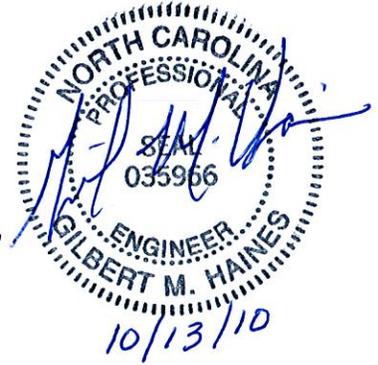


**BIDDING AND CONTRACT DOCUMENTS FOR
CABARRUS COUNTY, NORTH CAROLINA
CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL
PHASE 1L EXPANSION PROJECT**

CDM PROJECT NO. 1278-77070



ADDENDUM NO. 2

Date Issued: October 13, 2010

Bidders on this Project are hereby notified that this Addendum shall be attached to and made a part of the above named Bidding and Contract Documents dated September 2010.

The following items are issued to add to, modify, and clarify the Bidding and Contract Documents. These items shall have full force and effect as the Bidding and Contract Documents, and cost involved shall be included in the bid prices. Bids, to be submitted on the specified bid date, shall conform to the additions and revisions listed herein.

Acknowledge receipt of the Addendum by inserting its number and date on the appropriate page of the bid forms (i.e., page 00300-1). Failure to do so may subject the bidder to disqualification.

PLANHOLDER'S LIST

The Planholder's List is attached (Attachment No.1) and made part of this Addendum.

CHANGE IN CONTRACT STRUCTURE

The scope of work associated with the Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion project has been divided into two separate contracts:

- Construction Contract A for landfill construction, and
- Equipment Contract B for leachate storage tank system

Construction Contract A represents the full scope of work associated with the landfill construction work, including the lump sum Bid Alternate No.1 for bolted steel leachate storage tank, **as currently indicated in the Contract Documents and Addendum #1.**

General Contractors interested in the complete landfill construction work will submit their complete bid package as Contract A utilizing the current contract documents.

Equipment Contract B represents the full scope of work associated with the manufacturing and installation of the leachate storage tank system. The scope of work for Contract B represents the same scope of work as Bid Alternate No. 1 under Construction Contract A plus the contractual and administrative requirements provided in the Contract Documents. Equipment Contract B has been provided to allow the opportunity for leachate storage tank suppliers to contract directly with the

County for the manufacture and installation of the leachate storage tank system complete. Tank manufacturers must comply with the technical specifications for bolted steel epoxy-coated or glass fused-to-steel tanks as provided by the Contract Documents and any addendum issued. Separate contract forms for Contract B are attached to this Addendum.

Equipment Contract B is subject to all the contractual and technical requirements of this project as provided in the contract documents dated September 2010, which included Drawings, Specifications, and all addenda issued for the Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion Project.

Tank manufacturers or certified dealers have the option of proposing as a subcontractor under Contract A, or as a general contractor under Contract B.

PROJECT MANUAL

Section 0003 - Table of Content

1. Add the following Sections **pertaining to Contract B** to the Table of Content:

- 00301 - Bid Form (Contract B)
- 00411 - Bid Bond (Contract B)
- 00501 - Construction Agreement (Contract B)
- 00621 - Performance Bond (Contract B)
- 00651 - Notice of Award (Contract B)
- 00661 - Acceptance of Notice (Contract B)
- 00671 - Notice to Proceed (Contract B)
- 01025B - Measurement and Payment (Contract B)
- 11343 - Glass-lined Leachate Storage Tank

These sections are provided in Attachment No.2.

2. Modify Section 00421 in the Table of Content to read as follows:
 - 00421 - Qualification Form for the Steel Bolted Leachate Tank
3. Modify Section 11314 in the Table of Content to read as follows:
 - 11314 - Engine Driven Trash Pump

Section 00020 – Notice to Bidders

The Notice to Bidders has been revised and is being re-issued with this Addendum. Please replace the Notice to Bidders section in the Project Manual in its entirety with Attachment No.3, which incorporates the following changes:

1. Scope for contracts A and B
2. Project Schedule for Contract B

Section 00100 – Instruction to Bidders

1. Page 00100-4 Paragraph 8. OPENING OF BIDS. Replace the first sentence by the following:

“Bids for Contract A and Contract B will be publicly opened separately. Upon opening, all Bids shall be read aloud. Once any Bid is opened, the Owner may return no Bids to any Bidder. “

2. Page 00100-5 Paragraph 9. REJECTION OF BIDS. Add the following sentence at the end of the paragraph:

- I. If the equipment proposed for Contract B does not satisfy the requirement of the Bid Documents.
- J. If the Contractor does not meet the minimum requirements on the qualification forms 00420 or 00421. “

3. Page 00100-5 Paragraph 10. BID EVALUATION. Add the following sentence to the end of first paragraph:

“The award(s) shall not necessarily be based solely on lowest price, but will be made to the lowest responsible bidder(s) taking into consideration, quality, experience, performance and the time specified in the proposals for the performance of the contract.“

4. Page 00100-6 Section 10 BID EVALUATION. Modify the text as follows:

“General Construction Work and Equipment manufacturing and installation work as described for Contract A and Contract B.”

Section 00421 – Qualification Form for the Steel Bolted Leachate Tank

The Qualification Form for the Steel Bolted Leachate Tank has been revised and is being re-issued with this Addendum. Please replace Section 00421 in the Project Manual in its entirety with the form in Attachment No.4.

Section 00500 – Construction Agreement Form

The Construction Agreement Form for Contract A for the Steel Bolted Leachate Tank has been revised and is being re-issued with this Addendum. Please replace Section 00500 in the Project Manual in its entirety with the form in Attachment No.5.

Section 00850 – Drawing Index

1. Change D-7 callout into “Steel Epoxy Coated Leachate Storage Tank”
2. Add “D-7A – Glass-lined Leachate Storage Tank” to the Drawing Index .

Section 01010 – Summary of Work

1. Replace the first paragraph with the following:

“The scope of work associated with the Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion project consists of two separate contracts:

- Construction Contract A for landfill construction, and
- Equipment Contract B for leachate storage tank system

Construction Contract A generally includes the construction of a 2.1 acre double-lined cell. Work is to include the installation of a 40-mil HDPE base liner, geocomposite drainage net, a 10-inch secondary soil drainage layer and 24-inch protective soil drainage layer. Protective cover and secondary drainage layer material shall be obtained from an offsite borrow source with a specified permeability of 5×10^{-5} cm/sec or greater. Work shall include stripping existing vegetation, preparing the liner subgrade and liner installation, as well as a leachate collection system with force main, erosion control measures, seeding and mulching and other incidentals as shown on the Drawings and as noted in the Specifications. The Owner's onsite borrow area will be available for liner subgrade preparation and miscellaneous soil needs. Sorting and processing of the onsite borrow soil may be needed. Work may also include the construction of a Subcell A area within the lined expansion. This will depend on the need for permitted airspace for waste disposal prior to overall project completion. Days will be added to the date of Substantial Completion if this option is selected. In addition, work will also include the construction of a leachate tank truck loading area. A 150,000 gallon leachate storage tank system (including secondary containment, piping, transfer pump, etc.) shall be included as a bid alternate to Contract A.

Equipment Contract B includes all work associated with the manufacturing and installation of the 150,000 gallon leachate storage tank system (including secondary containment, piping, transfer pump, etc.). The scope of work for Contract B represents the same technical scope of work as Bid Alternate No. 1 under Construction Contract A.

Section 01026 – Schedule of Values

1. Paragraph 1.02 A. Add “Section 00301: Bid Form for Contract B” to the Contract Documents as item 2. and renumber the following items accordingly.

Section 01027 – Applications for Payment

1. Page 01027-2, Paragraph 1.05A(4). Add new item “e” as follows:
“e. Approved shop drawings.”
2. Page 01027-3, Paragraph 1.05. Add new paragraph “G” as follows:
“G. Progress payments will only be considered for approved stored (in accordance with Paragraph 1.05A(4)) materials on-site or installed per the specifications.”

Section 01041 – Project Coordination

1. Replace Paragraph 1.01A with the following:

“The scope of work associated with the Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion project consists of two separate contracts:

- Construction Contract A for landfill construction, and
- Equipment Contract B for leachate storage tank system

Construction Contract A generally includes the construction of a 2.1 acre double-lined cell. Work is to include the installation of a 40-mil HDPE base liner, geocomposite drainage net, a 10-inch secondary soil drainage layer and 24-inch protective soil drainage layer. Protective cover and secondary drainage layer material shall be obtained from an offsite borrow source with a specified permeability of 5×10^{-5} cm/sec or greater. Work shall include stripping existing vegetation, preparing

the liner subgrade and liner installation, as well as a leachate collection system with force main, erosion control measures, seeding and mulching and other incidentals as shown on the Drawings and as noted in the Specifications. The Owner's onsite borrow area will be available for liner subgrade preparation and miscellaneous soil needs. Sorting and processing of the onsite borrow soil may be needed. Work may also include the construction of a Subcell A area within the lined expansion. This will depend on the need for permitted airspace for waste disposal prior to overall project completion. Days will be added to the date of Substantial Completion if this option is selected. In addition, work will also include the construction of a leachate tank truck loading area. A 150,000 gallon leachate storage tank system (including secondary containment, piping, transfer pump, etc.) shall be included as a bid alternate to Contract A.

Equipment Contract B includes all work associated with the manufacturing and installation of the 150,000 gallon leachate storage tank system (including secondary containment, piping, transfer pump, etc.). The scope of work for Contract B represents the same technical scope of work as Bid Alternate No. 1 under Construction Contract A.

2. Replace paragraph 1.01 H. by the following paragraph:

“Contractor responsible for Contract A shall be aware that the primary and secondary containment leachate storage tanks along with piping and process equipment (within the containment area) may be awarded as an alternate bid to Contract A or provided under a separate contract (Contract B) as described in the Construction Documents. Contractor A shall be responsible for grading the tank area, connection of the leachate force main, electrical, the tank load out area, and coordination with the tank contractor (Contractor B). Contractor A shall schedule his work such that the grading and preparation of the tank area is completed within 60 days of NTP so as not to impede the progress of the Contract B Contractor. During the execution of Contract B, Contractor A shall make himself available to perform all work in support of the leachate storage tank facility construction to ensure that the leachate storage facility is complete and operational by the contract date for substantial completion.”

Section 01510 – Temporary Utilities

1. Modify the first sentence as follows:

“The general contractor (Contractor A) and tank contractor shall furnish, install and maintain temporary utilities required for construction and remove on completion of work.”

Section 01590 – Field Office and Vehicle

1. Replace the first paragraph by the following sentence:

‘ The general contractor (Contractor A) is required to furnish, install and maintain a temporary field office during the entire period and up to 30 days after final completion. A portion of the field office shall be made available to the Engineer when he is onsite and for bi-weekly progress meetings. The tank contractor (Contractor B) is not required to keep a field office, unless he deems necessary for his work.’

Section 02276 – Erosion and Sedimentation Control

1. At the end of Paragraph 1.01 A., delete “provide and pay for all erosion and sedimentation control measures and comply with the erosion and sedimentation control plan approved by NCDENR for this project.”

and replace with

“The general contractor (Contractor A) shall be responsible for providing and maintaining all required erosion and sedimentation control measures shown on the Drawings, comply with the erosion and sedimentation control plan approved by NCDENR for this project, throughout the project, including in the leachate tank area.”

Section 11314 – Engine Driven Trash Pump

1. On page 11314-3 change the first line of paragraph 2.01 A. to read:

“The engine shall be full compression ignition, four cycle, single acting, air or water cooled, not less than four (4) cylinder type, with 230.1 cu. inch displacement, Deutz Model F4L912, or equal”.

Section 11342 – Powder Epoxy Coated Steel Bolted Leachate Storage Tank

Section 11342 has been revised and is being re-issued with this Addendum. Please replace Section 11342 in the Project Manual in its entirety with the new version in Attachment No.6.

Section 15100 – Valves and Appurtenances

1. On page 15100-3 delete paragraph 2.02 C. in its entirety and replace with:

“C. Air Release Valves

1. Air release valves shall be model ARV100EPT-PV by Plastomatic valves, Inc. of Cedar Grove, NJ or equal”

DRAWINGS

Cover Sheet

1. Change D-7 callout into “Steel Epoxy Coated Leachate Storage Tank”
2. Add “D-7A – Glass-lined Leachate Storage Tank” to the Drawing Index.

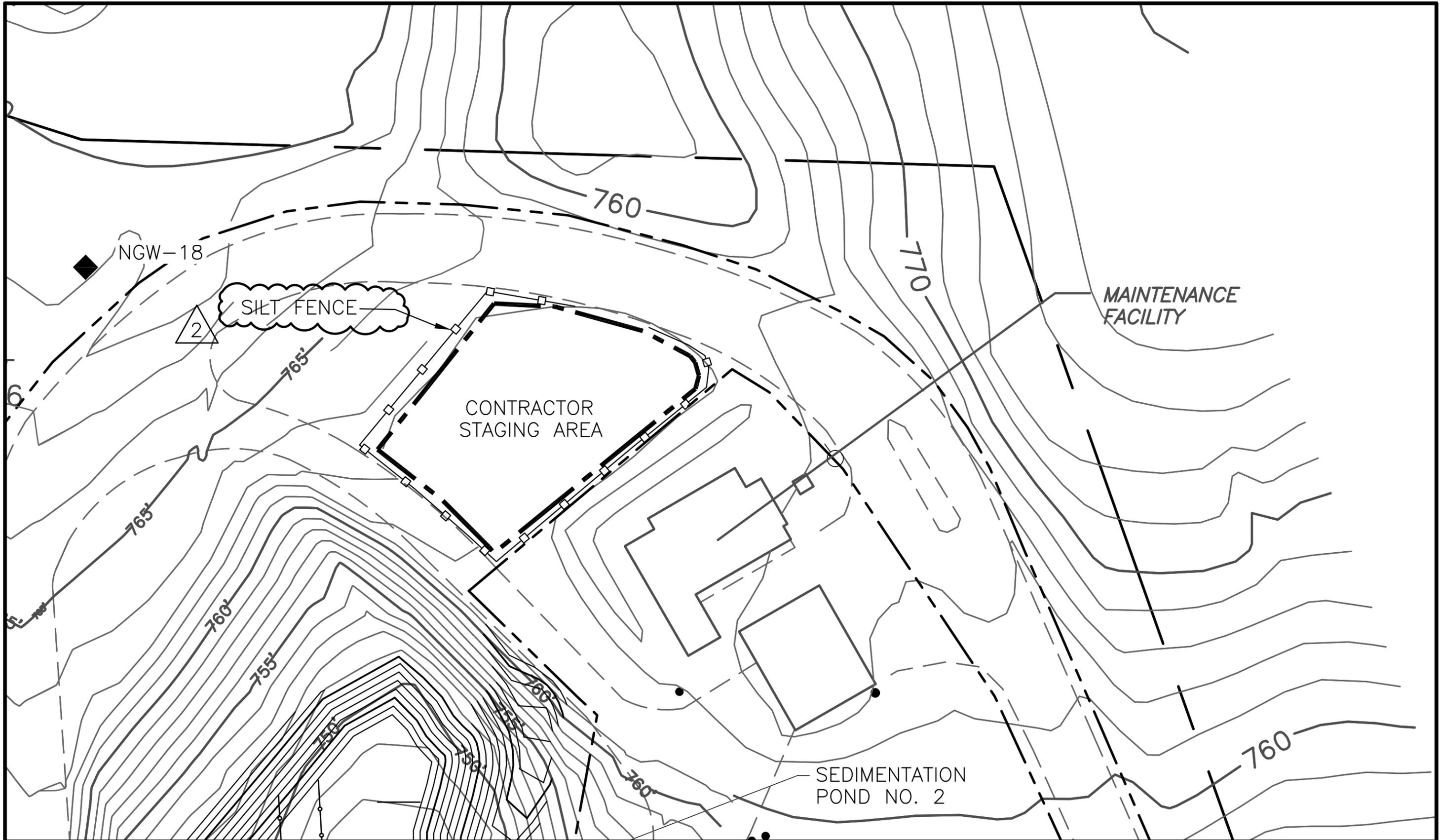
Sheet No. C-4

1. Added silt fence around the Contractor staging area as shown on Figure No. 1.

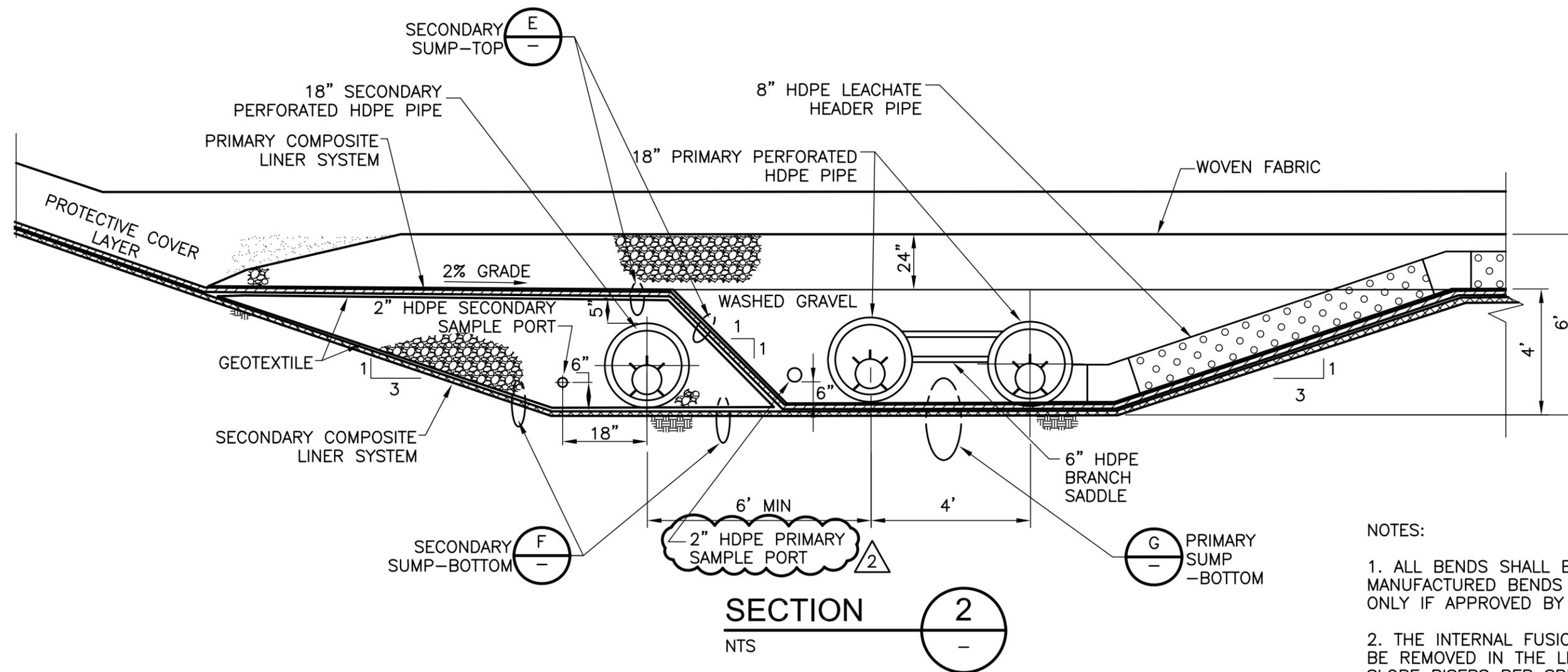
Sheet No. D-2

1. Detail D - Section 2 – Added 2-inch HDPE primary sample port as shown on Figure No. 2.

2. Detail D - Plan view – Added 2-inch HDPE primary sample port as shown on Figure No. 3.



SHEET NO. LOCATION		ADDENDUM NO.	FIGURE NO.
C-4		2	1

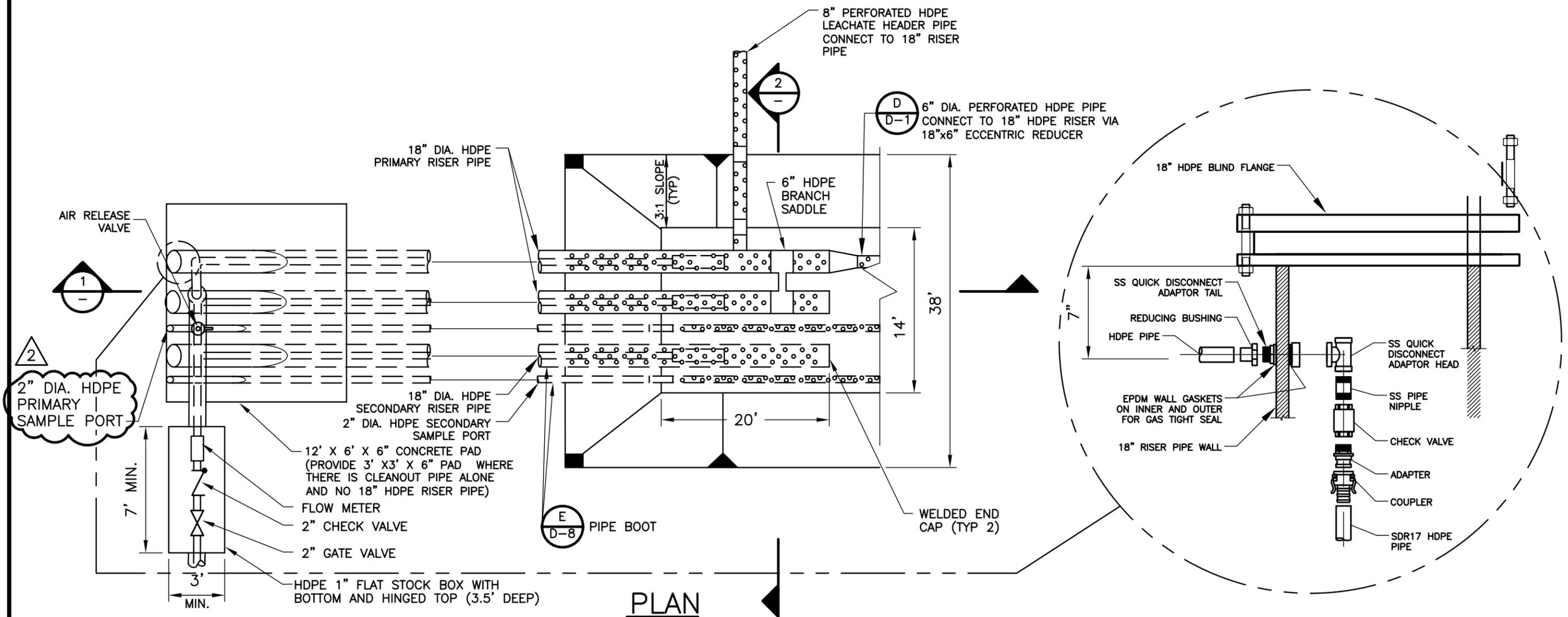


NOTES:

1. ALL BENDS SHALL BE SWEEPING, MANUFACTURED BENDS WILL BE USED ONLY IF APPROVED BY ENGINEER.

2. THE INTERNAL FUSION BEAD SHALL BE REMOVED IN THE LEACHATE PUMP SLOPE RISERS PER SPECIFICATION SECTION 02623.

SHEET NO.	LOCATION	ADDENDUM NO.	FIGURE NO.
D-2		2	2



DATE 10/10	SHEET NO.	LOCATION	ADDENDUM NO. 2	FIGURE NO. 3
	D-2			

Attachment No. 1

**Cabarrus County, NC
Construction and Demolition
Debris Landfill Phase 1L Expansion Project
Bidder's List (REBID)
CDM Project No. 1278-77070**

Contractor	Contact Name	Contractor Type?
Cabarrus County Solid Waste Management	Rick Payne, Solid Waste Director	
4441 Irish Potato Road	Phone: 704-791-5567	
Concord, NC 28025	Fax: 704-795-3917	
rapayne@cabarruscounty.us		
AGC Plan Room-Charlotte	Chelsea Andujar	
1100 Euclid Ave.	Phone: 704-372-1450	
Charlotte, NC 28203	Fax: 704-940-0265	
candujar@carolinasagc.org		
McGraw-Hill Construction Dodge	Susan Goodman	
800 Clanton Road, Ste. G	Phone: 704-525-6924	
Charlotte, NC 28217-2201	Fax: 704-521-9346	
susan_goodman@mcgraw-hill.com		
CDM-Raleigh	Farouk Banna	
5400 Glenwood, Ave., Ste. 300	Phone: 919-787-5620	
Raleigh, NC 27612	Fax: 919-781-5730	
banna@cdm.com		
CDM-Raleigh	Bob Brossoie	
5400 Glenwood, Ave., Ste. 300	Phone: 919-787-5620	
Raleigh, NC 27612	Fax: 919-781-5730	
brossoiere@cdm.com		
CDM- Charlotte	Martin Sanford	
301 South McDowell Street, Ste. 512	Phone: 704-342-4546	
Charlotte, NC 28204	Fax: 704-342-2296	
martinsd@cdm.com		
T&K Construction	Jamie Jenkins	General Contractor
235 Country Road 1242	Phone: 256-734-6611	
Vinemont, AL 35179	Fax: 256-734-4977	
jamie@tandkconstruction.com		
Earnhardt Grading, Inc. (EGI)	Mark LeGrand	General Contractor
7525 Old Plank Road	Phone: 704-601-4290	
Stanley, NC 28164	Fax: 704-601-4295	
mark@earnhardtgrading.com		
Sargent Corporation	Terry Watts	General Contractor
4820 Southpoint Drive, Ste. 205	Phone: 540-898-8362	
Fredericksburg, VA 22407	Fax: 540-898-8364	
twatts@sargent-corp.com		
Thalle Construction Company	Mary Eagens	General Contractor
900 NC 86 North	Phone: 919-241-1620	
Hillsborough, NC 27278	Fax: 919-241-1659	
meagens@thalle.com		
Shamrock Environmental, Inc.	Rick Wigal	General Contractor
503 Patton Avenue	Phone: 336-375-1989	
Greensboro, NC 27406	Fax: 336-282-2499	
rwigal@shamrockenviro.com		

**Cabarrus County, NC
Construction and Demolition
Debris Landfill Phase 1L Expansion Project
Bidder's List (REBID)
CDM Project No. 1278-77070**

Contractor	Contact Name	Contractor Type?
J.T. Russell & Sons, Inc.	Nathan Russell	General Contractor
1721 US 52 North	Phone: 704-982-2225	
Albermarle, NC 28001	Fax: 704-986-2270	
nathanrussell@jtrussellandsons.com		
Triangle Grading and Paving	Stephanie Griffin	General Contractor
1521 S. Huffman Mill Road	Phone: 336-584-1745	
Burlington, NC 27215	Fax: 336-584-0145	
sgriffin@trianglegradingpaving.com		
Blythe Construction Company	Mitch Hurst	General Contractor
2911 N. Graham Street	Phone: 704-375-8474	
Charlotte, NC 28206	Fax: 704-375-7814	
mitch.hurst@blytheconstruction.com		
N/S Carolina Storage Systems, Inc.	Ed Yarboro	General Contractor
838 Wallace Grove Drive	Phone: 704-482-2401	
Shelby, NC 28150	Fax: 704-487-1909	
nscarolina@carolina.rr.com		
Plastic Fusion Fabricators, Inc	Shawn Schmitt	Sub Contractor
3455 Stanwood Boulevard	Phone: 256-852-0378	
Huntsville, AL 35811	Fax: 256-852-0442	
sschmitt@plasticfusion.com		
East Coast Construction Services, LLC	Venetta Worrell	Sub Contractor
2705 Westchester Drive	Phone: 336-431-1533	
High Point, NC 27262	Fax: 336-431-1530	
eccsadmin@northstate.net		

Attachment No. 2

SECTION 00301
BID FORM
(CONTRACT B)

PROJECT IDENTIFICATION:

**CABARRUS COUNTY,
CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL
PHASE 1L EXPANSION PROJECT**

THIS BID IS TO BE SUBMITTED TO:

**Cabarrus County Purchasing Agent
Attn: Ms. Sherri Barnhardt
Finance Office, Room 288
Cabarrus County Government Center
65 Church Street SE, Concord, North Carolina 28026-0707**

1. The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Cabarrus County, herein after referred to as the County, in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid Form and the Agreement, and in accordance with the other terms and conditions of the Contract Documents.
2. Bidder accepts all of the terms and conditions of the Bidding Documents, including without limitation those dealing with the disposition of Bid Security. This bid will remain open for sixty (60) days after the date of the bid opening. If awarded a contract, Bidder agrees to execute the Agreement and comply with all of the conditions stipulated in the Notice of Award within the time stipulated in the Notice of Award.
3. In submitting this Bid, Bidder makes all representations required by the Instructions to Bidders and further warrants and represents that:

(a) Bidder has examined copies of all the Bidding Documents, the Advertisement for Bids, and of the following Addenda (receipt of which is hereby acknowledged):

No. _____	Date _____

(b) Bidder has examined the site and locality where the Work is to be performed, the legal requirements (federal, state and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress, or performance of the Work and has made such independent investigations as Bidder deems necessary.

- (c) Bidder has obtained and studied carefully all reports and drawings of subsurface conditions and drawings of physical conditions which are identified in Section 00200 of the Bidding and Contract Requirements and accepts the determination set forth in Article 4 of the General Conditions and the Supplementary Conditions thereto of the extent of the technical data contained in such reports and drawings upon which Bidder is entitled to rely.
 - (d) Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, and studies (in addition to or to supplement these referred to in (c) above) which pertain to the subsurface or physical conditions at the site or which otherwise may affect the cost, progress, performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Article 4 of the General Conditions and the Supplementary Conditions thereto.
 - (e) Bidder has reviewed and checked all information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities.
 - (f) Bidder has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents.
 - (g) Bidder has given the Engineer written notice of all conflicts, errors, or discrepancies that it has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Bidder.
 - (h) By bidding in response to this invitation, the Bidder represents that in the preparation and submission of this Bid, said Bidder did not, either directly or indirectly, enter into any combination or arrangement with any person, firm or corporation or enter into any agreement, participate in any collusion, or otherwise take any action in the restraint of free, competitive Bidding in violation of the Sherman Act (15 U.S.C. Section 1).
4. Bidder agrees to complete the Work for the following prices. The Bid Form must be completed in ink or by typewriter. Amounts shall be shown in both words and figures. In case of discrepancy, the amount in words will govern.
- (a) Except as otherwise provided in this Bid Form, the Bidder represents to the County that all prices herein include all Federal, State and Local taxes. The Bidder agrees to assume responsibility for the payment of all such taxes and shall indemnify and hold harmless the County from all tax liability arising out of or related to Bidder's breach of this representation or failure to pay such taxes.
 - (b) Bidder understands that the County shall have the right to accept any, all or none of the proposed alternates, which require either deletion of a base bid work item from the project in its entirety or replacement of a base bid work item with another option, in any order or combination and to determine the lowest responsive Bidder on the basis of the base bid and the alternates accepted. The County reserves the right to reject any or all Bids and to waive any informality in the Bidding procedure.

ITEM NO.	DESCRIPTION	QUANTITY		AMOUNT
1	Bolted Steel Leachate Storage Tank ; the lump sum price of _____ dollars and _____ cents (\$ _____)	1	LS	\$ _____
2	Miscellaneous Work and Clean-up; the lump sum price of _____ dollars and _____ cents (\$ _____)	1	LS	\$ _____
3	Bonds, Mobilization, and Insurance (maximum of 4% of Base Bid Amount); the lump sum price of _____ dollars and _____ cents (\$ _____)	1	LS	\$ _____
4	Indemnification (minimum \$1,000.00); the lump sum price of _____ dollars and _____ cents (\$ _____)	1	LS	\$ _____

SUBTOTAL (ITEMS 1 THROUGH 4)

In Words: \$ _____

In Figures: \$ _____

5 5.0% Contingency Allowance (Base Bid): \$ _____

TOTAL BASE BID (ITEMS 1 THROUGH 5)

In Words: \$ _____

In Figures: \$ _____

PROPOSED SUBCONTRACTORS:

Type	Name	Address	Type and Extent of Work

- 5. Bidder agrees that all Work required by the Contract Documents will be substantially completed as set forth in the Agreement (Section 00501).

Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work on time.

- 6. The following documents are attached to and made a condition of this Bid:
 - (a) Bid Security in the form of (circle one) Bid Bond/Certified Check/Cashier's Check in the amount of 5% of Bidder's Base Bid Price.
 - (b) Power of Attorney (for surety bond only)
 - (c) Evidence of Bidder's certification and license to perform the work and services
 - (d) Section 00310 – Minority Participation
 - (e) Section 00480 – Non-Collusive Affidavit
 - (f) Section 00421 – Qualification Form for the Steel Bolted Leachate Storage Tank Subcontractor
 - (g) Section 00485 – Authority to Execute Contract

- 7. Communications with Bidder concerning this Bid shall be addressed to:

- 8. The terms used in this Bid are defined in the General Conditions of the Construction Contract, included as part of the Contract Documents and have the meanings assigned to them in the General Conditions.

(REMAINDER OF PAGE LEFT INTENTIONALLY BLANK)

9. The Bidder executes this bid as one of the following:

An Individual

By: _____ (SEAL)
(Individual's Name and Signature)

Name of Business: _____

North Carolina Registration No.: _____

Business Address: _____

Telephone No.: (_____) _____

A Partnership

By: _____ (SEAL)
(Name and Signature)

Firm Name: _____ (SEAL)

North Carolina Registration No.: _____

Business Address: _____

Telephone No.: (_____) _____

A Corporation

By: _____ (SEAL)
(Name of person authorized to sign and Signature)

(Title)

Firm Name: _____

State of Incorporation: _____

(Corporate Seal)

Attest: _____
(Name of Secretary and Signature)

North Carolina Registration No.: _____

Business Address: _____

Telephone No.: (_____) _____

A Joint Venture*

By: _____

Firm Name: _____

State of Incorporation: _____

North Carolina Registration No.: _____

Business Address: _____

Telephone No.: (_____) _____

By: _____

Firm Name: _____

State of Incorporation: _____

North Carolina Registration No.: _____

Business Address: _____

Telephone No.: (_____) _____

* (Each joint venturer member must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be in the manner indicated above. Add additional signature blocks as necessary).

END OF SECTION

SECTION 00411
BID BOND
(CONTRACT B)

KNOW ALL MEN BY THESE PRESENTS, that we,

(Bidder's Name)

_____, of _____
(Street Address) (City, State, Zip)

hereinafter called the Principal, and

_____ of
(Surety's Name)

_____, a Corporation duly organized, and existing under the laws of the State of _____ and authorized to transact business in the State of North Carolina, as Surety, hereinafter called the Surety, are held and firmly bound unto the County of Cabarrus as Owner, hereinafter called the Obligee, in the Penal sum of five percent (5%) of the amount bid, good and lawful money of the United States of America, for the payment for which the Principal and the Surety, bind ourselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents. This bid bond is submitted in lieu of submitting cash, a cashier's check, or a certified check pursuant to G.S. 143- 129.

WHEREAS, the Principal has submitted a Bid for the construction of 150,000 Gallons Steel Bolted
(Project Name)

Leachate Storage Tank for the Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion
designated as Contract B

NOW THEREFORE, if the Obligee shall accept the Bid of the Principal and the Principal shall enter into a Contract with the Obligee in accordance with the terms of said Bid, and give such bond or bonds as may be specified in the Bidding and Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and materials furnished in the prosecution thereof, or in the event of the failure of the Principal to enter into such Contract and give such bond or bonds the Surety shall, upon demand forthwith pay to the Obligee the amount set forth above. The Principal shall pay the Obligee the difference not to exceed the penalty hereof between the amount specified in said Bid and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by said Bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

SIGNED AND SEALED this ____ day of _____, 20__ in the presence of:

Witness _____

Witness _____

(SEAL)
Principal

(SEAL)
Surety

Title

Title

SECTION 00501

CONSTRUCTION AGREEMENT
FORM
(CONTRACT B)CABARRUS COUNTY
CONSTRUCTION AND DEMOLITION LANDFILL
PHASE 1 EXPANSION PROJECT

THIS AGREEMENT, made as of the ___ day of _____, 20___, by and between _____, a corporation, hereinafter called the Contractor, and Cabarrus County, a body corporate and politic and a political subdivision of the State of North Carolina, hereinafter called the Owner.

WITNESSETH:

That the Contractor and the Owner, for the consideration herein named, agree as follows:

1. SCOPE OF WORK - The Contractor shall furnish and deliver all of the materials, and perform all of the work required by this Agreement and the following enumerated documents, which are attached hereto and made a part hereof as if fully contained herein: General Conditions, Supplemental Conditions, Contract Construction Schedule, Specifications, Drawings entitled "Construction and Demolition Debris Landfill Phase 1L Expansion Project" dated September 2010, which Drawings are listed in the Specifications, Performance Bond, Labor and Material Payment Bond, Insurance Certificates, and the following addenda:

All of the documents listed, referenced or described in this paragraph, together with Modifications made or issued in accordance herewith are the Contract Documents, and the work, labor, materials and completed construction required by the Contract Documents and all parts thereof is the Work. The Contractor shall perform the Work in the time, manner and form required by the Contract Documents. The Contract Documents constitute the entire agreement between Owner and Contractor.

The scope of work associated with the Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion project has been divided into two separate contracts:

- Construction Contract A for the Phase 1L C&D landfill construction, and
- Equipment Contract B for the leachate storage tank system installation

The Work to be performed under this Contract generally includes all labor, materials, equipment and incidentals required to erect a new factory bolted carbon steel primary and secondary tank for storage of

leachate from a construction and demolition (C&D) debris landfill. The bolted tank shall be either glass-lined or epoxy-coated as specified in Sections 11342 and 11343. The factory-applied tank interior coating shall be chemically resistant to a C&D landfill leachate environment. The Contractor shall design, furnish, install, test, and perform any other incidentals required to provide an operable tank as specified herein and shown in the Drawings. The Work shall include, but not be limited to, tank foundation design and construction, secondary containment, tank erection, tank coating, installation of tank appurtenances such as a level indicator, transfer pumps, flow meter, and the ultimate water tightness of the completed installation and any other work shown on the Drawings. Contractor shall be responsible for all costs associated with hydrostatic testing including emptying and disposing the water from the tank.

2. The Contractor agrees to commence work not later than three (3) days after the commencement date specified in the Notice to Proceed. The Contractor agrees to complete fully all Work hereunder on the dates specified below in Paragraph 3 – Contract Time, as may be adjusted in accordance with the terms of the Contract Documents. Time is of the essence with respect to all dates specified in the Contract Documents as Completion Dates. Liquidated damages for failure(s) to complete in accordance with the provisions of this paragraph shall be computed and assessed against the Contractor in accordance with Paragraph 13.18 of the Supplementary General Conditions (Section 00800).

3. Contract Time

Substantial Completion for Contract B is **120 calendar days** from Notice to Proceed (NTP).

All work shall reach final completion within **130 calendar days** from Notice to Proceed for **Contract B**.

4. The Owner hereby agrees to pay to the Contractor for the faithful performance of this Agreement, and the Contractor hereby agrees to perform all of the Work, for the sum of _____ Dollars (\$ _____) in the lawful money of the United States, subject to adjustments as provided for in the Contract Documents. Payment of the Contract Price shall be in accordance with Articles 20 and 21 of the General Conditions.

5. It is further mutually agreed between the parties hereto that if at any time after the execution of this Agreement and the Performance Bond and Labor and Material Payment Bond hereto attached for its faithful performance, the Owner shall deem the surety or sureties upon such Bonds to be unsatisfactory, or if, for any reason, such Bonds or either of them cease to be adequate to cover the performance of and payment for the Work, the Contractor shall, at its expense, within five (5) days after notice from the Owner so to do, furnish an additional bond or bonds in such form and amount and with such surety or sureties as shall be satisfactory to the Owner. In such event no further payment to the Contractor shall be deemed to be due under this Agreement until such new or additional security for the faithful performance of or payment for the Work shall be furnished in a manner and form satisfactory to the Owner.

6. Terms used in this Agreement which are defined in the Contract Documents shall have the meanings designated in those Contract Documents.

7. The laws of the State of North Carolina shall apply to the interpretation and enforcement of this Agreement. Any and all suits or actions to enforce, interpret or seek damages with respect to any provision of, or the performance or nonperformance of, this Agreement shall be brought in the General Court of Justice of North Carolina sitting in Cabarrus County, North Carolina, and it is agreed by the parties that no other court shall have jurisdiction or venue with respect to such suits or actions.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the day and date first above written in a number of counterparts, each of which shall, without proof or accounting for other counterparts, be deemed an original contract.

Contractor: (Trade or Corporate Name)

By: _____

ATTEST: (CORPORATION)

Title: _____
(President)

By: _____

Title: _____
(Corporate Secretary)

(CORPORATE SEAL)

WITNESS:

(Proprietorship or Partnership)

CABARRUS COUNTY
65 Church Street
P.O. Box 707
Concord, NC 28026

By: _____
H. Jay White, Sr.
Chair, Board of Commissioners

ATTEST: _____
Kay Honeycutt
Clerk to the Board

This instrument has been pre-audited in the manner required by the local Government Budget and Fiscal Control Act.

Pam Dubois
Finance Director of Cabarrus County

This instrument is approved as to Form.

Richard M. Koch
Cabarrus County Attorney

SECTION 00621

PERFORMANCE BOND
(CONTRACT B)

Date of Contract: _____

Date of Execution _____

Name of Principal
(Contractor) _____

Name of Surety _____

Name of Contracting Body North Carolina
County of Cabarrus

Amount of Bond: _____ Dollars (\$ _____)

Project: Cabarrus County
Construction and Demolition Debris Landfill Phase 1L Expansion Project

KNOW ALL MEN BY THESE PRESENTS, that we, the PRINCIPAL and SURETY above named, are held and firmly bound unto the named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain Contract with the Contracting Body, identified as shown above and hereto attached:

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its countersigned representative, pursuant to authority of its governing body.

PERFORMANCE BOND

Executed in Four (4) Counterparts.

CONTRACTOR:

By: _____

Title: _____
(Corporation President or
Vice President Only)

ATTEST: (Corporation)

(Corporation Secretary or Assistant
Secretary Only)

(CORPORATE SEAL)

SURETY COMPANY:

WITNESS: By: _____

(Attorney in Fact)

Title: _____

(SURETY CORPORATE SEAL)

COUNTERSIGNED

(N.C. Licensed Resident Agent)

Name and Address-Surety Agency

Surety Company Name and N.C.
Regional or Branch Office Address

SECTION 00651

NOTICE OF AWARD
(CONTRACT B)

Dated _____

TO: _____
(Bidder)

PROJECT: Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion

CONTRACT FOR 150,000 Gallons Steel Bolted Leachate Storage Tank for the Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion designated as Contract B

You are notified that your Bid dated _____, 20__ for the above Contract has been considered. You are the apparent successful Bidder and will be recommended for award of a Contract (at the regularly scheduled Board of County Commissioners meeting _____, 20__ for: _____)
(Indicate total Work and alternates awarded)

The Contract Price of your contract is _____

Dollars (\$_____).

Enclosed are five (5) copies of the Contract Documents for your execution and subsequent return to this office for further processing.

You must comply with the following conditions precedent within fifteen (15) calendar days of the date of this Notice of Award, that is by _____, 20__:

1. Execute all copies of the Agreement. Each Project Manual and set of contract drawings must bear your signature and seal on the cover sheet. Do not date the Agreements or bonds; this will be accomplished upon execution of the contracts by the Owner. Submit a power of attorney authorizing Owner to date bonds and Agreements.
2. Submit five (5) copies of the Performance-Payment Bonds. Instructions to the Surety and the Principal for execution of the bonds are as follows:

Where the Contractor is a Corporation, the Agreement and any bonds must be executed by the President or the Chairman of the Board of the corporation. The Agreement or Bond is accompanied by a statement certified by a Secretary of the Corporation. The signatures of the persons executing the bond on behalf of the Principal and of the Surety, respectively, shall each be dated on the signature line. If the bond is executed by an Attorney-in-Fact for the Surety, the accompanying Power of Attorney must be executed by persons whose authority to do so is plainly identified on the face of the Power of Attorney.

Neither signatures nor the Corporate Seal may appear by facsimile unless the authority for them to appear in that form is plainly disclosed on the face of the document. The Secretary or other

properly authorized Officer must certify and seal a statement declaring that the authority granted by the Power of Attorney remained in force on the date that the bond was executed by the Attorney-in-Fact.

3. Include five (5) copies of the Certificate of Insurance. The Certificate must name County of Cabarrus, North Carolina, Camp Dresser & McKee (Engineer), and Engineer's Consultants as additional insured and the standard cancellation clause must read as follows:

"Should any of the above described policies be cancelled or changed by restricted amendment before the expiration date thereof, the issuing Company will give thirty (30) days written notice to the below named certificate holder: County of Cabarrus, North Carolina."

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

The Owner shall deliver one fully signed counterpart of the Contract Documents attached to the Contractor before or at the Pre-Construction Conference which is scheduled for _____, 200__.

If you have any questions, or if we can be of any further assistance, please do not hesitate to contact this office.

Sincerely,

Cabarrus County Board of Commissioners

SECTION 00661

ACCEPTANCE OF NOTICE
(CONTRACT B)

Receipt of the above NOTICE OF AWARD is hereby acknowledged by this the _____ day of _____, 20__.

By: _____

Title: _____

SECTION 00671
NOTICE TO PROCEED
(CONTRACT B)

Date: _____

To: _____

Address: _____

Project Description: _____

You are hereby notified to commence work in accordance with the Agreement dated _____, 20__ on or before _____, 20__ and you are to complete the WORK within _____ calendar days thereafter. The date of completion of all WORK is therefore _____, 20__.

County of Cabarrus
Owner

BY: _____

TITLE: _____

ACCEPTANCE OF NOTICE

Receipt of the NOTICE TO PROCEED is hereby acknowledged.

Contractor

BY: _____

TITLE: _____

DATE: _____

SECTION 01025B
MEASUREMENT AND PAYMENT
(CONTRACT B)

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. All contract prices included in Section 00300 will be full compensation for all labor, materials, tools, equipment and incidentals necessary to complete the Work as shown on the Drawings and specified in the Contract Documents to be performed under this Contract.
- B. The items listed below, refer to and are the same pay items listed in the Bid Form. They constitute all of the pay items for the completion of the Work. No direct or separate payment will be made for providing miscellaneous temporary or accessory works, services, field offices, layout surveys, job signs, sanitary requirements, testing, safety devices, water supplies, power, maintaining traffic, removal of waste, watchmen, and all other requirements of the General Conditions and DIVISION 1 - GENERAL REQUIREMENTS. Compensation for all such services, equipment and materials shall be included in the prices stipulated for the lump sum and unit pay items listed herein. No direct or separate payment will be made for certified surveys where required to document quantities. The cost for certified surveys shall be included in the unit cost for each of the applicable bid items.
- C. Each lump sum and unit bid price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Restoration is not a separate pay item but is considered to be an integral part of the work under the contract, and all contract bid prices include the cost of restoration necessitated by the work related to that bid item. Restoration includes existing structures and property, paving, stabilized roads, drainage piping and ditches, catch basins, head walls, driveways, lawns and ground areas, walkways which are altered, removed, or damaged during construction. Cleanup is an integral part of restoration.
- E. For purposes of measurement and payment, the term surface area is defined as the horizontal surface measured from a certified survey. The unit price bid for all items measured in surface area shall account for any necessary slope adjustments.

1.02 PAY ITEMS

TOTAL BID – ITEMS 1 - 5

- A. Item 1 – Bolted Steel Leachate Storage Tank
 - 1. The lump sum price for construction of the leachate tank shall be full compensation for all labor, materials, tools, equipment, supervision and incidentals required to furnish and install **either an epoxy-coated or a glass-lined** steel bolted leachate storage tank for storage of leachate as specified in Section 11342 and 11343, with a minimum nominal capacity of 150,000 gallons. Work to be paid under this item shall include but not

limited to design and construction of the tank foundation, erection of the tank, secondary containment wall, tank coating (interior and exterior), influent and effluent leachate piping connections and appurtenances inside the secondary containment wall including, but not limited to plug and butterfly valves, leachate loadout pump, manway, ladder, 6-inch overflow piping, concrete pad for the loadout pump, and any miscellaneous work for which payment is not provided elsewhere on this bid form. The Contractor shall be responsible for all incidentals related to the tank work including but not limited to loading and unloading trucks, and all costs (labor, pumps, hauling, filling, etc.) to furnish water required for hydrostatic testing at the time of tank erection completion, and at no charge to the Owner. Disposal of test water shall also be the responsibility of the Contractor. Excavation and backfill at the leachate tank area, all work outside of the secondary containment wall, and all electrical work inside and outside the containment wall will be performed by others and paid under a separate Contract (Contract A).

B. Item 2 – Miscellaneous Work and Clean-up

1. The lump sum price for miscellaneous work and clean-up shall be full compensation for all labor, materials, and equipment required to perform the work specified in Section 02901 of the Specifications and as shown on the Drawings, and any other work not specifically included for payment under any other item but obviously necessary to complete the Contract. Partial payments will be based on the breakdown of the item as required in Section 02901. The lump sum price shall also include full compensation for construction schedules as required by Section 01310, all construction photographs as required by Section 01380, pre-construction video photography as required by Section 01390, project record documents as required by Section 01720, traffic control, field offices, temporary access roads, maintenance and repair of existing roads, and seeding of unused stockpile areas.

C. Item 3 – Bonds, Mobilization, and Insurance

1. Measurement for this item will be based on actual invoiced amounts to substantiate the actual bond and insurance premiums and other invoiced costs, as well as an allowance for mobilization/demobilization.
2. Payment of this item will be made at the applicable lump sum amount, as above determined, and will represent full compensation for providing the required 100 percent Payment Bond, 100 percent Performance Bond, all insurance and mobilization/demobilization in accordance with the requirements of the General Conditions. Mobilization/demobilization payments will be pro-rated on a monthly basis.

D. Item 4 – Indemnification

1. Payment will be made to the Contractor on a lump sum basis for considerations for indemnification to Owner and Engineer as specified in the General Conditions. The lump sum amount stated for this item shall be no less than \$1,000.

E. Item 5 - Contingency Allowance (Base Bid)

1. The contingency allowance is to provide payment for unforeseen conditions, which may be encountered in the work and is to be used only upon written work order from the

Engineer. The contingency allowance shall be a fixed percentage of the base bid as specified in the Bid Form.

2. The contingency allowance is not part of the Unit Price Contract and is not due to the Contractor except when authorized by a change order executed by the Owner as set forth in the General Conditions.

END OF SECTION

SECTION 11343

GLASS COATED BOLTED STEEL
LEACHATE STORAGE TANK

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment and incidentals required and erect a new factory bolted glass fused to steel tank for storage of leachate from a construction and demolition (C&D) debris landfill. American Petroleum Institute (API 12B) flanged panel tank design shall not be acceptable for this project. The factory-applied tank interior coating shall be chemically resistant to C&D landfill leachate environment.
- B. The Contractor shall design, furnish, install, test, and perform any other incidentals required to provide an operable tank as specified herein and shown in the Drawings. The scope of work shall include, but not be limited to, tank foundation design and construction, secondary containment, tank erection, tank coating, installation of tank accessories such as a level indicator, inlet and discharge inside the secondary containment wall, butterfly valves, upper and lower limit switches, primary tank roof, overflow piping, level indicator, centrifugal loadout pump, batch controller with totalizer, and the ultimate water tightness of the complete installation and any other work shown on the Drawings or specified herein. Contractor shall be responsible for all costs associated with hydrostatic testing including emptying and disposing the water from the tank.

1.02 RELATED WORK

- A. Earthwork is included in Division 2.
- B. Piping is included in the respective Sections of Divisions 2.
- C. Loadout Pump is specified in Section 11213.
- D. Electrical is included in Division 16.

1.03 QUALIFICATIONS

- A. The tank shown on the Drawings and specified herein shall be a new glass coated bolted carbon steel tank with either a tapered or flat panel design. Tank manufacturers shall specialize in glass-lined bolted carbon steel tank construction and erection.
- B. The manufacturer or manufacturer approved dealer shall be responsible for actual erection and workmanship of the tanks. If the manufacturer chooses to provide certified subcontractors for installation, the manufacturer shall guarantee and take responsibility for the workmanship of the certified subcontractor.
- C. The tank shown on the contract drawings and specified herein is a model 3129 (Primary Containment) and model 8106 (Secondary Containment) Aquastore Tank System as manufactured by Engineered Storage Products Company of DeKalb, Illinois. The use of another glass lined tank manufacturer not listed herein requires prior approval by the Engineer. Tank manufacturers and their production facilities must be headquartered in the United States. Manufacturer qualification

information, as required in Specification 00421, shall be submitted with the Contractor's bid package.

- D. The glass fused-to-steel tank manufacturer shall certify that the recommended glass fused-to-steel coating (and applied DFT) will withstand the leachate composition provided in Table A, and that this leachate storage application is appropriate for the coating. Glass coating must also be certified for "immersion" service. Coating must also be certified for resistance to chloride ion permeation. These certifications must be provided with the bid package as part of the qualification section.
- E. The tank foundation designer shall be a Professional Engineer registered in the State of North Carolina with at least 5 years experience in the design of similar foundation systems.
- F. The tank designer shall be a Professional Engineer registered in the State of North Carolina with at least 5 years experience in the design of similar tank structures.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, shop drawings showing details of construction, erection, and coating information as follows:
 - 1. Complete fabrication, assembly, support, and structural drawings together with design criteria, structural calculations, specifications, and data covering the materials and appurtenances to be furnished, layout of the tanks, dimensions of tanks, tank supports, piping, fittings and attachments. Drawings shall be signed and sealed by a licensed professional structural engineer registered in the state of North Carolina.
 - 2. Material and performance information on the lining for interior and exterior coating. Submittal shall also include application and curing procedures.
 - 3. Wall thicknesses (shell, head and base).
 - 4. Locations of fittings, attachments and bolts.
 - 5. Manufacturer's quality assurance/quality control document describing procedures to be followed during tank fabrication, and application and curing of coating. Instructions for handling, storage and installation of tanks shall also be provided.
 - 6. Certification that fabrication is in accordance with these Specifications and AWWA D103.
 - 7. Weight and center of gravity of tanks.
 - 8. Seismic anchorage calculations. These calculations shall be completed and sealed by a professional civil engineer registered in the State of North Carolina.
 - 9. Tank foundation and anchorage design calculation and detail drawings signed and sealed by a professional engineer registered in the State of North Carolina.
 - 10. Shop testing and inspection procedures.
 - 11. Shop testing and inspection report that includes mill test reports, mil thickness tests, and holiday detection tests for glass fused-to-steel coating.

12. Provide the following information:
 - a. Number of gallons per foot of depth.
 - b. Total tank gallons.
 - c. Usable gallons to the normal full level.
12. Resumes of job installation superintendent and field crew.

1.04 REFERENCE STANDARDS

- A. International Conference of Building Officials (ICBO)
 1. Uniform Building Code (UBC)
- B. American Concrete Institute (ACI)
 1. ACI 350R - Environmental Engineering Concrete Structures
- C. American Society for Testing and Materials (ASTM)
 1. ASTM A36 - Standard Specification for Carbon Structural Steel
 2. ASTM A1011 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
 3. ASTM D7091 Standard Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals.
- D. American National Standards Institute (ANSI)
 1. ANSI A10.4 - Safety Requirements for Personnel Hoists and Employee Elevators
 2. ANSI A14.3 - Ladders - Fixed - Safety Requirements.
- E. American Water Works Association (AWWA)
 1. AWWA D103 - Factory-Coated Bolted Steel Tanks for Water Storage.
- F. Occupational Safety and Health Administration (OSHA)
- G. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 DESIGN CRITERIA

- A. The primary tank shall have a nominal diameter of approximately 31 feet and a nominal sidewall height (to roof eave) of approximately 29 feet. The secondary tank shall have a nominal diameter of approximately 81 feet and a nominal sidewall height of approximately 5.5 feet. Staircase access into the secondary containment area shall comply with all OSHA requirements. The secondary containment tank size shall provide volume equal to at least 110% of the primary storage tank. The secondary containment shall not create a confined space condition.
- B. The tank working capacity shall be not less than 150,000 gallons.
- C. A minimum freeboard of 1-foot shall be provided for domed primary tank.
- D. One tank inlet and one outlet connection, each of 4-in diameter shall be provided through the tank sidewall as shown on the Drawings. Inlet piping assembly (304 stainless steel construction) shall run from the containment wall to the top of the primary tank, and terminate with a 45 degree deflection nozzle on the interior and flanged connection at containment wall. Outlet piping assembly shall terminate with flanged connection for outlet pump to be provided by tank manufacturer. Suitable reinforcement shall be provided around each pipe connection. Acetylene torch cutting will not be permitted.
- E. One gravity vent assembled in accordance with AWWA D103 shall be provided. The vent shall be sized by the tank manufacturer and installed above the maximum water level. The air vent shall have sufficient capacity so that at maximum design rate of water fill or withdrawal, the resulting interior design pressure / vacuum will not exceed +2.0 / -0.5 ounces per square inch.
- F. One hinged galvanized steel flanged manway with a diameter of 24-in shall be provided in the sidewall of the tank. Manway shall have a watertight seal and the openings shall be suitably reinforced. Manway shall be bolted using Type 316 stainless steel hardware.
- G. The materials, design, fabrication, and erection of the carbon steel bolted tank shall conform to the latest AWWA D103 standard for Factory-Coated Bolted Steel Tanks for Water Storage.
- H. Coating shall be compatible with the leachate composition provided in Table A of this specification.
- I. A cathodic protection system especially designed for a glass-fused-to-steel tank. The system shall be a passive type utilizing a specially designed system of magnesium anodes with steel cores mounted on the floor of the tank. The system shall protect and control corrosion of the submerged portion of the tank wall and wetted portions of the tank floor.
- J. The Contractor shall provide a shallow foundation system for the proposed tank with average bearing loads not exceed 1,850 pounds per square foot for dead and normal live loads. The allowable bearing capacity for the tank foundations shall be determined by the foundation designer based upon the subsurface conditions and the tank manufacturer's performance criteria (allowable settlement, etc.). Boring logs are provided in Appendix A of Section 11342 and a geotechnical memorandum is available upon request. However, the Contractor's foundation designer shall remain responsible for the interpretation of subsurface conditions in preparation of the tank foundation design. Geotechnical design criteria shall be clearly indicated on the foundation drawings and in the associated engineering calculations.

1.06 DELIVERY, STORAGE AND HANDLING

- A. All plates, members and miscellaneous parts shall be packaged for shipment in a manner that prevents abrasion or scratching of the finished coating system. Heavy paper or plastic foam sheets shall be placed between each panel to eliminate sheet-to-sheet abrasion.
- B. Materials shall be delivered to the job site, marked for proper installation, as close to the time of erection as possible.
- C. Individual stacks of panels shall be wrapped in heavy black plastic and shall be steel banded to special wood pallets built to the roll radius of the tank panels. The tank components shall be shipped from the factory to the job site by truck, and the truck that carries the tank components shall haul the tank components exclusively. The tank manufacturer shall be responsible for unloading all tank materials at the job site.
- D. Handle and store all materials carefully to prevent distortions or other damage that could affect structural, mechanical, or electrical integrity. Store all materials that are subject to deterioration by exposure to the elements off the ground in a well-drained location and protected from the weather. All materials shall be accessible for inspection and handling.
- E. Materials furnished for the tanks that are determined to be defective by the Engineer shall be rejected and replaced with acceptable sheets. All materials rejected must be removed from the project site immediately and replaced with material of a quality acceptable to the Engineer. Failure to reject any material or to require removal of any such rejected material shall not relieve the Contractor from responsibility for the quality and character of material used.

1.08 WARRANTY

- A. The tank manufacturer shall provide a performance warranty on tank materials and workmanship for five (5) years. The warranty shall cover for defects in fabrication, installation, material, coating, appurtenances and workmanship during the warranty period.

PART 2 PRODUCTS

2.01 TANK

- A. The bolted, glass-fused-to-steel tanks shall conform to AWWA D103, ASTM A36, AISI 1010 and the additional requirements specified herein.
- B. Double steel sheeting shall not be permitted to achieve structural requirements.
- C. Sheet edges of sidewall and floor plates shall be mechanically rounded and flame coated with stainless steel prior to glass coating. Glass coating of the sheet edges shall be similar to the flat panel surfaces. The process shall be equal to Edgecoat™ by Engineered Storage Products Co.
- D. The maximum differential elevation within the starter ring shall not exceed 1/8-in and shall not exceed 1/16-in within any 10-ft length.
- E. Concrete work shall be in accordance with Division 3.

- F. Ladders, manways, roof hatches and vents shall be as shown on the Drawings, or specified herein. All components shall conform to AWWA D103, with the ladders and platforms meeting all OSHA requirements.
- G. Pipe straps shall be of Type 316 stainless steel for both interior and exterior straps. Straps shall be placed at appropriate intervals as recommended by the tank manufacturer and shall be of sufficient size for the pipe that they support.
- H. A manufacturer's nameplate shall list each tank's serial number, diameter and height, maximum design capacity, intended storage use, date of installation and shall bear the NSF certification mark. The nameplate shall be affixed to the tank exterior sidewall at a location approximately 5-ft above finished grade elevation in a position of unobstructed view.
- I. Following the decoiling and shearing process, steel sheets shall be steel grit blasted on both sides to the equivalent of SSPC SP-10. Sand blasting and chemical pickling of steel sheets shall not be considered an acceptable method. The sheets shall be evenly oiled on both sides to protect them from corrosion during fabrication.
- J. After initial sheet preparation, all full height vertical wall sheets shall be machined and a thermal spray coating of a corrosion resistant stainless steel alloy shall be applied to all sheet edges that are to be exposed to the tank contents (interior) or the weather (exterior). The same glass coating as applied to the sheet surfaces shall be applied to the exposed edges.
- K. After fabrication and before application of the coating system, all sheets shall be thoroughly cleaned using a caustic wash and hot rinse process followed immediately by hot air drying. The tank coating system shall conform solely to Section 10.4 of AWWA D103. All sheets shall be inspected for traces of foreign matter or rust. Any sheets found with defects shall be cleaned again or grit blasted to an acceptable level of quality.
- L. Tank roof shall be clear-span glass coated, bolted steel assembly with roof manway, roof walkway, and safety cage..
- M. All shell, floor and roof penetrations shall be adequately reinforced to transfer vertical, tangential and horizontal stresses, seismic load, and incidental differential settlement.

2.02 TANK COATING

- A. Following the decoiling and shearing process, sheets shall be steel grit-blasted on both sides to the equivalent of SSPC-10. Sand blasting and chemical pickling of steel sheets is not acceptable.
- B. The surface anchor pattern shall be not less than 1.0 mil.
- C. These sheets shall be evenly oiled on both sides to protect them from corrosion during fabrication.
- D. After fabrication and prior to application of the coating system, all sheets shall be thoroughly cleaned by a caustic wash and hot rinse process followed immediately by hot air drying.
- E. Inspection of the sheets shall be made for traces of foreign matter or rust. Any such sheets shall be cleaned or grit-blasted to an acceptable level of quality.
- F. All sheets shall receive one coat of a glass precoat on both sides and shall then be air dried. A second

coat to both sides of the sheets of cobalt blue glass frit shall be made. The sheets shall be fired at a minimum temperature of 1500 degrees F for a sufficient period of time to ensure complete fusion of glass frit and steel sheets.

- G. A final cover coat of milled glass shall then be applied to the inside of the sheet. This milled glass shall be formulated with titanium dioxide to produce a finished interior surface with optimum toughness and resistance to conditions normally found in potable water storage tanks.
- H. The sheets shall then be fired a second time at a minimum temperature of 1500°F in strict accordance with the manufacturer's ISO 9001 quality process control procedures, including firing time, furnace humidity, temperature control, etc.
- I. Minimum drying coating thickness shall be 7.0 mils for the exterior and 10 mils for the interior. The finished inside color shall be off-white. The finished outside color of the tank sidewall sheets shall be Cobalt Blue.
- J. All coated sheets shall be inspected for mil thickness (Mikrotest or equal). All sheets shall be checked for color uniformity by an electronic colorimeter.
- K. An electrical leak detection test shall be performed on the inside surface after fabrication of the sheet. Sheets with excessive electrical leaks shall be rejected so as to minimize field touch up.
- L. All approved sheets shall be protected from damage prior to packing for shipment.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install tank in accordance with this Section, AWWA D103 and manufacturer's recommendations.
- B. Tank foundation shall be designed and constructed by the tank manufacturer.
- C. Foundation preparation shall be in accordance with Section 02200 and concrete work shall be in accordance with Section 03300.
- D. Anchor bolts shall not be driven but shall be set when the concrete is placed and in the locations indicated on the approved shop drawings. This is required to limit corrosion impacts to the concrete reinforcement.
- E. Field erection of the glass-coated, bolted steel tank shall be in strict accordance with the manufacturer's recommendations and shall be performed by a factory-trained representative. Care shall be taken to avoid damage of the coating system.
- F. An electrical leak test shall be performed during erection using a 9 Volt leak detection device. All electrical leak points found on the inside surface shall be repaired in accordance with the manufacturer's recommendations.
- G. The exterior of the tank walls shall have a layer of filter fabric placed against them before any backfilling takes place.

- H. All bolts shall be installed so that the head portion is inside the tank and the washer and nut are on the exterior. All lap joint bolts shall be selected so that threaded portions will not be exposed in the shear plane between tank sheets.
- I. Bolt lengths shall be sized to achieve a neat and uniform appearance. Excessive threads extending beyond the nut after torquing will not be permitted.
- J. All lap joint bolts shall include a minimum of four splines on the underside of the bolt head at the shank in order to resist rotation during torquing.
- K. High-density polyethylene co-polymer caps and sealant shall be used to cover bolts, nuts and washers exposed on the tank exterior sidewall.
- L. The lap joints, bolt connections and sheet edges shall be sealed with high-density polyethylene material. The sealant shall be compatible with the stored leachate and shall meet applicable NSF Additives Standard 6. Sealant certifications shall be submitted with shop drawing submittal.
- M. The sealant shall cure to a rubber-like consistency, have excellent adhesion to glass fused-to-steel fused coating, low shrinkage, and be suitable for interior and exterior use.

3.02 GLASS COATING TEST

- A. During erection of the tank, the manufacturer shall perform mil thickness test per ASTM D7091 and a holiday detection test (Tinker Razor or equivalent) of glass coating. A report shall be submitted to the Engineer summarizing the results of the tests.

3.03 FIELD TESTING

- A. Following completion of erecting and cleaning of the tank, the structure shall be tested for liquid tightness by filling tank to its overflow elevation.
- B. The contractor in accordance with the manufacturer's recommendations shall correct any leaks disclosed by this test at no additional cost to the Owner.
- C. The Contractor shall be responsible for all costs (labor, pumps, hauling, filling, etc.) to furnish water required for hydrostatic testing at the time of tank erection completion, and at no charge to the Owner. Disposal of test water shall be the responsibility of the Contractor.
- D. During erection of the tank, the manufacturer shall perform mil thickness test (Mikrotest or equal) and a holiday detection test (tinker Razor or equal) of glass fused-to-steel coating. Engineer shall be present during field testing of the erected tank. Any defects identified by these tests shall be corrected to the satisfaction of the Engineer. A report shall be submitted to the Engineer summarizing the results of the test and any repairs made.

3.04 INSPECTION

- A. The manufacturer shall make a visual inspection of the tank interior coating and appurtenances, tank exterior coating and appurtenances, and the immediate area surrounding the tank. A written report prepared by the tank manufacturer, certifying that the work was inspected in accordance with Section 9 of AWWA D103 shall be submitted to the Engineer. This report shall meet the

requirements of Section 9 and also cover the hydrostatic test. It shall also indicate that the tanks have been installed in accordance with the manufacturer's instructions and that they meet all the requirements of this specification.

3.05 RECORD "AS-BUILT" DRAWINGS

- A. In accordance with Specification Section 01050 – Field Engineering, a Certified Record "As-Built" Drawing Survey of the leachate storage tanks (primary and secondary), piping, pump, instrumentation, and other surface structures (associated with the tank facility construction) installed by CONTRACTOR shall be provided prior to and as a condition of substantial completion of the project.
- B. Upon completion of construction of the tanks, submit structural design calculations of the "as-built" tanks signed and sealed by a structural engineer registered in the State of North Carolina. Calculation shall be submitted for record purposes only and will not be reviewed by the Engineer. Calculations shall include, but shall not be limited to a description of the structural design loading conditions used for the design of the entire tank, including the foundation and a description of the structural design method and codes used in establishing the allowable stresses and safety factors applied in the design.

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**Table A: Example of Construction and Demolition (C&D)
Landfill Leachate Composition**

Parameters	Unit	Concentration
PH	-	6.1 – 9.0
TDS	mg/L	780 – 7,040
Chloride	mg/L	6.8 – 1,180
Sulfate	mg/L	41- 8,570
Nitrogen, Ammonia	Mg/L	0.053 – 92.1
Calcium	mg/L	106 – 933
NPOC	mg/L	1.1 – 80.5
Arsenic	µg/L	<5.0 – 147.8
Manganese	µg/L	6.0 – 74.9
Copper	µg/L	5.6 – 1,740
Iron	mg/L	0.3 – 4.6
Manganese	mg/L	0.2 – 2.3
Nickel	mg/L	<500
Zinc	mg/L	107 – 1,731

References:

1. Timothy G. Townsend and al., "Continued Research into the characteristics of leachate from construction and demolition waste landfills" July 2000, State University System of Florida Report #00-04
2. State of Ohio EPA Draft study, "A Comparison of Selected Parameters from Ohio Construction and Demolition Debris Leachate with Ohio Municipal Solid Waste Leachate" June 12, 2009.

Attachment No. 3

NOTICE TO BIDDERS



Sealed proposals will be received by Cabarrus County Purchasing in the Board of Commissioners Meeting Room located in the Cabarrus County Government Center, 2nd Floor, 65 Church Street SE, Concord, North Carolina 28026-0707, up to 2:00 p.m. on October 20, 2010 and immediately thereafter publicly opened and read for the furnishing of labor, material and equipment for the construction of the Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion. The scope of work associated with the Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion project has been divided into two separate contracts:

- Construction Contract A for landfill construction, and
- Equipment Contract B for leachate storage tank system

Construction Contract A generally includes the construction of a 2.1 acre double-lined cell. Work is to include the installation of a 40-mil HDPE base liner, geocomposite drainage net, a 10-inch secondary soil drainage layer and 24-inch protective soil drainage layer. Protective cover and secondary drainage layer material shall be obtained from an offsite borrow source with a specified permeability of 5×10^{-5} cm/sec or greater. Work shall include stripping existing vegetation, preparing the liner subgrade and liner installation, as well as a leachate collection system with force main, erosion control measures, seeding and mulching and other incidentals as shown on the Drawings and as noted in the Specifications. The Owner's onsite borrow area will be available for liner subgrade preparation and miscellaneous soil needs. Sorting and processing of the onsite borrow soil may be needed. Work may also include the construction of a Subcell A area within the lined expansion. This will depend on the need for permitted airspace for waste disposal prior to overall project completion. Days will be added to the date of Substantial Completion if this option is selected. In addition, work will also include the construction of a leachate tank truck loading area. A 150,000 gallon leachate storage tank system (including secondary containment, piping, transfer pump, etc.) shall be included as a bid alternate to Contract A.

Equipment Contract B includes all work associated with the manufacturing and installation of the leachate storage tank system. The scope of work for Contract B represents the same technical scope of work as Bid Alternate No. 1 under Construction Contract A plus the contractual and administrative requirements provided in the Contract Documents. Tank manufacturers must comply with the technical specifications for bolted steel epoxy-coated or glass fused-to-steel tanks as provided by the Contract Documents. Separate contract forms for Contract B are provided.

Tank manufacturers or certified dealers have the option of proposing as a subcontractor under Contract A, or as a general contractor under Contract B.

Both Construction Contract A and Equipment Contract B are subject to the contractual and technical requirements of this project as provided herein, which includes Drawings, Specifications, and all Addenda issued for the Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion project.

All bidders for either Contract A or Contract B will be required to submit complete proposals in accordance with Specification 00100 – Instruction to Bidders including a bid security. Bids for Contract A and Contract B will be publicly opened separately on October 20, 2010 at 2:00 p.m. as indicated herein. The County reserves the right to reject any or all bids and to waive any irregularities or technicalities in bids received whenever such rejection or waiver is in the best interest of the County. The award(s) shall not necessarily be based solely on lowest price, but will be made to the lowest responsible bidder(s) taking into consideration, quality, experience, performance and the time specified in the proposals for the performance of the contract.

Bids received after the specified bid date and time will not be accepted. The time of receipt shall be determined by the clock in the Cabarrus County Board of Commissioners Meeting Room. The sealed envelope containing the bid shall be marked on the exterior "Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion" with the name, address, and North Carolina Contractor License Number of the Bidder. The exterior of the envelope shall also indicate either Contract A or Contract B. The sealed envelope shall be addressed to Cabarrus County Purchasing Attention: Ms. Sherri Barnhardt, Finance Department, Cabarrus County Government Center, 2nd Floor, 65 Church Street SE, Concord, North Carolina 28026-0707.

Complete contract documents will be open for inspection on or after September 29, 2010 at the Cabarrus County website @ www.cabarruscounty.us, as well as at the landfill office and in the offices of the Engineer or may be purchased from the Engineer upon receipt of a One Hundred Dollar (\$100.00) deposit in cash or certified check made payable to CDM. Only complete sets of the Contract Documents will be issued. This payment represents reproduction costs and is non-refundable. Costs include first class postage or equivalent only.

Substantial Completion for Contract A is 150 calendar days from Notice to Proceed (NTP). The Owner and Engineer will work closely with the Contractor to determine if Contract A can be completed within the 150 days and permitted airspace (including leachate storage tanks if Alternate No. 1 is accepted) provided, or if the phased approach will need to be implemented. In order to provide the Contractor with ample notice regarding the implementation of a phased approach, the Owner will decide within 45 calendar days of NTP whether or not to implement the phased approach.

If the phased approach for Contract A is implemented, Contractor shall have Subcell A and the leachate storage tank system substantially complete within 120 calendar days of NTP. The remaining work shall be substantially complete within 150 calendar days.

All work for Contract A shall reach final completion within 180 calendar days from Notice to Proceed.

Substantial Completion for Contract B is 120 calendar days from Notice to Proceed (NTP). All work for Contract B shall reach final completion within 150 calendar days from Notice to Proceed.

A non-mandatory Pre-Bid Meeting will be held on Tuesday, October 6, 2010 at 2:00 p.m. in the maintenance building at the entrance to the Cabarrus County Landfill located at 4441 Irish Potato Road. Bidders will have the opportunity to inspect the project site following the pre-bid meeting. Bidders are also welcome to contact Mr. Rick Payne, Solid Waste Director at (704) 920-2955 to arrange for a site inspection of the proposed work area prior to the submittal of bids.

Questions regarding the intent of the work must be submitted in writing to CDM's Raleigh, NC office: Attention Mr. Robert Brossoie, P.G. on or before the close of business on October 15, 2010. Appropriate responses, where required, will be issued by addendum to all plan holders prior to the date scheduled for the submittal of bids.

All bids must be accompanied by a certified check, cashier's check, or bid bond in the amount of 5 percent of the total bid amount made payable to Cabarrus County. Said deposit shall be retained by the Owner as liquidated damages in the event of failure of the successful bidder to execute the contract within ten days after the award or to give satisfactory surety as required by law.

No bid may be withdrawn for sixty (60) days after the scheduled closing time for bids.

Cabarrus County reserves the right to reject any and all bids and to waive any formality.

Signed: CABARRUS COUNTY

By: _____
Cabarrus County Purchasing Agent

ENGINEER: CDM
5400 Glenwood Avenue, Suite 300
Raleigh, NC 27612
Phone: (919) 787-5620
Fax: (919) 781-5730

Attachment No. 4

SECTION 00421



**QUALIFICATION FORM FOR THE STEEL BOLTED
LEACHATE STORAGE TANK**

**Cabarrus County C&D Landfill
Phase 1L Expansion
Cabarrus County, North Carolina**

Completion of this Qualification Form by a firm is not intended, nor does it operate, to guarantee or warrant that the firm will be selected for any actual work to be let for this project. Firms are advised that they still will be required to meet and comply with the Specifications of this Project and all requirements of the Contract Documents to qualify for this Project. **This Qualification Form must be submitted along with Contractor's bid package.**

The undersigned certifies under oath that the information provided herein is true and sufficiently complete so as to not be misleading.

Submitted by:

Name of the Tank Manufacturing Organization (Subcontractor) _____

Name of Individual _____

Title _____

Address _____

Telephone _____

1.0 GENERAL INFORMATION

- Corporation
- Partnership
- Joint Venture
- Sole Proprietorship

If Corporation:

a. Date and State of Incorporation

b. List of Executive Officers:

Name

Title

If Partnership:

a. Date and State of Organization

Type of Partnership

General Publicly Traded

Limited Other (describe): _____

b. Names, Addresses and Form of Organization of General Partners:

If Joint Venture:

a. Date and State of Organization

b. Names, Addresses and Form of Organization of Joint Venture Partners: (Indicate managing partner by an asterisk)

If Sole Proprietorship:

a. Date and State of Organization

b. Name and Address of Owner(s)

Has your Organization or any of your Subsidiaries ever been convicted of a bidding or contract term violation?

_____ YES _____ NO

If yes, details must be provided on a separate sheet.

2.0 EXPERIENCE

2.1 Complete Attachment "A" for each bolted steel tank that was constructed for the storage of landfill leachate or wastewater similar in corrosiveness and aggressiveness of landfill leachate relative to pH, temperature, and chemical composition. Provide tank projects that were manufactured and installed by your organization for the past five years. For each reference project, information regarding the characteristics of the stored liquid shall be provided. For your qualification form to be considered, the list must include a minimum of ten bolted tanks out of which a least two were installed for sole purpose of landfill leachate storage which (1) your organization has manufactured (2) was installed by your organization's supervision, direction and control, and (3) had a minimum of 150,000 gallons in nominal capacity. A minimum of five of the tank projects must have been in service, to the satisfaction of the owner, for at least 5 years.

2.2 Complete Attachment "B" for each tank manufacturing and erection project which exceeds \$ 500,000 that your organization has in progress.

2.3 State total dollar amount of work in progress and under contract.

2.4 State annual amount of work performed during the past five years.

Year	\$ Amount
2005	\$ _____
2006	\$ _____
2007	\$ _____
2008	\$ _____
2009	\$ _____

3.0 CLAIMS AND SUITS (If the answer to any questions below is yes, please attach details

3.1 Has your Organization ever failed to complete any work awarded to it?

3.2 Are there any judgments, claims, arbitration proceedings or suits pending or outstanding against your organization or its officers?

3.3 Has your organization filed any lawsuits or requested arbitration with regard to construction contracts within the last five years?

4.0 FINANCIAL INFORMATION

4.1 The tank Contractor or Subcontractor proposed by the successful Bidder shall submit to the Owner, within 2 days of written request by the Owner, audited financial statement, including the organization’s latest balance sheet, income statement, cash flow statement, and all financial statement notes showing the following items:

Current Assets; (e.g. cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, material inventory and prepaid expenses);

Net Fixed Assets;

Other Assets

Current Liabilities e.g., accounts payable, notes payable, accrued expenses, provision for income taxes, advances accrued salaries and accrued payroll taxes);

Other liabilities (e.g., capital, capital stock, authorized and outstanding shares par values, earned surplus and retained earnings).

4.2 Provide the following information with respect to an accredited banking institution familiar with your organization:

Name of Bank: _____

Account Manager _____

Address: _____

Telephone: _____

Name of Bank: _____

Account Manager _____

Address: _____

Telephone: _____

4.3 Provide a certified copy of your organization’s current Dunn & Bradstreet rating:

4.4 Is your Organization now or has it ever been involved in bankruptcy or reorganization proceedings?

_____ YES _____ NO

If yes, details must be provided on a separate sheet

5.0 SAFETY

5.1 List your Organization's Insurance Interstate Experience Modification Rate (EMR) for the three most recent years:

	2007	2008	2009
For the entire Organization	_____	_____	_____
For your particular entity or division of the Organization	_____	_____	_____

Provide certified copies of the EMR report.

6.0 DESIGN AND CERTIFICATION

6.1 Name of the Professional Engineer who has designed (or will design) and certify the foundation:

License Number and State: _____

6.2 I hereby certify that the information submitted herewith, including any attachment, is true to the best of my knowledge and belief. I also certify that the proposed tank and coating are designed to perform in the application of C&D landfill leachate storage based on the data provided in the Specifications or made available to me separately by the Engineer or the Owner.

By: _____

Title: _____

Dated: _____

ATTACHMENT "A"
COMPLETE A SEPARATE FORM FOR EACH PROJECT

6.1 Project Background

Project Name _____

Project Purpose _____

Project Location _____

Your Organization's Full time on-site Supervisor _____

6.2 Project Schedule

Date Project Started ____/____/____

Scheduled Substantial Completion Date ____/____/____

Actual Substantial Completion Date ____/____/____

Date of Final Release to Owner ____/____/____

6.3 Project Cost

Original Contract Price \$ _____

Number of Change Orders (Related to the tank work) _____

Change Order Amount \$ _____

*Final Contract Price \$ _____

*If final contract amount varies by more than 10% compared to the original contract amount, provide details on a separate sheet.

6.4 Contacts who are Familiar with Project Details

Client/Owner Name _____

Client/Owner Telephone _____

Design/Certifying Engineer Name _____

Design/Certifying Engineer Telephone _____

General Contractor (if Applicable) Name and Contact _____

6.5 Tank Details

Tank Volume _____ gallons

What Liquid will be contained in the Tank _____

Coating Product Name, Manufacturer and Thickness _____

Was the tank foundation designed by your organization?

If No, provide name of other firms involved with the foundation design? _____

Was the tank foundation constructed by your organization?

If No, provide name of other firms involved with the foundation construction? _____

Was the tank piping and accessories (flow meters, pumps, level switch, pump controls etc...) , installed by your organization?

If No, provide the name of other firms involved with the tank piping and accessories? _____

6.6 Warranty and Claims

What was the warranty provided for the tank project? _____ years

Have there been any claims or complaints within the warranty period?

Have there been any claims or complaints beyond the warranty period?

If you answered yes to any of the above, please provide explanation including date of the claims, reason, and outcome.

ATTACHMENT "B"

Name of Project	Owner/Client	Designer/Engineer	Contract Amount	Percent Complete	Scheduled Completion Date
_____	_____	_____			
_____	_____	_____			
_____	_____	_____	\$ _____	_____ %	___/___/___
_____	_____	_____			
_____	_____	_____			
_____	_____	_____	\$ _____	_____ %	___/___/___
_____	_____	_____			
_____	_____	_____			
_____	_____	_____	\$ _____	_____ %	___/___/___
_____	_____	_____			
_____	_____	_____			
_____	_____	_____	\$ _____	_____ %	___/___/___

Attachment No. 5

SECTION 00500



CONSTRUCTION AGREEMENT
FORM
(CONTRACT A)

CABARRUS COUNTY
CONSTRUCTION AND DEMOLITION LANDFILL
PHASE 1 EXPANSION PROJECT

THIS AGREEMENT, made as of the ___ day of _____, 20___, by and between _____, a corporation, hereinafter called the Contractor, and Cabarrus County, a body corporate and politic and a political subdivision of the State of North Carolina, hereinafter called the Owner.

WITNESSETH:

That the Contractor and the Owner, for the consideration herein named, agree as follows:

1. **SCOPE OF WORK** - The Contractor shall furnish and deliver all of the materials, and perform all of the work required by this Agreement and the following enumerated documents, which are attached hereto and made a part hereof as if fully contained herein: General Conditions, Supplemental Conditions, Contract Construction Schedule, Specifications, Drawings entitled "Construction and Demolition Debris Landfill Phase 1L Expansion Project" dated September 2010, which Drawings are listed in the Specifications, Performance Bond, Labor and Material Payment Bond, Insurance Certificates, and the following addenda:

All of the documents listed, referenced or described in this paragraph, together with Modifications made or issued in accordance herewith are the Contract Documents, and the work, labor, materials and completed construction required by the Contract Documents and all parts thereof is the Work. The Contractor shall perform the Work in the time, manner and form required by the Contract Documents. The Contract Documents constitute the entire agreement between Owner and Contractor.

The scope of work associated with the Cabarrus County Construction and Demolition Debris Landfill Phase 1L Expansion project has been divided into two separate contracts:

- Construction Contract A for landfill construction (This Contract), and
- Equipment Contract B for leachate storage tank system

The Work to be performed under Contract A generally includes the construction of a 2.1 acre double-lined cell area. Work is to include the installation of a 40-mil HDPE base liner, geocomposite drainage net, a 10-inch secondary soil drainage layer and 24-inch protective soil drainage layer. Protective cover and secondary drainage layer material shall be obtained from an offsite borrow source with a specified permeability of 5×10^{-5} cm/sec or greater (more permeable). Work shall include stripping existing vegetation, preparing the liner subgrade and liner installation, as well as a leachate collection system with force main, erosion control measures, seeding and mulching and other incidentals as shown on the Drawings and as noted in the Specifications. In addition, work will also include the construction of a

leachate tank truck loading area. A 150,000 gallon leachate storage tank system (including secondary containment, piping, transfer pump, etc.) shall be included as a bid alternate. The Owner's onsite borrow area will be available for liner subgrade preparation and miscellaneous soil needs. Sorting and processing of the onsite borrow soil may be needed. Work may also include the construction of a Subcell A area within the lined expansion. This will depend on the need for permitted airspace for waste disposal prior to overall project completion. Days will be added to the date of Substantial Completion if this option is selected.

2. The Contractor agrees to commence work not later than three (3) days after the commencement date specified in the Notice to Proceed. The Contractor agrees to complete fully all Work hereunder on the dates specified below in Paragraph 3 – Contract Time, as may be adjusted in accordance with the terms of the Contract Documents. Time is of the essence with respect to all dates specified in the Contract Documents as Completion Dates. Liquidated damages for failure(s) to complete in accordance with the provisions of this paragraph shall be computed and assessed against the Contractor in accordance with Paragraph 13.18 of the Supplementary General Conditions (Section 00800).

3. Contract Time

In order to ensure that the Owner has permitted landfill disposal space prior to the end of **May, 2011**, a phased approach to construction of the Phase 1L expansion may be required depending upon the impact of construction weather days and actual waste tonnages being received at the landfill.

A 1-acre area adjacent to the existing C&D landfill has been identified as Subcell A of the Phase 1L landfill construction. Substantial Completion of the Subcell A area will include all work necessary to provide the Owner with permitted waste disposal capacity including, but not limited to the full double liner system, leachate collection and header piping, leachate force main piping, sumps, pumps, work in support of the leachate storage tank (or leachate storage tank facility complete if alternate is accepted), and all testing and CQA data.

Substantial Completion for the entire landfill expansion is **150 calendar days** from Notice to Proceed (NTP). The Owner and Engineer will work closely with the Contractor to determine if the entire landfill expansion can be completed within the 150 days and permitted airspace provided, or if the phased approach will need to be implemented. In order to provide the Contractor with ample notice regarding the implementation of a phased approach, the Owner will decide within **45 calendar days** of NTP whether or not to implement the phased approach.

If the phased approach is implemented, Contractor shall have Subcell A substantially complete within **120 calendar days** of NTP. The remaining work shall be substantially complete within **150 calendar days**.

Contractor shall schedule his work such that the grading and preparation of the tank area is completed within 60 days of NTP so as not to impede the progress of the Contract B Contractor.

All work shall reach final completion within **180 calendar days** from Notice to Proceed.

4. The Owner hereby agrees to pay to the Contractor for the faithful performance of this Agreement, and the Contractor hereby agrees to perform all of the Work, for the sum of _____ Dollars (\$ _____) in the lawful money of the United States, subject to adjustments as provided for in the Contract Documents. Payment of the Contract Price shall be in accordance with Articles 20 and 21 of the General Conditions.

5. It is further mutually agreed between the parties hereto that if at any time after the execution of this Agreement and the Performance Bond and Labor and Material Payment Bond hereto attached for its faithful performance, the Owner shall deem the surety or sureties upon such Bonds to be unsatisfactory, or if, for any reason, such Bonds or either of them cease to be adequate to cover the performance of and payment for the Work, the Contractor shall, at its expense, within five (5) days after notice from the Owner so to do, furnish an additional bond or bonds in such form and amount and with such surety or sureties as shall be satisfactory to the Owner. In such event no further payment to the Contractor shall be deemed to be due under this Agreement until such new or additional security for the faithful performance of or payment for the Work shall be furnished in a manner and form satisfactory to the Owner.

6. Terms used in this Agreement which are defined in the Contract Documents shall have the meanings designated in those Contract Documents.

7. The laws of the State of North Carolina shall apply to the interpretation and enforcement of this Agreement. Any and all suits or actions to enforce, interpret or seek damages with respect to any provision of, or the performance or nonperformance of, this Agreement shall be brought in the General Court of Justice of North Carolina sitting in Cabarrus County, North Carolina, and it is agreed by the parties that no other court shall have jurisdiction or venue with respect to such suits or actions.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the day and date first above written in a number of counterparts, each of which shall, without proof or accounting for other counterparts, be deemed an original contract.

Contractor: (Trade or Corporate Name)

By: _____

ATTEST: (CORPORATION)

Title: _____
(President)

By: _____

Title: _____
(Corporate Secretary)

(CORPORATE SEAL)

WITNESS:

(Proprietorship or Partnership)

CABARRUS COUNTY
65 Church Street
P.O. Box 707
Concord, NC 28026

By: _____
H. Jay White, Sr.
Chair, Board of Commissioners

ATTEST: _____
Kay Honeycutt
Clerk to the Board

This instrument has been pre-audited in the manner required by the local Government Budget and Fiscal Control Act.

Pam Dubois
Finance Director of Cabarrus County

This instrument is approved as to Form.

Richard M. Koch
Cabarrus County Attorney

Attachment No. 6

SECTION 11342

POWDER EPOXY COATED STEEL BOLTED
LEACHATE STORAGE TANK

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment and incidentals required and erect a new factory epoxy coated bolted carbon steel primary and secondary tank for storage of leachate from a construction and demolition (C&D) debris landfill. The bolted tank shall be either a tapered or flat panel design. American Petroleum Institute (API 12B) flanged panel tank design shall not be acceptable for this project. The factory-applied tank interior coating shall be chemically resistant to C&D landfill leachate environment.
- B. The Contractor shall design, furnish, install, test, and perform any other incidentals required to provide an operable tank as specified herein and shown in the Drawings. The scope of work shall include, but not be limited to, tank foundation design and construction, secondary containment, tank erection, tank coating, installation of tank appurtenances such as a level indicator, transfer pumps, flow meter, and the ultimate water tightness of the complete installation and any other work shown on the Drawings. Contractor shall be responsible for all costs associated with hydrostatic testing including emptying and disposing the water from the tank.

1.02 RELATED WORK

- A. Earthwork is included in Division 2.
- B. Piping is included in the respective Sections of Divisions 2.
- C. Loadout Pump is specified in Section 11213.
- D. Electrical is included in Division 16.

1.03 QUALIFICATIONS

- A. The tank shown on the Drawings and specified herein shall be a new factory epoxy coated bolted carbon steel tank with either a tapered or flat panel design. Tank manufacturers shall specialize in thermoset epoxy coated bolted carbon steel tank construction and erection. The tank shall be constructed and coated in the manufacturers owned and operated facility. Facility quality process shall be ISO 9001 certified.
- B. The manufacturer shall be responsible for actual erection and workmanship of the tanks. If the manufacturer chooses to provide certified subcontractors for installation, the manufacturer shall guarantee and take responsibility for the workmanship of the certified subcontractor.
- C. Manufacturer shall be Tank Connection Affiliate Group of Parsons, KS or Columbian TecTank of

Lenexa, KS. The use of another manufacturer not listed herein requires prior approval by the Engineer. Tank manufacturers and their production facilities must be headquartered in the United States. Manufacturer qualification information, as required in Specification 00421, shall be submitted with the Contractor's bid package.

- D. The thermoset powder epoxy supplier and/or tank manufacturer shall certify that the recommended epoxy powder coating (and applied DFT) will withstand the leachate composition provided in Table A, and that this leachate storage application is appropriate for the coating. Thermoset powder coating must also be certified for "immersion" service. Coating must also be certified for resistance to chloride ion permeation. These certifications must be provided with the bid package as part of the qualification section.
- E. The tank foundation designer shall be a Professional Engineer registered in the State of North Carolina with at least 5 years experience in the design of similar foundation systems.
- F. The tank designer shall be a Professional Engineer registered in the State of North Carolina with at least 5 years experience in the design of similar tank structures.

1.03 SUBMITTALS

- A. Submit, in accordance with Section 01300, shop drawings showing details of construction, erection, and coating information as follows:
 - 1. Complete fabrication, assembly, support, and structural drawings together with design criteria, structural calculations, specifications, and data covering the materials and appurtenances to be furnished, dimensions of tanks, tank supports, piping, fittings and attachments. Drawings shall be signed and sealed by a licensed professional structural engineer registered in the state of North Carolina.
 - 2. Material and performance information on the thermoset epoxy powder coating product to be used for interior and exterior coating. Submittal shall also include application and curing procedures.
 - 2. Wall thicknesses (shell, head and base).
 - 3. Locations of fittings, attachments and bolts.
 - 4. Manufacturer's quality assurance/quality control document describing procedures to be followed during tank fabrication, and application and curing of coating. Instructions for handling, storage and installation of tanks shall also be provided.
 - 5. Certification that fabrication is in accordance with these Specifications and AWWA D103.
 - 6. Weight and center of gravity of tanks.
 - 7. Seismic anchorage calculations. These calculations shall be completed and sealed by a professional civil engineer registered in the State of North Carolina.

8. Tank foundation and anchorage design calculation and detail drawings signed and sealed by a professional engineer registered in the State of North Carolina.
9. Shop testing and inspection procedures.
10. Shop testing and inspection report that includes mill test reports, mil thickness tests, and holiday detection tests for thermoset powder coating.
11. Provide the following information:
 - a. Number of gallons per foot of depth.
 - b. Total tank gallons.
 - c. Usable gallons to the normal full level.
12. Resumes of job installation superintendent and field crew.

1.04 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)
 1. ASTM A36 - Standard Specification for Carbon Structural Steel
 2. ASTM A1011 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
- B. American Water Works Association (AWWA)
 1. AWWA D103 Standard for Factory-Coated Bolted Steel Tanks for Water Storage
- C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 DESIGN CRITERIA

- A. The primary tank shall have a nominal diameter of approximately 33 feet and a nominal sidewall height (to roof eave) of approximately 28 feet. The secondary tank shall have a nominal diameter of approximately 71 feet and a nominal sidewall height of approximately 6.0 feet. Staircase access into the secondary containment area shall comply with all OSHA requirements.
- B. The tank working capacity shall be not less than 150,000 gallons.
- C. A minimum freeboard of 1-foot shall be provided for domed primary tank.

- D. The materials, design, fabrication, and erection of the carbon steel bolted tank shall conform to the latest AWWA D103 standard for Factory-Coated Bolted Steel Tanks for Water Storage.
- E. The thermoset epoxy powder coating and applied dry film thickness (DFT) shall be a fusion bonded epoxy coating that provides long-term corrosion resistance in a leachate storage (immersion) environment. Coating shall be compatible with the leachate composition provided in Table A of this specification.
- F. The Contractor shall provide a shallow foundation system for the proposed tank with average bearing loads not exceed 1,850 pounds per square foot for dead and normal live loads. The allowable bearing capacity for the tank foundations shall be determined by the foundation designer based upon the subsurface conditions and the tank manufacturer's performance criteria (allowable settlement, etc.). Boring logs are provided in Appendix A and a geotechnical memorandum is available upon request. However, the Contractor's foundation designer shall remain responsible for the interpretation of subsurface conditions in preparation of the tank foundation design. Geotechnical design criteria shall be clearly indicated on the foundation drawings and in the associated engineering calculations.

1.06 DELIVERY, STORAGE AND HANDLING

- A. All plates, members and miscellaneous parts shall be packaged for shipment in a manner that prevents abrasion or scratching of the finished coating system. Heavy paper or plastic foam sheets shall be placed between each panel to eliminate sheet-to-sheet abrasion.
- B. Materials shall be delivered to the job site, marked for proper installation, as close to the time of erection as possible.
- C. Individual stacks of panels shall be wrapped in heavy black plastic and shall be steel banded to special wood pallets built to the roll radius of the tank panels. The tank components shall be shipped from the factory to the job site by truck, and the truck that carries the tank components shall haul the tank components exclusively. The tank manufacturer shall be responsible for unloading all tank materials at the job site.
- D. Handle and store all materials carefully to prevent distortions or other damage that could affect structural, mechanical, or electrical integrity. Store all materials that are subject to deterioration by exposure to the elements off the ground in a well-drained location and protected from the weather. All materials shall be accessible for inspection and handling.
- E. Materials furnished for the tanks that are determined to be defective by the Engineer shall be rejected and replaced with acceptable sheets. All materials rejected must be removed from the project site immediately and replaced with material of a quality acceptable to the Engineer. Failure to reject any material or to require removal of any such rejected material shall not relieve the Contractor from responsibility for the quality and character of material used.

1.07 WARRANTY

The tank manufacturer shall provide a performance warranty on tank materials and workmanship for five (5) years. The warranty shall cover for defects in fabrication, installation, material,

coating, appurtenances and workmanship during the warranty period.

PART 2 PRODUCTS

2.01 TANK

A. Plates and Sheets

1. Plates and sheets used in the construction of the tank shell, tank floor and tank roof, shall comply with the minimum standards of AWWA D103.
2. Design requirements for mild strength steel shall be ASTM A36 or ASTM A1011 Grade 30, 36, 40, or 50 with a maximum allowable tensile stress 18,000 psi.
3. Design requirements for high strength steel shall be ASTM A1011 Grade 42, 50, 55, or 60 with a maximum allowable tensile stress of 30,000 psi, unless otherwise noted in the engineering specifications and/or submittals.

B. Rolled Structural Shapes

1. Material shall conform to minimum standards of ASTM A36 or ANSI 1010.

C. Coating

1. Thermoset powder coating product shall be suitable for C&D leachate environment as discussed in paragraph 1.05. The coating shall be applied (to both the interior and exterior tank surfaces) with a precision electrostatic process to provide accurate control of coating thickness application.
2. Surface preparation shall be performed per tank and coating manufacturer's recommendations. At a minimum, sheets and tank components shall be blasted on both sides providing a surface profile of SSPC-SP10 near white blast. Anchor profile shall be 2.0 mil minimum. Sand blasting and chemical pickling of steel sheet is not acceptable.
3. Thermoset powder (polymer) coating for the tank interior and bottom shall be LIQ Fusion 7000 FBE by Tank Connections, Trico Bond EP by Columbian TecTank, or equivalent. Thermoset powder coating for the tank exterior prime coat shall be EXT Fusion 5000 FBE by Tank Connections, Trico Bond EP by Columbian TecTank, or equivalent. Exterior finish coat shall also be applied on top of the prime coat, and shall provide appropriate UV resistance. Field coating, except for touch up, will not be allowed for this project.
4. Interior tank coating shall be a minimum of 7.0 mils average DFT. Exterior prime and finish coat shall be a minimum of 6 mils DFT. The thermoset powder coating shall be applied to all tank edges, in all bolt holes, and across all panels uniformly.
5. Thermoset epoxy powder coating curing procedures shall be performed in accordance with the tank and coating manufacturer's approved process. At a minimum, the oven curing process shall be a one-fire or two-fire process that provides a fusion-bonded solid coating

resulting from the chemical cross-linking reaction. During the coating application process, the steel sheets and tank components shall be heated to the recommended epoxy powder application temperature. Curing temperature and times shall be in accordance with coating manufacturer's recommendations. .

6. Interior and exterior coated surfaces shall be inspected for any visible defect or holiday, and coating thickness verified by a nondestructive mil-thickness test (Mikrotest or equal). Adhesion for interior and exterior coating shall be confirmed using 100 squares test. Interior coating inspection shall include a holiday detection test in accordance with AWWA D103 Section 12.9. Coated panels and tank parts shall be certified 100% factory holiday free prior to shipment. Exterior coating inspection shall occur prior to placement of finish coat.

D. Horizontal Wind Stiffeners

1. Web truss stiffeners shall be of steel with hot-dip galvanized coating.
2. Rolled steel angle stiffeners are not permitted for intermediate stiffeners.

E. Bolt Fasteners

1. Bolts used in tank lap joints shall be ½ - 13 UNC-2A rolled thread, and shall meet the minimum requirements of AWWA D103, Section 4.2.
2. Bolt Material
 - a. SAE Grade 5 (1" thru 1½")
Tensile strength – 105,000 psi Min.

Proof Load – 74,000 psi Min.
 - b. SAE Grade 8 (1" thru 1½")
Tensile Strength – 150,000 psi Min

Proof Load – 120,000 psi Min.
3. Bolt Head Finish and Encapsulation
 - c. Bolt finish shall be JS500 electro-plated, or zinc plated.
 - d. High impact polypropylene copolymer encapsulation of entire bolt head up to the splines on the shank
 - e. Resin shall be stabilized with an ultraviolet light resistant material such that the color shall appear black. The bolt head encapsulation shall be certified to meet the ANSI/NSF Standard 61 for indirect additives.
4. All bolts on the vertical tank wall shall be installed such that the head portion is located inside the tank, and the washer and nut are on the exterior.
5. Bolt lengths shall be sized to achieve a neat and uniform appearance. Excessive threads extending beyond the nut after torquing will not be permitted.

F. Sealants

1. The lap joint sealant shall be a one component, moisture cured, polyurethane compound, or a high-density polyethylene material. The sealant shall be certified suitable for contact with stored leachate by the manufacturer and shall be certified to meet ANSI/NSF Additives Standard 61 for indirect additives. Sealant certifications shall be submitted with shop drawing submittal.
2. The sealant shall be used to seal lap joints and bolt connections and edge fillets for sheet notches and starter sheets. The sealant shall cure to a rubber-like consistency, have excellent adhesion to the thermoset powder epoxy coating, low shrinkage, and be suitable for interior and exterior use.
3. Sealant curing rate at 73°F and 50% RH
4. Tack-free time: 6 to 8 hours
5. Final cure time: 10 to 12 hours
6. Neoprene gaskets and tape type sealer shall not be used in leachate contacting surfaces.

2.02 TANK FLOOR

A. Steel Floor

1. The floor is to be a thermoset powder epoxy coated bolted steel floor. Bolted steel panels shall be placed over a concrete slab. Non-extruding and resilient bituminous type filler, meeting the requirements of ASTM D1751, should be placed between between the tank floor and concrete slab to act as a cushion.
2. A plastic encapsulated nut shall be used to cover the bolt threads exposed on the inside of the floor.

B. Embedded Base Setting Ring

1. The floor design is of reinforced concrete with an embedded thermoset powder epoxy coated steel starter sheet per the manufacturer's design and in accordance with AWWA D103, Sec. 13.4, and Type 6.
2. A leveling assembly shall be used to secure the started ring, prior to encasement to concrete. Installation of the starter ring on concrete blocks or bricks, using shims for adjustment, is not permitted.
3. Leveling the starter ring shall be required and the maximum differential elevation within the ring shall not exceed one-eighth (1/8) inch, nor exceed one-sixteenth (1/16) inch within any ten (10) feet of length.
4. Place one butyl rubber elastomer waterstop seal strip on the inside surface of the starter ring below concrete floor line. Place one Conseal CS-231 impregnated water seal below the butyl rubber seal. Install materials in accordance with tank manufacturer's instructions.

C. Sidewall Structure

1. Field erection of the thermoset powder epoxy coated bolted steel tank shall be in strict

- accordance with the procedures outlined by the manufacturer, using factory trained erectors.
2. Particular care shall be taken in handling and bolting of the tank panels and members to avoid abrasion of the coating system. Prior to a liquid test, the Engineer may visually inspect all surface areas.
 3. An electrical leak test shall be performed during erection using a wet sponge low voltage leak detection device. All electrical leak points found on the inside surface shall be repaired in accordance with manufacturer's published touch up procedures.
 4. The placement of sealant on each panel may be inspected prior to placement of adjacent panels. However, the Engineer's inspection shall not relieve the contractor from his responsibility for liquid tightness.
 5. No backfill shall be placed against the tank sidewall without prior written approval and design review of the tank manufacturer. Any backfill shall be placed according to the strict instructions of the tank manufacturer.

D. Thermoset Powder Epoxy Coated Steel Deck Roof

Tank shall include a sectioned roof fabricated from thermoset powder epoxy coated, bolted steel panels as fabricated by the tank manufacturer, and shall be assembled in a similar manner as the sidewall panels utilizing the same sealant and bolt installation techniques. The roof shall be clear-span and self-supporting or center supported. Both live and dead loads shall be carried by the tank walls and any center supports.

E. Roof Vent

A properly sized vent assembly in accordance with AWWA D103 shall be furnished and installed above the maximum water level of sufficient capacity so that at maximum design rate of water fill or withdrawal, the resulting interior design pressure / vacuum will not exceed +2.0 / -0.5 ounces per square inch.

The overflow pipe shall not be considered to be a tank vent. The vent shall be so designed in construction as to prevent the entrance of birds and/or animals by including a 16 mesh (1/16" opening size) galvanized screen installed to prevent the entrance of insects.

F. Appurtenances

1. Pipe Connections

- a. Overflow piping shall be minimum 4 inches nominal diameter schedule 10 carbon steel coated externally. A 90 degree internal weir elbow with external downcomer pipe and flap valve shall be provided for the overflow.
- b. Inlet and outlet connections shall conform to the sizes and locations specified on the Drawings.

2. Outside Tank Ladder

- a. An outside tank ladder shall be furnished and installed.
- b. Safety cage and step-off platforms shall be fabricated of galvanized steel.

Ladders shall be equipped with a hinged lockable entry device.

3. Access Doors
 - a. One manway shall be provided in accordance with AWWA D103.
 - b. The manhole opening shall be a minimum of 24 inches in diameter. The access door (shell manhole) and the tank shell reinforcing shall comply with AWWA D103, Sec. 7.1.
4. Liquid Level Indicator
 - a. A liquid level indicator with stainless steel float, number board, and high visibility target shall be provided and installed as detailed on the project drawings.
5. Identification Plate
 - a. A manufacturer's nameplate shall list the tank serial number, tank diameter and height, and maximum design capacity. The nameplate shall be affixed to the tank exterior sidewall location approximately five (5) feet from the grade elevation.
6. Leachate Transfer Pumps and panels
 - a. The manufacturer shall furnish leachate transfer pumps with complete piping, control panels and valves as shown on the Drawings. Refer to Section 11311.
7. Electrical (Refer to Division 16).

PART 3 INSTALLATION

3.01 INSTALLATION PROCESS

- A. Field erection of the bolted steel tank will be in strict accordance with manufacturing procedures using factor trained and certified erectors.
- B. Particular care will be taken to protect the panels and coating from damage (i.e., scratches, abrasion) during field installation.
- C. Tank to be constructed utilizing synchronized (hydraulic screw) jacking process, which keeps construction crews at grade level for safety and point access quality control. Any coating damage will be repaired per manufacturer's recommendations.
- D. No backfill shall be placed against the tank sidewall during or after the construction process.
- E. Foundations
 1. The foundation system shall be installed in accordance with the recommendations provided by the tank manufacturer or Contractor's foundation designer. The foundation designer or a suitable representative shall be present at the commencement of installation of the foundation system and as needed throughout installation to verify the applicable design assumptions and installation recommendations.

2. Subgrade and excavation for foundation shall be inspected by the manufacturer's or Contractor's geotechnical engineer prior to foundation construction.
3. The Contractor shall exercise care to avoid disturbance of excavated subgrade prior to placement of structural fill or concrete foundations. Refer to Division 2, Earthwork, for protection of subgrade.

3.02 FIELD TESTING

- A. Following completion of erecting and cleaning of the tank, the structure shall be tested for liquid tightness by filling tank to its overflow elevation.
- B. The contractor in accordance with the manufacturer's recommendations shall correct any leaks disclosed by this test at no additional cost to the Owner.
- C. The Contractor shall be responsible for all costs (labor, pumps, hauling, filling, etc.) to furnish water required for hydrostatic testing at the time of tank erection completion, and at no charge to the Owner. Disposal of test water shall be the responsibility of the Contractor.
- D. During erection of the tank, the manufacturer shall perform mil thickness test (Mikrotest or equal) and a holiday detection test (tinker Razor or equal) of fusion bonded epoxy coating. Engineer shall be present during field testing of the erected tank. Any defects identified by these tests shall be corrected to the satisfaction of the Engineer. A report shall be submitted to the Engineer summarizing the results of the test and any repairs made.

3.03 INSPECTION

- A. The manufacturer shall make a visual inspection of the tank interior coating and appurtenances, tank exterior coating and appurtenances, and the immediate area surrounding the tank. A written report prepared by the tank manufacturer, certifying that the work was inspected in accordance with Section 9 of AWWA D103 shall be submitted to the Engineer. This report shall meet the requirements of Section 9 and also cover the hydrostatic test. It shall also indicate that the tanks have been installed in accordance with the manufacturer's instructions and that they meet all the requirements of this specification.

3.04 RECORD "As-Built" DRAWINGS

- A. In accordance with Specification Section 01050 – Field Engineering, a Certified Record "As-Built" Drawing Survey of the leachate storage tanks (primary and secondary), piping, pump, instrumentation, and other surface structures (associated with the tank facility construction) installed by CONTRACTOR shall be provided prior to and as a condition of substantial completion of the project.

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**Table A: Example of Construction and Demolition (C&D)
Landfill Leachate Composition**

Parameters	Unit	Concentration
PH	-	6.1 – 9.0
TDS	mg/L	780 – 7,040
Chloride	mg/L	6.8 – 1,180
Sulfate	mg/L	41- 8,570
Nitrogen, Ammonia	Mg/L	0.053 – 92.1
Calcium	mg/L	106 – 933
NPOC	mg/L	1.1 – 80.5
Arsenic	µg/L	<5.0 – 147.8
Manganese	µg/L	6.0 – 74.9
Copper	µg/L	5.6 – 1,740
Iron	mg/L	0.3 – 4.6
Manganese	mg/L	0.2 – 2.3
Nickel	mg/L	<500
Zinc	mg/L	107 – 1,731

References:

1. Timothy G. Townsend and al., “*Continued Research into the characteristics of leachate from construction and demolition waste landfills*” July 2000, State University System of Florida Report #00-04
2. State of Ohio EPA Draft study, “*A Comparison of Selected Parameters from Ohio Construction and Demolition Debris Leachate with Ohio Municipal Solid Waste Leachate*” June 12, 2009.

APPENDIX A
BORING LOGS



BOREHOLE LOG

B-1

Client: Cabarrus County
Project Location: Cabarrus County, NC

Project Name: C&D Landfill Expansion - Phase I
Project Number: 1278-78073

Drilling Contractor: SAEDACCO
Drilling Method/Rig: 4 1/4" ID HSA/Diedrich D-50
Drillers: Stefan Smith
Drilling Date: Start: 7-15-10 **End:** 7-15-10

Surface Elevation (ft.):
Total Depth (ft.): 55
Depth to Initial Water Level (ft. BGS): 18
Abandonment Method: Grouted to Ground Surface
Field Screening Instrument: None
Logged By: D. Forbes

Borehole Coordinates:
 N E

Sample Type	Sample Number	Sample Advance/ Recovery (inches)	Elev. Depth (feet)	N-Value	Blows per 6-in	Graphic Log	USCS Classification	Material Description	
			0		2			6-inch-thick TOPSOIL.	
SS	S-1	24/24		11	3		ML	Dry, stiff, reddish brown, SILT, trace sand, clay. -RESIDUAL SOIL-	
					8				
					13				
SS	S-2	24/24		20	5				Dry, very stiff, reddish brown, SILT, trace sand, clay.
					8				
					12				
SS	S-3	24/24	5	19	5			Dry, very stiff, reddish brown, SILT, trace sand, clay.	
					8				
					11				
SS	S-4	24/24		12	3		ML	Dry, stiff, orange and reddish brown, SILT, little sand, trace clay.	
					5				
					7				
					9				
SS	S-5	24/20		12	3			Dry, stiff, orange and reddish brown, SILT, little sand, trace clay.	
					5				
					7				
					9				
			10						
SS	S-6	24/24		8	3			Moist, medium stiff to stiff, orange, reddish brown, and black mineralization, SILT, little sand, trace clay.	
					4				
					4				
					6				

BOREHOLE CABARRUS - TANK.GPJ CDM CORP.GDT 10/7/10

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
 HSA - Hollow Stem Auger
 SSA - Solid Stem Auger
 HA - Hand Auger
 AR - Air Rotary
 DTR - Dual Tube Rotary
 FR - Foam Rotary
 MR - Mud Rotary
 RC - Reverse Circulation
 CT - Cable Tool
 JET - Jetting
 D - Driving
 DTC - Drill Through Casing

SAMPLING TYPES:
 AS - Auger/Grab Sample
 CS - California Sampler
 BX - 1.5" Rock Core
 NX - 2.1" Rock Core
 GP - Geoprobe
 HP - Hydro Punch
 SS - Split Spoon
 ST - Shelby Tube
 WS - Wash Sample
OTHER:
 AGS - Above Ground Surface

REMARKS

Hammer weight = 140 pounds, drop height = 30 inches
 Split spoon = 2 inches OD, 24 inches long

Reviewed by: I. S. Akbas

Date: 7-22-10



BOREHOLE LOG

B-1

Client: Cabarrus County

Project Name: C&D Landfill Expansion - Phase I

Project Location: Cabarrus County, NC

Project Number: 1278-78073

Sample Type	Sample Number	Sample Advance/ Recovery (inches)	Elev. Depth (feet)	N-Value	Blows per 6-in	Graphic Log	USCS Classification	Material Description
			15				ML	
SS	S-7	24/24		5	2 2 3 5			Moist to wet, medium stiff, orange, reddish brown, and black mineralization, SILT, little sand, trace clay.
			20					
SS	S-8	24/24		5	1 2 3 5		ML	Wet, medium stiff, light brown, orangish brown, and black mineralization, SILT, little clay, trace sand.
			25					
SS	S-9	24/24		6	2 3 3 6			Wet, medium stiff, light brown, orangish brown, and black mineralization, SILT, little clay, trace sand.
			30					
SS	S-10	24/24		8	1 3 5 8			Wet, medium stiff to stiff, light brown, orangish brown, and black mineralization, SILT, little clay, trace sand.
			35					
					3 5		ML	Wet, stiff, light brown to brown and orangish brown, SILT, little sand, trace clay.

BOREHOLE CABARRUS - TANK.GPJ CDM CORP.GDT 10/7/10



BOREHOLE LOG

B-1

Client: Cabarrus County

Project Name: C&D Landfill Expansion - Phase I

Project Location: Cabarrus County, NC

Project Number: 1278-78073

Sample Type	Sample Number	Sample Advance/ Recovery (inches)	Elev. Depth (feet)	N-Value	Blows per 6-in	Graphic Log	USCS Classification	Material Description			
SS	S-11	24/24		13	8 10		ML	Wet, hard, light brown to brown and orangish brown, SILT, little sand, trace clay.			
			40								
SS	S-12	24/24		42	8 19 23 28						
			45								
SS	S-13	24/24		83	21 45 38 37						
			50								
SS	S-14	6/6		>50	38 50/0"				PWR	Wet, very dense, gray, WEATHERED ROCK FRAGMENTS. -PARTIALLY WEATHERED ROCK-	
			55								
			60								
Boring terminated at 55 feet below ground surface.											

BOREHOLE CABARRUS - TANK.GPJ CDM_CORP.GDT 10/7/10



BOREHOLE LOG

B-2

Client: Cabarrus County
Project Location: Cabarrus County, NC

Project Name: C&D Landfill Expansion - Phase I
Project Number: 1278-78073

Drilling Contractor: SAEDACCO
Drilling Method/Rig: 2 1/4" ID HSA/Diedrich D-50
Drillers: Stefan Smith
Drilling Date: Start: 8-12-10 **End:** 8-12-10

Surface Elevation (ft.):
Total Depth (ft.): 53.9
Depth to Initial Water Level (ft. BGS): 24.8
Abandonment Method: Grouted to Ground Surface
Field Screening Instrument: None
Logged By: I. S. Akbas

Borehole Coordinates:
 N E

Sample Type	Sample Number	Sample Advance/Recovery (inches)	Elev. Depth (feet)	N-Value	Blows per 6-in	Graphic Log	USCS Classification	Material Description
SS	S-1	24/24	0	11	4		SM	Dry, medium dense, light orangish brown, fine SAND, little silt, trace roots. -RESIDUAL SOIL-
					5			
					6			
SS	S-2	24/24	-	13	8		SM	Dry, medium dense, light brown to light grayish brown, fine SAND, little to some silt.
					6			
					7			
SS	S-3	24/24	5	9	4		SM/ML	Dry, loose, orangish to reddish brown, fine SAND and SILT.
					4			
					5			
SS	S-4	24/24	-	17	8		SM	Dry, medium dense, orangish to reddish brown, fine SAND and SILT.
					7			
					10			
SS	S-5	24/24	-	16	5		SM	Dry, medium dense, greenish to brownish gray and black mineralization, fine SAND and SILT.
					8			
					8			
SS	S-6	24/24	10	16	5		SM	Dry, medium dense, greenish to brownish gray and black mineralization, fine SAND and SILT.
					7			
					9			
SS	S-7	24/24	-	18	5		SM	Dry to moist, medium dense, light grayish and greenish brown, fine SAND, some silt.
					9			
					9			
					13			

BOREHOLE CABARRUS - TANK.GPJ CDM CORP.GDT 10/7/10

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
 HSA - Hollow Stem Auger
 SSA - Solid Stem Auger
 HA - Hand Auger
 AR - Air Rotary
 DTR - Dual Tube Rotary
 FR - Foam Rotary
 MR - Mud Rotary
 RC - Reverse Circulation
 CT - Cable Tool
 JET - Jetting
 D - Driving
 DTC - Drill Through Casing

SAMPLING TYPES:
 AS - Auger/Grab Sample
 CS - California Sampler
 BX - 1.5" Rock Core
 NX - 2.1" Rock Core
 GP - Geoprobe
 HP - Hydro Punch
 SS - Split Spoon
 ST - Shelby Tube
 WS - Wash Sample
OTHER:
 AGS - Above Ground Surface

REMARKS

Hammer weight = 140 pounds, drop height = 30 inches
 Split spoon = 2 inches OD, 24 inches long

Reviewed by: J. Wen

Date: 8-18-10



BOREHOLE LOG

B-2

Client: Cabarrus County

Project Name: C&D Landfill Expansion - Phase I

Project Location: Cabarrus County, NC

Project Number: 1278-78073

Sample Type	Sample Number	Sample Advance/ Recovery (inches)	Elev. Depth (feet)	N-Value	Blows per 6-in	Graphic Log	USCS Classification	Material Description
			15				SM	
SS	S-8	24/24		13	8 6 7 13			Moist, medium dense, light grayish and greenish brown, fine SAND, some silt, weak cementation.
			20					
SS	S-9	24/24		38	7 13 25 33			Moist, dense, light greenish to brownish gray, fine SAND, little to some silt, trace rock fragments, weak cementation.
			25					
SS	S-10	24/24		25	3 11 14 20			Moist, medium dense, light greenish and grayish brown, fine SAND, some silt.
			30					
SS	S-11	24/24		19	4 7 12 15			Moist, medium dense, grayish green, brown, and black mineralization, fine SAND, some silt.
			35					
					7 8			Moist, medium dense, light greenish brown, fine SAND, some silt.

BOREHOLE CABARRUS - TANK.GPJ CDM CORP.GDT 10/7/10



BOREHOLE LOG

B-2

Client: Cabarrus County

Project Name: C&D Landfill Expansion - Phase I

Project Location: Cabarrus County, NC

Project Number: 1278-78073

Sample Type	Sample Number	Sample Advance/ Recovery (inches)	Elev. Depth (feet)	N-Value	Blows per 6-in	Graphic Log	USCS Classification	Material Description
SS	S-12	24/24		25	17 34		SM	
			40					
SS	S-13	23/23		53	5 21 32 50/5"		PWR	Wet (spoon), very dense, brown, fine SAND, little to some silt, weak cementation. -PARTIALLY WEATHERED ROCK-
			45					
SS	S-14	22/22		54	3 17 37 50/4"			Wet (spoon), very dense, brownish gray, fine SAND, little silt.
			50					
SS	S-15	11/11		>50	23 50/5"			Wet, very dense, brownish gray, fine to medium SAND, little rock fragments, trace silt.
			55					
			60					
								Boring terminated upon split-spoon refusal at 53.9 feet below ground surface.

BOREHOLE CABARRUS - TANK.GPJ CDM_CORP.GDT 10/7/10



BOREHOLE LOG

B-3

Client: Cabarrus County
Project Location: Cabarrus County, NC

Project Name: C&D Landfill Expansion - Phase I
Project Number: 1278-78073

Drilling Contractor: SAEDACCO
Drilling Method/Rig: 2 1/4" ID HSA/Diedrich D-50
Drillers: Stefan Smith
Drilling Date: Start: 8-12-10 **End:** 8-12-10

Surface Elevation (ft.):
Total Depth (ft.): 43.4
Depth to Initial Water Level (ft. BGS): 33.6
Abandonment Method: Grouted to Ground Surface
Field Screening Instrument: None
Logged By: I. S. Akbas

Borehole Coordinates:
 N E

Sample Type	Sample Number	Sample Advance/ Recovery (inches)	Elev. Depth (feet)	N-Value	Blows per 6-in	Graphic Log	USCS Classification	Material Description
			0				SM	
SS	S-1	24/24		11	5 5 6 8			Dry, medium dense, orangish to reddish brown, fine SAND, little silt. -RESIDUAL SOIL-
SS	S-2	24/24	5	11	4 5 6 8		SP-SM	Dry, medium dense, light orangish brown and white mottled, fine SAND, trace to little silt.
SS	S-3	24/24		14	6 6 8 11			Dry, medium dense, light grayish brown, fine SAND, trace silt, clay clusters.
SS	S-4	24/24		12	2 5 7 10			Dry, medium dense, light brownish gray, fine SAND, trace silt.
			10					
SS	S-5	24/24		22	5 8 14 20		SM	Moist, medium dense, brownish to greenish gray, fine SAND, little silt.

BOREHOLE CABARRUS - TANK.GPJ CDM_CORP.GDT 10/7/10

EXPLANATION OF ABBREVIATIONS

DRILLING METHODS:
 HSA - Hollow Stem Auger
 SSA - Solid Stem Auger
 HA - Hand Auger
 AR - Air Rotary
 DTR - Dual Tube Rotary
 FR - Foam Rotary
 MR - Mud Rotary
 RC - Reverse Circulation
 CT - Cable Tool
 JET - Jetting
 D - Driving
 DTC - Drill Through Casing

SAMPLING TYPES:
 AS - Auger/Grab Sample
 CS - California Sampler
 BX - 1.5" Rock Core
 NX - 2.1" Rock Core
 GP - Geoprobe
 HP - Hydro Punch
 SS - Split Spoon
 ST - Shelby Tube
 WS - Wash Sample
OTHER:
 AGS - Above Ground Surface

REMARKS

Hammer weight = 140 pounds, drop height = 30 inches
 Split spoon = 2 inches OD, 24 inches long

Reviewed by: J. Wen

Date: 8-18-10



BOREHOLE LOG B-3

Client: Cabarrus County

Project Name: C&D Landfill Expansion - Phase I

Project Location: Cabarrus County, NC

Project Number: 1278-78073

Sample Type	Sample Number	Sample Advance/ Recovery (inches)	Elev. Depth (feet)	N-Value	Blows per 6-in	Graphic Log	USCS Classification	Material Description
			15				SM	
SS	S-6	24/24		24	5 9 15 13		SP-SM	Moist, medium dense, light brownish gray, fine SAND, trace to little silt.
			20					
SS	S-7	24/24		25	6 9 16 32		SM	Moist, medium dense, grayish brown and black mineralization, fine SAND, some silt.
			25					
SS	S-8	24/24		27	4 12 15 34			Moist, medium dense, grayish and greenish brown, fine SAND, little silt.
			30					
SS	S-9	21/21		75	5 32 43 50/3"		PWR	Moist, very dense, grayish and greenish brown, fine SAND, little silt. -PARTIALLY WEATHERED ROCK-
			35					
SS	S-10	17/17		>50	10 30			Dry, very dense, light grayish brown, fine SAND, trace silt.

BOREHOLE CABARRUS - TANK.GPJ CDM_CORP.GDT 10/7/10



BOREHOLE LOG

B-3

Client: Cabarrus County

Project Name: C&D Landfill Expansion - Phase I

Project Location: Cabarrus County, NC

Project Number: 1278-78073

Sample Type	Sample Number	Sample Advance/ Recovery (inches)	Elev. Depth (feet)	N-Value	Blows per 6-in	Graphic Log	USCS Classification	Material Description
			40		50/5"		PWR	
SS	S-11	5/5		>50	50/5"			Dry, very dense, light brownish gray, fine SAND, trace rock fragments.
			45					Boring terminated upon split-spoon refusal at 43.4 feet below ground surface.
			50					
			55					
			60					