

- LEGEND**
- Soil Boring with Undisturbed (Shelby) Tube Samples and/or Standard Penetration Tests
  - Soil Boring with Undisturbed (Shelby) Tube Samples and/or Standard Penetration Tests and Rock Core

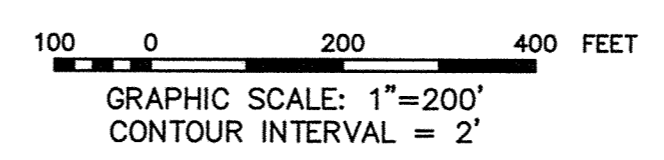
- NOTES:**
1. The topographic mapping presented on this drawing was developed by TVA Surveying and Project Services, in April, 2009. This plan view was prepared to support development of the geotechnical exploration program and should not be used for construction.
  2. A hydrographic survey was performed on the Clinch River in September, 2009 and on the Area 2 ponds in February, 2006.
  3. The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

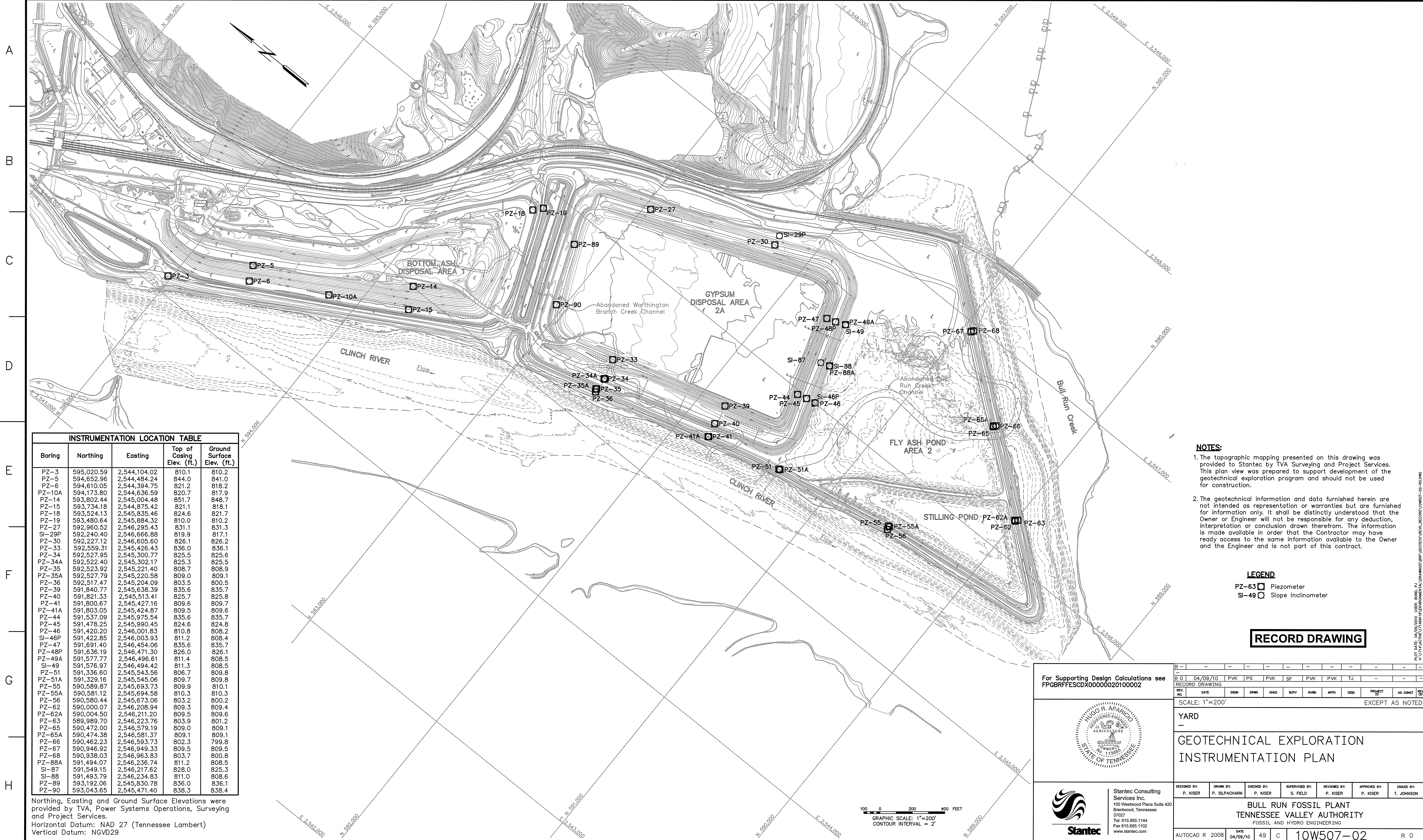
BORING LOCATION TABLE							
Boring	Northing	Easting	Elev. (ft.)	Boring	Northing	Easting	Elev. (ft.)
STN-1	595,024.10	2,544,375.85	832.4	STN-39	591,840.77	2,545,638.39	835.7
STN-2	595,022.62	2,544,232.15	819.4	STN-40	591,821.33	2,545,513.41	825.8
STN-3	595,020.59	2,544,104.02	810.2	STN-41	591,800.67	2,545,427.16	809.7
STN-5	594,652.96	2,544,484.24	841.0	STN-43	591,427.25	2,545,657.42	825.0
STN-6	594,610.05	2,544,394.75	818.2	STN-44	591,537.09	2,545,975.54	835.7
STN-7	594,577.54	2,544,332.94	809.5	STN-45	591,478.25	2,545,990.45	824.8
STN-8	594,312.72	2,544,896.21	821.0	STN-46	591,420.20	2,546,001.83	808.2
STN-9	594,232.56	2,544,740.10	837.5	STN-47	591,691.40	2,546,454.06	835.7
STN-10	594,173.80	2,544,636.59	817.9	STN-48	591,636.19	2,546,471.30	825.8
STN-11	594,140.80	2,544,576.48	808.6	STN-49	591,576.97	2,546,494.42	808.5
STN-13	593,923.78	2,545,228.66	831.3	STN-50	591,841.40	2,546,757.19	825.1
STN-14	593,802.44	2,545,004.48	848.7	STN-51	591,336.60	2,545,543.56	809.8
STN-15	593,734.18	2,544,875.42	818.1	STN-52	591,060.68	2,545,599.52	809.8
STN-16	593,705.67	2,544,823.03	808.0	STN-53	591,057.48	2,545,580.54	801.3
STN-18	593,524.13	2,545,835.46	821.7	STN-54	590,638.72	2,545,959.39	810.1
STN-19	593,480.64	2,545,884.32	810.2	STN-55	590,589.87	2,545,693.73	810.1
STN-20	593,389.26	2,545,507.73	819.6	STN-56	590,580.44	2,545,673.06	800.2
STN-21	593,286.66	2,545,087.68	808.0	STN-58	590,091.97	2,545,756.90	810.3
STN-22	593,138.35	2,545,015.84	799.0	STN-59	590,089.21	2,545,731.11	800.0
STN-23	593,275.52	2,546,061.35	835.0	STN-60	589,601.84	2,545,827.99	810.2
STN-24	593,211.79	2,545,589.93	809.9	STN-61	589,536.98	2,545,830.43	799.9
STN-25	593,158.33	2,545,607.45	826.2	STN-62	590,000.07	2,546,208.94	809.4
STN-26	592,971.96	2,546,347.19	817.3	STN-63	589,989.70	2,546,223.76	801.2
STN-27	592,960.52	2,546,295.43	831.3	STN-65	590,472.00	2,546,579.19	809.1
STN-28	592,587.48	2,546,501.20	816.8	STN-66	590,462.23	2,546,593.73	799.8
STN-29	592,243.83	2,546,673.33	816.8	STN-67	590,946.92	2,546,949.33	809.5
STN-30	592,227.12	2,546,605.60	826.2	STN-68	590,938.03	2,546,963.83	800.8
STN-31	592,969.83	2,545,281.84	823.6	STN-70	591,380.61	2,547,267.77	809.4
STN-32	593,010.17	2,545,153.51	808.2	STN-71	591,954.22	2,546,956.25	809.1
STN-33	592,559.31	2,545,426.43	836.1	STN-87	591,549.15	2,546,217.62	825.3
STN-34	592,527.95	2,545,300.77	825.6	STN-88	591,493.79	2,546,234.83	808.6
STN-35	592,523.92	2,545,221.40	808.9	STN-89	593,192.06	2,545,830.78	836.1
STN-36	592,517.47	2,545,204.09	800.5	STN-90	593,043.65	2,545,471.40	838.4
STN-38	592,160.74	2,545,322.53	808.6				

Northing, Easting and Ground Surface Elevations were provided by TVA, Power Systems Operations, Surveying and Project Services.  
 Horizontal Datum: NAD 27 (Tennessee Lambert)  
 Vertical Datum: NGVD29

**RECORD DRAWING**

For Supporting Design Calculations see FPGBRFFESCDX0000020100002		R 0 04/09/10 WRM TJ PVK SF HRA HRA TJ - - -		DISCIPLINE INTERFACE
RECORD DRAWING		REV. NO. DATE DSSN DRWN CHKD SUPV RWDN APPR ISSD PROJECT ID AS CONST		REV. NO.
SCALE: 1"=200'		EXCEPT AS NOTED		
YARD				
GEOTECHNICAL EXPLORATION BORING LAYOUT				
DESIGNED BY: W. MATTLINGLY	DRAWN BY: T. JOHNSON	CHECKED BY: P. KISER	SUPERVISED BY: S. FIELD	REVIEWED BY: H. APARICIO
APPROVED BY: H. APARICIO		ISSUED BY: T. JOHNSON		
STANTEC CONSULTING SERVICES INC. 100 Westwood Pl., Ste. 420 Brentwood, Tennessee 37027-5044 Tel: 615.885.1144 Fax: 615.885.1102 www.stantec.com		BULL RUN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING		
AUTOCAD R 2000	DATE 04/09/10	49	C	10W507-01 R 0





INSTRUMENTATION LOCATION TABLE				
Boring	Northing	Easting	Top of Casing Elev. (ft.)	Ground Surface Elev. (ft.)
PZ-3	595,020.59	2,544,104.02	810.1	810.2
PZ-5	594,652.96	2,544,484.24	844.0	841.0
PZ-6	594,610.05	2,544,394.75	821.2	818.2
PZ-10A	594,173.80	2,544,636.59	820.7	817.9
PZ-14	593,802.44	2,545,004.48	851.7	848.7
PZ-15	593,734.18	2,544,875.42	821.1	818.1
PZ-18	593,524.13	2,545,835.46	824.6	821.7
PZ-19	593,480.84	2,545,884.32	810.0	810.2
PZ-27	592,960.52	2,546,295.43	831.1	831.3
SI-29P	592,240.40	2,546,666.88	819.9	817.1
PZ-30	592,227.12	2,546,605.60	826.1	826.2
PZ-33	592,559.31	2,545,426.43	836.0	836.1
PZ-34	592,527.95	2,545,300.77	825.5	825.6
PZ-34A	592,522.40	2,545,302.17	825.3	825.5
PZ-35	592,523.92	2,545,221.40	808.7	808.9
PZ-35A	592,527.79	2,545,220.58	809.0	809.1
PZ-36	592,517.47	2,545,204.09	803.5	800.5
PZ-39	591,840.77	2,545,638.39	835.6	835.7
PZ-40	591,821.33	2,545,513.41	825.7	825.8
PZ-41	591,800.67	2,545,427.16	809.6	809.7
PZ-41A	591,803.05	2,545,424.87	809.5	809.6
PZ-44	591,537.09	2,545,975.54	835.6	835.7
PZ-45	591,478.25	2,545,990.45	824.6	824.8
PZ-46	591,420.20	2,546,001.83	810.8	808.2
SI-46P	591,422.85	2,546,003.93	811.2	808.4
PZ-47	591,691.40	2,546,454.06	835.6	835.7
PZ-48P	591,636.19	2,546,471.30	826.1	826.0
PZ-49A	591,577.77	2,546,496.61	811.4	808.5
SI-49	591,576.97	2,546,494.42	811.3	808.5
PZ-51	591,336.60	2,545,543.56	806.7	809.8
PZ-51A	591,329.16	2,545,545.06	809.7	809.8
PZ-55	590,589.87	2,545,693.73	809.9	810.1
PZ-55A	590,581.12	2,545,694.58	810.3	810.3
PZ-56	590,580.44	2,545,673.06	803.2	800.2
PZ-62	590,000.07	2,546,208.94	809.3	809.4
PZ-62A	590,004.50	2,546,211.20	809.5	809.6
PZ-63	589,989.70	2,546,223.76	803.9	801.2
PZ-65	590,472.00	2,546,579.19	809.0	809.1
PZ-65A	590,474.38	2,546,581.37	809.1	809.1
PZ-66	590,462.23	2,546,593.73	802.3	799.8
PZ-67	590,946.92	2,546,949.33	809.5	809.5
PZ-68	590,938.03	2,546,963.83	803.7	800.8
PZ-88A	591,494.07	2,546,236.74	811.2	808.5
SI-87	591,549.15	2,546,217.62	828.0	825.3
SI-88	591,493.79	2,546,234.83	811.0	808.6
PZ-89	593,192.06	2,545,830.78	836.0	836.1
PZ-90	593,043.65	2,545,471.40	838.3	838.4

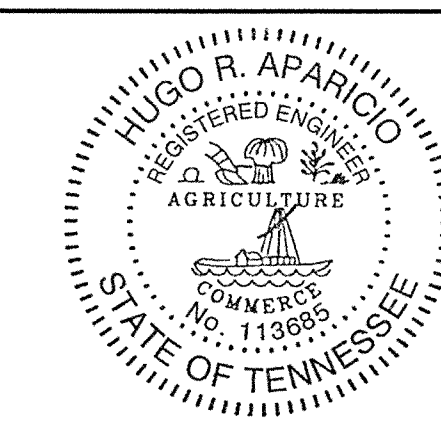
Northing, Easting and Ground Surface Elevations were provided by TVA, Power Systems Operations, Surveying and Project Services.  
 Horizontal Datum: NAD 27 (Tennessee Lambert)  
 Vertical Datum: NGVD29

**NOTES:**  
 1. The topographic mapping presented on this drawing was provided to Stantec by TVA Surveying and Project Services. This plan view was prepared to support development of the geotechnical exploration program and should not be used for construction.  
 2. The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

**LEGEND**  
 PZ-63 Piezometer  
 SI-49 Slope Inclinometer

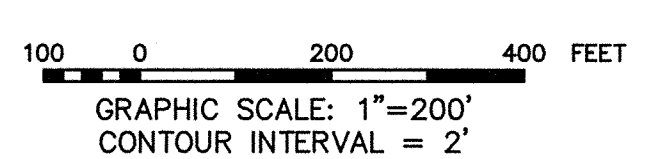
**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002

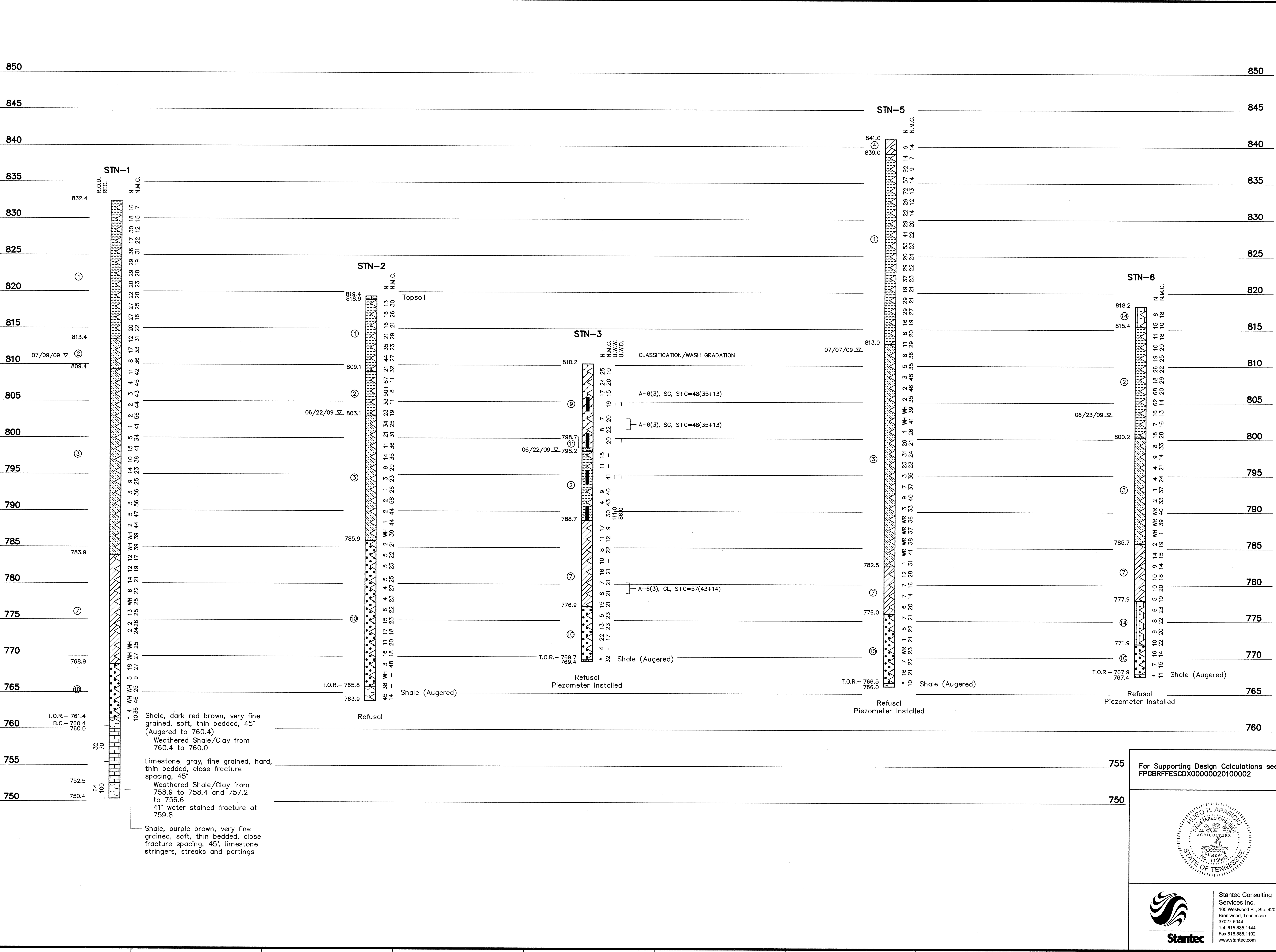


Stantec Consulting Services Inc.  
 100 Westwood Place Suite 420  
 Brentwood, Tennessee 37027  
 Tel. 615.885.1144  
 Fax 615.885.1102  
 www.stantec.com

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
P. KISER	P. SILPACHARN	P. KISER	S. FIELD	P. KISER	P. KISER	T. JOHNSON
<b>BULL RUN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING</b>						
AUTOCAD R 2008	DATE 04/09/10	49	C	10W507-02	R 0	



A  
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D  
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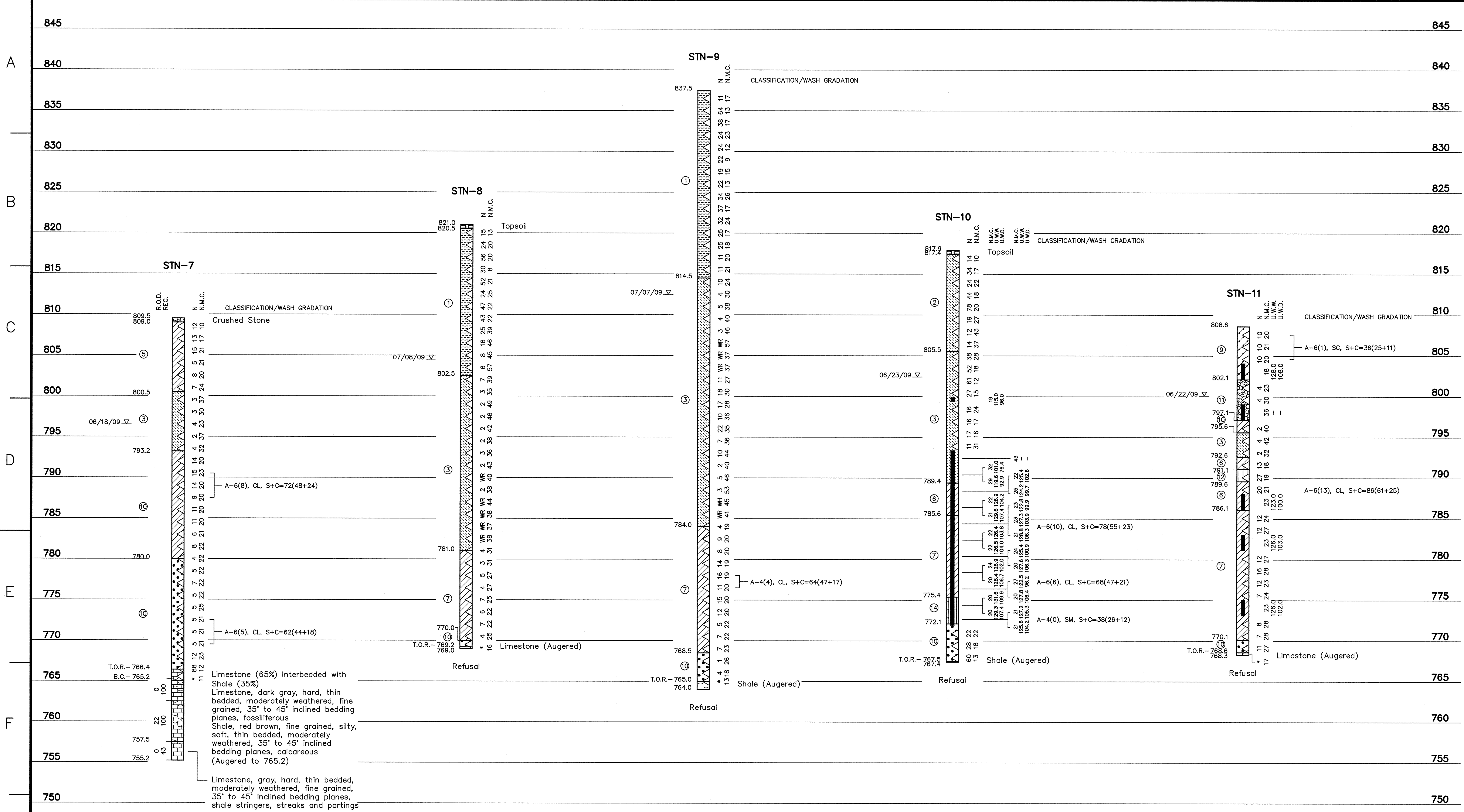


- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Δ Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 T.O.R. Water Level and Date Recorded  
 Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.
- NOTE:**  
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**RECORD DRAWING**

<p>For Supporting Design Calculations see          FPGBRFFESCDX0000020100002</p>		<p>R 0 04/09/10 WRM TJ PVK SF HRA HRA TJ - - -</p>	
<p>RECORD DRAWING</p>		<p>SCALE: 1"=5' EXCEPT AS NOTED</p>	
<p>YARD</p>			
<p>GEOTECHNICAL EXPLORATION          LOGS OF BORING</p>			
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD
REVIEWED BY:	APPROVED BY:	ISSUED BY:	
H. APARICIO	H. APARICIO	T. JOHNSON	
<p>BULL RIVER FOSSIL PLANT          TENNESSEE VALLEY AUTHORITY          FOSSIL AND HYDRO ENGINEERING</p>			
AUTOCAD R 2000	DATE 04/09/10	49 C	10W507-03 R 0





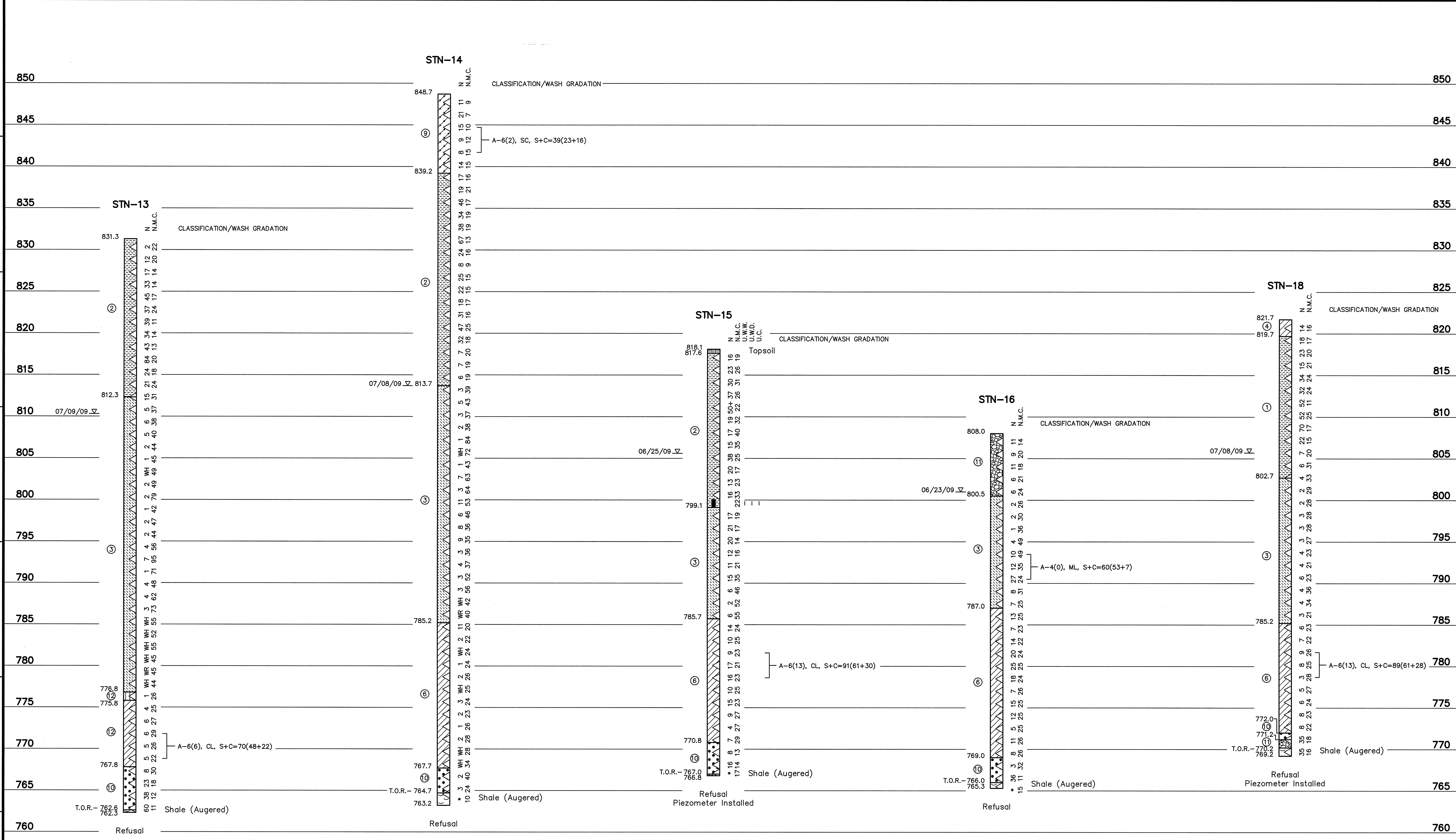
- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
  - WH Weight of Hammer
  - WR Weight of Rods
  - Standard Penetration Test Interval
  - Undisturbed Thin-Walled (Shelby) Tube Sample
  - N.M.C. Natural Moisture Content (%)
  - U.W.W. Unit Weight Wet (lbs./cu.ft.)
  - U.W.D. Unit Weight Dry (lbs./cu.ft.)
  - 03/31/09 T.O.R. Water Level and Date Recorded
  - Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)
  - B.C.- Begin Rock Core
  - R.Q.D. Rock Quality Designation (%)
  - REC. Recovery (%)
  - Refusal Auger Refusal using a carbide-tipped tooth auger bit
  - No Refusal No Refusal Encountered
  - \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

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**RECORD DRAWING**

For Supporting Design Calculations see FPGBRFFESCDX00000020100002		R 0 04/09/10 WRM TJ PVK SF HRA HRA TJ - - -		DISCIPLINE
RECORD DRAWING		RECORD DRAWING		INTERFACE
REV. NO.	DATE	DSGN	DRWN	CHKD
SCALE: 1"=5'		EXCEPT AS NOTED		
YARD				
GEOTECHNICAL EXPLORATION LOGS OF BORING				
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:
W. MATTINGLY	T. JOHNSON	F. KISER	S. FIELD	H. APARICIO
BULL RUN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING				
AUTOCAD R 2000	DATE	49	C	10W507-04
STANTEC		0		PLOT FACTOR: XX
TASK COMPLETED BY:		REV NO.		W_TVA

A  
B  
C  
D  
E  
F  
G  
H



- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
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  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 T.O.R. Water Level and Date Recorded  
 Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
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 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

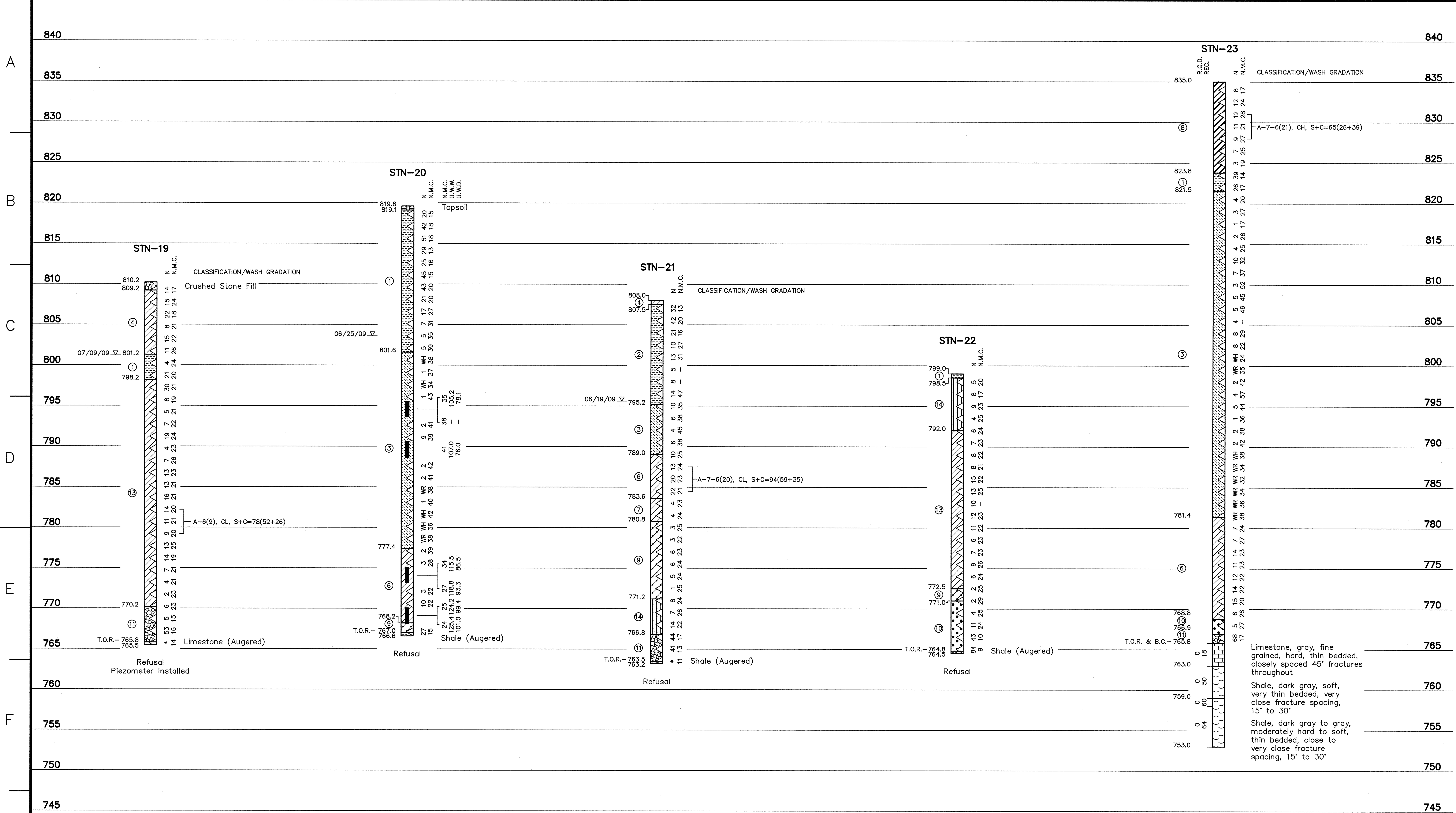
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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002

**Stantec**  
 Stantec Consulting Services Inc.  
 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-5044  
 Tel: 615.885.1144  
 Fax: 615.885.1102  
 www.stantec.com

REV. NO.	DATE	ISSN	DRWN	CHKD	SUPV	RVD	APPD	ISSD	PROJECT	AS CONST	BY
0	04/09/10		WRM	TJ	PVK	SF	HRA	HRA	TJ		
RECORD DRAWING											
SCALE: 1"=5' EXCEPT AS NOTED											
YARD											
GEOTECHNICAL EXPLORATION LOGS OF BORING											
DESIGNED BY:	DRWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:					
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON					
BULL RUN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING											
AUTOCAD R 2000	DATE	49	C	10W507-05		R 0					



- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silts, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 T.O.R. Water Level and Date Recorded  
 T.O.R. Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTE:**  
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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002

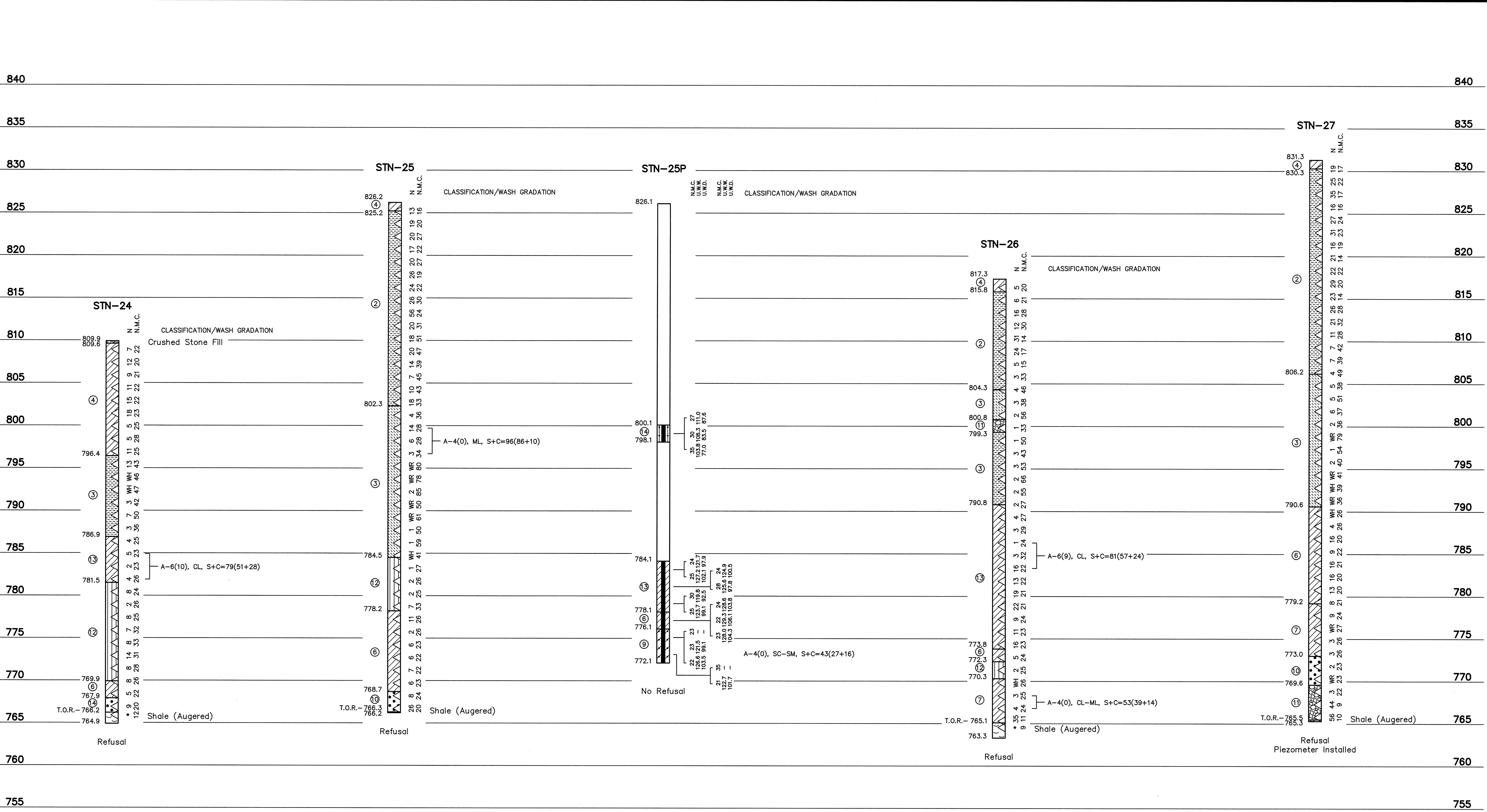
Stantec Consulting Services Inc.  
 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-5044  
 Tel: 615.885.1144  
 Fax: 615.885.1102  
 www.stantec.com

DESIGNED BY:	W. MATTINGLY	DRAWN BY:	T. JOHNSON	CHECKED BY:	P. KISER	SUPERVISED BY:	S. FIELD	REVIEWED BY:	H. APARICIO	APPROVED BY:	H. APARICIO	ISSUED BY:	T. JOHNSON
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**BULL RUN FOSSIL PLANT  
 TENNESSEE VALLEY AUTHORITY  
 FOSSIL AND HYDRO ENGINEERING**

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-06 R 0

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- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Δ Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 Water Level and Date Recorded  
 T.O.R. Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.
- NOTE:**  
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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002

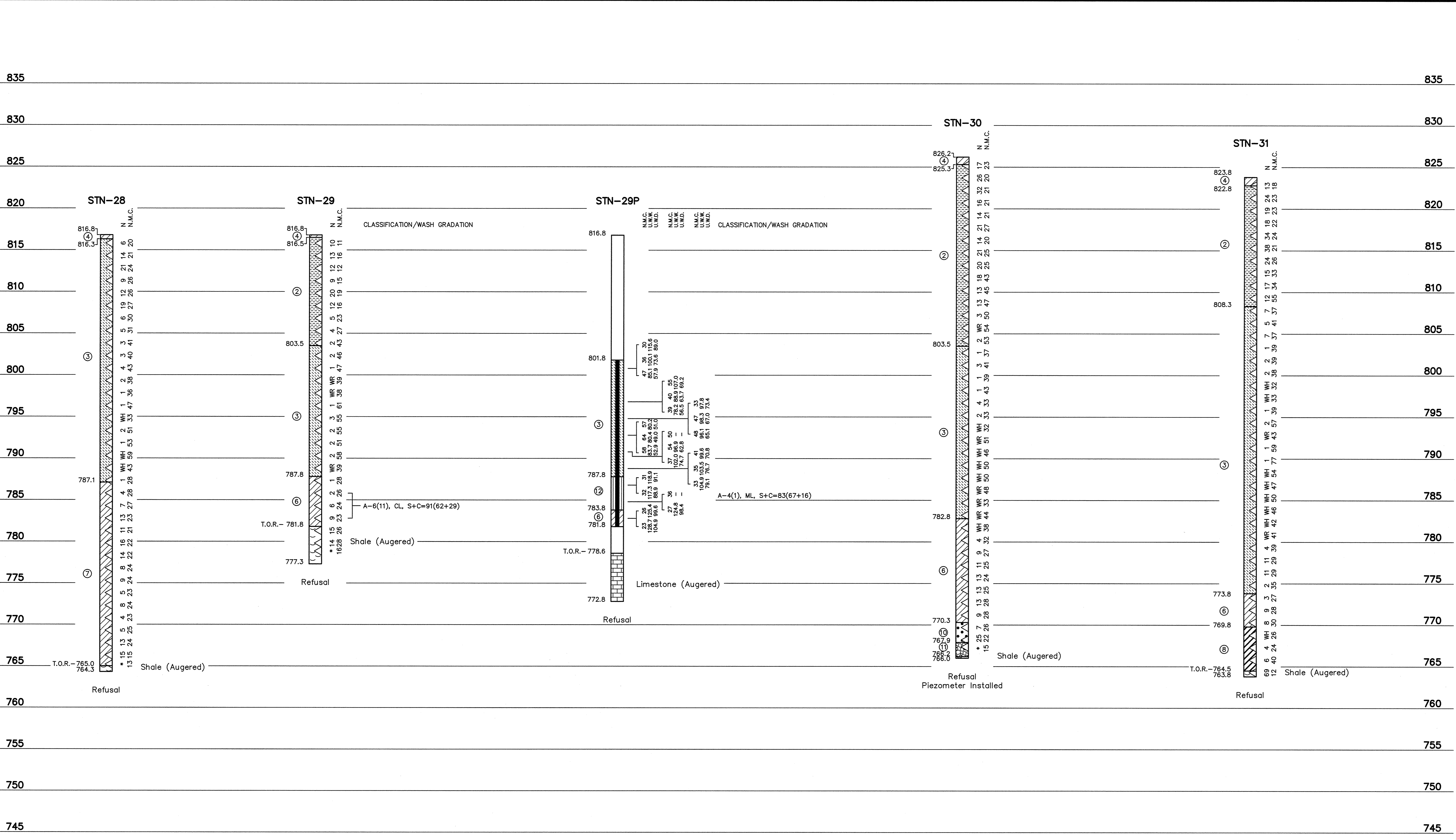
Stantec Consulting Services Inc.  
 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-5044  
 Tel: 615.885.1144  
 Fax: 615.885.1102  
 www.stantec.com

DESIGNED BY:	W. MATTINGLY	DRAWN BY:	T. JOHNSON	CHECKED BY:	F. KISER	SUPERVISED BY:	S. FIELD	REVIEWED BY:	H. APARICIO	APPROVED BY:	H. APARICIO	ISSUED BY:	T. JOHNSON
--------------	--------------	-----------	------------	-------------	----------	----------------	----------	--------------	-------------	--------------	-------------	------------	------------

**BULL RUN FOSSIL PLANT  
 TENNESSEE VALLEY AUTHORITY  
 FOSSIL AND HYDRO ENGINEERING**

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-07 R 0

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- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 Water Level and Date Recorded  
 T.O.R. Top of Rock (indicates the beginning of rock-like resistance to the advancement of the auger. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002

**Stantec**  
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 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-5044  
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REV.	DATE	DSGN	DRWN	CHKD	SUPV	RWND	APPR	ISSD	PROJECT ID	AS CONST	REV
R 0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ			

SCALE: 1"=5' EXCEPT AS NOTED

**YARD**

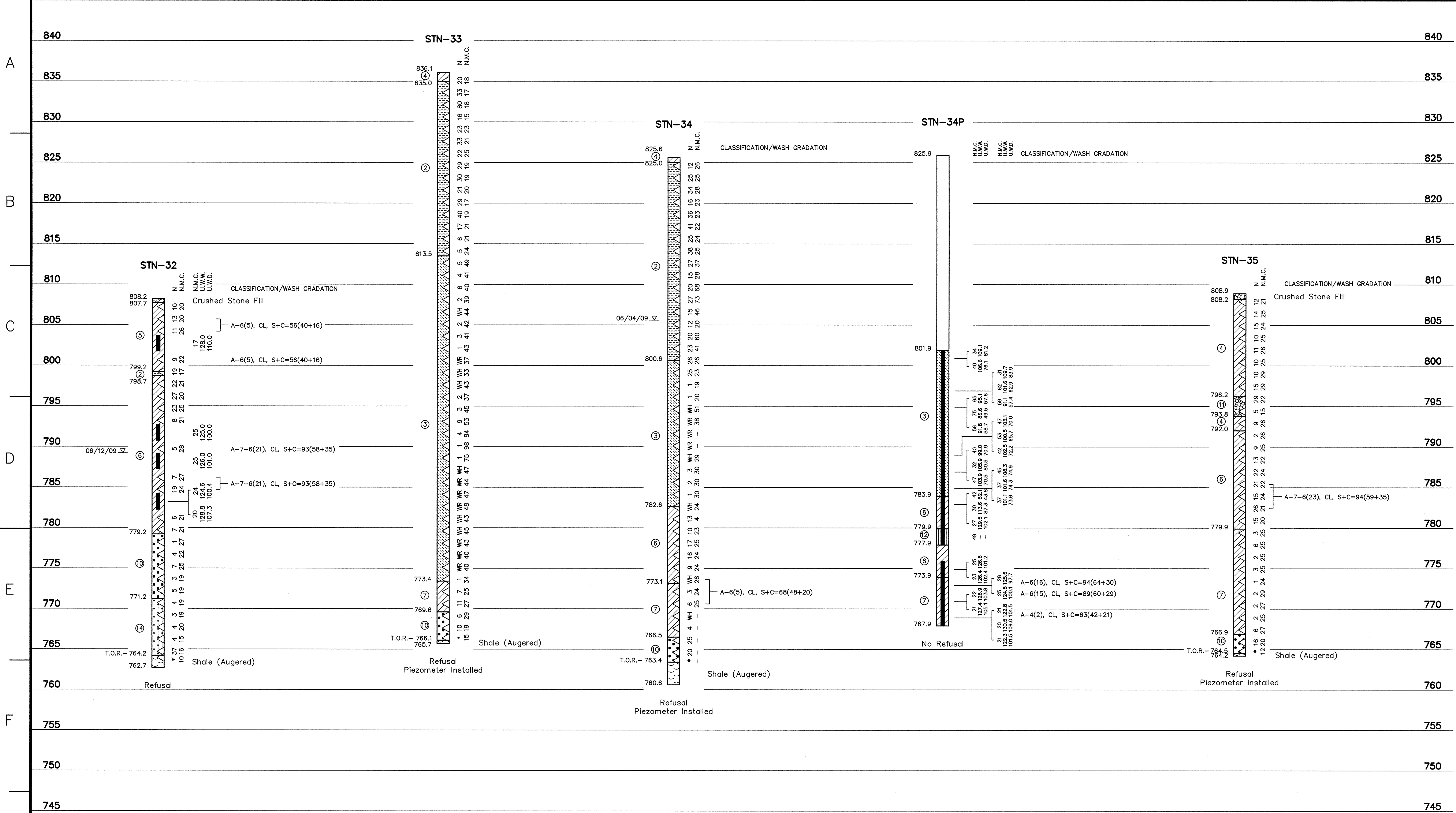
**GEOTECHNICAL EXPLORATION LOGS OF BORING**

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON

**BULL RUN FOSSIL PLANT**  
**TENNESSEE VALLEY AUTHORITY**  
 FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-08 R 0





- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 T.O.R. Water Level and Date Recorded  
 Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. - Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTE:**  
 The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

**RECORD DRAWING**

For Supporting Design Calculations see FPGBRFFESCDX00000020100002		R 0 04/09/10 WRM TJ PVK SF HRA HRA TJ - - -	
RECORD DRAWING		DISCIPLINE INTERFAC	
REV. NO.	DATE	DSGN	DRWN
SCALE: 1"=5'		EXCEPT AS NOTED	
YARD			
GEOTECHNICAL EXPLORATION LOGS OF BORING			
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:
W. MATTINGLY	T. JOHNSON	P. KISER	S. FELD
REVIEWED BY:	APPROVED BY:	ISSUED BY:	
H. APARICIO	H. APARICIO	T. JOHNSON	
BULL RUN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING			
AUTOCAD R 2000	DATE 04/09/10	49	C 10W507-09 R 0

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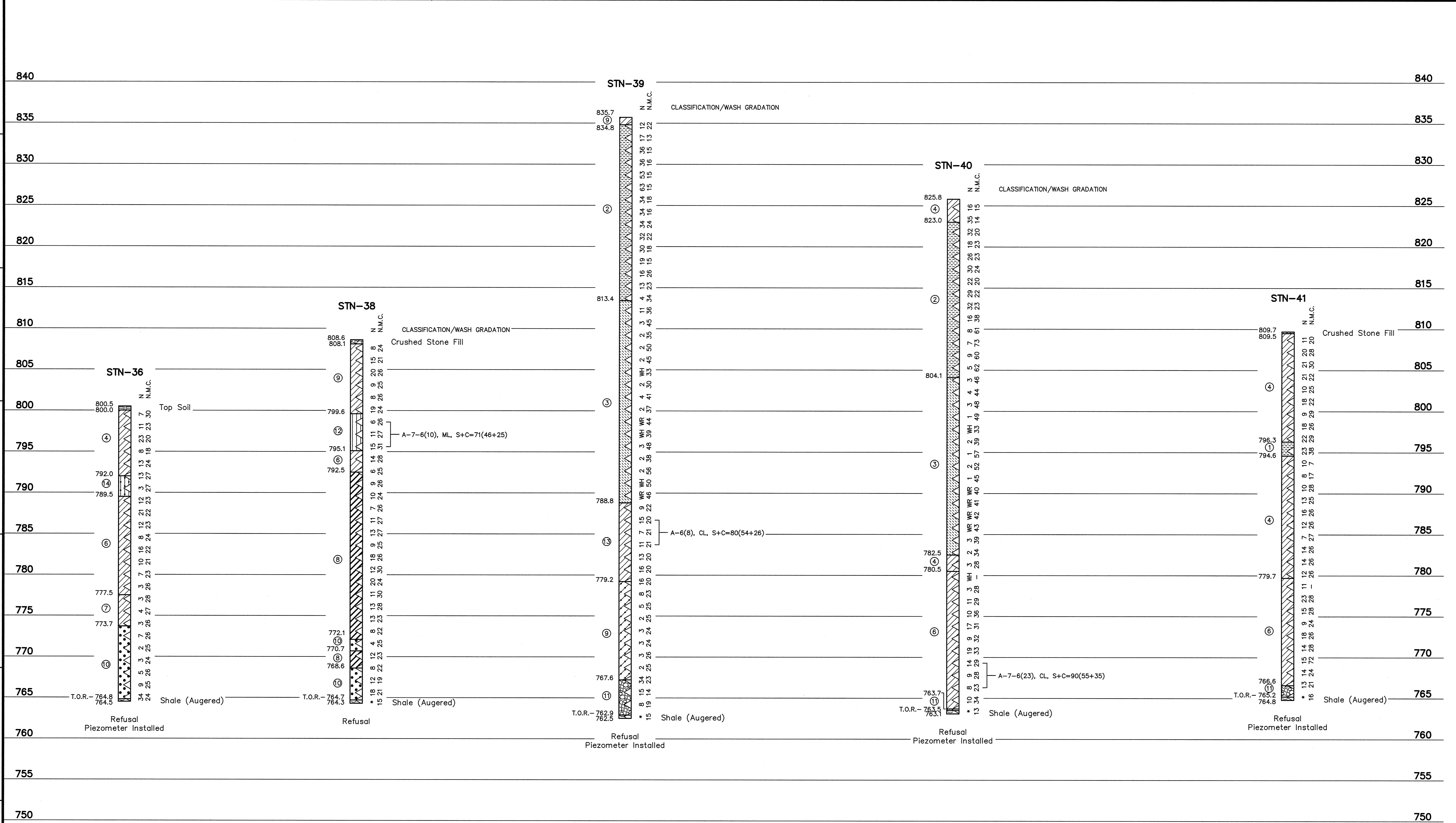
A  
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**LEGEND**

- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
- ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
- ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
- ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
- ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
- ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
- ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
- ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
- ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
- ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
- ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
- ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
- ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
- ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels

WH Weight of Hammer  
 WR Weight of Rods  
 Δ Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 ■ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ■ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 ■ 03/31/09 Water Level and Date Recorded  
 ■ T.O.R. Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 ■ B.C. Begin Rock Core  
 ■ R.Q.D. Rock Quality Designation (%)  
 ■ REC. Recovery (%)  
 ■ Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 ■ No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

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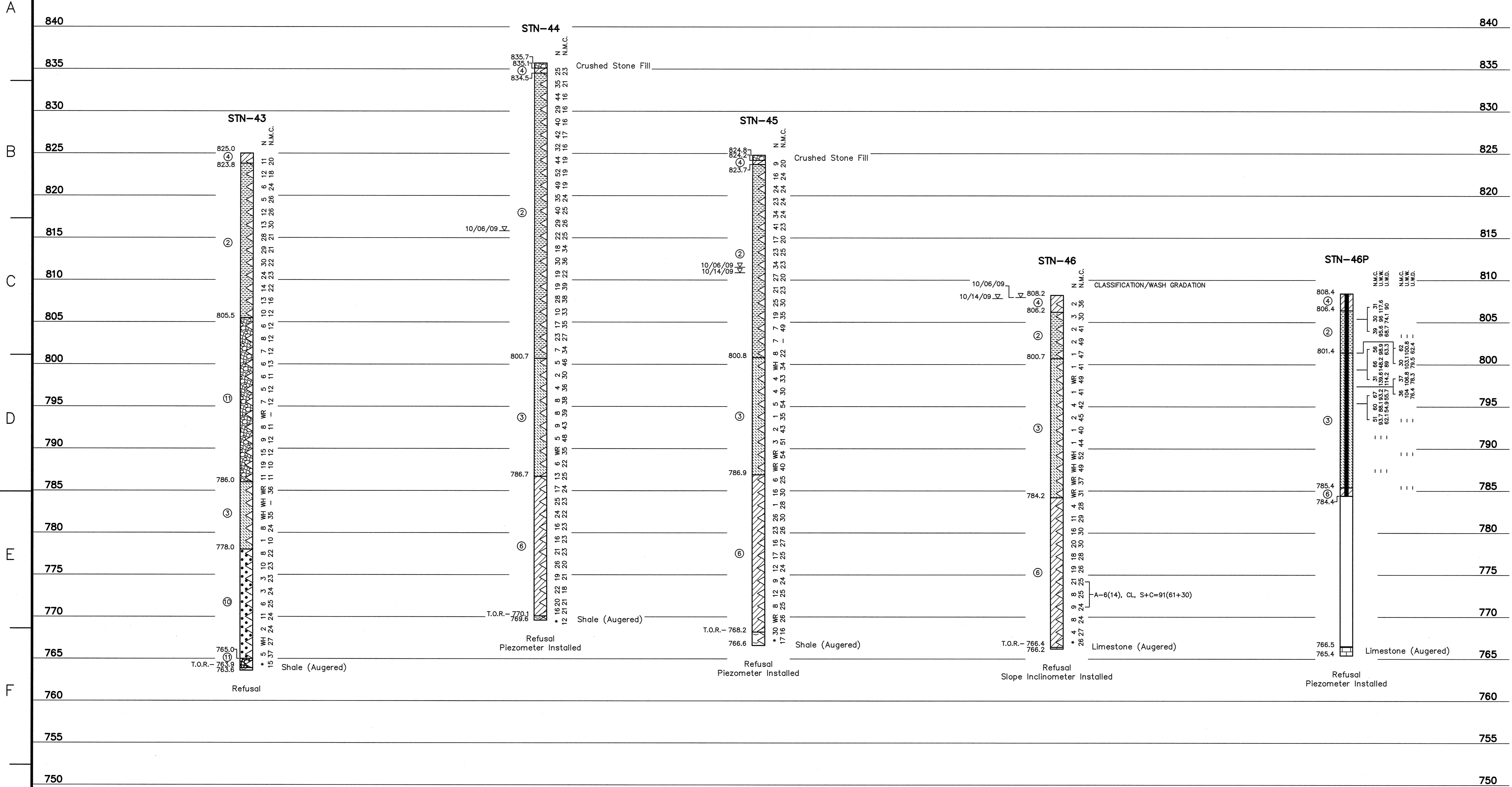


**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002

**Stantec**  
 Stantec Consulting Services Inc.  
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 Brentwood, Tennessee 37027-5044  
 Tel: 615.885.1144  
 Fax: 615.885.1102  
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REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RWMD	APPR	ISSD	PROJECT ID	AS CONST	REV
0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ			
RECORD DRAWING											
SCALE: 1"=5' EXCEPT AS NOTED											
YARD											
GEOTECHNICAL EXPLORATION LOGS OF BORING											
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:					
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON					
BULL RUN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING											
AUTOCAD R 2000	DATE	49	C	10W507-10	R 0						
PLOT FACTOR: XX W_TVA C.A.D. DRAWING DO NOT ALTER MANUALLY											



- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
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  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
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 03/31/09 Water Level and Date Recorded  
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 B.C. Begin Rock Core  
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 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESC00000020100002

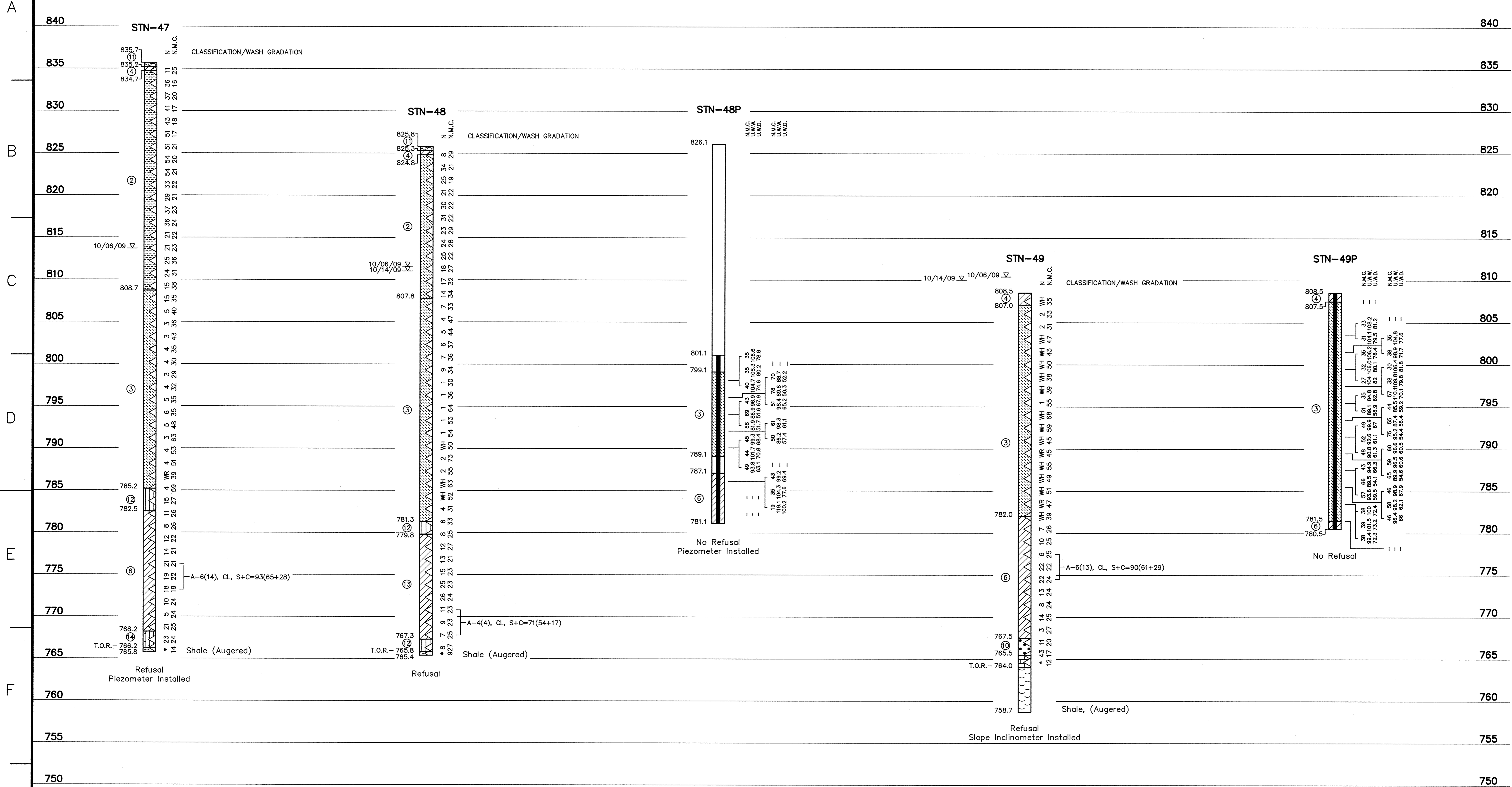
**Stantec Consulting Services Inc.**  
 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee 37027-5044  
 Tel: 615.885.1144  
 Fax: 615.885.1102  
 www.stantec.com

DESIGNED BY: W. MATINGLY	DRAWN BY: T. JOHNSON	CHECKED BY: P. KISER	SUPERVISED BY: S. FELD	REVIEWED BY: H. APARICIO	APPROVED BY: H. APARICIO	ISSUED BY: T. JOHNSON
-----------------------------	-------------------------	-------------------------	---------------------------	-----------------------------	-----------------------------	--------------------------

**BULL RUN FOSSIL PLANT  
 TENNESSEE VALLEY AUTHORITY  
 FOSSIL AND HYDRO ENGINEERING**

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-11 R 0

PLOT DATE: 04/09/2010 USER: BNAI, PJ  
 W:\114\ACTIVE\10178818\ENVIRONMENTAL\DRAWINGS\BPA\GEOTECH\BPA\_GEOLOG\10W507-11-RECORD



- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 △ Weight of Rods  
 Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 Water Level and Date Recorded  
 T.O.R. Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTE:**  
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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCXD00000020100002

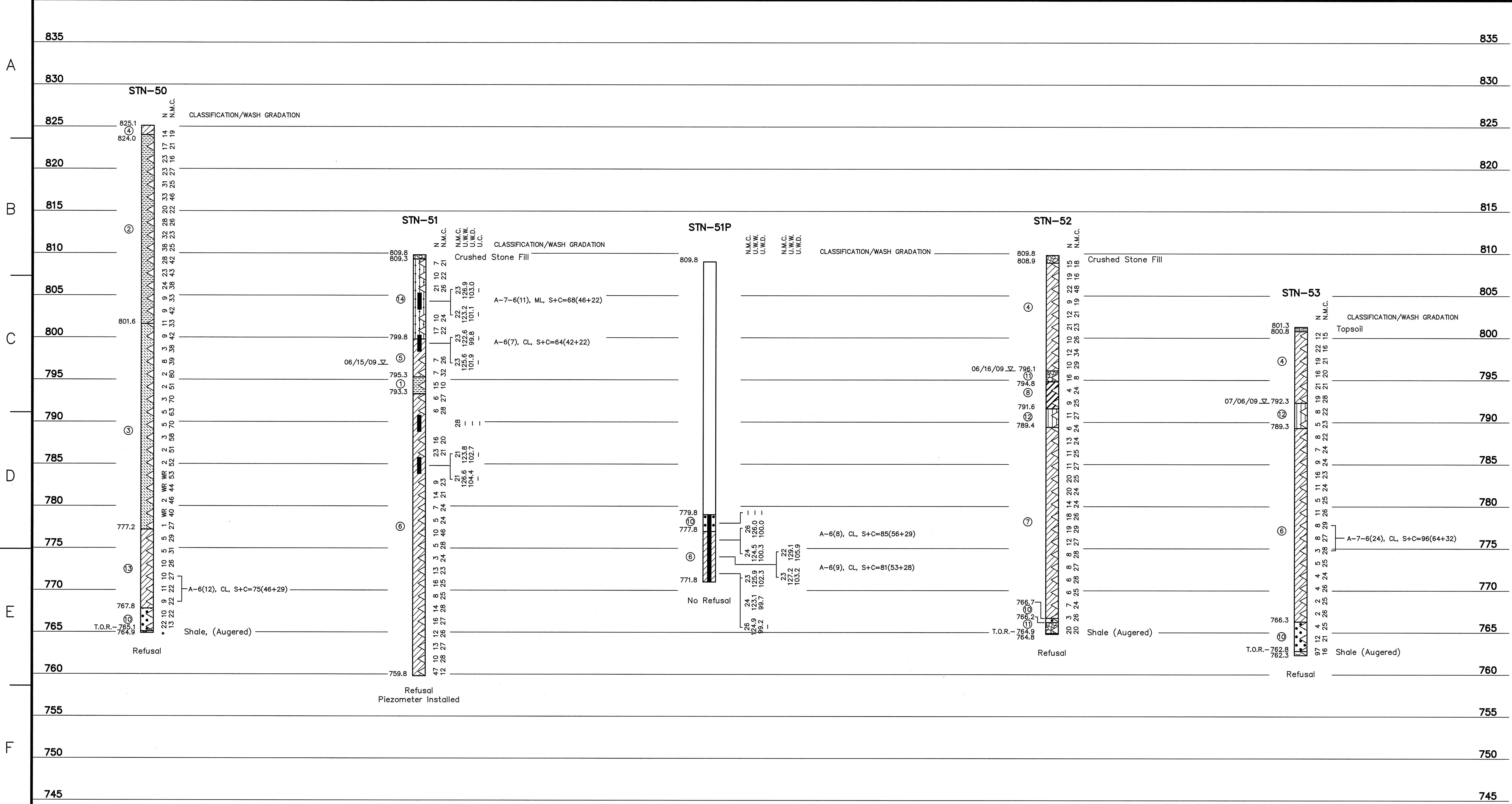
**HUGO R. APARICIO**  
 REGISTERED ENGINEER  
 AGRICULTURE  
 STATE OF TENNESSEE

**Stantec**  
 Stantec Consulting Services Inc.  
 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-0944  
 Tel: 615.885.1144  
 Fax: 615.885.1102  
 www.stantec.com

DESIGNED BY: W. MATTINGLY	DRAWN BY: T. JOHNSON	CHECKED BY: P. KISER	SUPERVISED BY: S. FIELD	REVIEWED BY: H. APARICIO	APPROVED BY: H. APARICIO	ISSUED BY: T. JOHNSON
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**BULL RUN FOSSIL PLANT  
 TENNESSEE VALLEY AUTHORITY  
 FOSSIL AND HYDRO ENGINEERING**

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-12 R 0



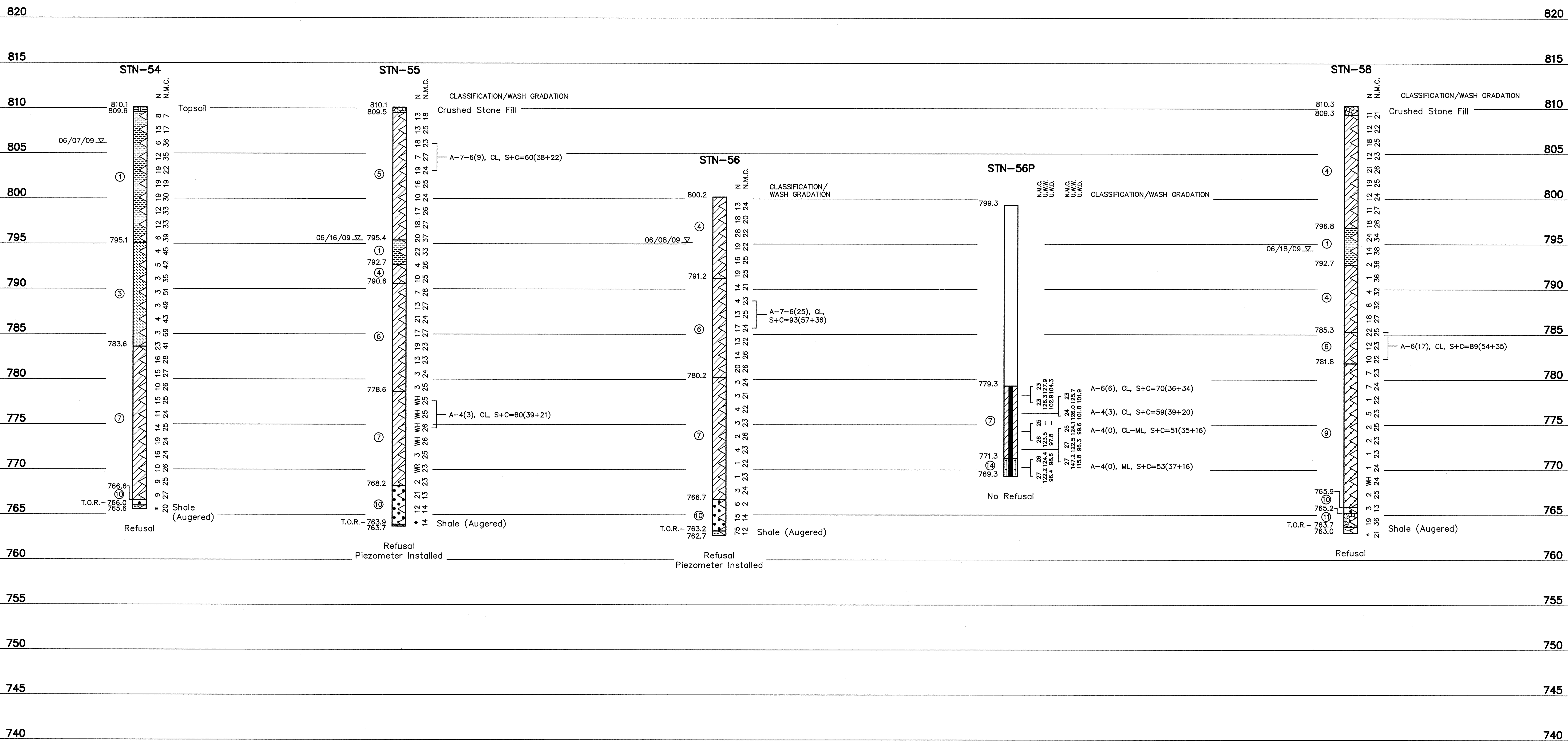
- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 T.O.R. Water Level and Date Recorded  
 Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTE:**  
 The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

**RECORD DRAWING**

For Supporting Design Calculations see FPGBRFFESCDX00000020100002		R 0 04/09/10 WRM TJ PVK SF HRA HRA TJ - - -	
RECORD DRAWING		DISCIPLINE INTERFACE	
REV. NO.	DATE	DSGN	DRWN
SCALE: 1"=5'		EXCEPT AS NOTED	
YARD			
GEOTECHNICAL EXPLORATION LOGS OF BORING			
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD
REVIEWED BY:	APPROVED BY:	ISSUED BY:	
H. APARICIO	H. APARICIO	T. JOHNSON	
Stantec Consulting Services Inc. 100 Westwood Pl., Ste. 420 Brentwood, Tennessee 37027-5044 Tel: 615.885.1144 Fax: 615.885.1102 www.stantec.com			
<b>BULL RUN FOSSIL PLANT</b> <b>TENNESSEE VALLEY AUTHORITY</b> FOSSIL AND HYDRO ENGINEERING			
AUTOCAD R 2000	DATE 04/09/10	49	C 10W507-13 R 0

A  
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D  
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H



- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Δ Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 ■ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ■ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 Water Level and Date Recorded  
 T.O.R. Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.
- NOTE:**  
 The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

**RECORD DRAWING**

For Supporting Design Calculations see FPCBRFFESCDX00000020100002

**Stantec**  
 Stantec Consulting Services Inc.  
 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee 37027-5044  
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 www.stantec.com

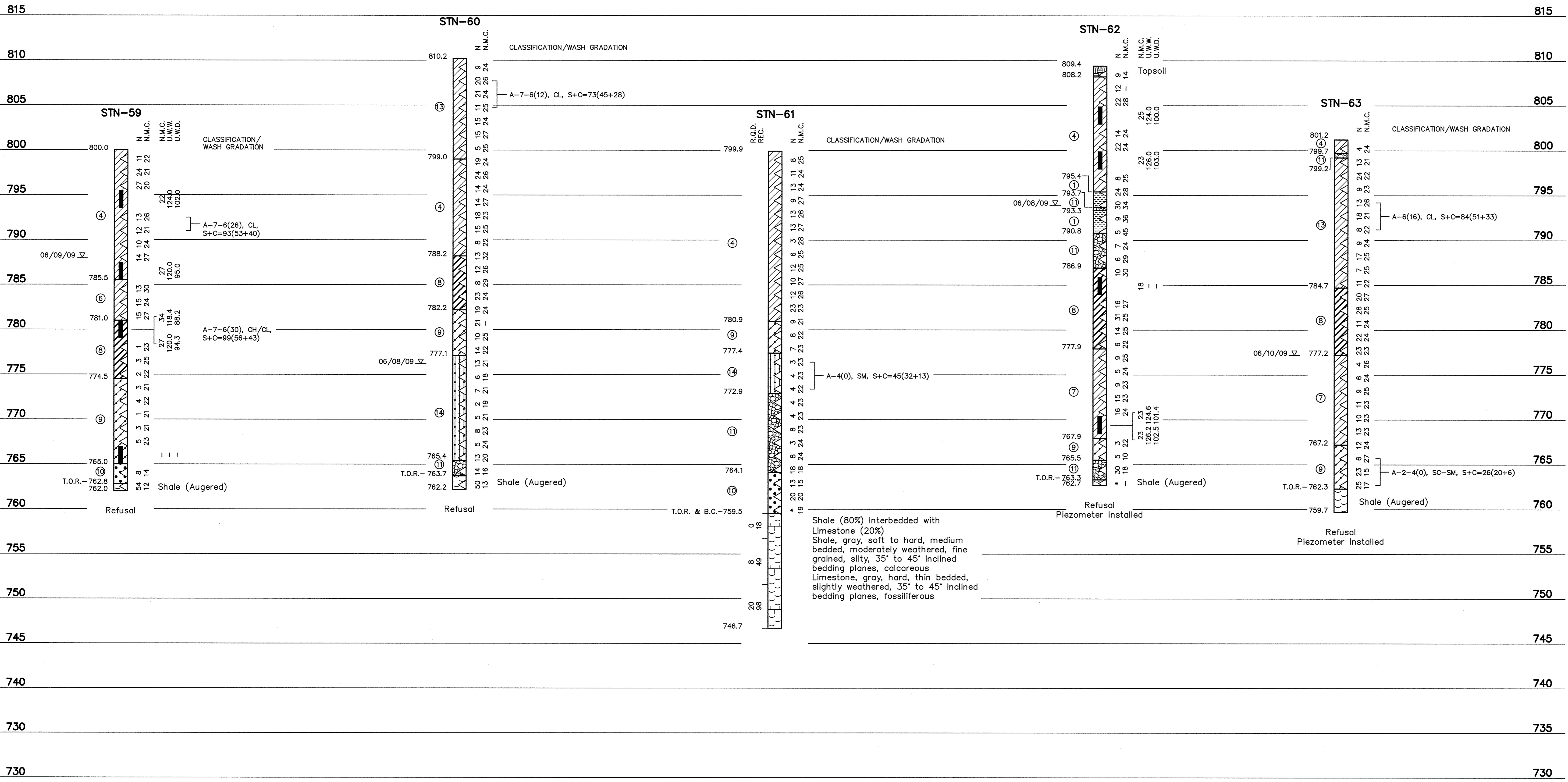
DESIGNED BY: W. MATTINGLY	DRAWN BY: T. JOHNSON	CHECKED BY: P. KISER	SUPERVISED BY: S. FIELD	REVIEWED BY: H. APARICIO	APPROVED BY: H. APARICIO	ISSUED BY: T. JOHNSON
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**BULL RUN FOSSIL PLANT  
 TENNESSEE VALLEY AUTHORITY  
 FOSSIL AND HYDRO ENGINEERING**

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-14 R 0

PLOT DATE: 04/09/2010 USER: BING, P.I. V:\114\ACTIVE\114\B818\ENVIRONMENTAL\DRAWINGS\BPP\GEO\EXPL\BPP\_GEO\_EXPL\_10W507-14-RECORD

A  
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H



- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
  - WH Weight of Hammer
  - WR Weight of Rods
  - Standard Penetration Test Interval
  - Undisturbed Thin-Walled (Shelby) Tube Sample
  - N.M.C. Natural Moisture Content (%)
  - U.W.W. Unit Weight Wet (lbs./cu.ft.)
  - U.W.D. Unit Weight Dry (lbs./cu.ft.)
  - 03/31/09 SW Water Level and Date Recorded
  - T.O.R. Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)
  - B.C. Begin Rock Core
  - R.Q.D. Rock Quality Designation (%)
  - REC. Recovery (%)
  - Refusal Auger Refusal using a carbide-tipped tooth auger bit
  - No Refusal No Refusal Encountered
  - \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTE:**  
The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

**RECORD DRAWING**

For Supporting Design Calculations see  
FPGBRFFESCXD00000020100002

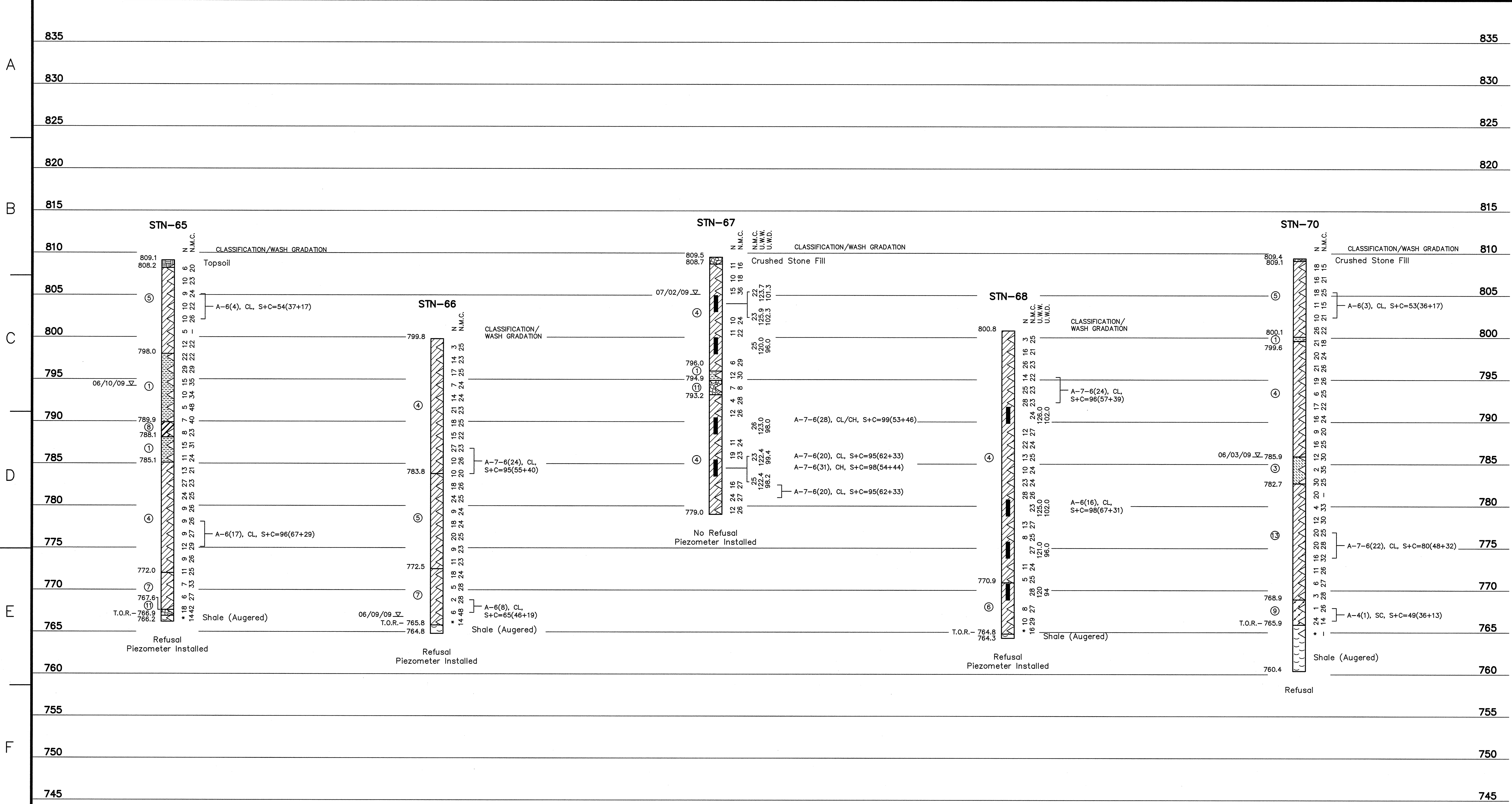
**YARD**  
**GEOTECHNICAL EXPLORATION**  
**LOGS OF BORING**

DESIGNED BY: W. MATTINGLY  
DRAWN BY: T. JOHNSON  
CHECKED BY: P. KISER  
SUPERVISED BY: S. FIELD  
REVIEWED BY: H. APARICIO  
APPROVED BY: H. APARICIO  
ISSUED BY: T. JOHNSON

**BULL RUN FOSSIL PLANT**  
**TENNESSEE VALLEY AUTHORITY**  
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-15 R 0

PLOT DATE: 04/09/2010 USER: BONE, P.I. V:\174\ACTIVE\1748818\ENVIRONMENTAL\DRAWINGS\BULL RUN\GEOTECH\WELL\_LOGS\10W507-15-RECORD



**LEGEND**

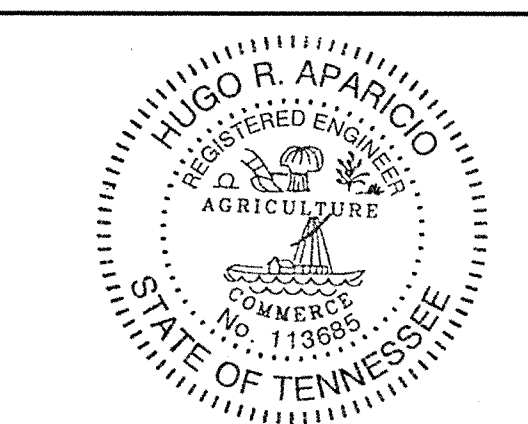
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
- ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
- ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
- ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
- ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
- ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
- ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
- ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
- ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
- ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
- ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
- ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
- ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
- ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels


WH Weight of Hammer  
 WR Weight of Rods  
 Δ Standard Penetration Test Interval  
 ▽ Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 □ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ▤ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 ▾ Water Level and Date Recorded  
 T.O.R. - Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. - Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTE:**  
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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002



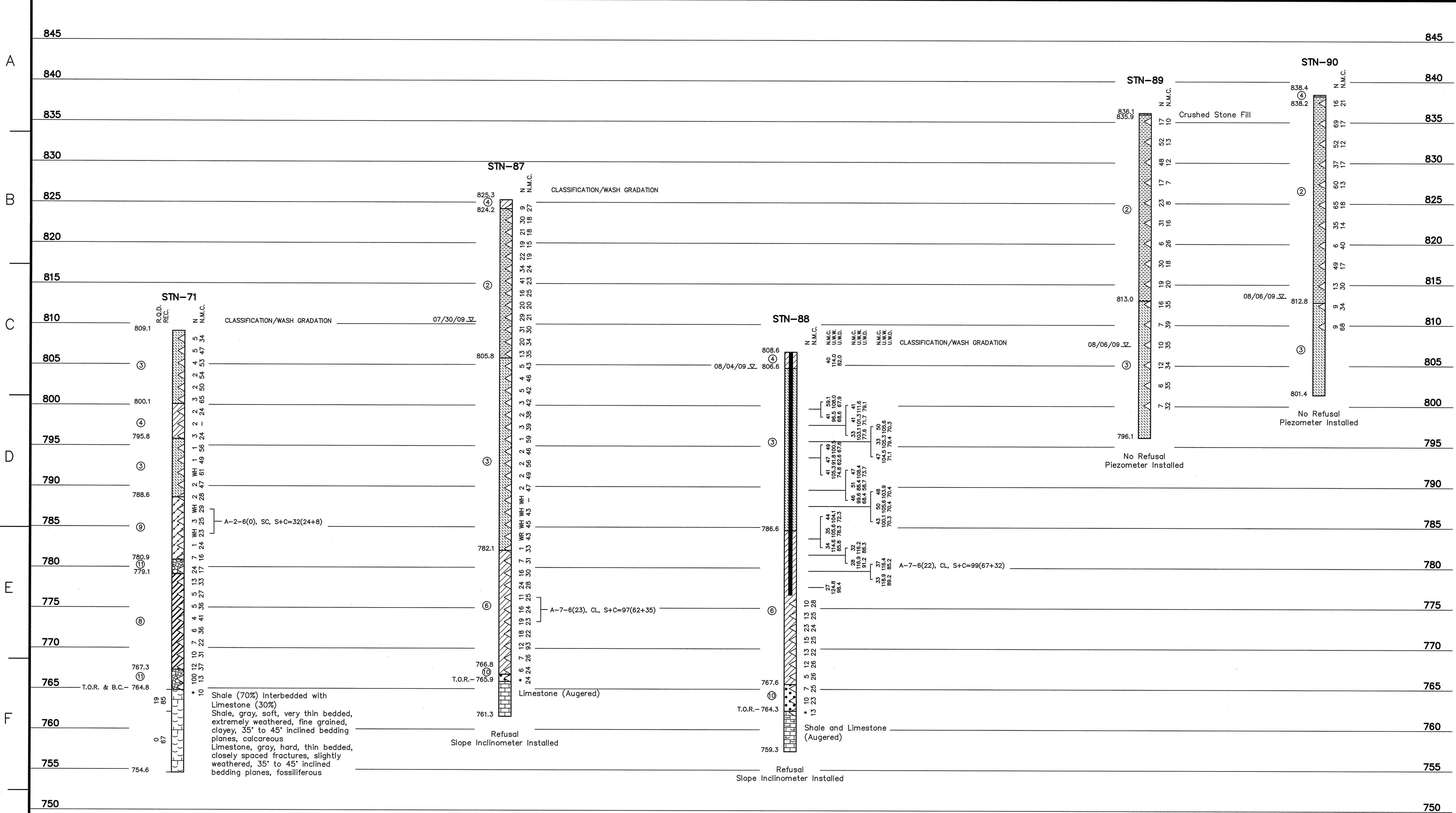

 Stantec Consulting Services Inc.  
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 Fax: 615.885.1102  
 www.stantec.com

DESIGNED BY:	W. MATTINGLY	DRAWN BY:	T. JOHNSON	CHECKED BY:	F. KISER	SUPERVISED BY:	S. FIELD	REVIEWED BY:	H. APARICIO	APPROVED BY:	H. APARICIO	ISSUED BY:	T. JOHNSON
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**BULL RUN FOSSIL PLANT**  
**TENNESSEE VALLEY AUTHORITY**  
 FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000    DATE: 04/09/10    49    C    10W507-16    R 0





- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 T.O.R. Water Level and Date Recorded  
 T.O.R. Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.
- NOTE:**  
 The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCXD00000020100002

DESIGNED BY: W. MATTINGLY  
 DRAWN BY: T. JOHNSON  
 CHECKED BY: P. KISER  
 SUPERVISED BY: S. FIELD  
 REVIEWED BY: H. APARICIO  
 APPROVED BY: H. APARICIO  
 ISSUED BY: T. JOHNSON

**STANTEC CONSULTING SERVICES INC.**  
 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-5044  
 Tel: 615.885.1144  
 Fax: 615.885.1102  
 www.stantec.com

**YUGO R. APARICIO**  
 REGISTERED ENGINEER  
 AGRICULTURE  
 No. 113960  
 STATE OF TENNESSEE

SCALE: 1"=5'  
 EXCEPT AS NOTED

**GEOTECHNICAL EXPLORATION  
 LOGS OF BORING**

**BULL RUN FOSSIL PLANT  
 TENNESSEE VALLEY AUTHORITY  
 FOSSIL AND HYDRO ENGINEERING**

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-17 R 0

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LEGEND

- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
- ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
- ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
- ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
- ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
- ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
- ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
- ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
- ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
- ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
- ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
- ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
- ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
- ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer
- WR Weight of Rods
- Standard Penetration Test Interval
- Undisturbed Thin-Walled (Shelby) Tube Sample
- N.M.C. Natural Moisture Content (%)
- U.W.W. Unit Weight Wet (lbs./cu.ft.)
- U.W.D. Unit Weight Dry (lbs./cu.ft.)
- 03/31/09.W Water Level and Date Recorded
- T.O.R.— Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)
- B.C.— Begin Rock Core
- R.Q.D. Rock Quality Designation (%)
- REC. Recovery (%)
- Refusal Auger Refusal using a carbide-tipped tooth auger bit
- No Refusal No Refusal Encountered
- \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

NOTES

1. The Tennessee Valley Authority Surveying and Project services performed an aerial survey of the Bull Run Fossil Plant in April 2009, a land survey in September 2009, a hydrographic survey of the Fly Ash Disposal Area 2 in February 2006 and a hydrographic survey of the Clinch River in September 2009.
2. See Geotechnical Report for references of drawings used in development of cross sections.
3. The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

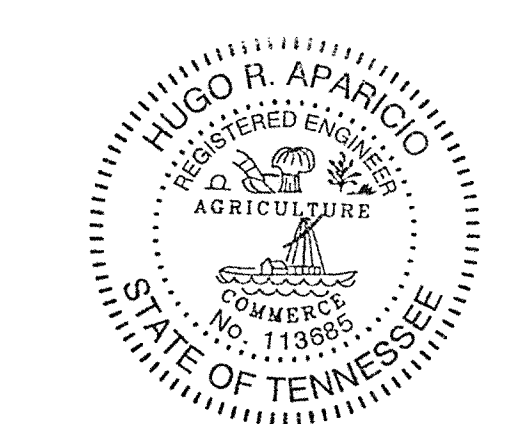
PLOT DATE: 04/09/2010 USER: BOND, FJ V:\1714\ACTIVE\17146818\ENVIRONMENTAL\DRAWINGS\BUREAU\VEGETATION\RECORD\10W507-18-RDING

RECORD DRAWING

GEOLOGIC CROSS SECTION I-I' (CONT'D)

SCALE: 1"=5'

For Supporting Design Calculations see FPGBRFFESCDX00000020100002



Stantec Consulting Services Inc. 100 Westwood Pl., Ste. 420 Brentwood, Tennessee 37027-5044 Tel: 615.885.1144 Fax: 615.885.1102 www.stantec.com

R.O.	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ	-	-	-	-	-	-	-	-	-	-	-	-
REV	NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVMD	APPD	ISSD	PROJECT	AS CONST	REV	NO.	DATE	DESCRIPTION	BY	CHKD	ISSD	DATE	DESCRIPTION
SCALE: 1"=5'											EXCEPT AS NOTED									

YARD  
GEOTECHNICAL EXPLORATION  
GEOLOGIC CROSS SECTION I-I'

DESIGNED BY	W. MATTINGLY	DRAWN BY	T. JOHNSON	CHECKED BY	P. KISER	SUPERVISED BY	S. FIELD	REVIEWED BY	H. APARICIO	APPROVED BY	H. APARICIO	ISSUED BY	T. JOHNSON
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BULL RUN FOSSIL PLANT  
TENNESSEE VALLEY AUTHORITY  
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000	DATE	04/09/10	49	C	10W507-18	R 0
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STANTEC 0  
TASK COMPLETED BY: REV NO.

PLOT FACTOR: XX  
W\_TVA  
C.A.D. DRAWING  
DO NOT ALTER MANUALLY

425

450

475

500

525

550

575

1

2

3

4

5

6

7

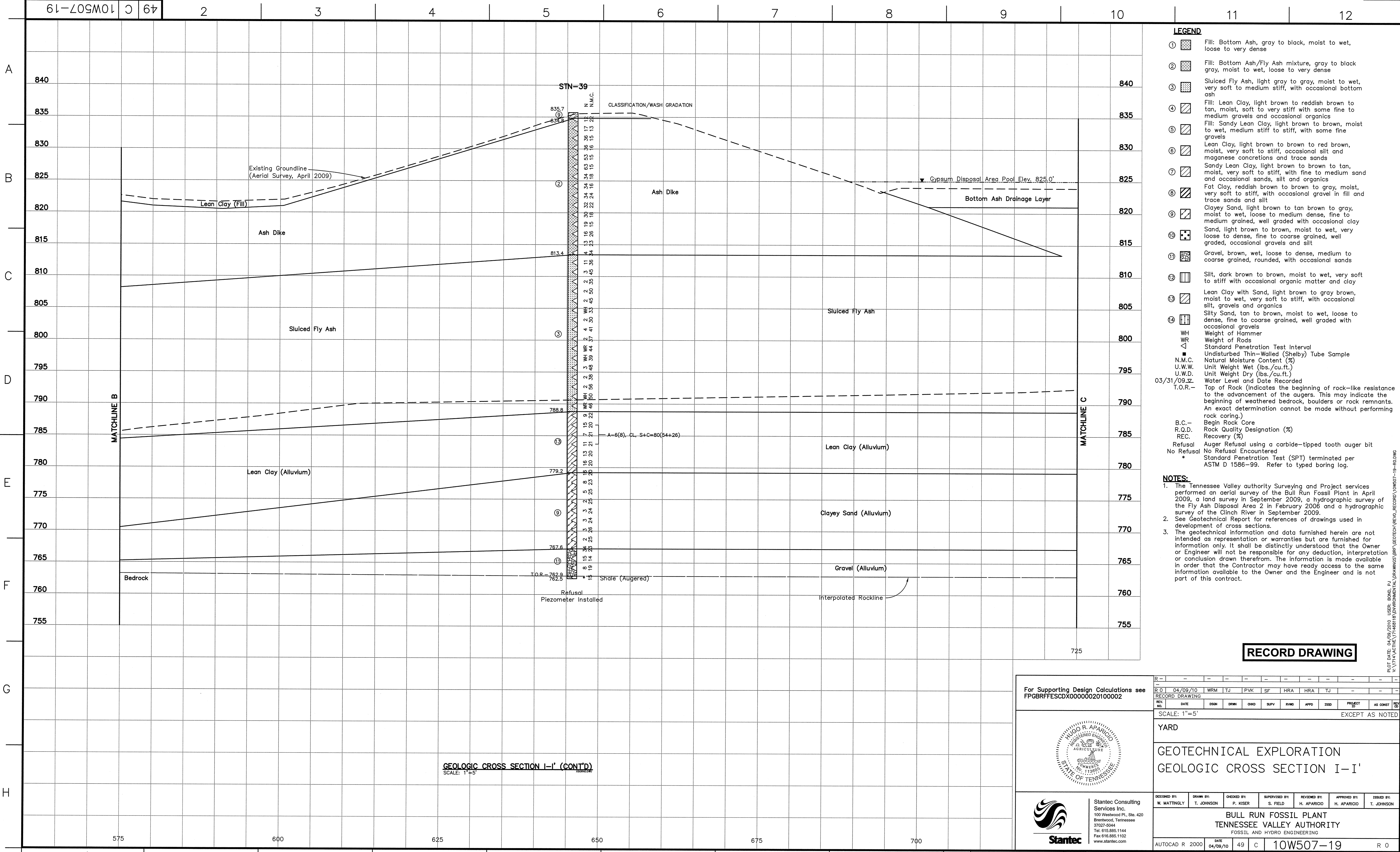
8

9

10

11

12



- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 ∇ Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 Water Level and Date Recorded  
 T.O.R. Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

- NOTES:**
- The Tennessee Valley Authority Surveying and Project services performed an aerial survey of the Bull Run Fossil Plant in April 2009, a land survey in September 2009, a hydrographic survey of the Fly Ash Disposal Area 2 in February 2006 and a hydrographic survey of the Clinch River in September 2009.
  - See Geotechnical Report for references of drawings used in development of cross sections.
  - The geotechnical information and data furnished herein are not intended as representation or warranties but are furnished for information only. It shall be distinctly understood that the Owner or Engineer will not be responsible for any deduction, interpretation or conclusion drawn therefrom. The information is made available in order that the Contractor may have ready access to the same information available to the Owner and the Engineer and is not part of this contract.

**RECORD DRAWING**

For Supporting Design Calculations see  
FPGBRFFESC00000020100002

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 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-5044  
 Tel. 615.885.1144  
 Fax 615.885.1102  
 www.stantec.com

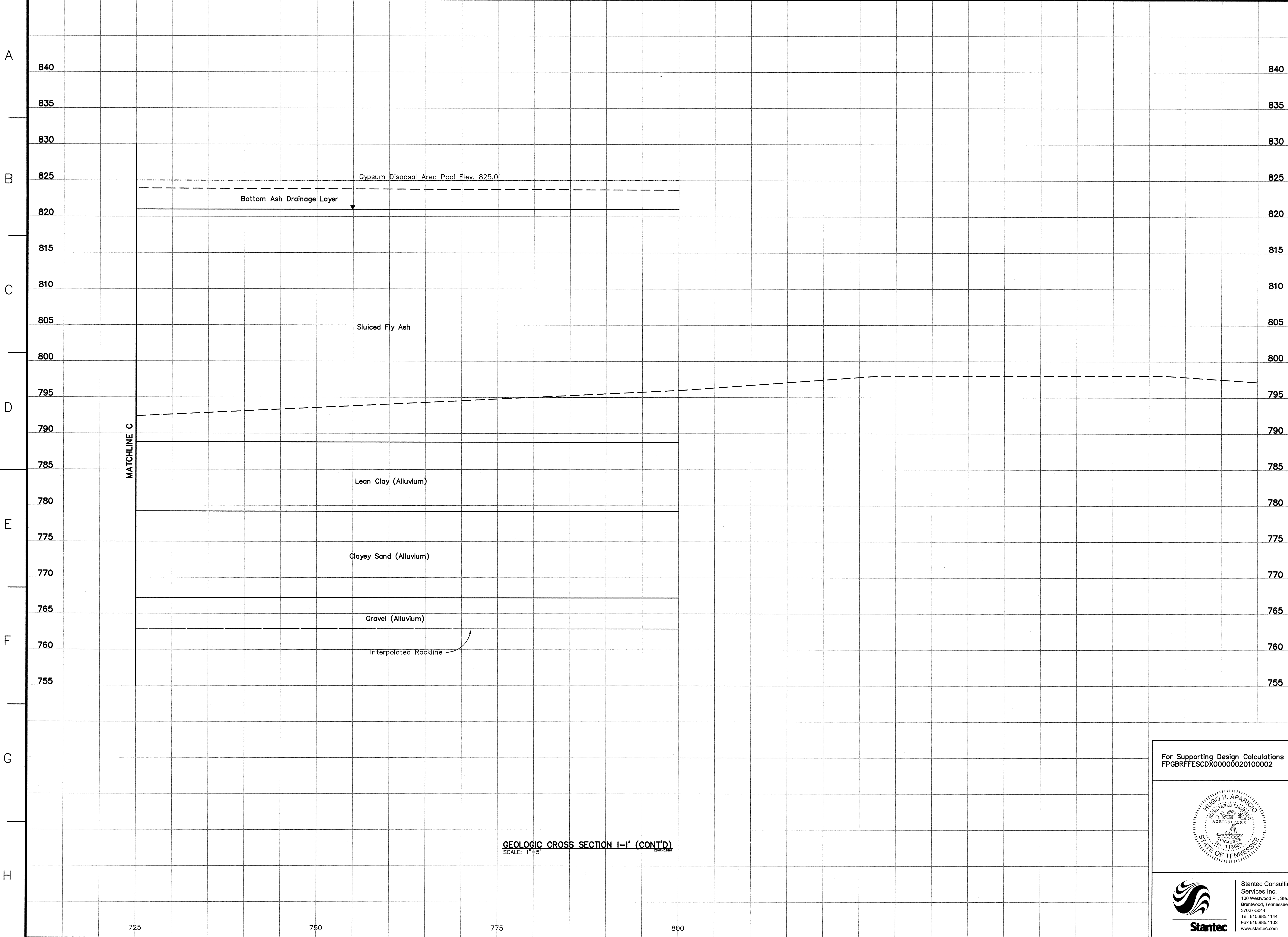
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON

**BULL RUN FOSSIL PLANT  
TENNESSEE VALLEY AUTHORITY  
FOSSIL AND HYDRO ENGINEERING**

AUTOCAD R 2000    DATE: 04/09/10    49    C    10W507-19    R 0  
 PLOT FACTOR: XX  
 W,TVA    C.A.D. DRAWING  
 DO NOT ALTER MANUALLY

**GEOLOGIC CROSS SECTION I-I' (CONT'D)**  
SCALE: 1"=5'

PLOT DATE: 04/09/2010 USER: BOND, P.J. V:\V174\ACTIVE\1748819\ENVIRONMENTAL\DRAWINGS\BPI\GEOTECH\NEW\RECORD\10W507-19-RD.WG



**LEGEND**

①	Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
②	Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
③	Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
④	Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
⑤	Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
⑥	Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
⑦	Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
⑧	Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
⑨	Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
⑩	Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
⑪	Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
⑫	Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
⑬	Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
⑭	Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels

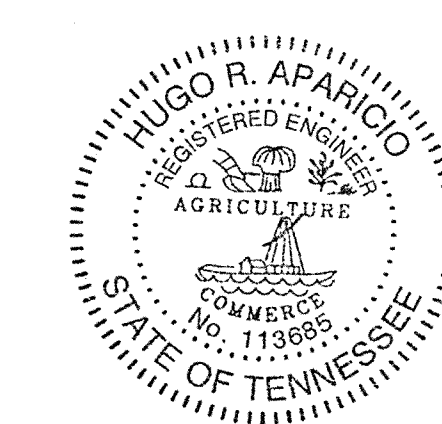
WH Weight of Hammer  
 WR Weight of Rods  
 ◁ Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 ■ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ■ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 Water Level and Date Recorded  
 T.O.R. Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C.- Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTES:**

- The Tennessee Valley Authority Surveying and Project services performed an aerial survey of the Bull Run Fossil Plant in April 2009, a land survey in September 2009, a hydrographic survey of the Fly Ash Disposal Area 2 in February 2006 and a hydrographic survey of the Clinch River in September 2009.
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**RECORD DRAWING**

For Supporting Design Calculations see  
FPCBRFFESCXD00000020100002



Stantec Consulting Services Inc.  
100 Westwood Pl., Ste. 420  
Brentwood, Tennessee  
37027-5044  
Tel: 615.885.1144  
Fax: 615.885.1102  
www.stantec.com

R	0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ	-	-	-	-	-	-	-	-	-	-
REV	NO.	DATE	DSGN	DRWN	CHKD	SUPV	RWMD	APPR	ISSD	PROJECT ID	AS CONST	REV	NO.	DATE	DESCRIPTION	BY	CHKD	DATE	DESCRIPTION

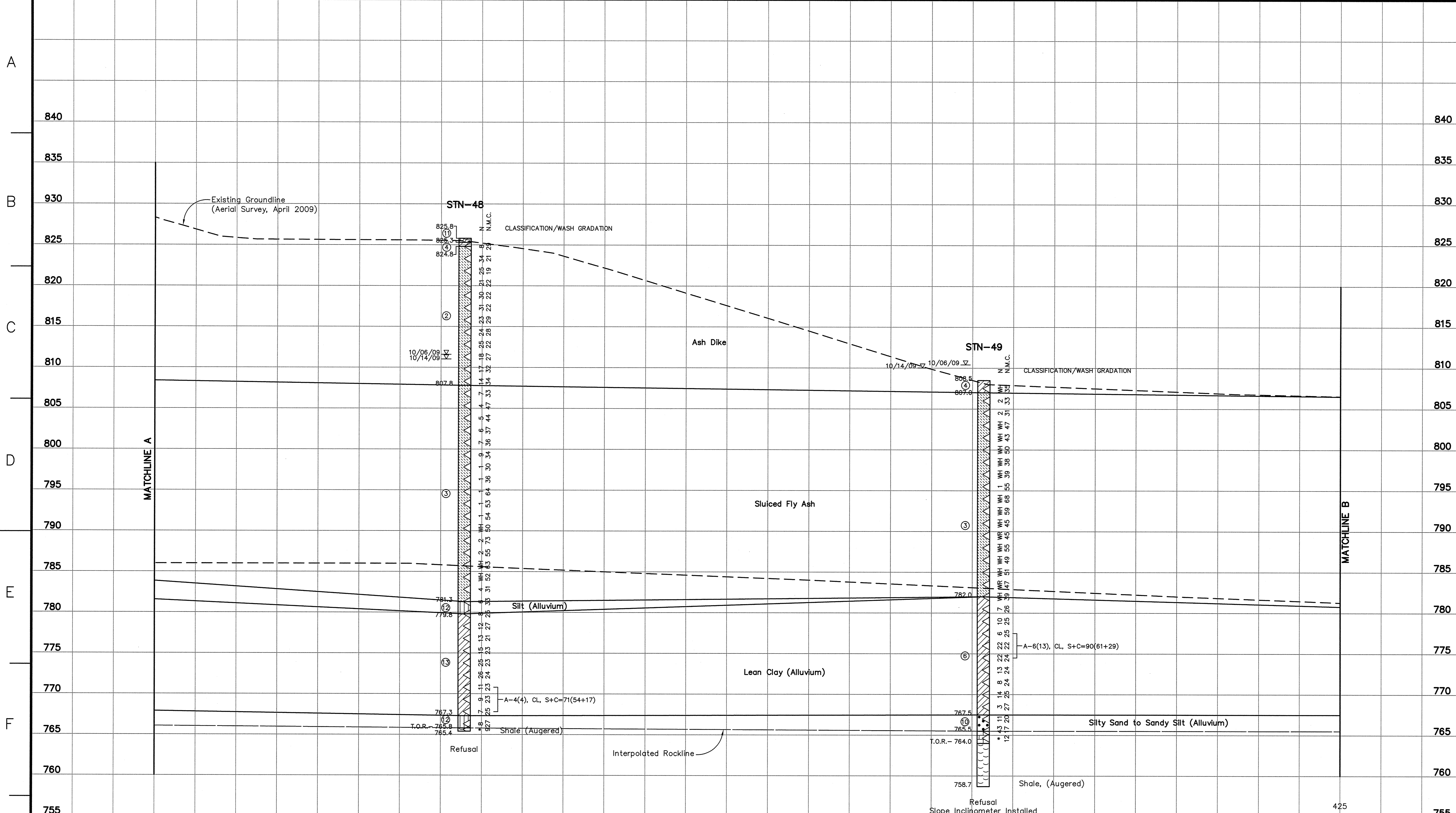
SCALE: 1"=5' EXCEPT AS NOTED

YARD  
 GEOTECHNICAL EXPLORATION  
 GEOLOGIC CROSS SECTION I-I'

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
W. MATTINGLY	T. JOHNSON	F. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON

**BULL RUN FOSSIL PLANT**  
**TENNESSEE VALLEY AUTHORITY**  
 FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-20 R 0



**LEGEND**

- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
- ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
- ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
- ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
- ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
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- ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
- ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
- ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
- ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
- ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
- ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
- ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
- ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels

WH Weight of Hammer  
 WR Weight of Rods  
 Δ Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 T.O.R. Water Level and Date Recorded  
 Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C.- Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

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**GEOLOGIC CROSS SECTION K-K' (CONT'D)**  
SCALE: 1"=5'

**RECORD DRAWING**

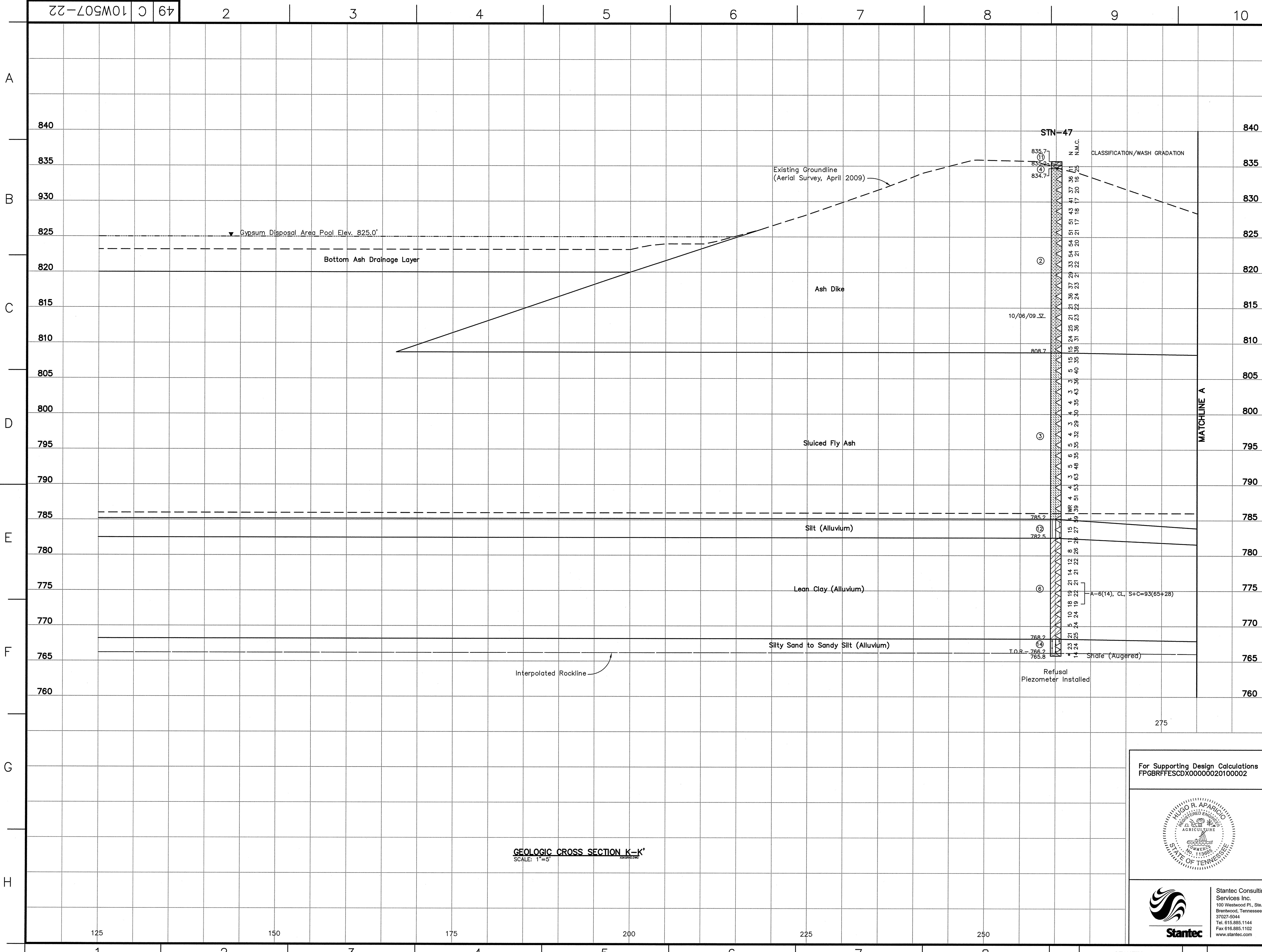
For Supporting Design Calculations see FPGBRFFESCDX00000020100002

**Stantec**  
Stantec Consulting Services Inc.  
100 Westwood PL, Ste. 420  
Brentwood, Tennessee 37027-0044  
Tel: 615.885.1144  
Fax: 615.885.1102  
www.stantec.com

DESIGNED BY: W. MATTINGLY	DRAWN BY: T. JOHNSON	CHECKED BY: P. KISER	SUPERVISED BY: S. FIELD	REVIEWED BY: H. APARICIO	APPROVED BY: H. APARICIO	ISSUED BY: T. JOHNSON
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**BULL RUN FOSSIL PLANT  
TENNESSEE VALLEY AUTHORITY  
FOSSIL AND HYDRO ENGINEERING**

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-21 R 0



**LEGEND**

- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
- ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
- ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
- ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
- ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
- ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
- ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
- ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
- ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
- ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
- ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
- ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
- ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
- ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels

WH Weight of Hammer  
 WR Weight of Rods  
 Δ Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 ∇ Water Level and Date Recorded  
 T.O.R. ∇ Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C.- Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTES:**

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**RECORD DRAWING**

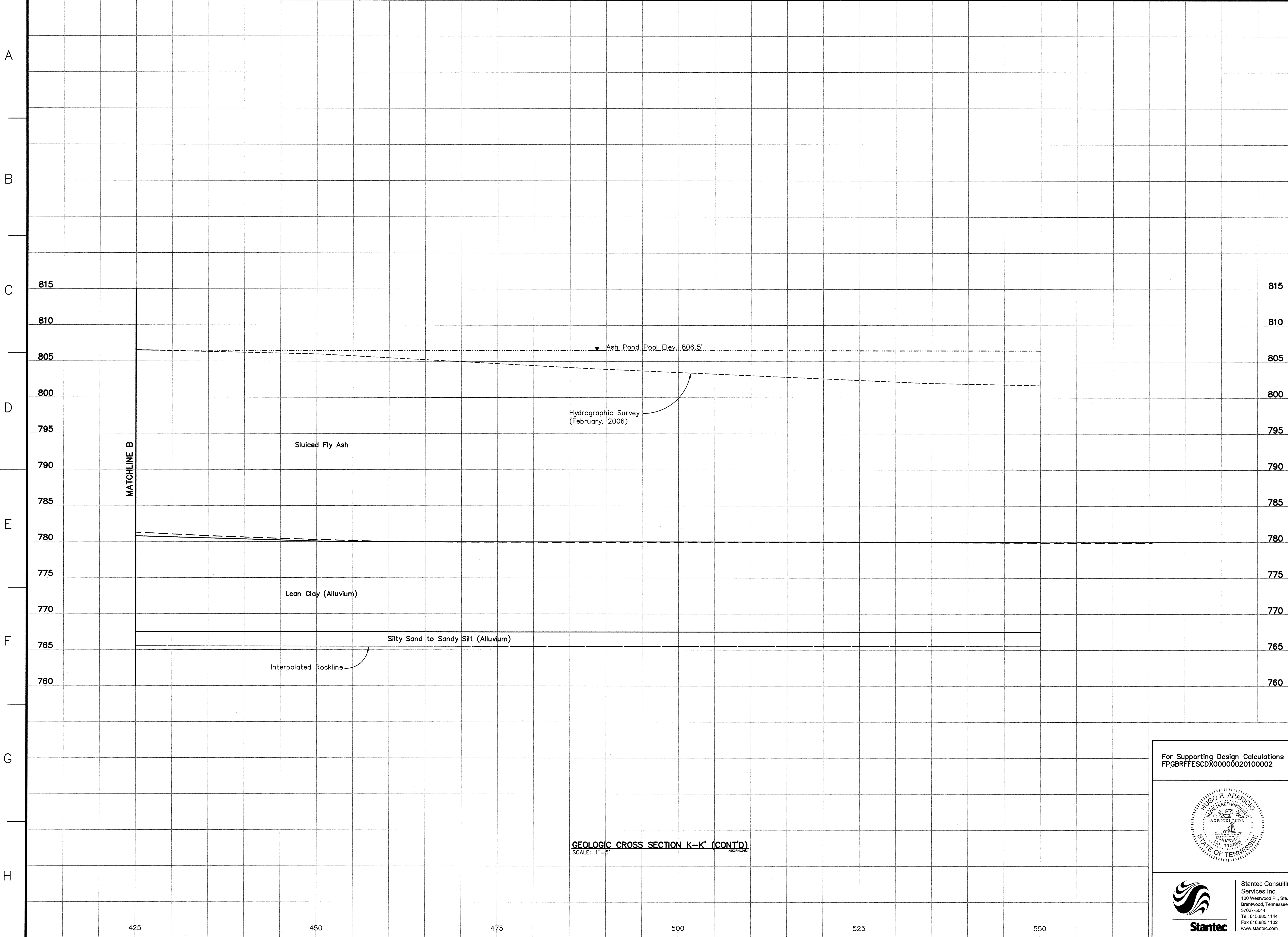
For Supporting Design Calculations see  
FPGBRFFESC00000020100002



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 Brentwood, Tennessee 37027-5044  
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DESIGNED BY:	W. MATTLINGLY	DRAWN BY:	T. JOHNSON	CHECKED BY:	F. KISER	SUPERVISED BY:	S. FIELD	REVIEWED BY:	H. APARICIO	APPROVED BY:	H. APARICIO	ISSUED BY:	T. JOHNSON
<b>BULL RUN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING</b>													
AUTOCAD R 2000	DATE	04/09/10	49	C	10W507-22	R 0							

**GEOLOGIC CROSS SECTION K-K'**  
SCALE: 1"=5'



**LEGEND**

- ① [Symbol] Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
- ② [Symbol] Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
- ③ [Symbol] Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
- ④ [Symbol] Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
- ⑤ [Symbol] Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
- ⑥ [Symbol] Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
- ⑦ [Symbol] Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional sands, silt and organics
- ⑧ [Symbol] Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
- ⑨ [Symbol] Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
- ⑩ [Symbol] Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
- ⑪ [Symbol] Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
- ⑫ [Symbol] Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
- ⑬ [Symbol] Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
- ⑭ [Symbol] Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels

WH Weight of Hammer  
 WR Weight of Rods  
 < Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 ■ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ■ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 T.O.R. Water Level and Date Recorded  
 Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C.- Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTES:**

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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPCBRFFESCDX00000020100002



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 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-5044  
 Tel: 615.885.1144  
 Fax: 615.885.1102  
 www.stantec.com

R 0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ	-	-	-	-	-	-	-	-	-	-	-	-
REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RWMD	APPR	ISSD	PROJECT ID	AS CONST	REV	DATE	BY	REASON	DATE	BY	REASON	DATE	BY	REASON

SCALE: 1"=5' EXCEPT AS NOTED

YARD  
 GEOTECHNICAL EXPLORATION  
 GEOLOGIC CROSS SECTION K-K'

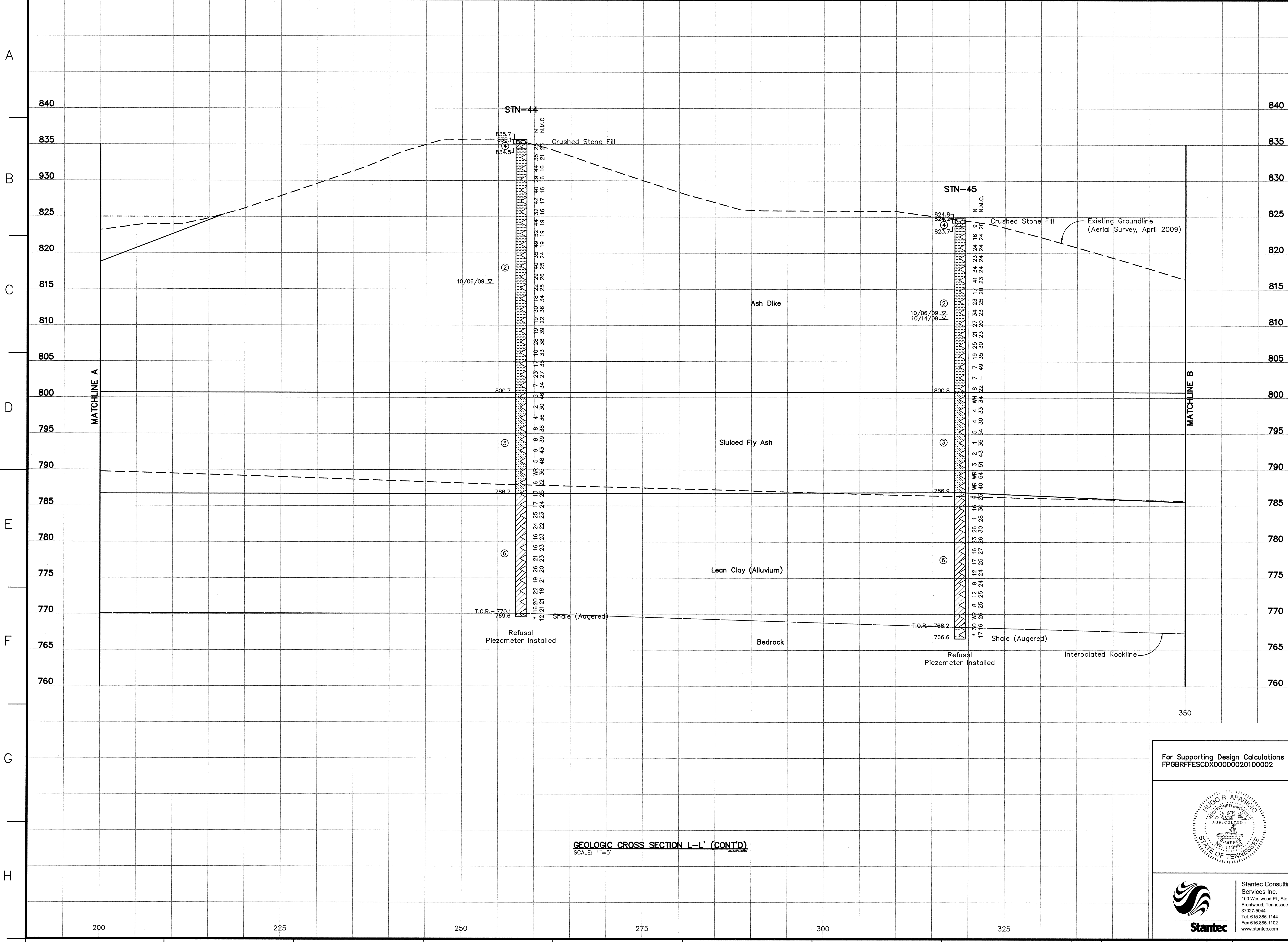
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON

BULL RUN FOSSIL PLANT  
 TENNESSEE VALLEY AUTHORITY  
 FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000	DATE	49	C	10W507-23	R 0
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**LEGEND**

① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense

② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense

③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash

④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics

⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels

⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands

⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts and organics

⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt

⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay

⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt

⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands

⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay

⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics

⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels

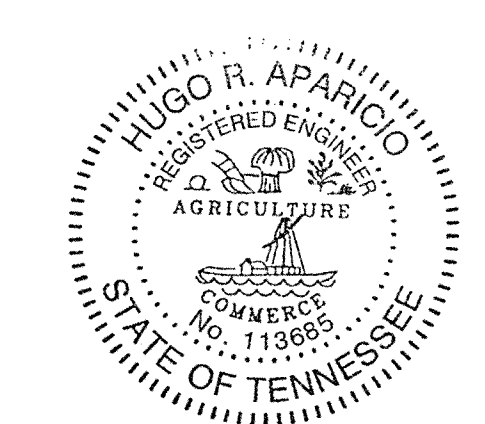
WH Weight of Hammer  
 WR Weight of Rods  
 Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09  
 T.O.R. - Top Level and Date Recorded  
 Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. - Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTES:**

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**RECORD DRAWING**

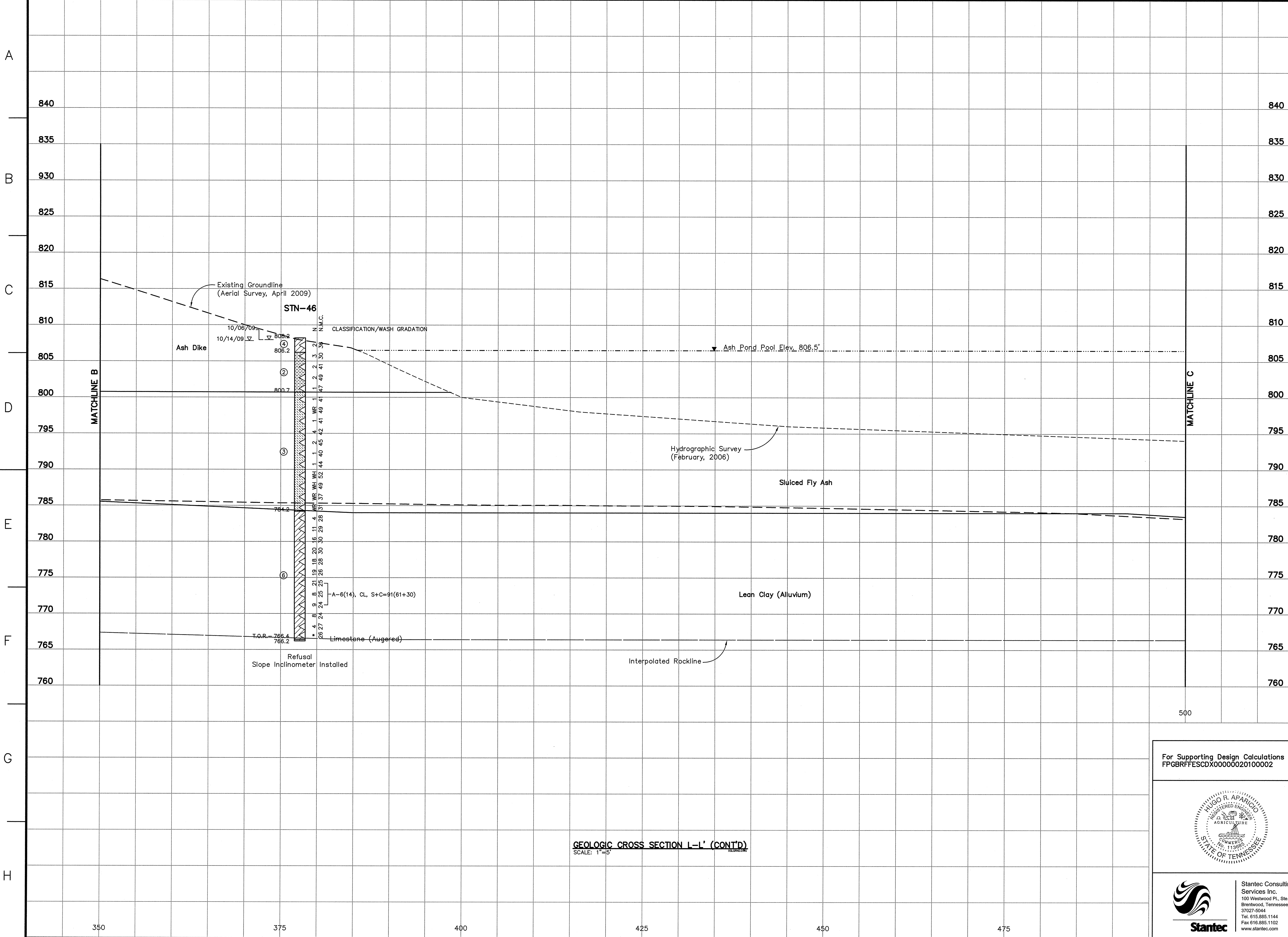
For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002



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 Brentwood, Tennessee  
 37027-5044  
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 Fax: 615.885.1102  
 www.stantec.com

DESIGNED BY:	W. MATTINGLY	DRAWN BY:	T. JOHNSON	CHECKED BY:	P. KISER	SUPERVISED BY:	S. FIELD	REVIEWED BY:	H. APARICIO	APPROVED BY:	H. APARICIO	ISSUED BY:	T. JOHNSON
<p align="center"><b>BULL RUN FOSSIL PLANT                  TENNESSEE VALLEY AUTHORITY                  FOSSIL AND HYDRO ENGINEERING</b></p>													
AUTOCAD R 2000	DATE	04/09/10	49	C	10W507-25	R 0							

**GEOLOGIC CROSS SECTION L-L' (CONT'D)**  
 SCALE: 1"=5'



**LEGEND**

- Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
- Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
- Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
- Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
- Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
- Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
- Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
- Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
- Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
- Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
- Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
- Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
- Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
- Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels

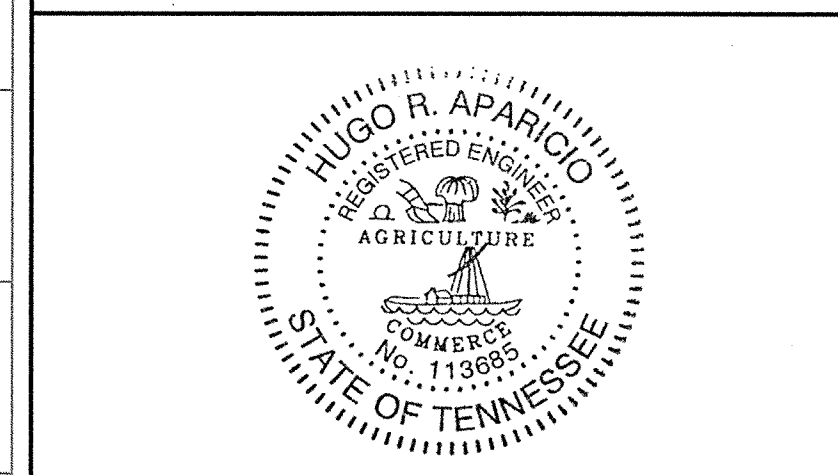
WH Weight of Hammer  
 WR Weight of Rods  
 SPT Standard Penetration Test Interval  
 N.T.S. Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 T.O.R. Water Level and Date Recorded  
 Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTES:**

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**RECORD DRAWING**

For Supporting Design Calculations see  
FPGBRFFESCDX00000020100002

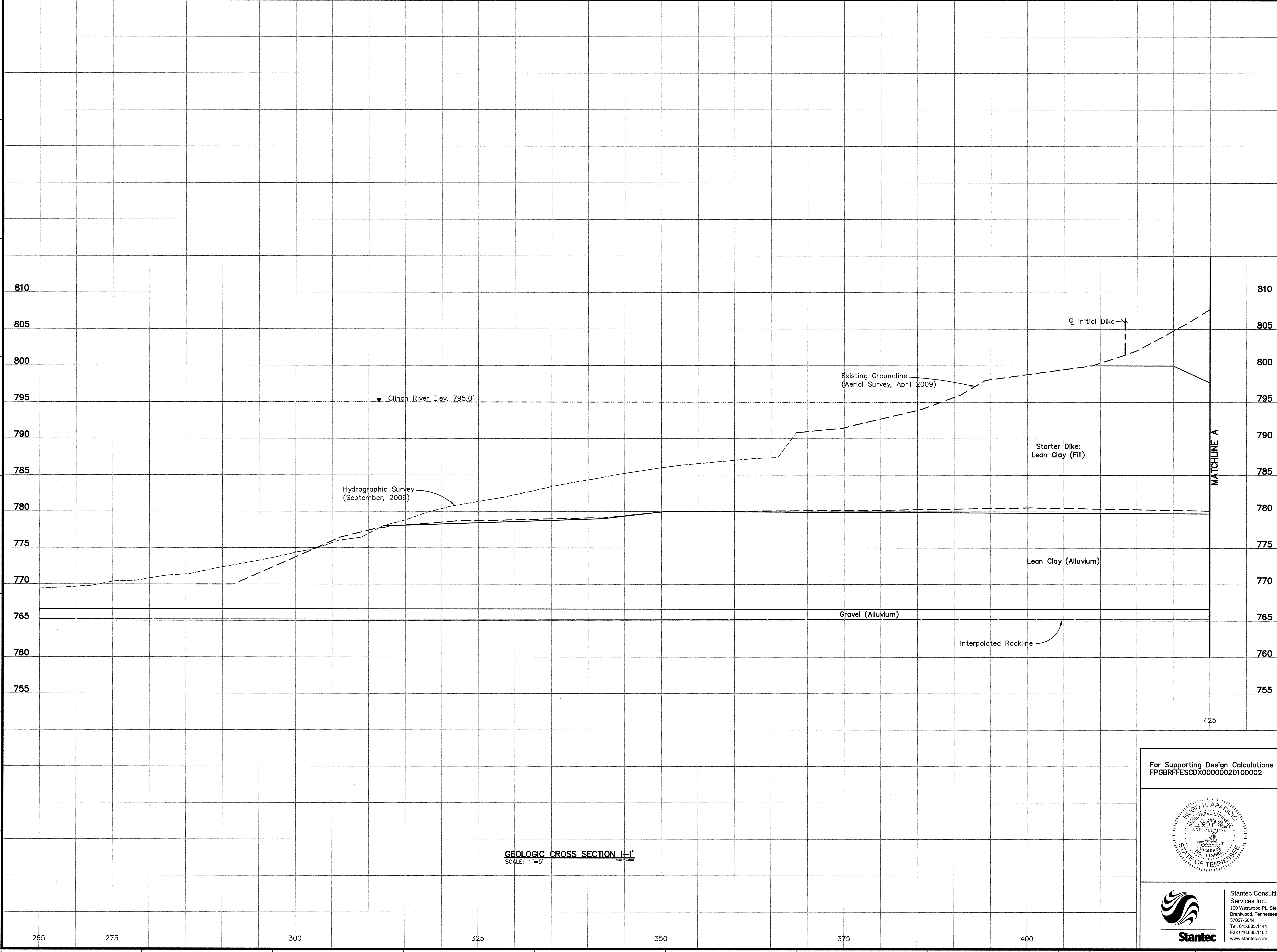


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 Fax: 615.885.1102  
 www.stantec.com

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVMD	APPO	ISSD	PROJECT	AS CONST	REV. NO.
0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ			
SCALE: 1"=5' EXCEPT AS NOTED											
YARD											
GEOTECHNICAL EXPLORATION											
GEOLOGIC CROSS SECTION L-L'											
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:					
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON					
BULL RUN FOSSIL PLANT											
TENNESSEE VALLEY AUTHORITY											
FOSSIL AND HYDRO ENGINEERING											
AUTOCAD R. 2000	DATE	49	C	10W507-26			R 0				

**GEOLOGIC CROSS SECTION L-L' (CONT'D)**  
SCALE: 1"=5'

A  
B  
C  
D  
E  
F  
G  
H



**LEGEND**

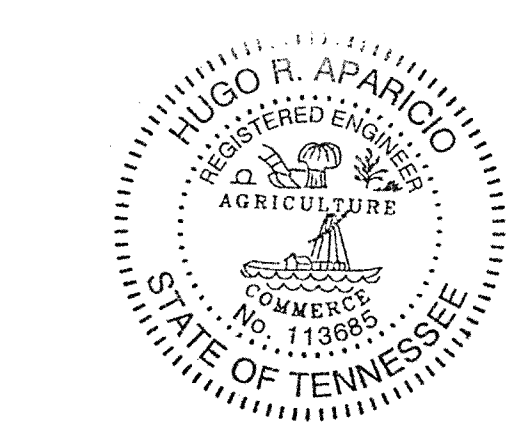
①	Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
②	Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
③	Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
④	Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
⑤	Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
⑥	Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
⑦	Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
⑧	Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
⑨	Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
⑩	Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
⑪	Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
⑫	Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
⑬	Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
⑭	Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
WH	Weight of Hammer
WR	Weight of Rods
△	Standard Penetration Test Interval
■	Undisturbed Thin-Walled (Shelby) Tube Sample
N.M.C.	Natural Moisture Content (%)
U.W.W.	Unit Weight Wet (lbs./cu.ft.)
U.W.D.	Unit Weight Dry (lbs./cu.ft.)
03/31/09	Water Level and Date Recorded
T.O.R.	Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)
B.C.	Begin Rock Core
R.Q.D.	Rock Quality Designation (%)
REC.	Recovery (%)
Refusal	Auger Refusal using a carbide-tipped tooth auger bit
No Refusal	No Refusal Encountered
*	Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTES:**

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**RECORD DRAWING**

For Supporting Design Calculations see  
FPGBRFFESCDX00000020100002

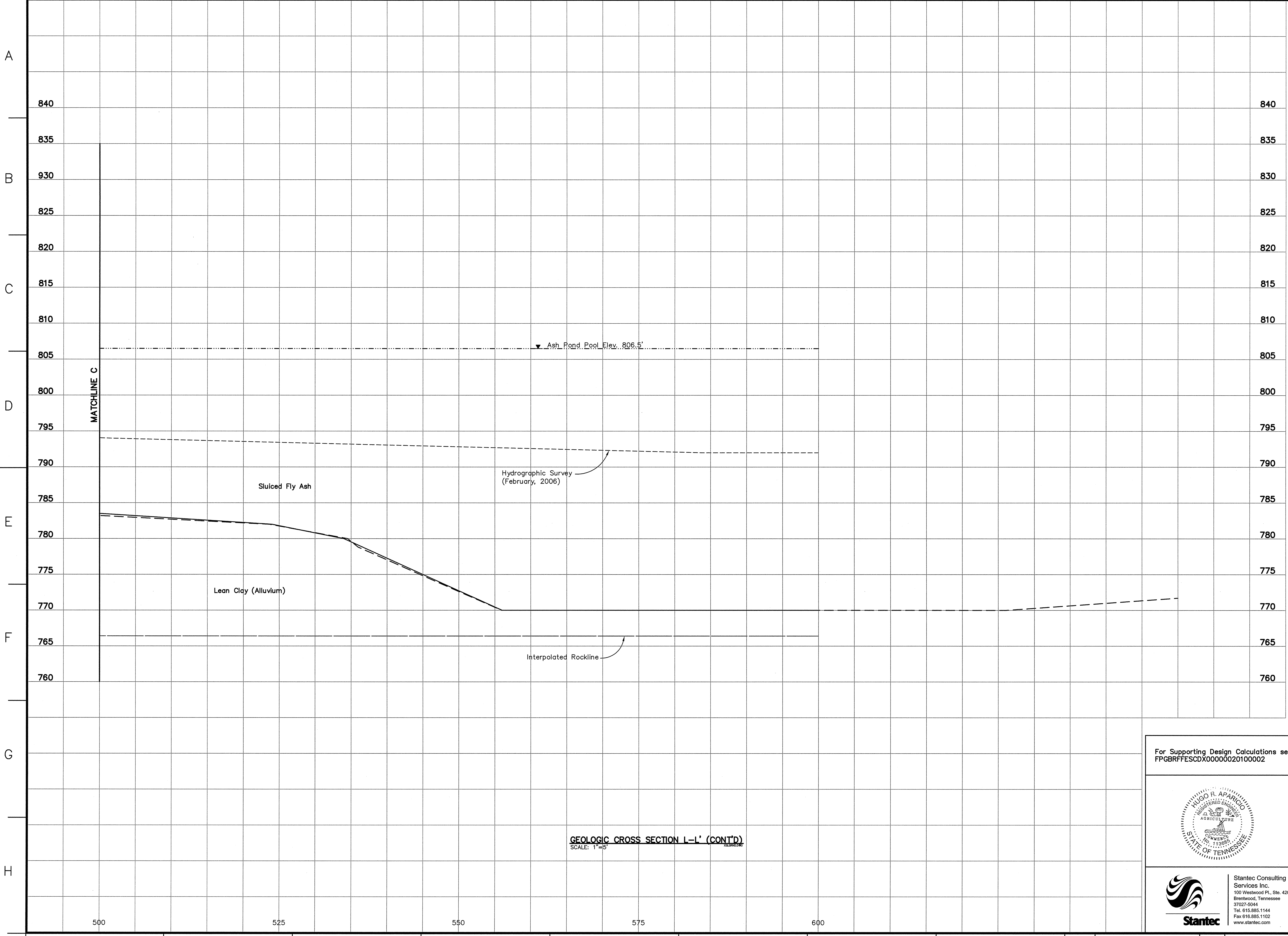


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Fax: 615.885.1102  
www.stantec.com

DESIGNED BY: W. MATTINGLY	DRAWN BY: T. JOHNSON	CHECKED BY: P. KISER	SUPERVISED BY: S. FELD	REVIEWED BY: H. APARICIO	APPROVED BY: H. APARICIO	ISSUED BY: T. JOHNSON
<b>BULL RUN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING</b>						
AUTOCAD R 2000	DATE 04/09/10	49	C	10W507-27	R 0	

**GEOLOGIC CROSS SECTION I-I'**  
SCALE: 1"=5'

265 275 300 325 350 375 400



**LEGEND**

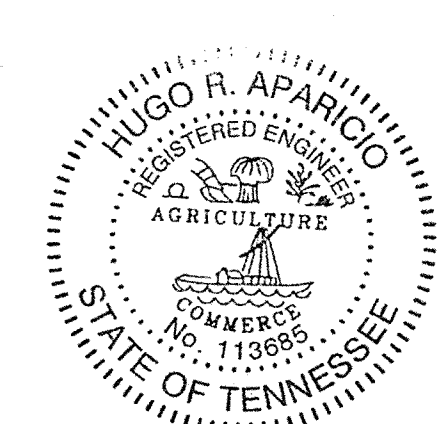
①	Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
②	Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
③	Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
④	Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
⑤	Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
⑥	Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
⑦	Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
⑧	Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
⑨	Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
⑩	Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
⑪	Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
⑫	Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
⑬	Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
⑭	Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
WH	Weight of Hammer
WR	Weight of Rods
△	Standard Penetration Test Interval
■	Undisturbed Thin-Walled (Shelby) Tube Sample
N.M.C.	Natural Moisture Content (%)
U.W.W.	Unit Weight Wet (lbs./cu.ft.)
U.W.D.	Unit Weight Dry (lbs./cu.ft.)
03/31/09	Water Level and Date Recorded
T.O.R.	Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)
B.C.	Begin Rock Core
R.Q.D.	Rock Quality Designation (%)
REC.	Recovery (%)
Refusal	Auger Refusal using a carbide-tipped tooth auger bit
No Refusal	No Refusal Encountered
*	Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

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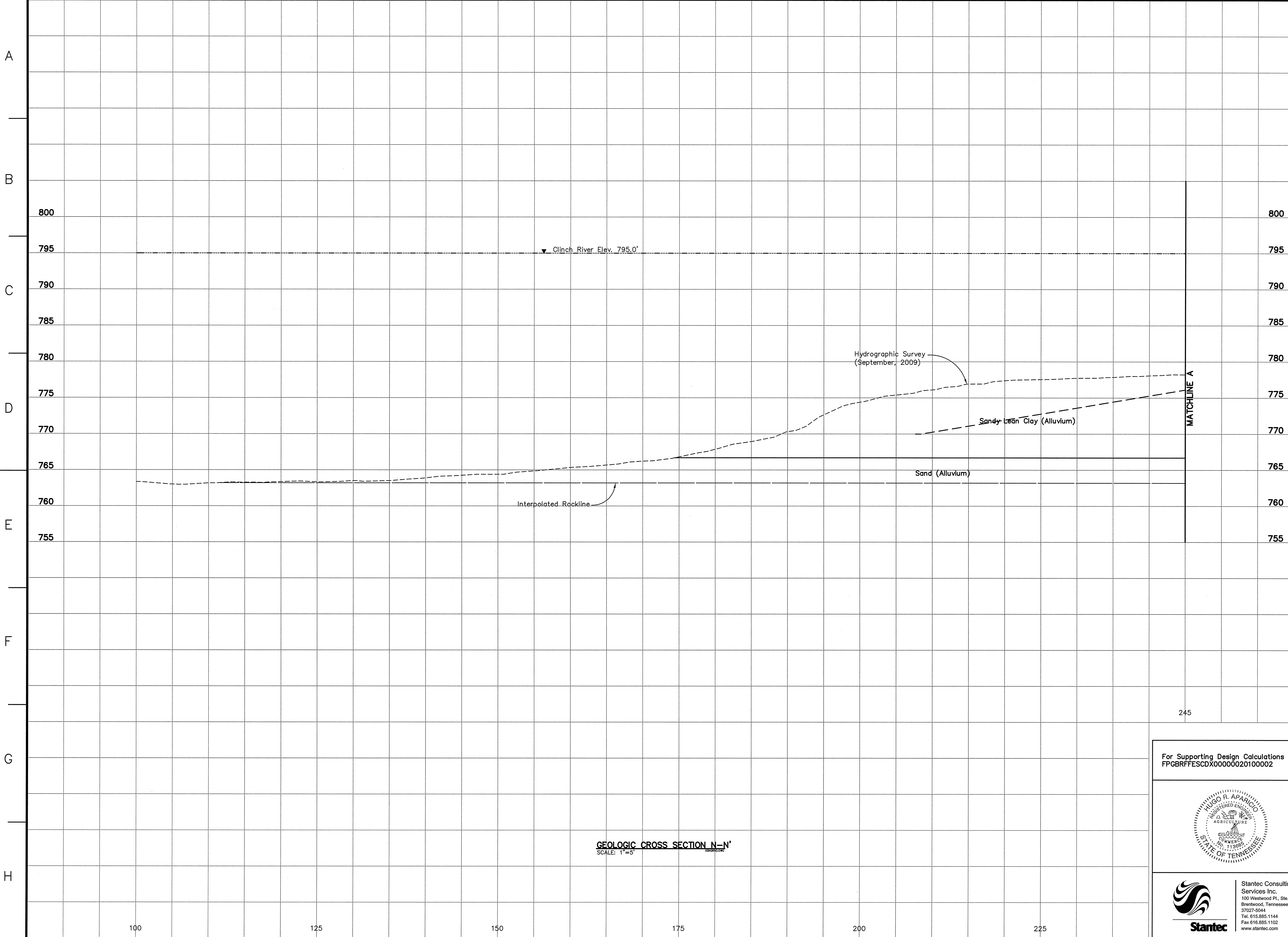
For Supporting Design Calculations see  
FPGBRFFESCXD00000020100002



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REV	NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPR	ISSD	PROJECT	AS CONST	REV
SCALE: 1"=5'											EXCEPT AS NOTED	
YARD												
GEOTECHNICAL EXPLORATION												
GEOLOGIC CROSS SECTION L-L'												
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:						
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON						
BULL RUN FOSSIL PLANT												
TENNESSEE VALLEY AUTHORITY												
FOSSIL AND HYDRO ENGINEERING												
AUTOCAD R 2000	DATE	49	C	10W507-28	R 0							

**GEOLOGIC CROSS SECTION L-L' (CONT'D)**  
SCALE: 1"=5'



**LEGEND**

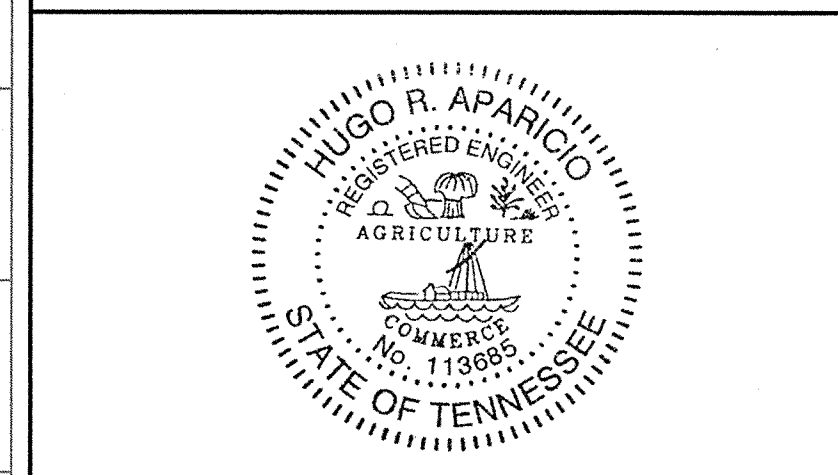
①	Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
②	Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
③	Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
④	Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
⑤	Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
⑥	Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
⑦	Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
⑧	Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
⑨	Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
⑩	Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
⑪	Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
⑫	Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
⑬	Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
⑭	Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
WH	Weight of Hammer
WR	Weight of Rods
△	Standard Penetration Test Interval
■	Undisturbed Thin-Walled (Shelby) Tube Sample
N.M.C.	Natural Moisture Content (%)
U.W.W.	Unit Weight Wet (lbs./cu.ft.)
U.W.D.	Unit Weight Dry (lbs./cu.ft.)
03/31/09	Water Level and Date Recorded
T.O.R.	Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)
B.C.	Begin Rock Core
R.Q.D.	Rock Quality Designation (%)
REC.	Recovery (%)
Refusal	Auger Refusal using a carbide-tipped tooth auger bit
No Refusal	No Refusal Encountered
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**RECORD DRAWING**

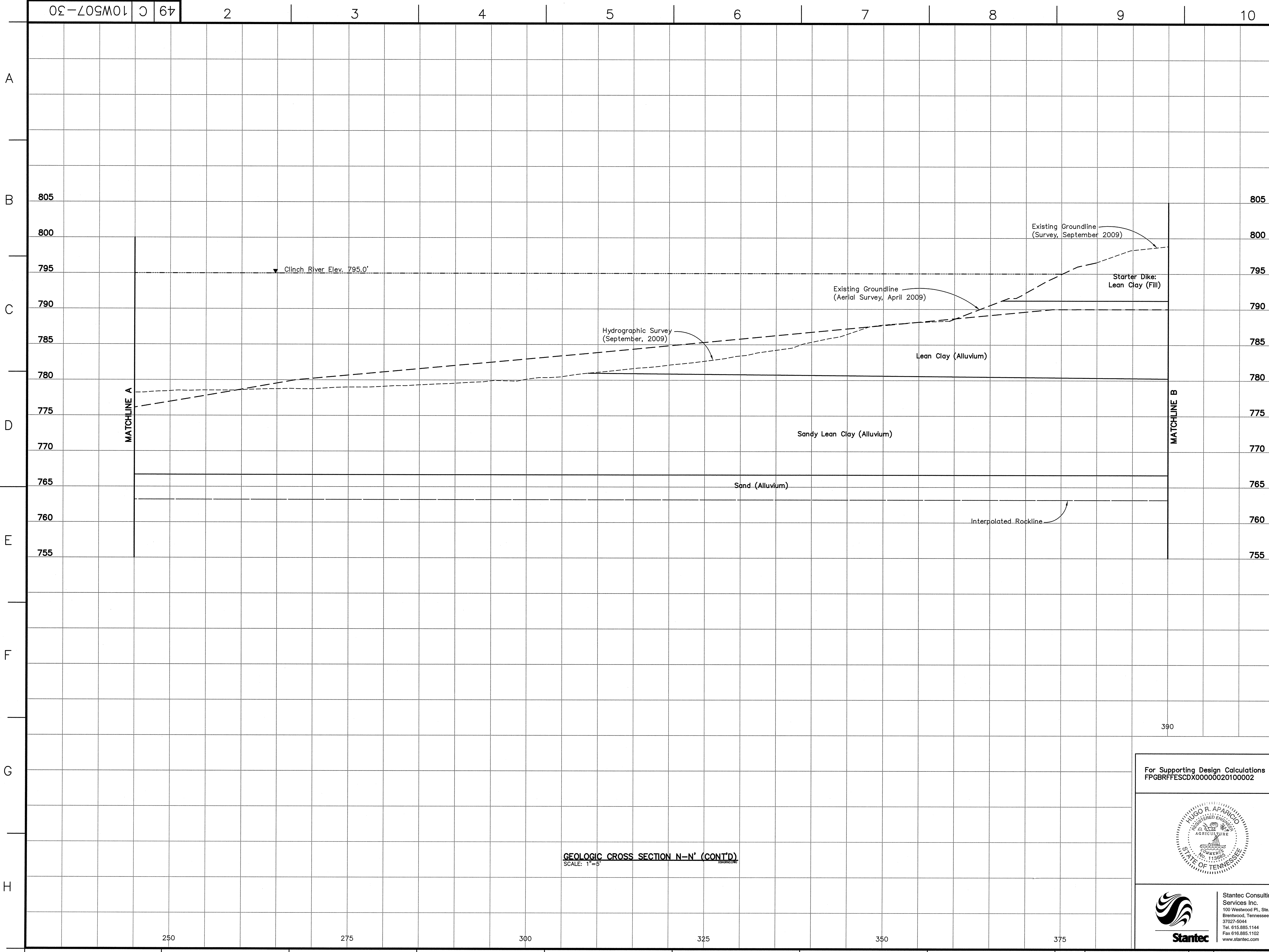
For Supporting Design Calculations see  
FPCBRFFESCDX00000020100002



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REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RWMD	APPR	ISSD	PROJECT ID	AS CONST	REV
0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ			
SCALE: 1"=5' EXCEPT AS NOTED											
YARD											
GEOTECHNICAL EXPLORATION GEOLOGIC CROSS SECTION N-N'											
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:					
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON					
BULL RUN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING											
AUTOCAD R. 2000	DATE	49	C	10W507-29			R. 0				

**GEOLOGIC CROSS SECTION N-N'**  
SCALE: 1"=5'

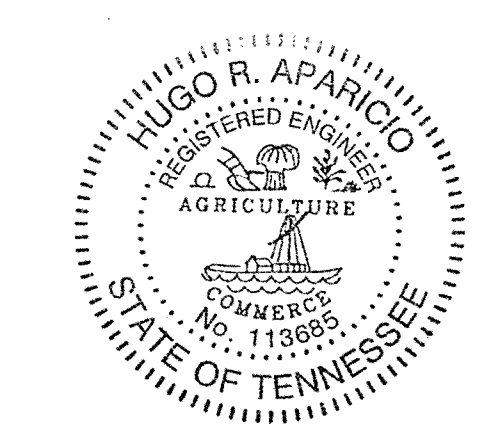


- LEGEND**
- ① [Symbol] Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② [Symbol] Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ [Symbol] Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ [Symbol] Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ [Symbol] Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ [Symbol] Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ [Symbol] Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ [Symbol] Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ [Symbol] Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ [Symbol] Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ [Symbol] Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ [Symbol] Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ [Symbol] Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ [Symbol] Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 < Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 ■ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ■ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 Water Level and Date Recorded  
 T.O.R. Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
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 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
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- NOTES:**
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**RECORD DRAWING**

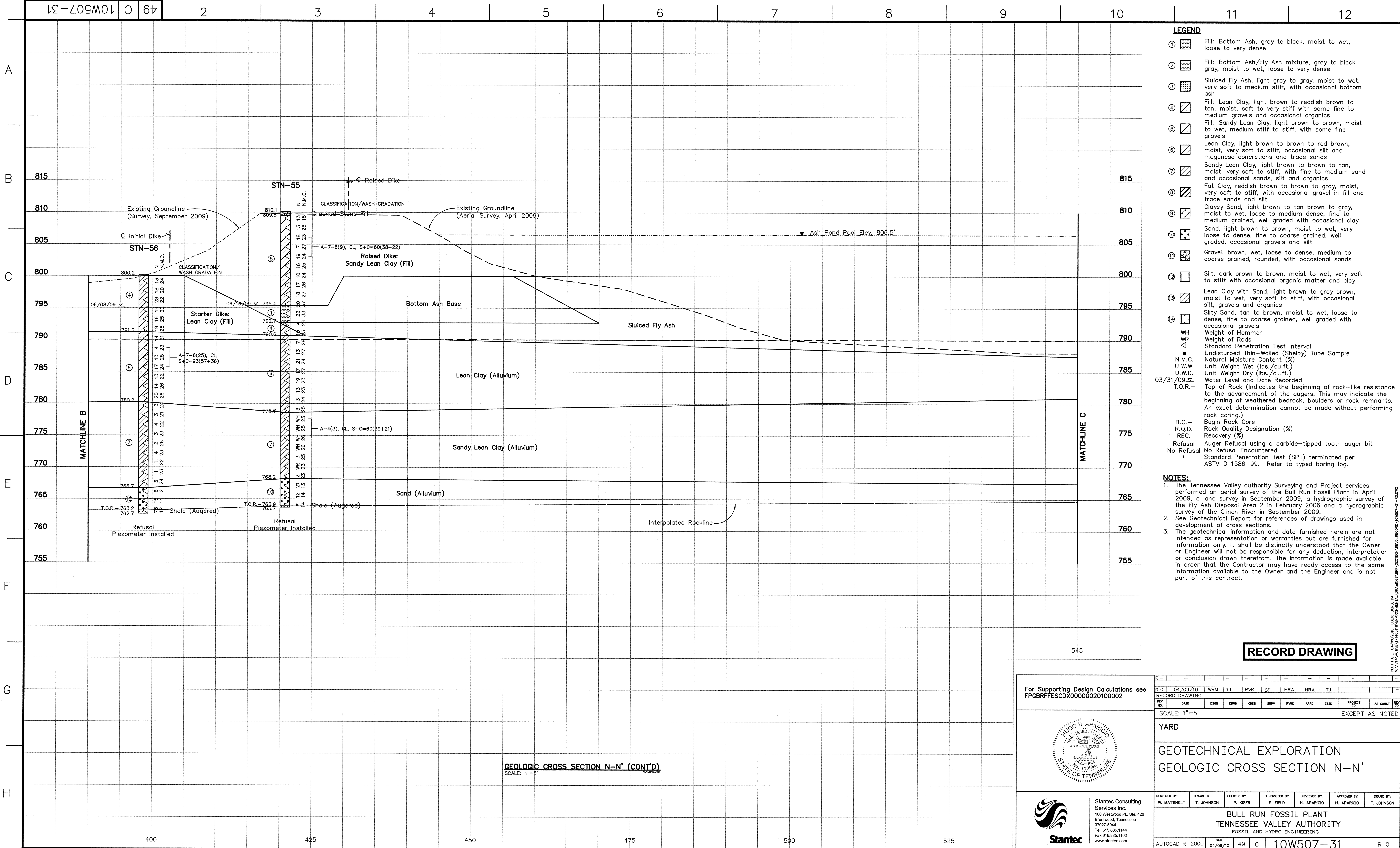
For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002



**Stantec**  
 Stantec Consulting Services Inc.  
 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-5044  
 Tel. 615.885.1144  
 Fax 615.885.1102  
 www.stantec.com

R 0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ	-	-	-	-	-	-	-	-	-	-	-	-
RECORD DRAWING																				
REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RWMD	APPR	ISSD	PROJECT ID	AS CONST	REV									
SCALE: 1"=5'											EXCEPT AS NOTED									
YARD																				
GEOTECHNICAL EXPLORATION																				
GEOLOGIC CROSS SECTION N-N'																				
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:														
W. MATTINGLY	T. JOHNSON	F. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON														
BULL RUN FOSSIL PLANT																				
TENNESSEE VALLEY AUTHORITY																				
FOSSIL AND HYDRO ENGINEERING																				
AUTOCAD R. 2000	DATE	49	C	10W507-30	R 0															

**GEOLOGIC CROSS SECTION N-N' (CONT'D)**  
 SCALE: 1"=5'

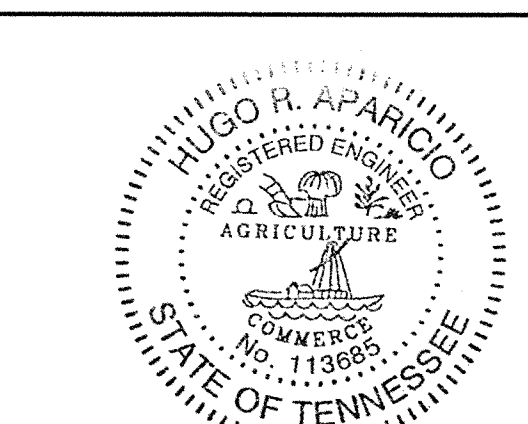



- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 Water Level and Date Recorded  
 T.O.R.— Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C.— Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

- NOTES:**
- The Tennessee Valley Authority Surveying and Project services performed an aerial survey of the Bull Run Fossil Plant in April 2009, a land survey in September 2009, a hydrographic survey of the Fly Ash Disposal Area 2 in February 2006 and a hydrographic survey of the Clinch River in September 2009.
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**RECORD DRAWING**

For Supporting Design Calculations see  
FPGBRFFESCDX00000020100002




 Stantec Consulting Services Inc.  
 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-0044  
 Tel: 615.885.1144  
 Fax: 615.885.1102  
 www.stantec.com

DESIGNED BY: W. MATTINGLY	DRAWN BY: T. JOHNSON	CHECKED BY: P. KISER	SUPERVISED BY: S. FIELD	REVIEWED BY: H. APARICIO	APPROVED BY: H. APARICIO	ISSUED BY: T. JOHNSON
------------------------------	-------------------------	-------------------------	----------------------------	-----------------------------	-----------------------------	--------------------------

**BULL RUN FOSSIL PLANT  
TENNESSEE VALLEY AUTHORITY  
FOSSIL AND HYDRO ENGINEERING**

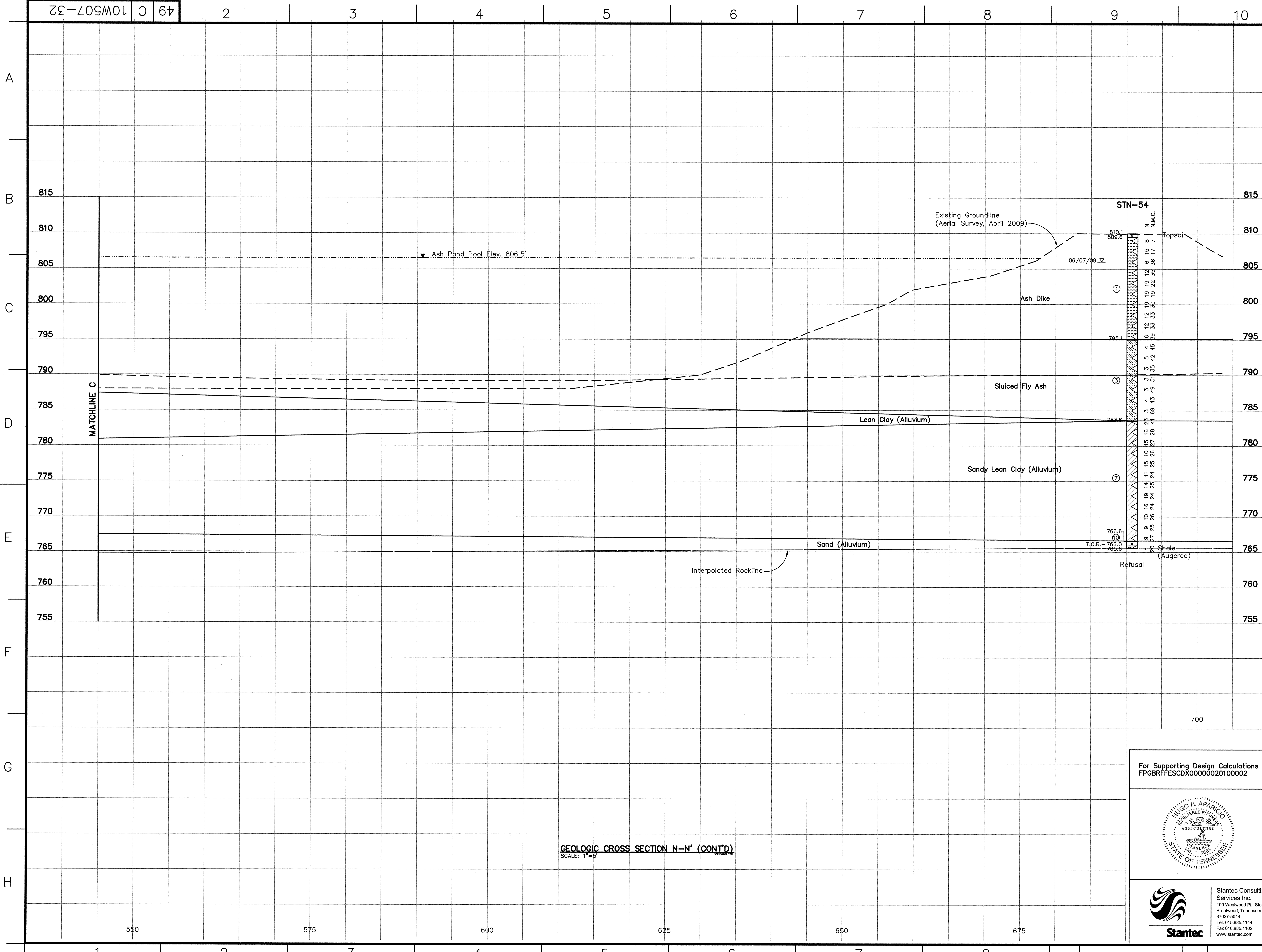
AUTOCAD R 2000	DATE 04/09/10	49	C	10W507-31	R 0
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PLOT FACTOR: XX  
 W\_TVA  
 C.A.D. DRAWING  
 DO NOT ALTER MANUALLY

**GEOLOGIC CROSS SECTION N-N' (CONT'D)**  
SCALE: 1"=5'

545

PLOT DATE: 04/09/2010 USER: BOND, PJ  
 V:\174\ACTIVE\1748818\ENVIRONMENTAL\DRAWINGS\BPR\GEOTECH\REC\RECORD\10W507-31-R0.DWG



**LEGEND**

- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
- ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
- ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
- ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
- ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
- ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
- ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
- ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
- ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
- ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
- ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
- ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
- ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
- ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels

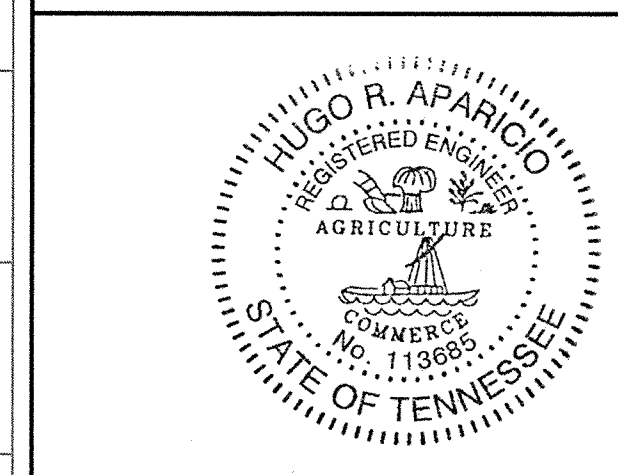
WH Weight of Hammer  
 WR Weight of Rods  
 Standard Penetration Test Interval  
 Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 Water Level and Date Recorded  
 T.O.R.— Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C.— Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTES:**

- The Tennessee Valley Authority Surveying and Project services performed an aerial survey of the Bull Run Fossil Plant in April 2009, a land survey in September 2009, a hydrographic survey of the Fly Ash Disposal Area 2 in February 2006 and a hydrographic survey of the Clinch River in September 2009.
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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002



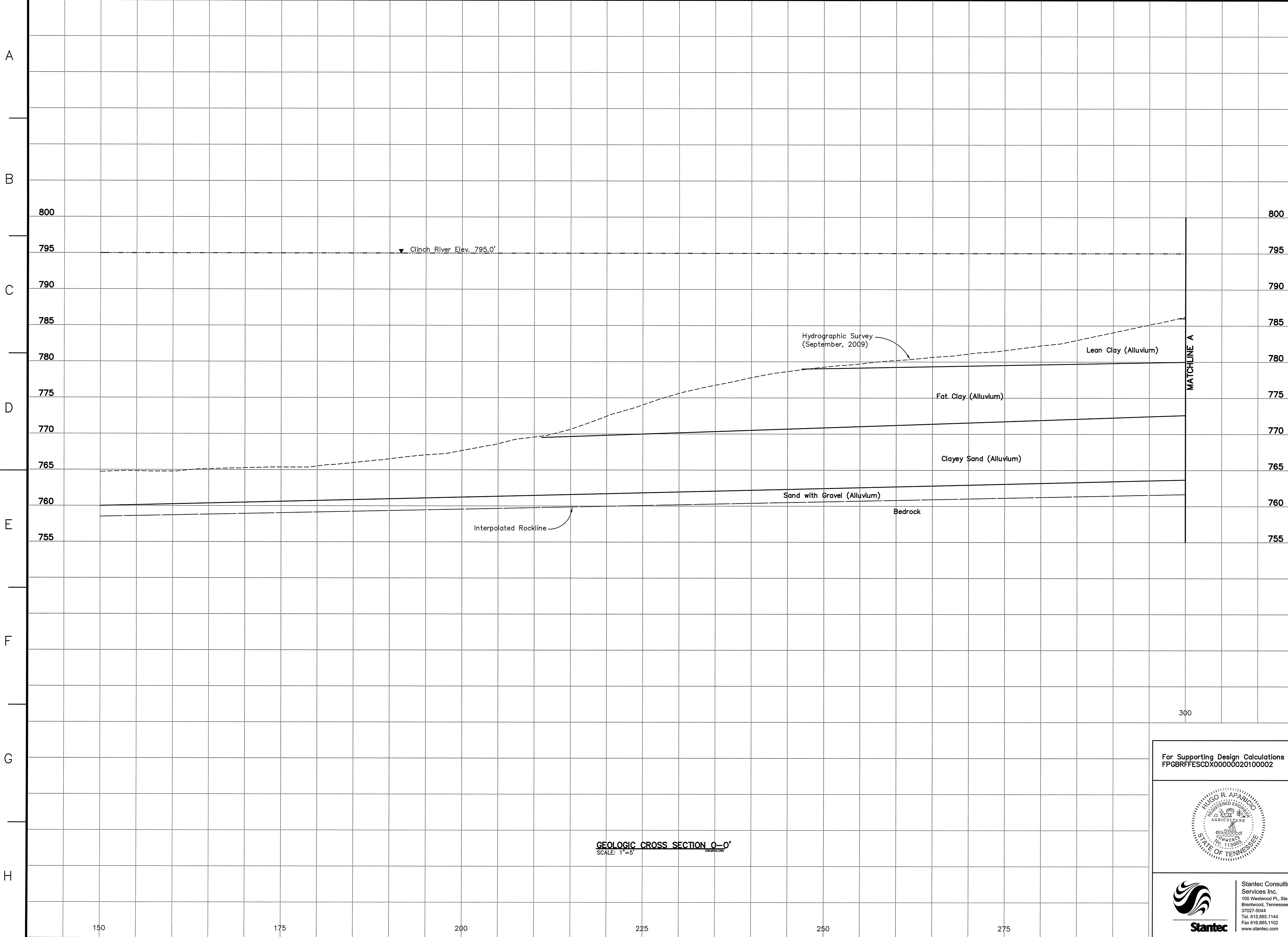
**Stantec**  
 Stantec Consulting Services Inc.  
 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-5044  
 Tel: 615.885.1144  
 Fax: 615.885.1102  
 www.stantec.com

DESIGNED BY:	W. MATTINGLY	DRAWN BY:	T. JOHNSON	CHECKED BY:	P. KISER	SUPERVISED BY:	S. FIELD	REVIEWED BY:	H. APARICIO	APPROVED BY:	T. JOHNSON	ISSUED BY:	T. JOHNSON
<b>BULL RUN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING</b>													
AUTOCAD R 2000	DATE	04/09/10	49	C	10W507-32	R 0							

**GEOLOGIC CROSS SECTION N-N' (CONT'D)**  
 SCALE: 1"=5'

PLOT DATE: 04/09/2010 USER: BING, PI  
 V:\114\ACTIVE\1718818\ENVIRONMENTAL\DRAWINGS\BUREAU\GEOTECH\NEAL\RECORD\10W507-32-R0.DWG





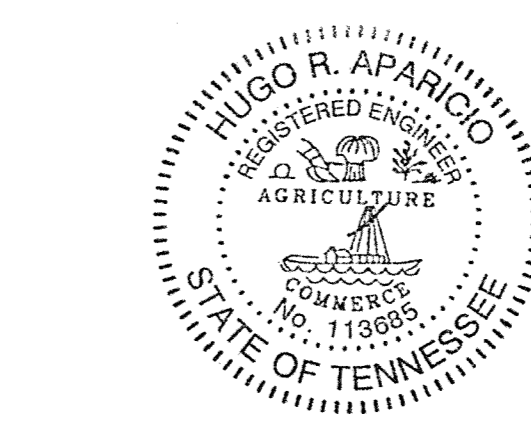
- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 △ Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 ■ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ■ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 T.O.R. Water Level and Date Recorded  
 Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C.- Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

- NOTES:**
- The Tennessee Valley Authority Surveying and Project services performed an aerial survey of the Bull Run Fossil Plant in April 2009, a land survey in September 2009, a hydrographic survey of the Fly Ash Disposal Area 2 in February 2006 and a hydrographic survey of the Clinch River in September 2009.
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**RECORD DRAWING**

**GEOLOGIC CROSS SECTION O-O'**  
SCALE: 1"=5'

For Supporting Design Calculations see  
FPGBRFFESCDX00000020100002



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Stantec Consulting Services Inc.  
100 Westwood Pl., Ste. 420  
Brentwood, Tennessee  
37027-5044  
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Fax: 615.885.1102  
www.stantec.com

R	0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ	-	-	-	-	-	-	-	-	-	-	-
REV	NO.	DATE	DSGN	DRWN	CHKD	SUPV	RWMD	APPO	ISSD	PROJECT	AS CONST	REV	NO.	DATE	ISSD	PROJECT	AS CONST	REV	NO.	DATE

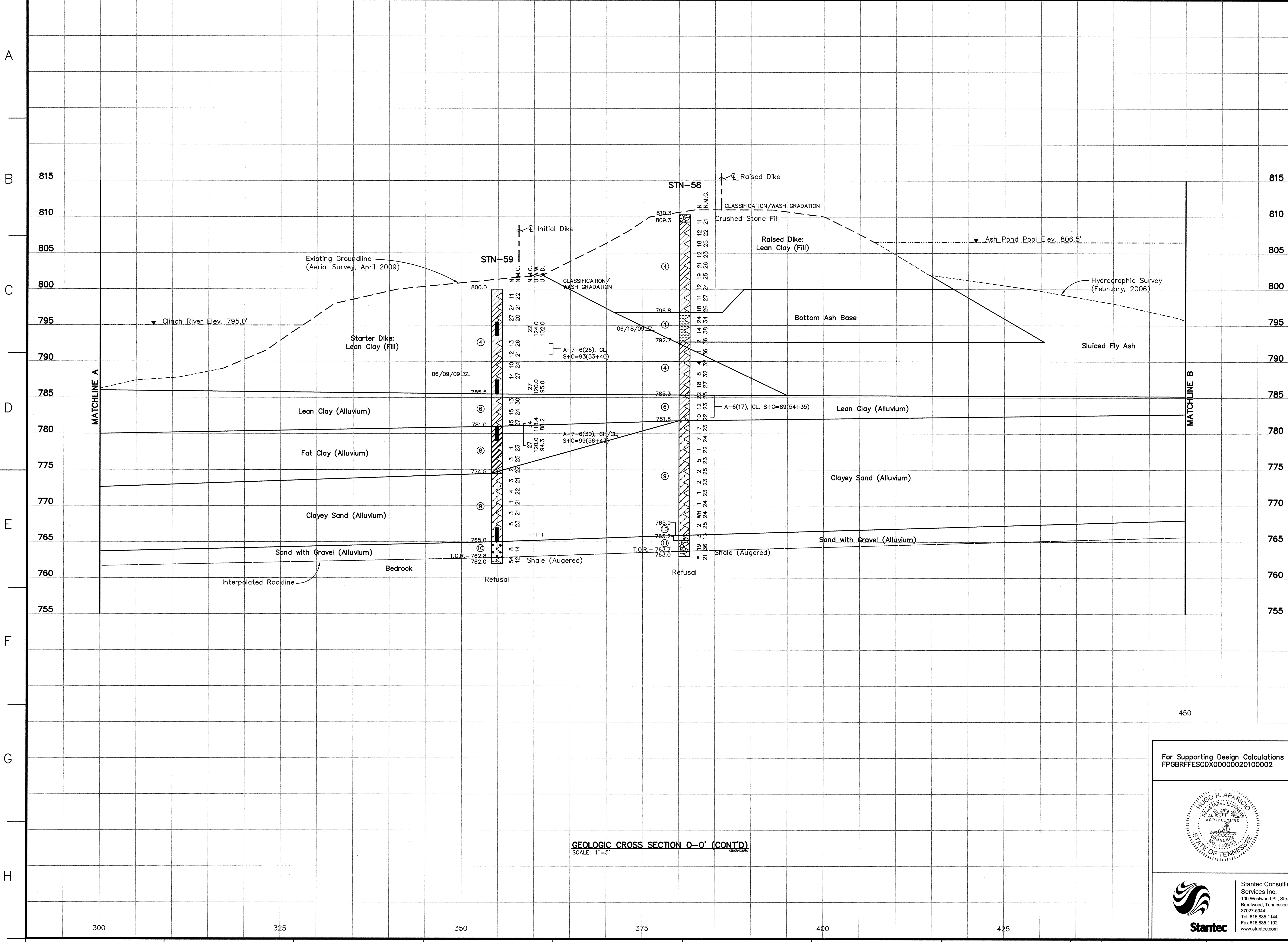
SCALE: 1"=5' EXCEPT AS NOTED

YARD  
GEO TECHNICAL EXPLORATION  
GEOLOGIC CROSS SECTION O-O'

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON

**BULL RUN FOSSIL PLANT**  
**TENNESSEE VALLEY AUTHORITY**  
FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-33 R 0



- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 SPT Standard Penetration Test Interval  
 U.T.W. Undisturbed Thin-Walled (Shelby) Tube Sample  
 N.M.C. Natural Moisture Content (%)  
 U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09.W.L. Water Level and Date Recorded  
 T.O.R. Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

- NOTES:**
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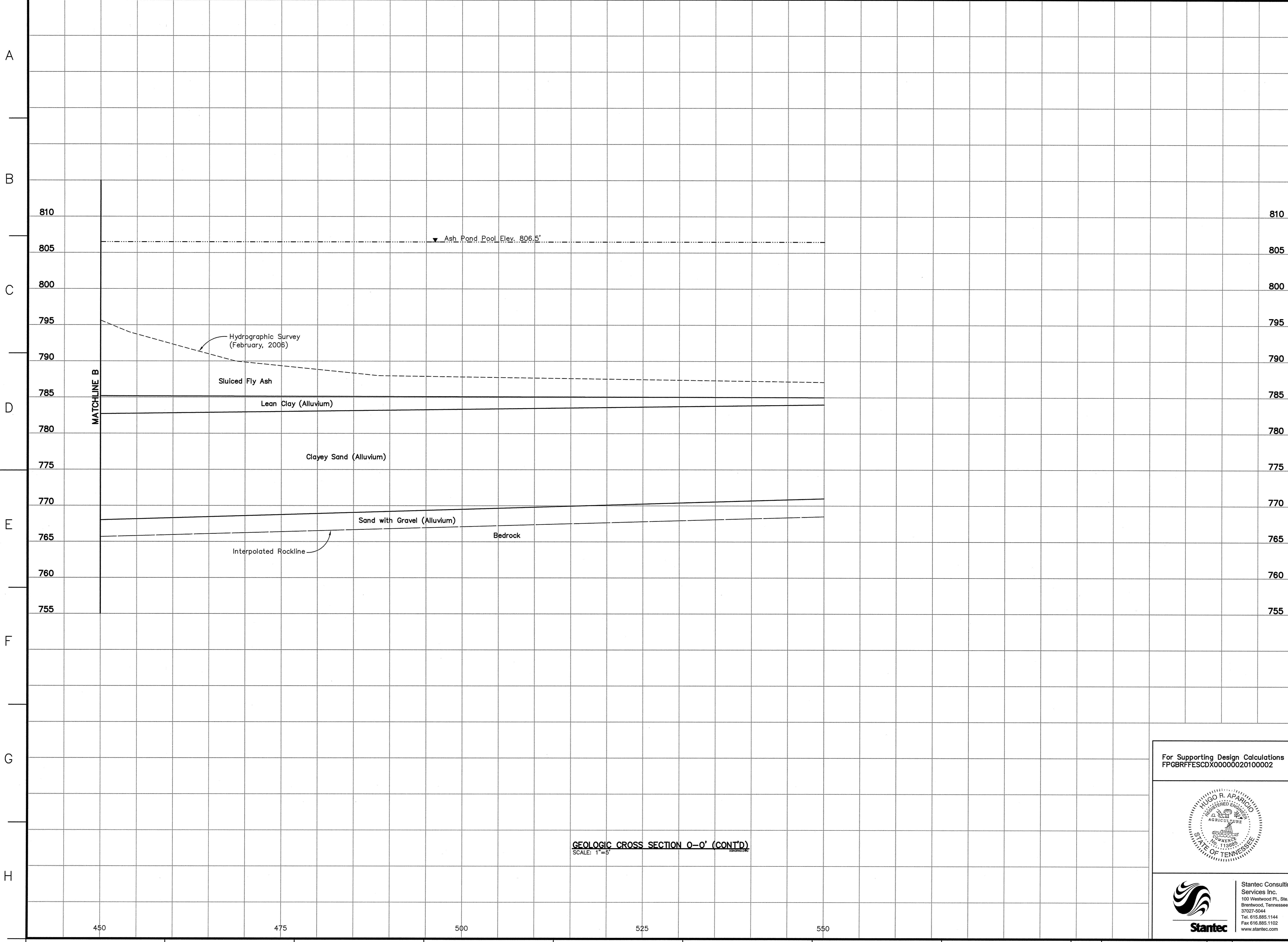
**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002

**Stantec**  
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 www.stantec.com

R	0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ											
RECORD DRAWING																				
REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVMD	APPR	ISSD	PROJECT ID	AS CONST	REV. NO.									
SCALE: 1"=5'										EXCEPT AS NOTED										
YARD																				
GEOTECHNICAL EXPLORATION																				
GEOLOGIC CROSS SECTION O-O'																				
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:														
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON														
BULL RUN FOSSIL PLANT																				
TENNESSEE VALLEY AUTHORITY																				
FOSSIL AND HYDRO ENGINEERING																				
AUTOCAD R 2000	DATE	49	C	10W507-34	R 0															

**GEOLOGIC CROSS SECTION O-O' (CONT'D)**  
 SCALE: 1"=5'



- LEGEND**
- ① [Symbol] Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② [Symbol] Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ [Symbol] Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ [Symbol] Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ [Symbol] Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ [Symbol] Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ [Symbol] Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ [Symbol] Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ [Symbol] Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ [Symbol] Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ [Symbol] Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ [Symbol] Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ [Symbol] Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ [Symbol] Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 < Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 ■ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ■ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 T.O.R. Water Level and Date Recorded  
 T.O.R. Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
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 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

- NOTES:**
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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002



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R	0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ	-	-	-	-	-	-	-	-	-	-
REV. NO.	DATE	DSGN	DRWN	CRD	SUPV	RVD	APPD	ISSD	PROJECT ID	AS CONST	REV	BY	DATE	BY	DATE	BY	DATE	BY	DATE

SCALE: 1"=5' EXCEPT AS NOTED

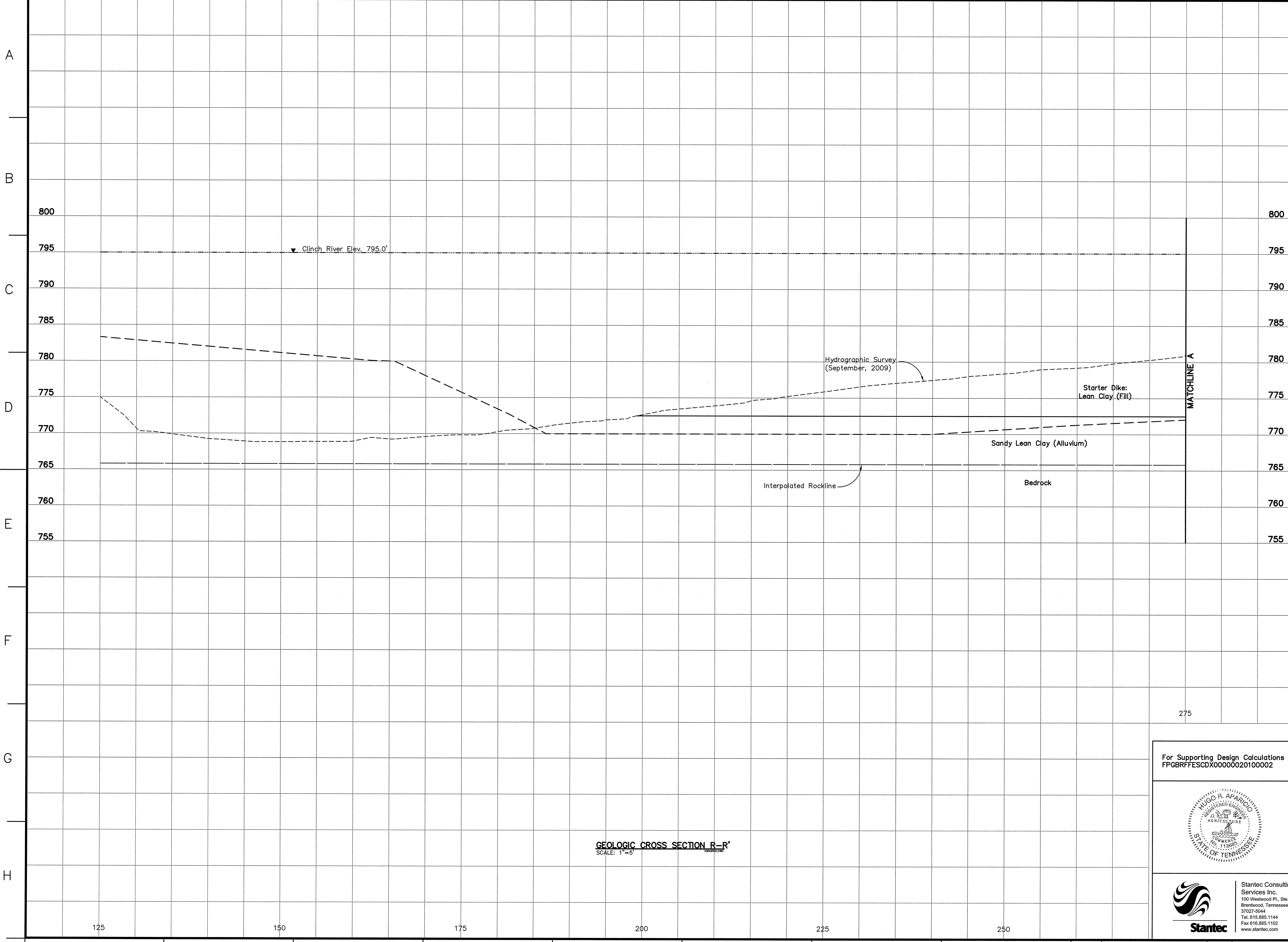
YARD  
 GEOTECHNICAL EXPLORATION  
 GEOLOGIC CROSS SECTION O-O'

DESIGNED BY: W. MATTINGLY  
 DRAWN BY: T. JOHNSON  
 CHECKED BY: P. KISER  
 SUPERVISED BY: S. FIELD  
 REVIEWED BY: H. APARICIO  
 APPROVED BY: H. APARICIO  
 ISSUED BY: T. JOHNSON

**BULL RUN FOSSIL PLANT  
 TENNESSEE VALLEY AUTHORITY  
 FOSSIL AND HYDRO ENGINEERING**

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-35 R 0

**GEOLOGIC CROSS SECTION O-O' (CONT'D)**  
 SCALE: 1"=5'



- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Δ Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 ■ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ■ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 Water Level and Date Recorded  
 T.O.R. Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

- NOTES:**
- The Tennessee Valley Authority Surveying and Project services performed an aerial survey of the Bull Run Fossil Plant in April 2009, a land survey in September 2009, a hydrographic survey of the Fly Ash Disposal Area 2 in February 2006 and a hydrographic survey of the Clinch River in September 2009.
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**RECORD DRAWING**

**GEOLOGIC CROSS SECTION R-R'**  
SCALE: 1"=5'

For Supporting Design Calculations see FPGBRFFESCDX00000020100002

**STANTEC**  
Stantec Consulting Services Inc.  
100 Westwood Pl., Ste. 420  
Brentwood, Tennessee  
37027-5044  
Tel: 615.885.1144  
Fax: 615.885.1102  
www.stantec.com

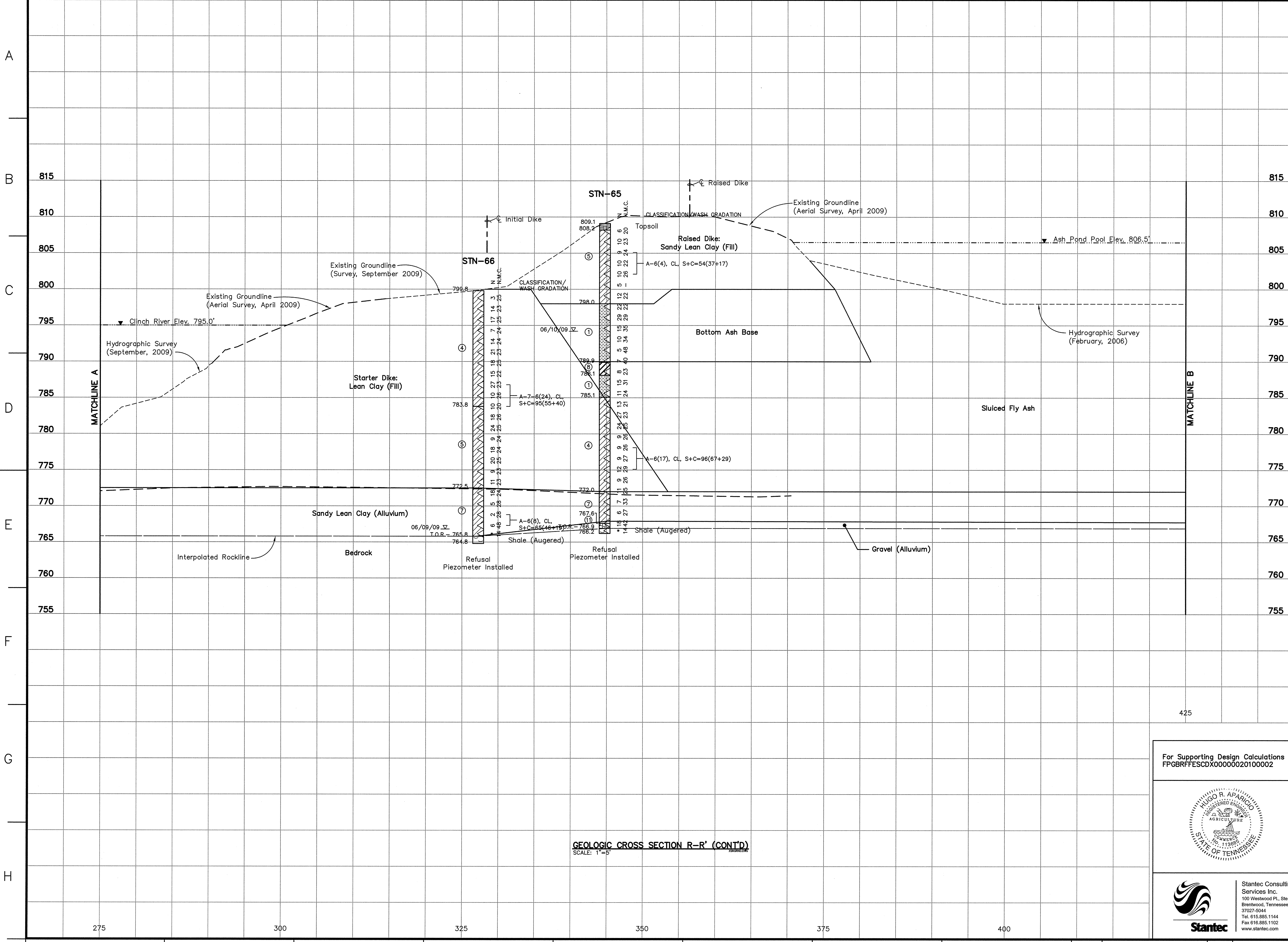
DESIGNED BY: W. MATTINGLY	DRAWN BY: T. JOHNSON	CHECKED BY: P. KISER	SUPERVISED BY: S. FIELD	REVIEWED BY: H. APARICIO	APPROVED BY: H. APARICIO	ISSUED BY: T. JOHNSON
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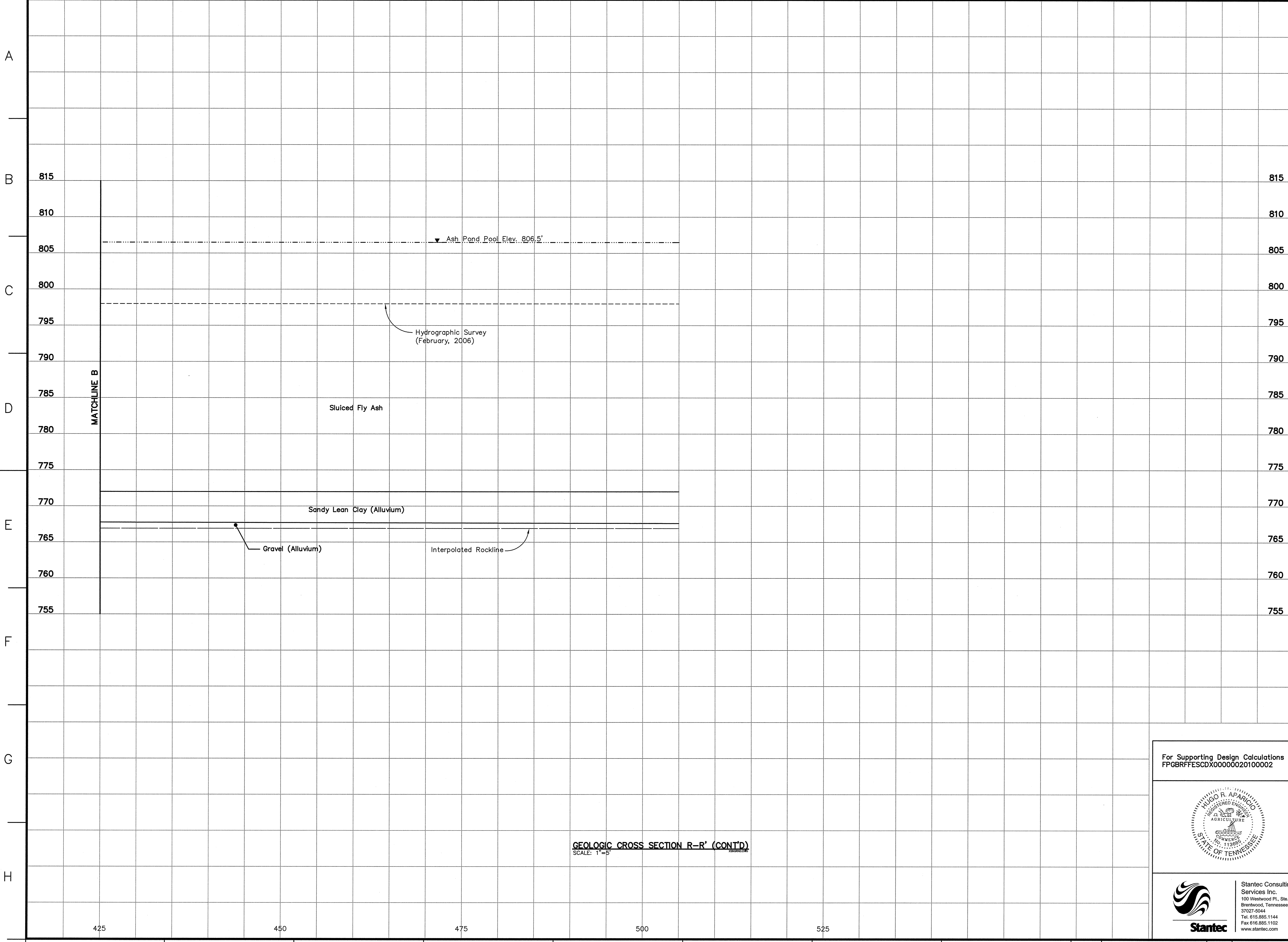
**BULL RUN FOSSIL PLANT  
TENNESSEE VALLEY AUTHORITY  
FOSSIL AND HYDRO ENGINEERING**

AUTOCAD R 2000	DATE: 04/09/10	49	C	10W507-36	R 0
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PLOT FACTOR: XX  
W\_TVA  
C.A.D. DRAWING  
DO NOT ALTER MANUALLY

PLOT DATE: 04/09/2010 USER: BNSH PJ V:\114\ACTIVE\1748818\ENVIRONMENTAL\DRAWINGS\BULL RUN FOSSIL PLANT\RECORD\00002-36-RECORD





**LEGEND**

①	Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
②	Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
③	Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
④	Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
⑤	Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
⑥	Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
⑦	Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
⑧	Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
⑨	Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
⑩	Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
⑪	Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
⑫	Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
⑬	Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
⑭	Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
WH	Weight of Hammer
WR	Weight of Rods
△	Standard Penetration Test Interval
■	Undisturbed Thin-Walled (Shelby) Tube Sample
N.M.C.	Natural Moisture Content (%)
U.W.W.	Unit Weight Wet (lbs./cu.ft.)
U.W.D.	Unit Weight Dry (lbs./cu.ft.)
03/31/09	Water Level and Date Recorded
T.O.R.	Top of Rock (Indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)
B.C.-	Begin Rock Core
R.Q.D.	Rock Quality Designation (%)
REC.	Recovery (%)
Refusal	Auger Refusal using a carbide-tipped tooth auger bit
No Refusal	No Refusal Encountered
*	Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

**NOTES:**

- The Tennessee Valley Authority Surveying and Project services performed an aerial survey of the Bull Run Fossil Plant in April 2009, a land survey in September 2009, a hydrographic survey of the Fly Ash Disposal Area 2 in February 2006 and a hydrographic survey of the Clinch River in September 2009.
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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002

SCALE: 1"=5' EXCEPT AS NOTED

**YARD**

**GEOTECHNICAL EXPLORATION**  
**GEOLOGIC CROSS SECTION R-R'**

DESIGNED BY:	W. MATTINGLY	DRAWN BY:	T. JOHNSON	CHECKED BY:	P. KISER	SUPERVISED BY:	S. FIELD	REVIEWED BY:	H. APARICIO	APPROVED BY:	H. APARICIO	ISSUED BY:	T. JOHNSON
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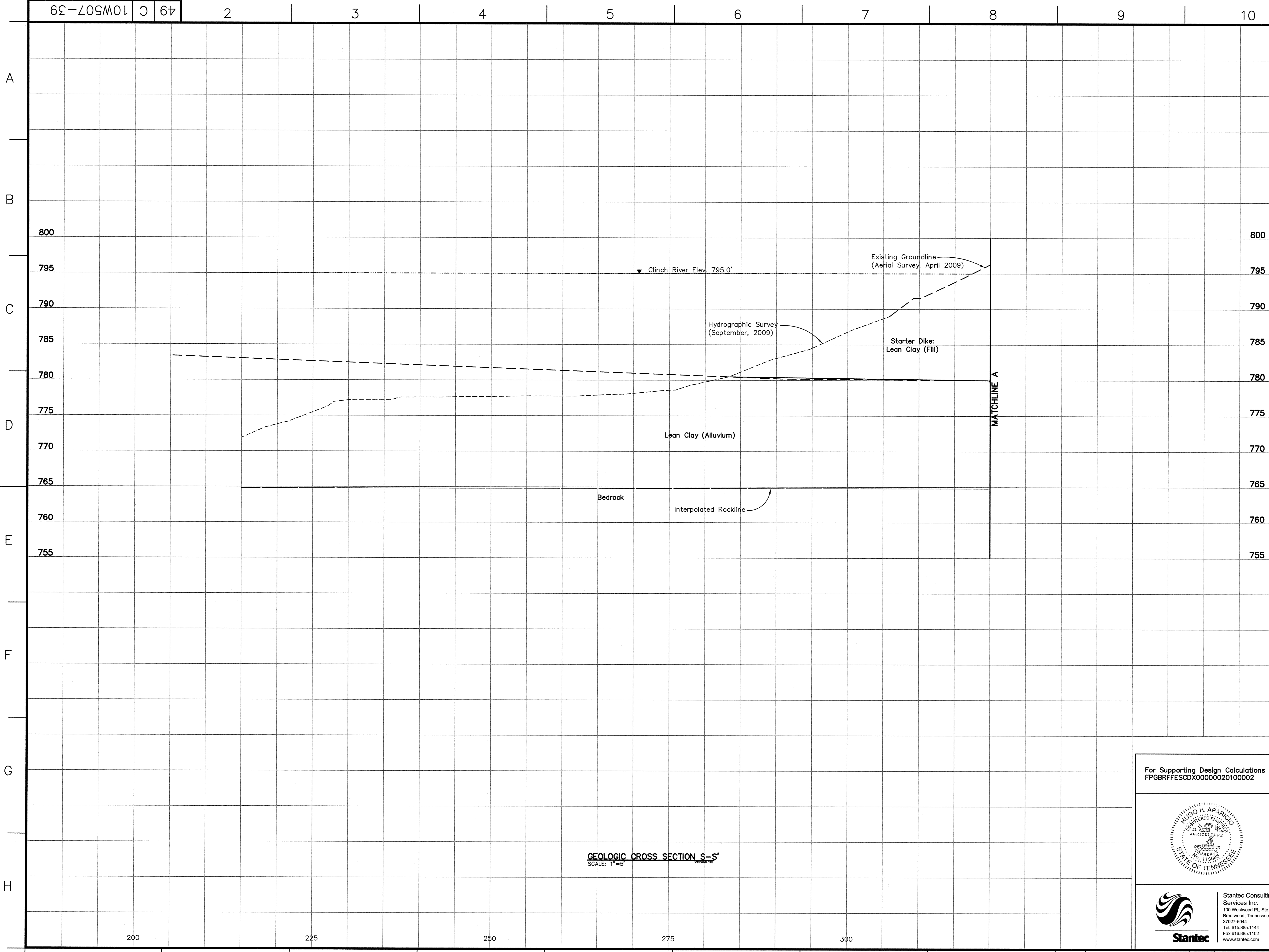
**BULL RUN FOSSIL PLANT**  
**TENNESSEE VALLEY AUTHORITY**  
 FOSSIL AND HYDRO ENGINEERING

AUTOCAD R 2000 DATE 04/09/10 49 C 10W507-38 R 0

STANTEC 0  
 TASK COMPLETED BY: REV NO.

PLOT FACTOR:XX  
 W\_TVA  
 C.A.D. DRAWING  
 DO NOT ALTER MANUALLY

PLOT DATE: 04/09/2010 USER: RINGE, P.J.  
 V:\P14\ACTIVE\1748818\ENVIRONMENTAL\DRAWINGS\BFB\GEO\VELOC\RECORD\10W507-38-R.DWG

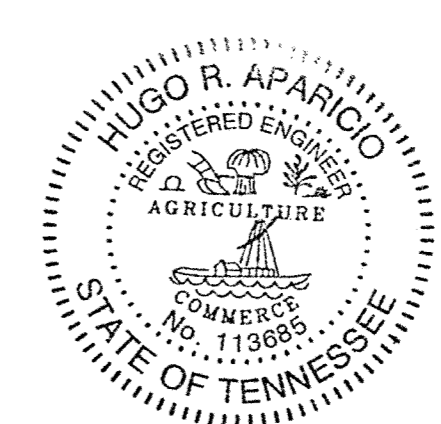


- LEGEND**
- ① [Symbol] Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② [Symbol] Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ [Symbol] Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ [Symbol] Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ [Symbol] Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ [Symbol] Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ [Symbol] Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ [Symbol] Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ [Symbol] Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ [Symbol] Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ [Symbol] Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ [Symbol] Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ [Symbol] Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ [Symbol] Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 < Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 ■ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ■ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 Water Level and Date Recorded  
 T.O.R. Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C. Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

- NOTES:**
- The Tennessee Valley Authority Surveying and Project services performed an aerial survey of the Bull Run Fossil Plant in April 2009, a land survey in September 2009, a hydrographic survey of the Fly Ash Disposal Area 2 in February 2006 and a hydrographic survey of the Clinch River in September 2009.
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**RECORD DRAWING**

For Supporting Design Calculations see  
 FPGBRFFESCDX00000020100002

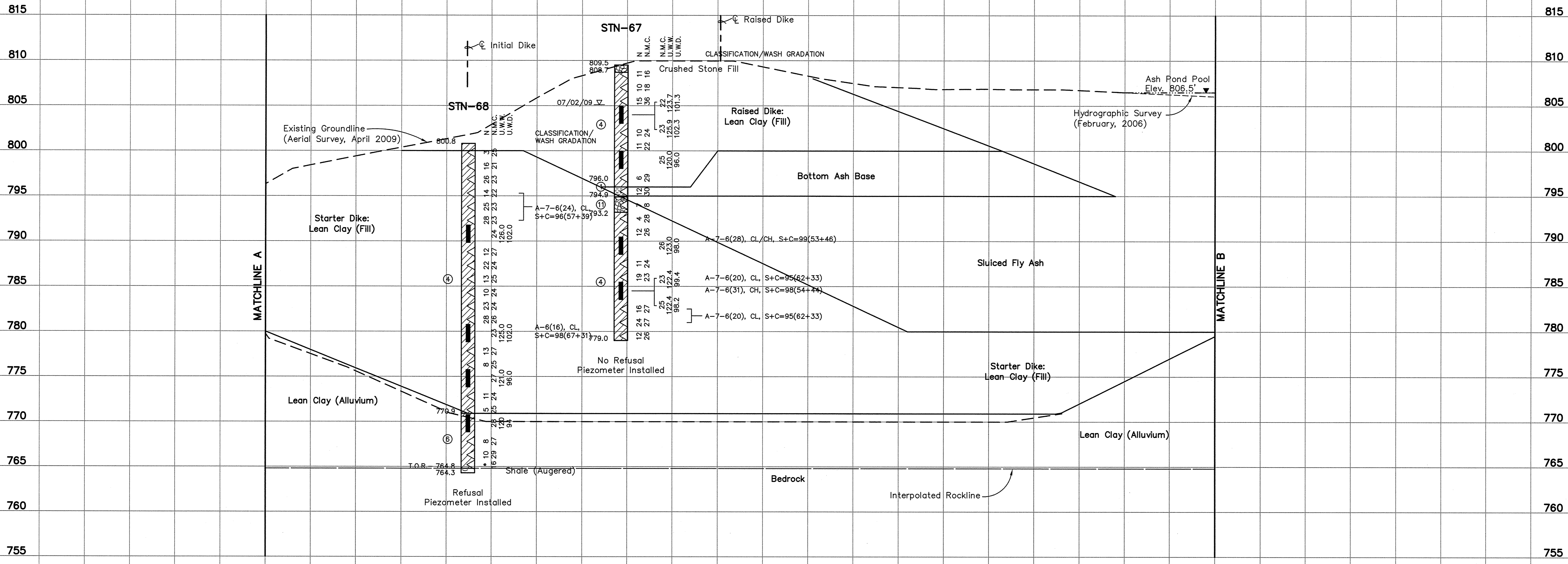


**Stantec**  
 Stantec Consulting Services Inc.  
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 Fax: 615.885.1102  
 www.stantec.com

REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RWMD	APPR	ISSD	PROJECT ID	AS CONST	REV. NO.
0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ			
SCALE: 1"=5' EXCEPT AS NOTED											
YARD											
GEOTECHNICAL EXPLORATION											
GEOLOGIC CROSS SECTION S-S'											
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:					
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON					
BULL RUN FOSSIL PLANT											
TENNESSEE VALLEY AUTHORITY											
FOSSIL AND HYDRO ENGINEERING											
AUTOCAD R. 2000	DATE	49	C	10W507-39			R 0				
PLOT FACTOR: XX											
W_TVA											

**GEOLOGIC CROSS SECTION S-S'**  
 SCALE: 1"=5'

A  
B  
C  
D  
E  
F  
G  
H



- LEGEND**
- ① Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
  - ⑦ Sandy Lean Clay, light brown to brown to tan, moist, very soft to stiff, with fine to medium sand and occasional silts, silt and organics
  - ⑧ Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 Δ Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 ■ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ■ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 T.O.R. Water Level and Date Recorded  
 Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
 B.C.- Begin Rock Core  
 R.Q.D. Rock Quality Designation (%)  
 REC. Recovery (%)  
 Refusal Auger Refusal using a carbide-tipped tooth auger bit  
 No Refusal No Refusal Encountered  
 \* Standard Penetration Test (SPT) terminated per ASTM D 1586-99. Refer to typed boring log.

- NOTES:**
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**RECORD DRAWING**

**GEOLOGIC CROSS SECTION S-S' (CONT'D)**  
SCALE: 1"=5'

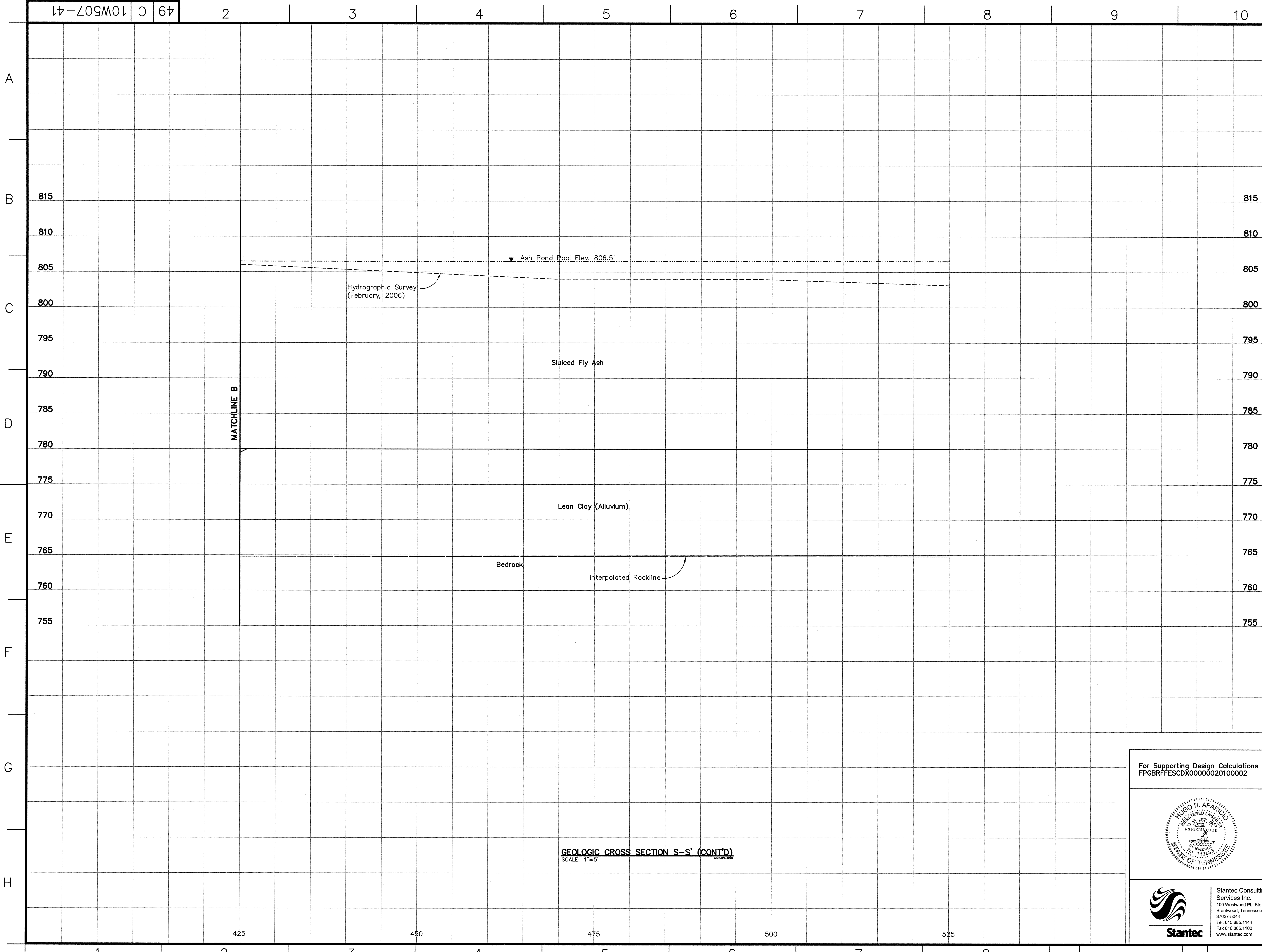
For Supporting Design Calculations see  
FPGBRFFESCDX00000020100002



**Stantec**  
 Stantec Consulting Services Inc.  
 100 Westwood Pl., Ste. 420  
 Brentwood, Tennessee  
 37027-5044  
 Tel: 615.885.1144  
 Fax: 615.885.1102  
 www.stantec.com

DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON
<b>BULL RUN FOSSIL PLANT TENNESSEE VALLEY AUTHORITY FOSSIL AND HYDRO ENGINEERING</b>						
AUTOCAD R 2000	DATE	49 C	10W507-40	R 0		



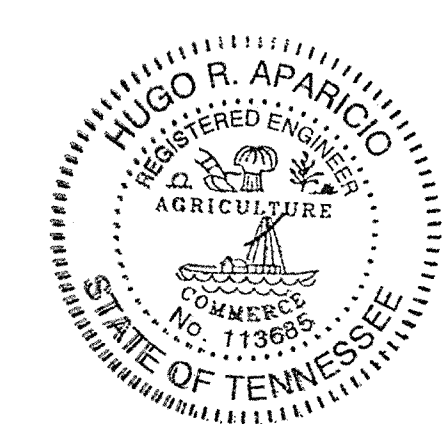


- LEGEND**
- ① [Symbol] Fill: Bottom Ash, gray to black, moist to wet, loose to very dense
  - ② [Symbol] Fill: Bottom Ash/Fly Ash mixture, gray to black gray, moist to wet, loose to very dense
  - ③ [Symbol] Sluiced Fly Ash, light gray to gray, moist to wet, very soft to medium stiff, with occasional bottom ash
  - ④ [Symbol] Fill: Lean Clay, light brown to reddish brown to tan, moist, soft to very stiff with some fine to medium gravels and occasional organics
  - ⑤ [Symbol] Fill: Sandy Lean Clay, light brown to brown, moist to wet, medium stiff to stiff, with some fine gravels
  - ⑥ [Symbol] Lean Clay, light brown to brown to red brown, moist, very soft to stiff, occasional silt and manganese concretions and trace sands
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  - ⑧ [Symbol] Fat Clay, reddish brown to brown to gray, moist, very soft to stiff, with occasional gravel in fill and trace sands and silt
  - ⑨ [Symbol] Clayey Sand, light brown to tan brown to gray, moist to wet, loose to medium dense, fine to medium grained, well graded with occasional clay
  - ⑩ [Symbol] Sand, light brown to brown, moist to wet, very loose to dense, fine to coarse grained, well graded, occasional gravels and silt
  - ⑪ [Symbol] Gravel, brown, wet, loose to dense, medium to coarse grained, rounded, with occasional sands
  - ⑫ [Symbol] Silt, dark brown to brown, moist to wet, very soft to stiff with occasional organic matter and clay
  - ⑬ [Symbol] Lean Clay with Sand, light brown to gray brown, moist to wet, very soft to stiff, with occasional silt, gravels and organics
  - ⑭ [Symbol] Silty Sand, tan to brown, moist to wet, loose to dense, fine to coarse grained, well graded with occasional gravels
- WH Weight of Hammer  
 WR Weight of Rods  
 < Standard Penetration Test Interval  
 ■ Undisturbed Thin-Walled (Shelby) Tube Sample  
 ■ N.M.C. Natural Moisture Content (%)  
 ■ U.W.W. Unit Weight Wet (lbs./cu.ft.)  
 ■ U.W.D. Unit Weight Dry (lbs./cu.ft.)  
 03/31/09 ▽ Water Level and Date Recorded  
 T.O.R. - Top of Rock (indicates the beginning of rock-like resistance to the advancement of the augers. This may indicate the beginning of weathered bedrock, boulders or rock remnants. An exact determination cannot be made without performing rock coring.)  
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**RECORD DRAWING**

For Supporting Design Calculations see  
FPGBRFFESCDX00000020100002



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R 0	04/09/10	WRM	TJ	PVK	SF	HRA	HRA	TJ	-	-	-	-	-	-	-	-	-	-	-
RECORD DRAWING																			
REV. NO.	DATE	DSGN	DRWN	CHKD	SUPV	RVWD	APPR	ISSD	PROJECT ID	AS CONST	REV. NO.								
SCALE: 1"=5'										EXCEPT AS NOTED									

YARD																				
GEO TECHNICAL EXPLORATION																				
GEOLOGIC CROSS SECTION S-S'																				
DESIGNED BY:	DRAWN BY:	CHECKED BY:	SUPERVISED BY:	REVIEWED BY:	APPROVED BY:	ISSUED BY:														
W. MATTINGLY	T. JOHNSON	P. KISER	S. FIELD	H. APARICIO	H. APARICIO	T. JOHNSON														
BULL RUN FOSSIL PLANT																				
TENNESSEE VALLEY AUTHORITY																				
FOSSIL AND HYDRO ENGINEERING																				
AUTOCAD R 2000	DATE	49	C	10W507-41	R 0															