysis of Soils
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)
Hydrometer portion of test method not utilized.
ASTM D 854: Specific Gravity of Soils

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Particle Size Analysis of Soils

ASTM D 422

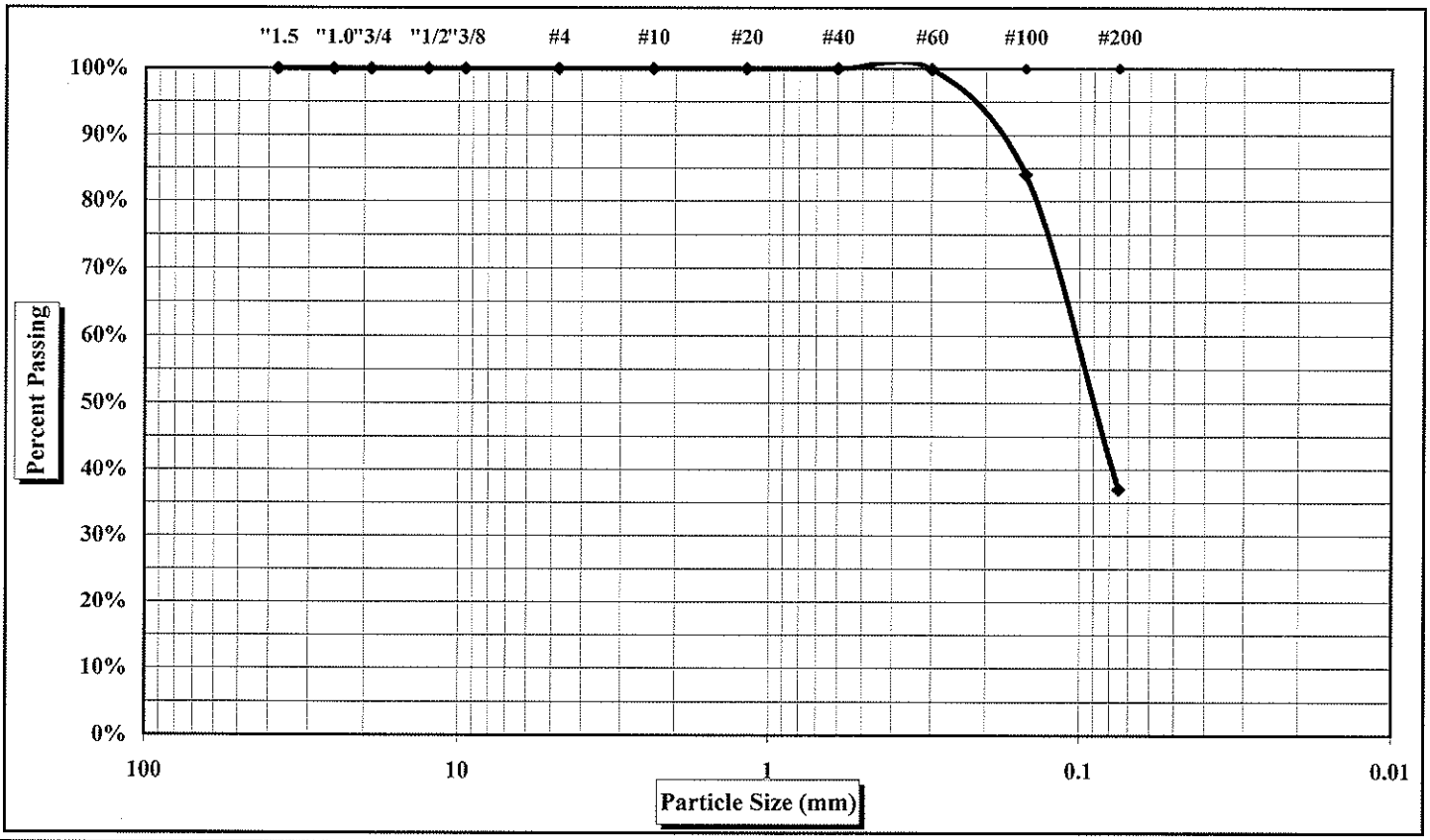
S&ME Project #: **1061-07-123** Report Date: May 30, 2007

Project Name: **Sutton Lake Road Borrow Pit** Test Date(s): May 22-29, 2007

Client Name: S.T. Wooten Corporation

Client Address: PO Box 2408, Wilson, NC 27894

Boring #:	B-2	Sample #:	S22	Sample Date:	5-16-07
Location:	Wilmington, NC	Offset:	N/A	Depth:	98.5'-100.0'
Sample Description:	Dark Gray Clayey Fine 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	0.0%	Gravel	0%	Medium Sand	0%
Silt & Clay (% Passing #200)	37.0%	Coarse Sand	0%	Fine Sand	63%
Apparent Relative Density	N/A	Natural Moisture Content	28.6%	Organic Content	N/A
Liquid Limit	N/A	Plastic Limit	N/A	Plastic Index	N/A

Description of Sand & Gravel

Rounded ☐ Angular ☐ Hard & Durable ☐ Soft ☐ Weathered & Friable ☐

References: ASTM D 422: Particle Size Analysis of Soils *Hydrometer portion of test method not utilized.*

ASTM D 421: Dry Preparation of Soil Samples ASTM D 854: Specific Gravity of Soils

ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils

ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technical Responsibility: Randy Martin, P.E. Branch Manager

Position

Particle Size Analysis of Soils

ASTM D 422

Project #: 1061-07-123 Test Date(s): May 22-29, 2007
Project Name: Sutton Lake Road Borrow Pit Report Date: May 30, 2007
Client Name: S.T. Wooten Corporation
Client Address: PO Box 2408, Wilson, NC 27894

Boring #: B-2 Sample #: S22 Sample Date: 5-16-07
Location: Wilmington, NC Offset: N/A Depth: 98.5'-100.0'
Sample Description: Dark Gray Clayey Fine SAND (SC)

Particle Size Analysis / Without Hydrometer Analysis			Moisture Content		Natural
				Tare #	
	Tare Number		A	Tare Weight	
A	Tare Weight		B	Wet Weight + Tare Wt.	236.84
B	Total Sample Dry Wt. + Tare Wt.	184.2	C	Dry Weight + Tare Wt.	184.23
C	Total Sample Dry Weight (B-A)	184.2	D	Water Wt. (B-C)	52.61
D	Total Sample Wt. After #200 Wash	126.7	E	Dry Wt.(C-A)	184.23
E	Percent Passing #200 (1-D/C)x100	31.2%	Moisture Content (100 x D/E) (%)		28.6%

Sieve Size (mm)	Sieve Size	Retained Weight	Percent Retained	**Percent Passing Total Sample**
37.50	1.5"	0.0	0.0%	**100.0%**
25.00	1.0"	0.00	0.0%	**100.0%**
19.00	3/4"	0.00	0.0%	**100.0%**
12.50	1/2"	0.00	0.0%	**100.0%**
9.50	3/8"	0.00	0.0%	**100.0%**
4.75	#4	0.00	0.0%	**100.0%**
2.36	#8	0.00	0.0%	**100.0%**
1.18	#16	0.00	0.0%	**100.0%**
0.60	#30	0.03	0.0%	**100.0%**
0.30	#50	0.14	0.1%	**99.9%**
0.15	#100	29.35	15.9%	**84.1%**
0.075	#200	116.06	63.0%	**37.0%**

Notes:

Maximum Particle Size			Gravel	< 75 mm and > 4.75 mm (#4)	**0.0%**
Apparent Relative Density			Coarse Sand	< 4.75 mm and >2.00 mm (#10)	**0.0%**
Liquid Limit	N/A	Fineness Modulus 0.16	Medium Sand	< 2.00 mm and > 0.425 mm (#40)	**0.0%**
Plastic Limit	N/A	Cu = D60/D10: **#DIV/0!**	Fine Sand	< 0.425 mm and > 0.075 mm (#200)	**63.0%**
Plastic Index	N/A	Cc =$(D30)^2$/ (D10xD60): **#DIV/0!**	% Silt and Clay	< 0.075 mm	**37.0%**
			Description of Sand & Gravel	Rounded ☐	Angular ☐
			Hard & Durable ☐	Soft ☐	Weathered & Friable ☐
					Organic Content

D10 = D30 = D60 = **0.11** D50 = **0.09** D90 = **0.18**

ASTM D 422: Particle Size Analysis of Soils
Hydrometer portion of test method not utilized.
ASTM D 421: Dry Preparation of Soil Samples
ASTM D 854: Specific Gravity of Soils
ASTM D 4318: Liquid Limit, Plastic Limit, & Plastic Index of Soils
ASTM D 2487: Classification of Soils for Engineering Purposes (Unified Soil Classification System)

Technician Name:

Technical Responsibility: Randy Martin, P.E. Branch Manager
Position

Appendix B: Permits

Permit Class
MODIFICATION/MAJOR

Permit Number
79-10

STATE OF NORTH CAROLINA
Department of Environmental Quality
and
Coastal Resources Commission

Permit

for

X Major Development in an Area of Environmental Concern pursuant to NCGS 113A-118

X Excavation and/or filling pursuant to NCGS 113-229

Issued to **Town of North Topsail Beach, 2008 Loggerhead Court, North Topsail Beach, NC 28460**

Authorizing development in Onslow County at the Ocean Beach within Town Limits, North Topsail Beach, as requested in the permittee's application dated 10/31/17, including attached workplan drawings (12), as referenced in Condition No. 1 below.

This permit, issued on **February 14, 2018**, is subject to compliance with the application (where consistent with the permit), all applicable regulations, special conditions and notes set forth below. Any violation of these terms may be subject to fines, imprisonment or civil action; or may cause the permit to be null and void.

1) Unless specifically altered herein, all development shall be carried out in accordance with the attached workplan drawings (12), Sheets 1-9 of 9, dated 9/28/17, Sheets 1-3 of 3, dated 9/27/17, the Letter of Commitment dated 10/30/17, and AEC Hazard Notice dated Received DCM Wilmington 1/31/18.

2) In order to protect threatened and endangered species and to minimize the adverse impacts to offshore, nearshore, intertidal and beach resources, no beach nourishment activities shall occur from April 1 to November 15 of any year without prior approval from the Division of Coastal Management in consultation with the appropriate resource agencies.

(See attached sheets for Additional Conditions)

This permit action may be appealed by the permittee or other qualified persons within twenty (20) days of the issuing date.

This permit must be accessible on-site to Department personnel when the project is inspected for compliance.

Any maintenance work or project modification not covered hereunder requires further Division approval.

All work must cease when the permit expires on

December 31, 2021

In issuing this permit, the State of North Carolina agrees that your project is consistent with the North Carolina Coastal Management Program.

Signed by the authority of the Secretary of DEQ and the Chairman of the Coastal Resources Commission.

Douglas V Huggett

FOR Braxton C. Davis, Director
Division of Coastal Management

This permit and its conditions are hereby accepted.

Signature of Permittee

ADDITIONAL CONDITIONS

Excavation

3) All excavation shall take place entirely within the areas indicated on the attached workplan drawings.

4) Excavation shall not exceed -20' NAVD88 within the NC Highway 421 Wilmington ST Wooten site. Overdredging is specifically prohibited.

5) The borrow area shall be inspected and approved by a representative of the Division of Coastal Management prior to the commencement of any excavation activities.

Beach Nourishment

6) This permit authorizes beach nourishment activities to be carried out one (1) time along the entire reach of the requested project area. Any request to carry out additional activities within an area where nourishment activities have been completed under this permit shall require a modification of this permit.

7) Prior to initiation of beach nourishment activity along each section of beach, the existing mean high water line shall be surveyed, and a copy of the survey provided to the Division of Coastal Management.

NOTE: The permittee is advised that the State of North Carolina claims title to all currently submerged lands and any future lands that are raised above the mean high water level as a result of this project.

8) The seaward nourishment limit shall be constructed in accordance with the attached work plats.

9) Prior to the initiation of beach nourishment activity on a specific property, easements or similar legal instruments shall be obtained from the impacted property owner(s).

10) Should excavation operations encounter sand deemed non-compatible with 15A NCAC 07H .0312 (Technical Standards for Beach Fill Projects), the contractor shall immediately cease operation and contact the Division of Coastal Management. Operations shall resume after resolution of the issue of sand compatibility.

11) Land-based equipment necessary for beach nourishment work shall be brought to the site through existing accesses. Should the work result in any damage to existing accesses, the accesses shall be restored to pre-project conditions immediately upon project completion in that specific area.

NOTE: The permittee is advised that any new access site would require a modification of this permit.

12) Dune disturbance shall be kept to a minimum. Any alteration of existing dunes shall be coordinated with the Division of Coastal Management as well as the appropriate property owner(s). All disturbed areas shall be restored to original contours and configuration and shall be revegetated immediately following project completion in that specific area.

ADDITIONAL CONDITIONS

13) Where oceanfront development exists at elevations nearly equal to that of the native beach, a low protective dune shall be pushed up along the backbeach to prevent slurry from draining towards the development.

14) Once a section is complete, all heavy equipment shall be removed or shifted to a new section and the area graded and dressed to final approved slopes.

15) The permittee shall make every effort possible to minimize any negative impacts of trucks and construction equipment on roadway and pedestrian traffic. The permittee should also ensure that the ability of individuals to access and enjoy the beach is not impeded outside of the construction limits.

16) This permit does not authorize any permanent or long-term interference with the public's right of access and/or usage of all State lands and waters.

17) The authorized project shall not interfere with the public's right to free navigation on all navigable waters of the United States. No attempt shall be made by the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the authorized work for reason other than safety.

U.S. Army Corps of Engineers Conditions

18) Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.

19) Appropriate sedimentation and erosion control measures must be taken to minimize suspended material or turbidity.

20) If submerged cultural resources are encountered during the operation, the USACE will be immediately notified so that coordination can be initiated with the Underwater Archeology Unit (UAU) of the Department of Cultural Resources. In emergency situations, the permittee shall immediately contact the UAU at (910-458-9042), Fort Fisher, so that a full assessment of the artifacts can be made.

Threatened & Endangered Species Conditions

21) The U.S. Fish and Wildlife Service (USFWS) August 28, 2017 North Carolina Statewide Programmatic Biological Opinion (SPBO) contains mandatory Reasonable and Prudent Measures and Terms and Conditions that are associated with "incidental take" for beach placement activities. Your authorization under this Corps permit is conditional upon your compliance with all the mandatory reasonable and prudent measures and terms and conditions associated with incidental take of the SPBO, which terms and conditions are incorporated by reference in this permit. Failure to comply with these SPBO reasonable and prudent measures and terms and conditions, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The USFWS is the appropriate authority to determine compliance with the reasonable and prudent measures and terms and conditions of its SPBO, and with the Endangered Species Act. The SPBO document can be accessed at https://www.fws.gov/raleigh/pdfs/spbo.pdf .

ADDITIONAL CONDITIONS

22) Daily routine beach surveillance shall be conducted during construction to prevent unintentional damage to sea turtles and their nesting areas. If a nest or a turtle crawl is identified in the project area, the permittee shall cease all work in that area and immediately contact Mr. Matthew Godfrey of the NC Wildlife Resource Commission (NCWRC), at (252) 728-1528, or Ms. Maria Dunn of the NCWRC, at (252) 946-3916, and the USACE to determine appropriate action.

23) All necessary precautions and measures shall be implemented so that any activity will not kill, injure, capture, pursue, harass, or otherwise harm any protected federally listed species (such as sea turtles, whales, manatee, shortnose sturgeon, and piping plover). While accomplishing the authorized work, if the permittee discovers or observes a damaged or hurt listed endangered or threatened species, the USACE shall be immediately notified so that required coordination can be initiated with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service.

Project Maintenance

24) The permittee shall advise the Wilmington District, Regulatory Division in writing prior to beginning the work authorized by this permit. The name, phone number, and address, including a field contact name and number, for both the construction and engineer contractors will be submitted to the USACE prior to any work.

25) A pre-construction meeting must be held with the USACE prior to conducting the work to ensure the contractor fully understands the conditions of this permit. Participants shall include, but are not limited to, representatives from NC Division of Coastal Management and NC Division of Water Resources.

26) Updated sediment analysis must be submitted to the USACE every Monday and Thursday to verify the compatibility of the material. All analysis must include, but is not limited to, the location of the sample station, shell percentage, silt/clay content, grain size, and color. All data provided to the USACE shall also be provided to the Division of Coastal Management.

27) Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used. Soils used for fill shall not be contaminated with any toxic substance in concentrations governed by Section 307 of the Clean Water Act.

28) The permittee shall provide written notification of project completion immediately upon completion of the work authorized by this permit. As-built surveys of the beach must be provided to the USACE as they are being conducted. Final surveys must be submitted within 60 days of the completion of the beach fill activity.

29) No deep ruts shall be left within the construction limits of the project when work is completed.

ADDITIONAL CONDITIONS

30) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States or the State of North Carolina on account of any such removal, relocation, or alteration.

31) The permittee shall notify NOAA/NATIONAL OCEAN SERVICE Chief Source Data Unit Attention: Sharon Tear N CS261, 1315 E West HWY- RM 7316, Silver Spring, MD 20910-3282 at least two weeks prior to beginning work and upon completion of work.

32) In issuing this permit, the Federal Government does not assume any liability for:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
b. Damages to the permitted project or uses thereof as a result of current or future Federal activities initiated on behalf of the general public.
c. Damages to other permitted or unpermitted activities or structures caused by the authorized activity.
d. Design and construction deficiencies associated with the permitted work.
e. Damage claims associated with any future modification, suspension, or revocation of this permit.

Mitigation & Monitoring

33) Unless specifically modified herein, all mitigative commitments and/or biological monitoring commitments made during the original environmental review process as found in the Final Environmental Impacts Statement shall be adhered to.

General

34) No sand shall be placed on any sand bags that have been determined by the DCM to be subject to removal under 15A NCAC 07H .0308(a)(2). In order to ensure compliance with this condition, the DCM shall be contacted at (910) 796-7215 prior to project initiation to allow the DCM to meet on site with the permittee and/or contractor.

NOTE: The permittee is advised that the Division of Coastal Management shall regulate the removal of existing sandbags and the placement of new sandbags in accordance with 15A NCAC 07H .0308(a)(2)(G).

35) All conditions and stipulations of the active permit remain in force under this Major Modification unless specifically altered herein.

36) This Major Modification shall be attached to the original of Permit No. 79-10, which was issued on 7/21/10, as well as all subsequent modifications, refinements and renewals, and copies of all documents shall be readily available on site when Division personnel inspect the project for compliance.

ADDITIONAL CONDITIONS

37) The permittee and/or his or her contractor shall meet with a representative of the Division prior to project initiation.

NOTE: Should disturbance landward of the first line of stable, natural vegetation exceed 1 acre in area, an Erosion and Sedimentation Control Plan may be required for this project. This plan must be filed at least thirty (30) days prior to the beginning of any land disturbing activity. Submit this plan to the Department of Environmental Quality, Land Quality Section, 127 Cardinal Drive Extension, Wilmington, NC 28405.

NOTE: This permit does not eliminate the need to obtain any additional state, federal or local permits, approvals or authorizations that may be required.

NOTE: The N.C. Division of Water Resources has assigned the proposed project DWR Project No. 08-1764v4.

NOTE: The U.S. Army Corps of Engineers has assigned the proposed project COE Action Id. No. SAW-2017-02492.

NOTE: An application processing fee of $400 was received by DCM for this project. This fee also satisfied the Section 401 application processing fee requirements of the Division of Water Resources.

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

February 15, 2018

Regulatory Division

Action ID No. SAW-2017-02492 and State Permit No. 79-10

Mr. Steve Foster, Town Manager
Town of North Topsail Beach
2008 Loggerhead Court
North Topsail Beach, North Carolina 28460

Dear Mr. Foster:

Reference your application for a Department of the Army permit to conduct a truck haul restoration nourishment activity along 17,950 linear feet (or 3.4 miles) of oceanfront shoreline (known as Phase 5) starting near 2nd Avenue and traversing to near East 9th Street at the southwest end of North Topsail Beach, Onslow County, North Carolina.

Your proposal has been reviewed and found to be consistent with the provisions and objectives of the CAMA-Corps Programmatic Permit process (copy attached) for construction activities that receive authorization from the State of North Carolina. Therefore, you may commence construction activity in strict accordance with applicable State authorization, attached Federal special conditions, and the approved plan. Failure to comply with the State authorization or conditions of the Federal permit could result in civil and/or administrative penalties.

If any change in your work is required because of unforeseen or altered conditions or for any other reason, plans revised to show the change must be sent promptly to this office and the North Carolina Division of Coastal Management prior to performing any such change or alteration. Such action is necessary as revised plans must be reviewed and the authorization modified. Your Department of the Army permit will expire on December 31, 2021.

If you have any questions or comments regarding this authorization and the accompanying conditions, please don't hesitate to contact me in the Wilmington Regulatory Field Office at telephone 910-251-4811 or mickey.t.sugg@usace.army.mil.

Sincerely,

Mickey Sugg, Project Manager
Wilmington Regulatory Field Office

Enclosures:
CAMA permit
401 WQ Cert
GP 291 conditions
Special Conditions
August 28, 2017 SPBO

Copies Furnished (w/enclosures):

Mr. Chris Gibson
TI Coastal Services, Inc.
387-B North Green Meadows Drive
Wilmington, North Carolina 28405

Mr. Jamie Pratt
TI Coastal Services, Inc.
387-B North Green Meadows Drive
Wilmington, North Carolina 28405

E-Copies Furnished (w/enclosures):
NOAA/NMFS; Dr. Fritz Rhode
NOAA/NMFS; Dr. Pace Wilber
NCDEQ/DCM; Mr. Doug Huggett
NCDEQ/DCM; Ms. Heather Coats
NCDEQ/DWR; Mr. Robb Mairs
NCDEQ/DWR; Ms. Karen Higgins
USFWS; Mr. Pete Benjamin
USEPA; Mr. Todd Bowers

EXHIBIT A
(PERMIT SPECIAL CONDITIONS

SPECIAL CONDITIONS (Action ID. SAW-2017-02492)

In accordance with 33 U.S.C. 1341(d), all conditions of the North Carolina Division of Water Quality 401 Certification #4097 (dated January 11, 2018) and the North Carolina Division of Coastal Management CAMA Major Permit Number 79-10 (dated February 14, 2018) are incorporated as part of the Department of the Army permit, and attached for your convenience.

Work Limits

1. All work authorized by this permit must be performed in strict compliance with the November 2017 permit application and the attached plans (which are a part of this permit). Any modification to these plans, prior to or during construction, must be approved by the U.S. Army Corps of Engineers Wilmington District (USACE) prior to implementation.

2. Except as authorized by this permit or any USACE approved modification to this permit, no dredge, fill, or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project within waters or wetlands outside the designated disposal and borrow areas. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.

3. Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.

4. All material used for the beach nourishment must be compatible.

5. Any work constructed under authorization of this permit shall be restricted to November 16-April 30. No work will occur outside this time period. All activity, including mobilization efforts, is restricted from the oceanfront shoreline prior to November 16. Upon completion of work, all equipment must be removed from the beach by April 30, this includes the leveling and/or removal of any remaining stockpiled material along the shoreline.

6. No attempt will be made by the permittee to prevent the full and free use by the public of all navigable waters at, or adjacent to, the authorized work for reason other than safety. No activity may cause a hazard to navigation.

Related Laws

7. Appropriate sedimentation and erosion control measures must be taken to minimize suspended material or turbidity. A Sedimentation and Erosion Control Plan may be required for the project. The applicant should contact the Division of Land Resource (910-395-3900) regarding the need for such a plan.

8. Threatened and Endangered Species:

a) The U.S. Fish and Wildlife Service (USFWS) August 28, 2017 North Carolina Statewide Programmatic Biological Opinion (SPBO) contains mandatory Reasonable and Prudent Measures and Terms and Conditions that are associated with "incidental take" for beach placement activities. Your authorization under this Corps permit is conditional upon your compliance with all the mandatory reasonable and prudent measures and terms and conditions associated with incidental take of the SPBO, which terms and conditions are incorporated by reference in this permit. Failure to comply with these SPBO reasonable and prudent measures and terms and conditions, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The USFWS is the appropriate authority to determine compliance with the reasonable and prudent measures and terms and conditions of its SPBO, and with the Endangered Species Act. The executive summary of the SPBO has been attached for your convenience and the entire document can be accessed at https://www.fws.gov/raleigh/pdfs/spbo.pdf .

b) Daily routine beach surveillance will be conducted during construction to prevent unintentional damage to sea turtles and their nesting areas. If a nest or a turtle crawl is identified in the project area, the permittee will cease all work in that area and immediately contact Mr. Matthew Godfrey of the NC Wildlife Resource Commission (NC WRC), at (252) 728-1528 or Ms. Maria Dunn of the NCWRC, at (252) 946-3916, and the USACE to determine appropriate action.

c) All necessary precautions and measures will be implemented so that any activity will not kill, injure, capture, pursue, harass, or otherwise harm any protected federally listed species (such as sea turtles, whales, manatee, shortnose sturgeon and Atlantic sturgeon, red knots, and piping plover). While accomplishing the authorized work, if the permittee discovers or observes a damaged or hurt listed endangered or threatened species, the USACE will be immediately notified so that required coordination can be initiated with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service.

9. If submerged cultural resources are encountered during the operation, the USACE will be immediately notified so that coordination can be initiated with the Underwater Archeology Unit (UAU) of the Department of Cultural Resources. In

emergency situations, the permittee should immediately contact the UAU at (910-458-9042), Fort Fisher, so that a full assessment of the artifacts can be made.

10. All mechanized equipment will be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, it should be reported to the N.C. Division of Water Quality at (919) 733-5083, Ext. 526 or (800) 662-7956 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act will be followed.

Project Maintenance

11. The permittee shall advise the Wilmington District, Regulatory Division in writing prior to beginning the work authorized by this permit. The name, phone number, and address, including a field contact name and number, for both the construction and engineer contractors will be submitted to the USACE prior to any work.

12. A pre-construction meeting must be held with the USACE prior to conducting the work to ensure the contractor fully understands the conditions of this permit. Participants may include, but are not limited to, representatives from NC Division of Coastal Management and NC Division of Water Quality.

13. Sediment analysis must be submitted to the USACE every Monday and Thursday to verify the compatibility of the material. The analysis must include, but shall not be limited to, the location of the sample station, shell percentage, silt/clay content, grain size, and color.

14. Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities. Metal products, organic materials (including debris from land clearing activities), or unsightly debris will not be used. Soils used for fill shall not be contaminated with any toxic substance in concentrations governed by Section 307 of the Clean Water Act.

15. The permittee shall provide written notification of project completion immediately upon completion of the work authorized by this permit. As-built surveys of the beach must be provided to the USACE as they are being conducted. Final surveys must be submitted within 60 days of the completion of the beach fill activity.

16. No deep ruts will be left within the construction limits of the project when work is completed.

17. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure

or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal, relocation, or alteration.

18. The permittee shall notify NOAA/NATIONAL OCEAN SERVICE Chief Source Data Unit Attention: Sharon Tear N CS261, 1315 E West HWY- RM 7316, Silver Spring, MD 20910-3282 at least two weeks prior to beginning work and upon completion of work.

19. In issuing this permit, the Federal Government does not assume any liability for:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future Federal activities initiated on behalf of the general public.

c. Damages to other permitted or unpermitted activities or structures caused by the authorized activity.

d. Design and construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

20. This Department of the Army permit does not obviate the need to obtain other Federal, State or local authorizations required by law.

Enforcement

21. Violations of these conditions or violations of Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act must be reported in writing to the USACE within 24 hours of the permittee's discovery of the violation.

22. A representative of the USACE will periodically and randomly inspect the work for compliance with these conditions. Deviations from these procedures may result in a directive to cease all work until the problem is resolved to the satisfaction of the USACE. No claim, legal action in equity or for damages, adjustment, or other entitlement shall be asserted against the United States on account of any such required cessation or related action, by the permittee, its agents, contractors, or other representatives.

EXHIBIT B
(DEPARTMENT OF ARMY (DOA) GENERAL PERMIT 291)

DEPARTMENT OF THE ARMY
Wilmington District, Corps of Engineers
69 Darlington Avenue
Wilmington, North Carolina 28403-1343
http://www.saw.usace.army.mil/Missions/RegulatoryPermitProgram.aspx

General Permit No. 198000291
Name of Permittee: General Public
Effective Date: January 01, 2017
Expiration Date: December 31, 2021

DEPARTMENT OF THE ARMY
GENERAL PERMIT

A general permit to do work in or affecting navigable waters of the United States and waters of the United States, upon recommendation of the Chief of Engineers, pursuant to Section 10 of the Rivers and Harbors Act of March 3, 1899 (U.S.C. 403), and Section 404 of the Clean Water Act (33 U.S.C. 1344), is hereby issued by authority of the Secretary of the Army by

District Engineer
U.S. Army Engineer District, Wilmington
Corps of Engineers
69 Darlington Avenue
Wilmington, North Carolina 28403-1343

TO AUTHORIZE THOSE CONSTRUCTION ACTIVITIES IN THE 20 COASTAL COUNTIES RECEIVING PRIOR APPROVAL FROM THE STATE OF NORTH CAROLINA IN THE FORM OF A COASTAL AREA MANAGEMENT ACT (CAMA) PERMIT, AND/OR A STATE DREDGE AND FILL PERMIT, AND IF REQUIRED, A WATER QUALITY CERTIFICATION, THAT ARE OTHERWISE NOT ELIGIBLE FOR FEDERAL AUTHORIZATION IN THE FORM OF A NATIONWIDE PERMIT OR ANOTHER REGIONAL GENERAL PERMIT.

Operating Procedures

a. Applications for joint state and federal authorization under this programmatic general permit will be accepted through the North Carolina Division of Coastal Management (NCDCM). Receipt of a complete application by the NCDCM will initiate the State's field review that will include a site visit and preparation of a Field Investigation Report and a state Bio-Report. The NCDCM will forward a copy of the complete application, its Field Investigation Report and its Bio-Report, to the appropriate Corps of Engineers field office, thereby initiating federal review of

the project. The Corps, upon receipt of an application, will immediately assign an action identification number, acknowledge receipt thereof, and examine the application to assure that it can be processed pursuant to this programmatic general permit. The applicant and the NCDCM will be furnished written notification of the Corps' determination. Notification to the applicant will include a brief description of the administrative process.

b. For those proposals that may result in a discharge into waters of the United States, including wetlands, the North Carolina Division of Water Resources (NCDWR) and the applicant will be informed regarding the applicant's need to obtain a Water Quality Certification in accordance with section 401 of the Clean Water Act.

c. If, at any time, the Corps determines that a proposed activity is eligible for authorization under another regional general permit (RGP) or a nationwide permit (NWP), this procedure may be terminated and the activity authorized pursuant to the terms and conditions of the appropriate RGP or NWP.

d. The permit review process conducted by the NCDCM is a public process involving publication of public notices in local newspapers, public hearings, and various public appeal procedures. The Corps may issue a separate public notice for a specific proposal if it is deemed necessary for compliance with appropriate laws, regulation and guidance.

e. This general permit does not, in any way, alter established procedures or responsibilities, as required by federal laws, memoranda of agreements (MOA's) or administrative regulations, with respect to the Corps' coordination with appropriate review agencies. The applicant will continue to have the opportunity to rebut any objections to a proposal.

f. The Corps will provide copies of the application and plans, the NCDCM's Field Investigation Report, and the state Bio-Report, to the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS) the U.S. Environmental Protection Agency (EPA), and any other federal agency that the Corps determines to be a necessary review agency (collectively, the "Federal Agencies"). Receipt of this material will initiate the Federal Agencies' review. The Federal Agencies will be allowed sufficient time, normally thirty (30) days, to provide the Corps with their comments and recommendations, including any proposed permit special conditions and recommendations of denial. The Corps may grant extensions of time for Federal Agency review if justified by unusual circumstances. If an extension is granted that would substantially delay an NCDCM decision, the application may be removed from this general permit process.

g. The Corps will receive and review all Federal Agency comments as well as any applicant rebuttal. Provided all Federal Agencies and the Corps are in agreement, the Corps will prepare a coordinated federal position incorporating all Federal Agency comments, including proposed permit special conditions and any recommendations for denial. The Corps will

typically furnish this coordinated federal position to the NCDCM within 45 days of its receipt of the complete application, and copies of the Field Investigation Report and Bio-Report.

h. If the Corps does not concur with a Federal Agency's comments or recommendations, the Corps will contact the Federal Agency and advise it of the Corps' position. Attempts to resolve the issue may include initiating the referral procedures outlined by current memoranda of agreement (MOA's) between the Department of the Army and the agency. No coordinated federal position will be furnished to the NCDCM until and unless the Corps receives written agreement from the Federal Agency that all issues have been resolved to the satisfaction of that agency.

i. If any of the recommendations and/or conditions included in the coordinated federal position are unacceptable to the NCDCM, the NCDCM will contact the Corps within ten (10) days of receipt of the coordinated federal position and attempt to resolve the conflict. If resolution of the conflict involves changes to the conditions or recommendations provided by the Federal Agencies, the provisions of paragraphs g. and h. (above) will apply. If the conflict is resolved to the satisfaction of the Corps and any affected Federal Agency, the NCDCM permit will be issued and the authority of this general permit will apply.

j. If a Federal Agency conflict is not resolved within the time necessary for a decision by the NCDCM, the NCDCM may proceed, independently, to conclude the state action without inclusion of the federal position. In such case, the applicant and the NCDCM will be notified immediately, in writing, that the state permit does not satisfy the federal permit requirements and that the proposal in question may not proceed without federal authorization.

k. If the coordinated federal position is not in conflict with state agencies' positions, law, regulation, or policy, and is acceptable to the NCDCM, a state permit will be developed by the NCDCM fully incorporating the state and federal positions. The NCDCM will furnish copies of the final permit to the applicant and the Corps. The NCDWR will furnish a copy of the Section 401 Water Quality Certification, if required, to the applicant and the Corps. The Corps will not confirm the authorization of a proposed project under this General Permit until the issuance of the NCDCM permit and, if required, the Section 401 Water Quality Certification.

l. If the NCDCM permit or Section 401 Water Quality Certification is denied, the applicant will be informed that federal authorization is denied without prejudice.

m. No work may proceed under this general permit until the Wilmington District Engineer or his representative provides written verification that the procedures and conditions of the general permit have been satisfied.

n. The NCDCM and the Corps will monitor all permitted work and periodically inspect projects for compliance with permit conditions and applicable state and federal regulations. If any violation of the NCDCM permit is discovered which would also constitute a violation of the

federal position, both the NCDCM and the Corps, in accordance with their respective regulations and policies, may take enforcement action.

o. This general permit will not be used to authorize an activity when the Wilmington District Engineer determines that the proposed activity would significantly affect the quality of the human environment and therefore require preparation of an Environmental Impact Statement (EIS).

General Conditions

a. Authorized structures located on or adjacent to Federally authorized waterways will be constructed in accordance with the latest setback criteria established by the Wilmington District Engineer. You may review the setback policy at http://www.saw.usace.army.mil/Missions/Navigation/Setbacks.aspx. This general permit does not authorize the construction of hardened or permanently fixed structures within the Federally Authorized Channel Setback, unless the activity is approved by the Corps. The permittee must obtain approval from the Corps prior to the construction of any structures within the Federally Authorized Channel Setback.

b. Except as authorized by this general permit or any Corps approved modification to this general permit, no excavation, fill or mechanized land-clearing activities shall take place, at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.

c. Authorization under this general permit does not obviate the need to obtain other federal, state, or local authorizations.

d. All work authorized by this general permit must comply with the terms and conditions of the applicable Clean Water Act Section 401 Water Quality Certification for this general permit issued by the North Carolina Division of Water Resources.

e. The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).

f. The activities authorized by this general permit must not interfere with the public's right to free navigation on all navigable waters of the United States. No attempt will be made by

the permittee to prevent the full and free use by the public of all navigable waters at or adjacent to the authorized work for a reason other than safety.

g. The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his/her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps , to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

h. The permittee, upon receipt of a notice of revocation of the permit for the verified individual activity, may apply for an individual permit, or will, without expense to the United States and in such time and manner as the Secretary of the Army or his/her authorized representative may direct, restore the affected water of the United States to its former conditions.

i. This General Permit does not authorize any activity that would conflict with a federal project's congressionally authorized purposes, established limitations or restrictions, or limit an agency's ability to conduct necessary operation and maintenance functions. Per Section 14 of the Rivers and Harbors Act of 1899, as amended (33 U.S.C. 408), no project that has the potential to take possession of or make use of for any purpose, or build upon, alter, deface, destroy, move, injure, or obstruct a federally constructed work or project, including, but not limited to, levees, dams, jettys, navigation channels, borrow areas, dredged material disposal sites, flood control projects, etc., shall be permitted unless the project has been reviewed and approved by the appropriate Corps approval authority.

j. The permittee shall obtain a Consent to Cross Government Easement from the Wilmington District's Land Use Coordinator prior to any crossing of the Corps easement and/or prior to commencing construction of any structures, authorized dredging or other work within the right-of-way of, or in proximity to, a federally designated disposal area. The Land Use Coordinator may be contacted at: CESAW-OP-N, 69 Darlington Avenue, Wilmington, North Carolina 28403-1343, email: SAWWeb-NAV@usace.army.mil.

k. The permittee will allow the Wilmington District Engineer or his/her representative to inspect the authorized activity at any time deemed necessary to assure that the activity is being performed or maintained in strict accordance with the Special and General Conditions of this permit.

l. This general permit does not grant any property rights or exclusive privileges.

m. This general permit does not authorize any injury to the property or rights of others.

n. This general permit does not authorize the interference with any existing or proposed federal project.

o. In issuing this general permit, the Federal Government does not assume any liability for the following:

(1) Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

(2) Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

(3) Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this general permit.

(4) Design or construction deficiencies associated with the permitted work.

(5) Damage claims associated with any future modification, suspension, or revocation of this general permit.

p. Authorization provided by this general permit may be modified, suspended or revoked in whole or in part if the Wilmington District Engineer, acting for the Secretary of the Army, determines that such action would be in the best public interest. The term of this general permit shall be five (5) years unless subject to modification, suspension or revocation. Any modification, suspension or revocation of this authorization will not be the basis for any claim for damages against the United States Government.

q. No activity may occur in a component of the National Wild and Scenic Rivers System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or "study river" (e.g., National Park Service, U.S. Forest Service, etc.)

r. This general permit does not authorize any activity within, or directly affecting, a marine sanctuary established by the Secretary of Commerce under authority of Section 302 of the Marine Protection, Research and Sanctuaries Act of 1972, unless the applicant provides the Corps with a certification from the Secretary of Commerce that the proposed activity is consistent with the purposes of Title III of the Marine Protection, Research and Sanctuaries Act. Information on marine sanctuaries may be obtained at http://sanctuaries.noaa.gov/#MN.

Permittees may not begin work until they provide the Corps with a written certification from the Department of Commerce.

s. In cases where the Wilmington District Engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places and its codified regulations, the National Historic Preservation Amendment Acts of 1980 and 1992, the Abandoned Shipwreck Act of 1987 and the Native American Graves Protection and Repatriation Act, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied. Permittees may not begin work until notified by the Corps that the requirements of the NHPA have been satisfied and that the activity is authorized.

t. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this general permit, you must immediately notify the Wilmington District Engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The Wilmington District Engineer will initiate the Federal, tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

u. No activity is authorized under this general permit which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed. Information on threatened and endangered species and their critical habitat can be obtained directly from the Corps field offices, the USFWS field offices or at the following web addresses: http://www.fws.gov/ or http://www.fws.gov/ipac/ or http://www.noaa.gov/fisheries.html . Permittees may not begin work until notified by the Corps that the requirements of the Endangered Species Act have been satisfied and that the activity is authorized.

v. If the permittee discovers or observes any live, damaged, injured or dead individual of an endangered or threatened species during construction, the permittee shall immediately notify the Wilmington District Engineer so that required coordination can be initiated with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service.

w. Permittees are advised that development activities in or near a floodway may be subject to the National Flood Insurance Program that prohibits any development, including fill, within a floodway that results in any increase in base flood elevations. This general permit does not authorize any activity prohibited by the National Flood Insurance Program.

x. The permittee must install and maintain, at his/her expense, any signal lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, on authorized facilities. For further information, the permittee should contact Coast Guard Sector North Carolina at (910) 772-2191 or email Coast Guard Fifth District at cgd5waterways@uscg.mil.

y. If the display of lights and signals on the authorized structure is not otherwise provided for by law, such lights and signals as may be prescribed by the U.S. Coast Guard will be installed and maintained by and at the expense of the permittee.

z. It is possible that an authorized structure may be damaged by wavewash from passing vessels. The issuance of this general permit does not relieve the permittee from taking all proper steps to ensure the integrity of the permitted structure and the safety of moored boats. The permittee will not hold the United States liable for any such damage.

aa. Structures and their attendant utilities, authorized by this general permit, located on lands subject to an easement in favor of the United States for the operation, maintenance, improvement, and enlargement of the Atlantic Intracoastal Waterway (AIWW), will be removed at the expense of the permittee, in the event that, in the judgment of the Corps acting on behalf of the United States, the lands are needed at any time for any purpose within the scope of the easement. Permanent buildings will not be constructed within the easement.

bb. The permittee must maintain any structure or work authorized by this general permit in good condition and in conformance with the terms and conditions of this general permit. The Permittee is not relieved of this requirement if the Permittee abandons the structure or work. Transfer in fee simple of the work authorized by this general permit will automatically transfer this general permit to the property's new owner, with all of the rights and responsibilities enumerated herein. The permittee must inform any subsequent owner of all activities undertaken under the authority of this general permit and provide the subsequent owner with a copy of the terms and conditions of this general permit.

cc. At his/her sole discretion, any time during the processing cycle, the Wilmington District Engineer may determine that this general permit will not be applicable to a specific proposal. In such case, the procedures for processing an individual permit in accordance with 33 CFR 325 will be available.

dd. Except as authorized by this general permit or any Corps approved modification to this general permit, all fill material placed in waters or wetlands shall be generated from an upland source and will be clean and free of any pollutants except in trace quantities.

ee. Except as authorized by this general permit or any Corps approved modification to this general permit, all excavated material will be disposed of in approved upland disposal areas.

ff. Activities which have commenced (i.e., are under construction) or are under contract

to commence in reliance upon this general permit will remain authorized provided the activity is completed within twelve months of the date of the general permit's expiration, modification, or revocation. Activities completed under the authorization of this general permit that were in effect at the time the activity was completed continue to be authorized by the general permit

BY AUTHORITY OF THE SECRETARY OF THE ARMY:

FOR THE COMMANDER:

Scott McLendon
Chief, Regulatory Division
Wilmington District