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PRODUCTS.**

CLAY CAP TEST SECTION
CONSTRUCTION REPORT
MIXED WASTE MANAGEMENT
FACILITY (MWMF) CLOSURE
SAVANNAH RIVER PLANT

APPENDIX 2

E.I. du Pont de Nemours & Co., Inc.
Engineering Dept., Proj. Engineering. Div., AES-Fairview
c/o Chas. T. Main, Inc., 5950 Fairview Road
P.O. Box 240236
Charlotte, NC 28224

MASTER

DISTRIBUTION ... THIS DOCUMENT IS UNLIMITED

Mueser Rutledge Consulting Engineers
708 Third Avenue
New York, New York 10017

February 26, 1988

APPENDIX 2

MRCE Daily Field Reports Nos. 1 to 54

MRCE File 6524

APPENDIX 2

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APPENDIX 2

MRCE Daily Field Reports Nos. 1 to 54

MRCE File 6524

APPENDIX 2

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

REPORT NO. 1

DATE: 9-21-87

FILE NO. 6524

WEATHER Sunny
Hum = 28%, Wind = 1 mph

PROJECT MWMF Closure, Clay Cap
Test Section

TEMPERATURE 62°-91°

To	Name	R	To	Name	R
	JPG			WW	
	EAR			HSL	
	EMB			AHB	
	DAY			WGS	
	GJT			JLK	
	WHA			SLT	
	PHE			TF	
	RCJ			JM	
	NWK			RJP	
	JWF			KWC	
	VA			ORL	

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

File No.

Du Pont 0800-1630 2 graders, 1 dozer, 1 self loading pan

RECEIVED

1 Cat 815 compactor, 1 drum compactor

P 28 1987

PROGRESS OF WORK:

1/4

Arrived at CAB at 0800 and met with J. Newell (C.T.M.) and J. Innis (MK).

Met with N. Shramek (PTL) from 0900-0930 and discussed Quality Control Testing program. PTL will have an inspector obtaining samples at the clay pits (B. Mitchell) and a second inspector obtaining samples from truck deliveries at the site (L. Kibbee). PTL intends to perform Standard Proctor (ASTM D 698-78) on samples prepared as follows:

- 1) Oven dry all material overnight at 130°F.
- 2) Pass it through the No. 4 sieve.
- 3) Add water

The writer requested PTL to try to run one point at the natural water content without first drying it back.

Visited the site from 0930-1000. R. Scott (Du Pont Contr.) is supervising the truck deliveries. Material was being stockpiled in SA3 (Cyprus Tertiary), SB3 (Dixie), and SC3 (Huber). PTL inspector began obtaining samples in plastic bags (no jars available).

Du Pont is presently stripping material from the south end of the site and placing it in the center of the site to fill the swale. The access road at the north end of the site is also being worked on.

J. Newell informed the writer the material stockpiled north of the site is being considered for use as the 9" drainage layer. The material appears to be dk brn to lt brn f-m sand, sm silt, & veg (sm).

Visitors:

Robert B. Rein
Resident Engr.

DAILY FIELD REPORTREPORT NO. 1DATE: 9-21-87FILE NO. 6524

WEATHER _____

PROJECT MINE Closure, Clay Cap
Test Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/4

J. Newell, J. Innis, N. Shramet, B. Mitchell and the writer visited the Dixie, Huber, Cyprus Tertiary and Cyprus Cretaceous clay pits from 1030-1530.

Dixie

Visited fresh face being excavated for test section. Today they are only running two trucks. Starting tomorrow they expect to have five trucks running. Each truck carries 23 tons $\pm$. Estimated delivery rate is 20 truck loads per day (460 tons $\pm$). PTL left labeled plastic bags with the backhoe operator and instructed him to obtain a representative small sample every third truck (70 tons $\pm$), and a 50 pound $\pm$ sample every seventh truck (160 tons $\pm$).

Huber

Visited stockpiles in Barden mine where material for test section is being excavated. Huber supervisor says 50 percent of amount required for full scale project would be taken from existing stockpiles. Remaining 50 percent would come from fresh faces. The material did not appear to be dried out beneath the outer few inches of the stockpile. They are running five 18 tons $\pm$ trucks and one 23 tons $\pm$ truck. Estimated delivery rate is 30 truck loads per day (565 tons $\pm$).

PTL left labeled plastic bags with the backhoe operator and instructed him to obtain small sample every third truck (55 tons $\pm$), and a 50 pound $\pm$ sample every ninth truck (165 tons $\pm$).

Visitors:

R. B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORTREPORT NO. 1DATE: 9-21-87FILE NO. 6524

WEATHER _____

PROJECT MWME Closure, Clay Cap
Test Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/4

Cyprus Tertiary

Visited fresh face being excavated for test section. Running five 23 ton $\pm$ trucks. Estimated delivery rate is 20 truck loads per day (460 tons $\pm$).

PTL left labeled plastic bags with the backhoe operator and instructed him to alternate a small sample and a 50 pound $\pm$ sample every third truck.

Cyprus Cretaceous

Visited fresh face to be excavated for test section. Will not start production in this mine until they complete deliveries of Tertiary.

PTL will obtain required sampler when production begins.

According to estimated delivery rates provided by clay vendors, all clay from Dixie, Huber and Cyprus Tertiary should be at the site by Friday or very early next week.

The writer reviewed sampling requirements with PTL inspector. He will attempt to visit each pit three times per day and watch to see that material is relatively uniform and uncontaminated. For the remainder of this afternoon, he will attempt to visit Dixie and Huber to see if requested samples are being properly obtained. He is aware that at estimated delivery rates, all 50 pound $\pm$ sampler should be obtained by Wednesday (9-23) morning. He will be at the pits full time until deliveries completed.

Returned to site at 1600. Met with J. Wood (DuPont Const.) who informed us that the 40' x 100' plastic covers DuPont ordered for the clay have not arrived. They may not get to the site until Wednesday.

Visitors:

Ralph B. Rein
Resident Engr.

DAILY FIELD REPORTFILE NO. _____
RECEIVED

SEP 28 1987

MRCE

REPORT NO. 1DATE: 9-21-87FILE NO. 6524

WEATHER _____

PROJECT MWMF Closure, Clay Cap
Test Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/4

The writer recommended that until the covers arrive the clay should be stockpiled in as large piles as possible to minimize drying or wetting. No rain is predicted for the next few days.

The writer telephoned J. Kaufman (MRCE) to discuss progress to date. His recommendations were as follows:

1. Quality Control Testing

- a. First priority should be Proctors, related Atterberg Limits and lab and Speedie water contents on Cyprus Tertiary and Dixie.
- b. Laboratory and Speedie water contents should only be performed on every other sample obtained from the clay pits rather than on every sample as specified in Tables A-1 and A-2 on Dwg T-2.

Laboratory water contents should only be performed on every other sample obtained from the truck deliveries rather than on every sample as specified in Table A-1 on Dwg T-2.

However, original sampling frequency as specified on Dwg. T-2 should still be adhered to.

2. Drainage Layer

Use stockpiled (SM) material compacted with three passes.

3. Access Roads in Conditioning Area

Provide access lanes aligned E-W at 45'± on center to provide access for water trucks.

Left the plant at 1745.

Visitors:

Robert B. Reiss
Resident Engr.

RECEIVED

DAILY FIELD REPORT

SEP 28 1987

REPORT NO. 2DATE: 9-22-87FILE NO. 6524WEATHER Sunny

M R C E

PROJECT MWME Closure, Clay Cap
Test Section

Hum=37%, Wind=2-5 mph

TEMPERATURE 62°-89°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 2 graders, 1 dozer, 1 pan,
1 Cat 815 compactor, 1 drum compactor 1/4

PROGRESS OF WORK:

EAR	✓	WGS	✓
END		AHS	
LAZ		WGS	
GJT		JLK	
WH4		SLT	
PHE		JM	
RCJ		RJP	
NWK		KWC	
JWF		GRL	
VA			

Arrived at site at 0745.
Truck deliveries started arriving at 0700.

Met with N. Shramek from 0800-0830 and informed him of J. Kaufman's recommendations regarding the Quality Control Testing program as described on Sheet 4 in Daily Field Report (DFR) #1, 9-24-87.

Accompanied J. Newell to attempt to obtain a Polaroid and 35mm camera along with contraband pass at CAB. Polaroids must be checked out and returned daily. No 35mm cameras are available so one would have to be ordered (two weeks). J. Newell informed the writer he will attempt to arrange for both cameras through other channels.

J. Newell, P. Atkins (DuPont), R. Scott and the writer discussed the following:

1. Tarps

DuPont will obtain clear plastic covers for stockpiles probably by the end of today. Whereabouts of the 40'x100' tarps mentioned in DFR #1 is unknown.

The writer recommended the completed portions of the stockpile be covered at the end of each day and be maintained that way.

DuPont intends to obtain heavier tarps for covering the test panels if required.

2. Shredder

Presently at Central Shops being inspected and cleaned. Possibly be at the site by Thursday.

Visitors:

R. B. R.
Resident Eng.

DAILY FIELD REPORTREPORT NO. 2DATE: 9-22-87FILE NO. 6524

WEATHER _____

PROJECT MWME Closure, Clay Cap Test
Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/4

3. Drainage Layer

According to R. Scott stockpiled (SM) material has significant pockets of organics and "muck" within it. DuPont feels it would be very difficult to work with if it gets wet by rains. They say it is no problem to bring in Burma Road sand for drainage layer. The writer recommended they do so.

4. Water Truck

DuPont has one water truck available which is presently performing dust control over the whole plant. They are attempting to locate a rental water truck but prospects are not good. Observation of DuPont water truck indicated uneven distribution of spray on side and behind truck. DuPont brought up possibility of using hoses. The writer recommended that depending upon what is available, access lanes within the conditioning area may be advantageous.

5. Priority Clay Pits

The writer recommended that all work for Cyprus Tertiary and Dixie be completed first as there are the clays we will have lab data available on first. J. Newell requested DuPont have layout crew begin staking out conditioning areas and test panels.

6. Work Hours

DuPont plans on working eight hour days, 5 days a week unless notified sufficiently in advance.

Visitors:

Ralph B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 2DATE: 9-22-87FILE NO. 6524

WEATHER _____

PROJECT MWME Closure, Clay Cap Test
Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/4

Inspected the wheels on the Cat 815 compactor. Pads don't appear to be excessively worn. Measured uniform length of pads at $7\frac{1}{8}$ ".

Pad Print

Pads are about $14\frac{1}{2}$ " c.c. around the wheel perimeter

Scale: 1" = 30"

Visited PTL lab to check on progress of Q.C. lab testing. Results to date as follows:

50 lb. Proctor Clay Pit Samples

<u>Pit</u>	<u>Lab Wn %</u>	<u>Speedy Wn %</u>	<u>Std Proctor Point Wn %</u>	<u>Yd (pcf)</u>
Cyprus Tertiary	21.8	23.0		
Dixie	22.9	29.0		
	21.4	25.0	21.4	92 ±
Huber	22.0	22.5		
Visitors:	20.3	23.0		

Ralph B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 2DATE: 9-22-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure, Clay Cap Test
Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/4

Truck Delivery Sampler

<u>Pit</u>	<u>No. of Tests</u>	<u>Range Lab Wt %</u>	<u>Avg Lab Wt %</u>
Cyprus Tertiary	13	17-24	20
Dixie	11	21-26	23
Huber	20	20-25	23

Met with PTL inspector responsible for clay pits. He visited each pit three times today. Represents a full days work. He says operators at each pit are cooperating fully and number of sampler each provided matched with number of trucks and requested frequency of sampling. He was able to obtain most of the 50 pound samplers himself. He brings sampler back to the lab each night to begin drying of Proctor sampler and lab and speedy water content on 50 lb sampler. Material at each pit appears uniform according to him.

According to PTL, about 84 truck loads were delivered today.

Left the plant at 1745.

Visitors:

Ralph B. Ri
Resident Engr.

Elle No
RECEIVED

SEP 28 1987

DATE: 9-23-87

WEATHER Sunny

Hum = 4790, Wind = 1 m/s

TEMPERATURE 59-84

M R C E

ST SHIPT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 dozer, 1 grader

0800-1630

1 roller 1815 compactor

PROGRESS OF WORK:

 $\frac{1}{2}$

Arrived at PTL laboratory at 0730.

Visited clay pits with PRL inspector from 0800-1245.

Dixie

M. Smith informed us trucking company hauling clay pulled out their equipment this morning due to mistakenly thinking they were limited to 1750 tons per week. This information was passed along to Dupont and the hauler was informed he was free to continue hauling the remainder of the clay. Hauling will resume tomorrow. Material at the pit is uniform. All six Proctor samples have been obtained.

Huber

About 1250 tons had been hauled as of 1000. Hauling continuing. Material appears uniform. All six Proctor samples have been obtained.

Cyprus Tertiary

About 1000 tons had been hauled as of 1145. Hauling continuing. Material appears uniform. All six Proctor samples have been obtained.

Arrived at test section site at 1330. Observed the following:

1. DuPont placing gravel on access road at north end of site.
2. Compactors running at south end of site in vicinity of panels.
3. DuPont layout staking out test panels and determining present grades in panel areas.

Visitors:

Rakt B. Ni
Resident Engr.

Resident Eng

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

RECEIVED

DAILY FIELD REPORT

SEP 28 1987

REPORT NO. 3DATE: 9-23-87FILE NO. 6524

WEATHER _____

PROJECT MNMF Closure, Clay Cap
Test Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

M R C E

PROGRESS OF WORK:

2 1/2

4. Clear, reinforced plastic covers have been placed over stockpiles SA3, SB3 and SC3. The covers are over the entire stockpile surfaces.
5. Informed J. Oliver (DuPont Const.) that red-brn non-plastic Burma Rd. sand would be most desirable for drainage layer. He will start hauling it as soon as the graders in test panel areas are satisfactory.
6. Discussed with J. Oliver the importance of determining the actual flow rate and coverage area of the water truck to be used to condition clay. He informed writer flow rate varies with speed of the truck for newer water truck. The writer recommended the water truck to be used be brought to the site as soon as possible for calibration and inspection.
7. Disc-harrow at the site has two axles with eight discs on each, with discs along an axle spaced one foot apart. Distance from bottom of axle to bottom of disc is 9". Total disc diameter is 27 inches.

J. Oliver informed the writer he had run the recycler over the practice clay panel DuPont Const. built in the "Rubble Pit" off Burma Road. The recycler is from BROS, model number LSPRM-8A. The writer visited the Rubble Pit and found the depth of the recycled material to be about 10 to 12 inches. About 50 percent of the material was less than 1/8" diameter with the maximum clod size at one inch. The width of the recycler drum is about 7 1/2 feet.

Visited PTH lab. They are currently performing Proctors and lab and speedy water contents. Informed Nishnamuk we would like Visitors: the same Speedy being used in the lab to be used in the field.

Left the site at 1715.

Robert B. Rice
Resident Eng.

DAILY FIELD REPORT

File No.

RECEIVED

REPORT NO. 4DATE: 9-24-87

SEP 29 1987

FILE NO. 6524WEATHER Partly Cloudy

Hum = 48%, Wind = 1-2 mph

PROJECT MWMF closure, Clay Cap Test
SectionTEMPERATURE 59°-86°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 grader, 1 drum compactor
1 loader, 1 dozer, shredder.

PROGRESS OF WORK:

1/4

Arrived at PTL lab at 0730.

Visited clay pits with PTL inspector from 0830 to 1230.

Dixie

Trucks have resumed hauling clay. They are still mining same area they started in. Clay excavated today is consistent with clay delivered earlier. Top 7 feet $\pm$ of face is white and 0.5 feet $\pm$ of an underlying gray clay is being excavated. By the end of the day about 2100 tons total had been delivered to the site.

Huber

Mining in the same stockpile they started on. Clay excavated today is consistent with clay delivered earlier. By the end of the day about 2100 tons total had been delivered to the site.

Cyprus Tertiary

Backhoe has moved to a new location about 200 feet from where he started. New location appears to be at the same elevation as original location and the clay is visually similar and at the same water content. Clay pit bag samples beginning with #11 are from the new location. Requested PTL to obtain a 50 pound sample at new location but not to perform a Proctor on it unless directed. About 1900 tons total had been delivered by end of the day.

Cyprus Cretaceous

Workers are presently working on the haul road within the mine. Portions of road are very soft. The clay face to be mined appears wet and soft in many areas. Some slumping of the face has occurred. Appears significant amount of work will have to be done before excavation and hauling can begin.

Visitors:

Rakht B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

REPORT NO. 4

DATE: 9-24-87

FILE NO. 6524

WEATHER

PROJECT MWME Closure, Clay Lap Test
Section

TEMPERATURE

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/4

Visited test section site from 1300 to 1600.

DuPont placing gravel on roadway between stockpile areas and conditioning areas.

Layout is locating test panels. The writer discussed with layout the system of stationing and offset for the conditioning area and requested that they at least place stakes at 20 foot intervals. Also discussed the elevation data required for the test panels.

F. Trevathan (Gleason) was on site to give a demonstration of the shredder. About nine tons of Huber clay were shred. The shredder shot the clay about 30 to 40 feet. Maximum clod size of the shredded clay was about 2 1/2 inches. About 5 percent of the shredded clay was longer than 1 1/2 inches. F. Trevathan informed DuPont and the writer he could replace the present sizing screen to reduce the maximum clod size. The screen on at present will allow a maximum clod of 1 1/2" x 2 1/2" to pass. He was available for installation another screen which will allow a maximum clod of 3/4" x 2" to pass. With additional welding he can further reduce the second screen to allow a maximum clod of 1/2" x 2" to pass. He provided the writer with the following gradation results obtained using the 1/2" x 2" maximum clod size screen on a Kaolinite:

<u>Size or Sieve No</u>	<u>% Retained</u> <u>% Passing</u>
71"	0
3/4" - 1"	0
1/2" - 3/4"	5.1%
1/4" - 1/2"	26.1%
No. 5 - 1/4"	12.6%
No. 10 - No. 5	16.0%
No. 20 - No. 10	14.2%
No. 30 - No. 20	25.6%

Visitors:

Ralt B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 4DATE: 9-24-87FILE NO. 6524

WEATHER _____

PROJECT MWMF Closure, Clay Cap Test
Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/4

The writer telephoned J. Kaufman (MACE) and it was agreed to replace the present sizing screen with the one allowing $3/4" \times 2"$ maximum clod size. F. Trevathan is having his office ship it up and he will install it before Monday.

The writer inspected the water truck to be used to condition the clay. It has a capacity of 3500 gallons and has one sprayer in the front and two in the rear. The sprayers are about eight to nine inches long and $1/16$ inch wide. The rear sprayers can be adjusted to any lift or direction.

The water is discharged under pressure generally dependent on the rpm's of the truck. The writer directed the driver to fill up and measure the time required to empty the truck moving at normal speed and with only the two rear sprayers discharging. Calculated flow rate was 407 gallons per minute (8 min - 36 seconds). (204 gpm per sprayer). Measured distance of uniform spray from side of truck for various sprayer orientations varied as follows:

Water truck has about 11" clearance from axle and piping to ground. Driver does not think he can drive through 18" of loose, wet clay. Discussed with Dupont the possibility of having to leave access lanes within the conditioning areas to allow for wetting.

Additional calibration of water truck will be attempted tomorrow.

Visitors:

Robert B. Ri
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORTREPORT NO. 4DATE: 9-24-87FILE NO. 6524

WEATHER _____

PROJECT MWMF Closure, Clay Cap Test
Section

TEMPERATURE _____

CONTRACTOR'S WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/4

Discussed with DuPont the need to coordinate the water truck with the recycler following behind it. Requested that they demonstrate the recycler tomorrow on loose unshredded clay. J. Oliver said he will perform the demonstration.

Discussed with P. Atkins the problem narrow disc blades being only 9 inches long rather than 12 inches. He says between 9 inch discs and recycler clay could be dried back. The writer pointed out that due to slow speed of recycler it may not be practical to use for drying clay. He says he may be able to locate a 12 inch disc if needed.

DuPont has started to haul red-brn f-m sand, tr. silt (SP-SM) (Burma Rd sand) to Cyprus Tertiary test panels to serve as drainage layer.

Visited PTL lab from 1615 - 1715. They provided copies of all lab tests completed to date. They will be working overtime to try to complete as much testing as possible by Monday morning.

Left the plant at 1715.

Visitors:

Ralt B. R.
Resident Engr.

DAILY FIELD REPORT

File No.

RECEIVED

SEP 28 1987

REPORT NO. 5DATE: 9-28-87FILE NO. 6524WEATHER Sunny

M R C E

PROJECT MWME Closing, Clay Cap Test
Section

Hum = 48%, Wind = 1 mph

TEMPERATURE 59°-89°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 dozer, 1 grader

PROGRESS OF WORK:

1 pan, 1 drum roller
1/2

To	Name	R	To	Name	R
	JPS			WW	
	EAR			WSL	
	EMB			AHB	
	OAZ			WGS	
	GJT			JLK	
	WHA			SLT	
	MHE			TF	
	RCJ			JM	
	NWK			RJP	
	JWF			KWC	
	VA			GRL	

Arrived at site at 0745.

Du Pont completed the gravel roadway between the stockpile and the conditioning areas.

Presently performing final grading within conditioning area CA and completed compaction of sand drainage layers for test panels A1, A2, B1 and B2. Measured dimensions of drainage layers as follows:

Width dimension for all panels is from top edge to top edge of panel.

Length dimension includes end ramps.

Piles of Burma Rd sand are being hauled to test panels C1 & C2.

A second Cat 815B Compactor is at the site. The wheels have the same dimensions as those on the other Cat 815B. The pads were measured at 7 1/4" from wheel to tip.

A tractor for pulling the disc-harrow is also now at the site.

Du Pont did not have time to demonstrate the recycler today. They hope to begin shredding Cyprus Tertiary sometime Monday (9-28)

Issues:

Robert P. Ri

Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

DAILY FIELD REPORTREPORT NO. 5DATE: 9-25-87FILE NO. 6524

WEATHER _____

PROJECT MWME Closure, Clay Clay Test
Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

Cyprus Tertiary, Dixie and Huber all completed their clay deliveries to the site before 1400 hours.

Total truck loads to deliver 2500 tons for each vendor were as follows:

Cyprus Tertiary: 106 truck loads
Dixie: 102 truck loads
Huber: 110 truck loads

Stockpile SBI for Dixie is only about $\frac{1}{3}$ of the length of a normal stockpile.

All stockpiles were covered with plastic at the end of the day.

According to PTL inspector at the clay pits, Cyprus Cretaceous may not be ready to start delivering until Tuesday due to work being done on the haul roads.

Further inspection of water truck

Driver had new treaded tires put on truck. He believes it may enable him to drive truck through clay. If so he would only be able to use 1st gear but could control water output by maintaining 1500 rpm.

The writer timed the water truck moving over hardground in 1st & 2nd gears as follows:

1st gear = 6 ft/sec = 358 ft/min

2nd gear = 10.3 ft/sec = 619 ft/min

If possible to drive through clay, speed would be even slower. Will attempt to do it as soon as shredding begins.

Adjusted sprayers to provide almost uniform spray without overlap at center. Area covered was about 32' wide. Heavier spray in outermost 4' on both sides.

Will pick up PTL lab results tomorrow.

Visitors: PTL should have most Proctors, Lab and Speedys done by Monday morning.

Left the site at 1700.

Ralph B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

RECEIVED

OCT - 2 1987

M R C E

REPORT NO. 6

DATE: 9-28-87

FILE NO. 6524

WEATHER Cloudy

PROJECT MWMF Closure, Clay Cap Test Section

Hum = 82%, Wind = 0:

TEMPERATURE 68°-87°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 2 graders, 2 loaders,

1 shredder, 1 drum compactor,

PROGRESS OF WORK:

1/2

To	Name	R	To	Name	R
	JPB			WW	
	EAR			MSL	
	EMB			AHB	
	DAZ			AWIS	
	GJT			JLK	
	WHA			SLT	
	PHE			YP	
	RCJ			JM	
	NWK			RJP	
	JWF			WVW	
	VA			GRL	

Arrived at site at 0745.

Du Pont informed the writer they would be ready to start shredding clay this morning.

Visited PTL lab to inspect results of latest Moisture-Density tests. Five Proctors have been completed for Dixie clay, therefore the writer recommended Du Pont shred Dixie stockpile SB3 first. (Proctors were performed on clay from stockpile SB3.)

P. Atkins, R. Scott, J. Newell, L. Kibbee and the writer met from 1000 to 1030 to discuss the handling of the clay in the conditioning area. Topics discussed were the following:

1. The writer recommended water truck access lanes 10 feet wide and running east-west at 45 feet center to center be left clear in the conditioning area. The water truck will wet the clay using a sideward pointed sprayer.
2. Bottom 6 inches of clay in conditioning area will be compacted with a smooth drum roller to provide a stable base. The writer recommended water be added to the bottom lift to ensure it does not suck water from the top 12 inches of clay.
3. The top 12 inches will be placed and moisture conditioned as two six inch lifts. Details of conditioning to be determined at the time.
4. Shredded clay stockpiles will be covered at the end of each day as will conditioning area unless otherwise directed.

Visitors:

Ralph B. R.
Resident Engr.

DAILY FIELD REPORT

File No

RECEIVED

OCT - 2 1987

REPORT NO. 6

DATE: 9-28-87

FILE NO. 6524

WEATHER _____

PROJECT MWME Closure, Clay Cap Test Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2 1/2

M R C E			
To	Name	R	To
	JPS		WW
	EAR		WEL
	EMB		AHB
	DAZ		WGS
	GJT		JLR
	WHA		SLT
	PHE		YF
	RCJ		JM
	NWK		RJP
	JWF		WGS
	VA		WEL

Dufont shredded Dixie Stockpile SB3 from 1100 to 1600. The writer measured production rate at 135 tons/hour $\pm$ with two loaders feeding shredder. Occasional stoppages due to equipment slowdowns or temporary blockages resulted in actual production rate somewhat lower.

Maximum clod size is about 1.5 inches in longest dimension. About 10 percent of the shredded clay is sized similar to fine sand. About 50 percent of the shredded clay is smaller than 1/4 inch.

Shredder throws the clay between 30 and 40 feet.

The writer directed PTL to obtain sampler from the stockpile face and shredded pile at 20 minute intervals beginning at 1400 hours. Sampler will be oven dried tonight and possibly provide an indication of amount of drying occurring during shredding. A Speedy water content from stockpile was 23 percent and material after shredding was at 22 percent. (Attempted to sample stockpile material after shredding for direct comparison of water contents.)

Requested PTL to have results as soon as possible tomorrow morning.

After stopping shredder for the day, Dufont covered the shredded stockpile and the remainder of SB3 with plastic. A compacted 6 inch lift is down in the southernmost 35 foot wide area.

Dufont placing sand drainage layers in test panel areas C1, C2, D1 and D2.

Measured flow rate out of one sprayer of water truck at 4.49 gallons/sec (3500 gallons/13 minutes).

Measured wet unit weights for shredded Dixie clay, between 80 pcf and 89 pcf by pouring into 1/13.32 ft³ mold using various rodding or shaking techniques.

Left PTL lab at 1800.

Rolla B. R.
Resident Engt.

DAILY FIELD REPORT

OCT - 5 1987

REPORT NO. 7DATE: 9-29-87FILE NO. 6524WEATHER CloudyPROJECT MWMT Closure, Clay Cap Test SectionHum = 69% Wind 3-7 mphTEMPERATURE 66-87

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 2 loaders, 1 grader
1 shredder, 1 drum compactor
1/2

PROGRESS OF WORK:

M R C E				
No.	Name	R	C	E
1	UPG			
2	EAR			
3	EMB			
4	DAZ			
5	GJT			
6	WHA			
7	PHE			
8	RCJ			
9	NWK			
10	JWF			
11	VA			
12				
13				
14				
15				
16				
17				
18				
19				
20				

Arrived at PTL lab at 0730.

Discussed progress of testing with N. Shramek.

Requested priority be given to completing last Proctor for Dixie clay (by tomorrow morning if possible) and remaining Proctors for Cyprus Tertiary.

Arrived at site at 0815. Observed the following:

1. Cyprus Cretaceous clay trucks began arriving at 0900. Ten trucks are running today. Clay is lt gray to purple and appears to contain more sand than the other three clays. It is also wetter. PTL obtaining sampler of every truck load for lab wts. Total truck load today = 41 (985 tons $\pm$, Avg truck load = 24 tons)
2. Shredder down for repairs from 0815 to 1000. Shred clay from 1000 to 1600.
3. Placed and compacted 6" $\pm$ bottom lifts of clay in remaining three 35' x 115' areas in conditioning area. Compacted lifts with smooth drum roller. The writer recommended the clay be wet prior to compacting but Du Pont felt they would be slowed down due to the clay sticking to compactor drum. The writer recommended the top of the base lift be kept wet continuously during the day to prevent excessive drying out and cracking.
4. At 1100, Du Pont began spraying about 2.2 gpm of water into the shredder hopper to reduce dust. Represents about 0.5% increase in water content based upon measured production rate of 135 tons/hour $\pm$. Directed PTL to obtain sampler from stockpile and shredded pile every 30 minutes for lab wts.

Visitors:

Robert P. R.
Resident Engr.

DAILY FIELD REPORT

OCT - 5 1987

REPORT NO. 7DATE: 9-29-87FILE NO. 6524

WEATHER _____

PROJECT MWME closure, Clay Cap Test
Section.

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

M R C E			
To	Name	R	To
	UPG		WW
	EAR		WGL
	EMB		WMB
	DAY		WTS
	GUT		JLK
	WHA		SLT
	PHB		YP
	RCJ		JM
	NWK		RJP
	JWF		RWP
	VA		GRL

5. Helped PTL obtain two 15 lb ± samples of shredded clay for sieve analysis. Sample #1 obtained directly from shredder conveyor belt, Sample #2 obtained from shredded pile.
Requested N. Shramek to perform a wet sieve analysis on both samples.
6. Results of lab water contents on stockpile and shredded clay sampled yesterday did not indicate any drying due to shredding.
Stockpile: 4 tests: Avg $w_n = 21.8\%$
Shredded clay: 5 tests: Avg $w_n = 21.9\%$
7. DuPont shred Dixie clay in preparation for moisture conditioning tomorrow. Shredded pile covered with plastic at end of day.

Met with N. Shramek and PTL lab manager to discuss results of Speedy water contents vs. lab water contents. Results to date are inconclusive. Speedy $w_n\%$ can vary up to 2% wet or dry of lab $w_n\%$. PTL believes likely due to small sample size in Speedy (13 grams; manufacturers suggested sample size when $w_n > 20\%$).

After discussions with J. Kaufman (MACE), the writer recommended to N. Shramek that PTL attempt to obtain a microwave oven for measuring water contents at the site. He will start acquisition procedures as soon as I can provide him with a suggested manufacturer. Hot plate drying of one sample takes 30-40 minutes at 140°F. All agreed too long.

Left PTL lab at 1715.

Visitors:

Robert B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

REPORT NO. 8

DATE: 9-30-87

FILE NO. 6524

WEATHER Overcast Rain = 0.0" **RECEIVED**

PROJECT MWAF Closure, Clay Cap Test
Section

Hum = 53-98% Wind 1-9 mph

TEMPERATURE 69-89°

OCT - 5 1987

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 shredder, 1 loader

PROGRESS OF WORK:

1/2

M R C E

To	Name	R	To	Name	R
	JPG			JAV	
	EAR			WHL	
	EMB			AWD	
	DAZ			WPS	
	GJT			SLX	
	WHA			SLT	
	PHE			TR	
	RCJ			FW	
	NWK			QEP	
	JWF				
	VA				

Arrived at PTL lab at 0715.

Water contents on stockpile and shredded material are equal.

Discussed use of microwave with N. Stramek and lab manager. They have never used one for water contents.

Recommended PTL begin steps to obtain one for use at site. Recommended they contact ASTM first to see if they recommend a certain size or model. Informed PTL that ASTM has non-finalized specification for microwave use for water contents. They will contact ASTM.

PTL employee reports using microwave in Texas. He says 1/2 day to calibrate, 1 sample at a time, 9-11 minutes for a CL or CH material.

PTL performed sieve analysis on two shredded clay samples obtained yesterday but they did not use a sieve smaller than the No. 4. Requested they perform sieve analysis using sieves as small as No. 200 if needed. Will obtain two new samples for sieve analysis today as they threw out yesterdays.

Visited site at 1000.

P. Atkins cancelled Cyprus Cretaceous truck deliveries today due to very wet and muddy site conditions. Feared contamination of clay due to tracking of mud by bulldozer while shaping pile. Should resume deliveries tomorrow. Water contents on Cyprus Cretaceous vary from 23%-28%.

DuPont spent the day shredding clay, mainly from north half of stockpile SB2. Stockpile SB3 was finished off by 1000 hours this morning. The writer recommended DuPont shred from the south end of SB2 northward since south end closer to Proctor #6 but shredder arrangement and mud made them choose to stay at Visitors: north end.

Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

File No.

RECEIVED

OCT - 5 1987

REPORT NO. 9

DATE: 9-30-87

FILE NO. 6524

WEATHER _____

PROJECT MWMF Closure, Clay Cap Test Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

To	Name	AR	GN	FR	N
	DEG			VW	
	EAR			HSL	
	EMB			AMB	
	DAZ			AVOS	
	GJT			JLK	
	WHA			SLT	
	PHE			TF	
	RCJ			IM	
	NWK			KJP	
	JWF			KVC	
	VA			GRL	

Average production rate of shredder for three hours this morning with loader hauling from 60'± away was about 100 tons/hour.

Average production rate of shredder for 1 1/2 hours this afternoon with loader hauling from 20'± away was about 160 tons/hour.

DuPont still adding 1 lb to 2 gpm to hopper of shredder to cut down dust.

Additional samples of shredded clay were obtained by PTE at 20-30 minute intervals for lab Wn %.

Moisture conditioning should begin tomorrow.

DuPont will take steps to reduce potential for contamination of kaolinite in conditioning area by tracking of wet red clayey sand.

Left the site at 1715.

Attached are plots of lab Wn % vs. Speedy Wn % for Cyprus Tertiary, Dixie & Huber, and Lab Wn-Speedy Wn % vs Frequency for all three clays.

Visitors:

Robert B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

File No.
 RECEIVED

OCT 12 1987

REPORT NO. 9

DATE: 10-1-87

FILE NO. 6524

WEATHER Sunny

PROJECT MWME Closure, Clay Cap Test Section

Hum = 38%, Wind = 0-9 mph

TEMPERATURE 55°-82°

M.R.C.E.

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont

0800-1630

1 grader, 2 loaders, 1 shredder

1 recycler, 1 drum compactor

PROGRESS OF WORK:

1/3

DATE	TIME	LOCATION	ACTIVITY
10/1/87	0800	CLAY CAP	START
10/1/87	0815	CLAY CAP	START
10/1/87	0830	CLAY CAP	START
10/1/87	0845	CLAY CAP	START
10/1/87	0900	CLAY CAP	START
10/1/87	0915	CLAY CAP	START
10/1/87	0930	CLAY CAP	START
10/1/87	0945	CLAY CAP	START
10/1/87	1000	CLAY CAP	START
10/1/87	1015	CLAY CAP	START
10/1/87	1030	CLAY CAP	START
10/1/87	1045	CLAY CAP	START
10/1/87	1100	CLAY CAP	START
10/1/87	1115	CLAY CAP	START
10/1/87	1130	CLAY CAP	START
10/1/87	1145	CLAY CAP	START
10/1/87	1200	CLAY CAP	START
10/1/87	1215	CLAY CAP	START
10/1/87	1230	CLAY CAP	START
10/1/87	1245	CLAY CAP	START
10/1/87	1300	CLAY CAP	START
10/1/87	1315	CLAY CAP	START
10/1/87	1330	CLAY CAP	START
10/1/87	1345	CLAY CAP	START
10/1/87	1400	CLAY CAP	START
10/1/87	1415	CLAY CAP	START
10/1/87	1430	CLAY CAP	START
10/1/87	1445	CLAY CAP	START
10/1/87	1500	CLAY CAP	START
10/1/87	1515	CLAY CAP	START
10/1/87	1530	CLAY CAP	START
10/1/87	1545	CLAY CAP	START
10/1/87	1600	CLAY CAP	START

Arrived at PTL lab at 0730.

Average lab water content on shredded clay is the same as average water content for truck delivery sampler in portion of stockpile being shredded.

PTL did not measure lab natural water contents for Dixie Proctor #6 and Cyprus Tertiary Proctors #5 and #6.

No material from any of these sampler is left over.

The writer reminded PTL to obtain a natural water content on all Proctor sampler in the future.

Arrived at site at 0900.

Du Pont shredded remainder of stockpile SB2 from 0900 to 1600.

Production rate of shredder 110 tons $\pm$ per hour.

Still adding water in hopper at 2 gpm.

Cyprus Cretaceous delivered 31 truck loads today at an average of 24 tons per truck load. (744 tons $\pm$)

Du Pont started conditioning shredded Dixie clay.

Dimensions of conditioning area CB as follows:

Witness: S. Trautwein

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 9DATE: 10-1-87FILE NO. 6524

WEATHER _____

PROJECT MWMP Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

Average natural water content of shredded
clay $\approx 23.5\%$
Average $W_{opt} - W_n = 5.7$

Target water content $= 23.5 + 5.7 = 29.2\% \approx 29\%$

Assumed loss in water content due to evaporation and
recycling $\approx 2\%$ (Sunny & breezy)

Therefore add $5.7\% + 2\% \approx 8\%$ of water.

Started conditioning in area CBI. Dumped material with loader
from shredded pile and leveled off with grader. Scarified
4" to 6" down after leveling with teeth on front of grader.
Estimated 12 passes of water truck on both sides of
conditioning area CBI necessary to provide adequate water.
After six passes water ponding. Attempted to scarify with
grader teeth but not very effective. Wet clay sticking to
teeth. Attempted to use recycler but it broke down
immediately with sheared pin. Recycler down from 1300 to 1345.
Water observed soaking into top 1/2" to 1" of clay during this
time.

Recycler completed one pass over entire area at speeds of 10 to
14 ft/min. One pass is about 7 feet wide. Mixing water and clay
uniformly to full 6 inch depth. Material appears similar to
prepared and hydrated Proctor point. D50 of recycled material
about 1/8 inch diameter but increases as water is added.
Following recycling, water truck completed six more passes
on each side. Clay able to hold water much better than
first time.

Recycler made one pass over area CBI from 1505 to 1530
at speed of 48 feet/min. Mixing uniformly with depth.
Due to long throw of water to get to middle of area,
water coverage is not so uniform. More water hitting within
middle 20' $\pm$ of area.

Closures:

Ruth A. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 9DATE: 10-1-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

Northerly wind is also carrying water to the south and making it difficult to get adequate water on north edge of conditioning area. Clay visibly dry of optimum within 10'± of outside edge of conditioning area and wetter in middle 20'.

Directed PTL to obtain sampler for lab water contents at following locations in conditioning area CB1.

DuPont placed 6" loose lift on top of compacted clay pads in CB2, CB3 and CB4.

All areas including CB1, were rolled with smooth drum roller at end of day. Areas CB2, CB3 and CB4 were wet down lightly after rolling. Surface of CB1 is very tight.

Conditioning will continue tomorrow. Adjustments will be made based on results of water contents.

Recommended DuPont start shredding stockpile SA2 next until 6" pads are down and then shred SA3 for top 1' of material to be conditioned. SA3 contains material which Proctors were run on.

Left the site at 1800 hours.

SIGNS:

Robert B. R.
Resident Engr.

DAILY FIELD REPORT

RECEIVED

REPORT NO. 10DATE: 10-2-87

OCT 12 1987

FILE NO. 6524WEATHER SUNNYPROJECT MWMT Closure, Clay Cap Test SectionHum $\approx 35\% \pm$ Wind $\approx 0-10 \text{ mph}$ TEMPERATURE 55-85 $\pm$ **M R C E**

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 grader, 2 loaders, 1 shredder
1 recycler, 1 drum compactor, 1 water truck

PROGRESS OF WORK:

 $\frac{1}{3}$

NO.	NAME	DATE
1	EMH	
2	BAZ	
3	BJT	
4	WHA	
5	WTE	
6	RCJ	
7	WHA	
8	WTE	
9	RCJ	
10	WHA	
11	WTE	
12	RCJ	

Arrived at site at 0730.

PRC provided the writer with the following results of lab work performed on CB1:

Average lab water % 7' from edge = 27.8%
 " " " 14' " " = 30.4%
 " " " 21' " " = 29.0% (along centerline)
 Average lab water % for all points = 29.1%
 Target lab water % = 29%

The writer recommended DuPont cover conditioning area CB1 until a method of treating the outer 8'-10' of the south and north ends is decided upon.

Conditioned 6" of clay in CB4 in following manner:

1. Scarified clay with teeth at front of grader to depth of 4"-6".
2. Five passes of water truck along north & south sides.
3. Recycled to depth of 6" from 0930-0948. Rate = 48'/min
4. Six passes of water truck along north & south sides.
5. Recycled to depth of 6". Recycler made two passes in middle 14' of area due to clumping of clay. As clay gets wetter

Witnesses:

Rabot A. Rein
Resident Engr.

DAILY FIELD REPORTREPORT NO. 10DATE: 10-2-87FILE NO. 6524

WEATHER _____

PROJECT MWME closure, Clay Cap Test Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

the recycler tends to have a more difficult time. Recycler operator controls size of recycled material by position of gate on recycler. Informed him we want the clay broken up as small as possible.

6. Outer 8' of north and south sides drier than rest of clay due to less spray from water truck hitting close to edge. Directed water truck to make two additional passes directing water only on outer 8' of each side. (50% of total flow, remainder will land on the access lane behind the truck)
7. Recycled outer 8' on north & south sides.
8. Still slightly dry. Directed water truck to make one more pass hitting only outer 8'.
9. Directed PTL to obtain 12 samples for lab wts.
10. Recommended DuPont cover CB4 as soon as possible. Due to not being sure when covering would be done, writer directed DuPont to smooth drum roll the area to seal it.

Conditioned 6" of clay in CB3 in following manner:

1. Scarified surface.
2. Three passes of water truck hitting only outer 8' of each side, followed by five passes hitting half area width.
3. DuPont stopped for lunch for 0.5 hours.
4. Recycled area from 1305 to 1330.
5. Six passes of water truck.
6. Recycled area from 1350 to 1420.
7. Clay feels at or very close to optimum water content. N. Shramek and T. Mathias (PTL) who performed Proctors tests in lab examined clay and believe it is at optimum. Directed PTL to obtain 12 samples for lab wts.
8. Recommended DuPont cover the area as soon as possible without smooth drum rolling it.
9. After recycling, hard pieces of clay 1/4" - 1/2" diameter remain. Upon breaking a few open, writer observed entire lump wet uniformly.

Notes:

Robert B. Kim
Resident Engr.

DAILY FIELD REPORTREPORT NO. 10DATE: 10-2-87FILE NO. 6524

WEATHER _____

PROJECT MWMP Closure, Clay Cap Test Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

Conditioned 6" of clay in CB2 in following manner:

1. Scarified surface.
2. Six complete passes of water truck.
3. Recycled to depth of 6".
4. Water truck gone for water from 1445 to 1515.
5. Directed L. Kibbee (PTC) to supervise the following:
 1. Five complete passes with water truck followed by three passes hitting only outer 8'.
 2. Recycle area
 3. Obtain 12 samples for lab w. %.
 4. Have area covered.

DuPont began shredding Cyprus Tertiary from stockpile SA2 for 6" pads. Production rate $\approx$ 135 tons/hour. Very heavy dust during shredding. Placed & compacted 6" pads in CA2, CA3 & CA4. Directed PTC to recommend DuPont wet down the compacted pads heavily before the end of the day.

Requested PTC to have lab w. % data early Monday morning.

Cyprus Cretaceous finished delivering clay to site.

Left the site at 1515.

Editors:

Ruth B. R.
Resident Engr.

OCT 12 1987

DATE: 10-5-87

WEATHER SUNNY

Hum = 30% Wind = 0-4 mph

TEMPERATURE 46°-80°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont +

0800-1630

1 grader 1 shredder 2 loaders

1 drum compactor 1 receiver

PROGRESS OF WORK:

1 water truck, 1 pan $\frac{1}{7}$

No	Name	F.I.O.	Age	Sex
	JR			
	SJR			
	EMG			
	OAZ			
	GJT			
	WHA			
	PHE			
	RQJ			
	MWX			
	LWF			
	VA			

They provided results of lab wt% for first six inches on conditioning areas CB2, CB3 and CB4. Average wt% are 28.8, 28.2 and 28.3 percent respectively. Actual wt% values and testing locations are shown on the attached Conditioning Area Water Content sheets.

Cyprus Tertiary stockpile SA3 being shredded at rate of 110 tons/hr $\pm$.
Water being added at hopper with hose at 2 gpm $\pm$.

Requested PTL to obtain 11 samples of shred clay at 30 minute intervals starting at 1330 for lab work. Also requested PTL to obtain two shred clay samples for wet sieve analysis down to sieve size which passes less than 5 percent.

Du Pont ran the recycler over unshredded Dixie clay as a test. After one pass the clay had clods greater than 2 inches but after three passes the clay appeared similar to the shred clay. Du Pont and the writer agreed to try using only the recycler and skipping the shredding operation on one of the clays in the near future.

Conditioning Dixie clay as follows:

CBI

1. Over weekend cover over northern $\frac{1}{3}$ of area was blown off due to winds between 20-30 mph on Saturday. Area is dried out and cracked ($\frac{1}{8}$ " wide, 2" deep).
2. Scarified, wet and recycled north and south edges to get close to optimum. Recovered six samples for lab work.
3. Covered area with plastic.

Visitors:

R. A. B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 11DATE: 10-5-87FILE NO. 6524

WEATHER _____

PROJECT MWLF Closure

TEMPERATURE _____

TRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2 1/2C82

1. Winds had blown entire cover off over the weekend. Clay had been left in loose state beneath cover and had completely dried out to depth of 3 inches $\pm$. Bottom 3 inches retained some moisture. Recommended Du Pont remove the 6 inches of dried clay and replace with new material from stockpile. Du Pont stripped the dried clay with a pan to hard bottom and dumped it in the Dixie stockpile area.
2. Placed 6 inch loose lift of fresh shredded clay and covered with plastic.

C83

1. Recommended outer 8 feet $\pm$ on north and south edges be wet with two passes of water truck and recycled. Afterwards, 6 inches of new shredded clay was placed.
2. Applied six full passes of the water truck and two passes hitting only the outer 8 feet.
3. Recycled.
4. At 1500 hours Du Pont stopped conditioning in order to have area covered by 1630 hours.
5. Covered area after obtaining nine samples for lab work.

C84

1. Cover intact. No work performed today.

Du Pont completed placement and compaction of 6 inch base pads in CA1, CA2, CA3 & CA4. Recommended they keep pads wetted down.

Recommended Du Pont plan on covering conditioning areas every night.

Left plant at 1745.

Notes:

R. A. B. R.
Resident Engr.

File No. 1
RECEIVED

REPORT NO. 12

DATE: 10-6-87

OCT 12 1987

FILE NO. 6524

WEATHER Cloudy

PROJECT MWME Closure, Clay Cap Test Section

Hum = 30% Wind = 1-10 mph

TEMPERATURE 51°-80°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont

0800-1630 2 loaders, 1 shredder, 1 recycler

1 water truck, 1 grader

PROGRESS OF WORK:

 $\frac{1}{2}$

To	Name	Initial	To	Name
	JBC			WJC
	EAP			PHB
	EMB			PHB
	DAZ			WJC
	GJT			JLK
	WHA			SLT
	PHB			TF
	RCJ			JM
	NWK			RJP
	LWF			KWC
	VA			GRL

Arrived at site at 0745.

DuPont shredding Cyprus Tertiary clay from stockpile SA3 and SA2. Production rate about 105 ton/hour. Adding water to hopper at 2 gpm $\pm$.

Six inch base pads wet down in morning and afternoon.

• Conditioning Dixie Clay as follows:

CBI

1. No new material placed.
Results of water contents taken along north and south ends which were reworked yesterday are shown on attached sheet.
Average value is 29.5%.
2. Second six inch lift will be conditioned tomorrow.

C82

1. Scarified first six inch lift.
2. Six full passes of water truck. Winds out of the south creating wet zone $12' \pm$ from north edge as spray is being blown back to the north.
3. Recycled once.
4. One full pass of water truck before lunch.
5. Five full passes of water truck. Winds blowing water applied at south side all the way to the north side.
6. Two passes of water truck hitting only $8' \pm$ in from south side and one pass hitting $8' \pm$ in from north side.
7. Recycled twice due to clumping of wetter material after one pass.
8. Clay is drier at east end and $4' \pm$ in from north side.
9. Sampled clay for lab water content.
10. Covered area with plastic.

Visitors: J. Kaufman (MRE)

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 12DATE: 10-6-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

TRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

CB3

Conditioning of second six inch lift was stopped yesterday due to time limitation.

1. Six full passes of water truck.
2. Recycled twice due to clumping in wetter areas.
3. Obtained samples for lab water contents.
Material appears slightly wet of optimum in some sections and at optimum in rest.
4. Total water truck passes: 12 full, 2 partial.
5. Covered area with plastic.

CB4

1. Wet down top of first six inch lift.
2. Placed, graded and scarified second six inch lift.
3. Three partial passes of water truck along outer 8'± of north and south sides.
4. Six full passes of water truck.
5. Recycled. Time for wetting lift down and recycling once is 50 minutes±.
6. Five complete passes with water truck.
7. Recycled once due to no time left for second pass.
8. Material appears slightly wet of optimum in some locations and at optimum in the rest.
9. Obtained samples for lab water contents.
10. Covered area with plastic.

General Observation

Wind consistently blows out of the south. Results in low water coverage along south side, high coverage just south of centerline, high coverage along north side. When wind is high, water truck sprayer alignment can require adjustment each time it goes from the north to the south side to provide near uniform coverage.

1000:

R. L. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 12DATE: 10-6-87FILE NO. 6524

WEATHER _____

PROJECT MWME Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

Project Equipment List

<u>Equipment</u>	<u>Manufacturer</u>	<u>Model No.</u>
Bulldozer	Caterpillar	D7G
Loader	Clark	75C
Loader	International	530
Pan	Caterpillar	623E
Grader	Caterpillar	140G
Recycler	Bros	LSPRM-8A
Drum Compactor	Ingersoll-Rand	SPA-56
Pad Compactor	Caterpillar	815B
"	Caterpillar	815B
Tractor	Ford	9700
Shredder	Gleason	

Left the site at 1700

10-6-87

Rutledge
Resident Engr.

RECEIVED

DAILY FIELD REPORT

OCT 12 1987

REPORT NO. 13DATE: 10-7-87FILE NO. 6524WEATHER Sunny, Windy
Hum = 28%, Wind = 0-10 mphPROJECT MWME Closure, Clay Cap Test SectionTEMPERATURE 55-75

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont0800-16301 shredder, 1 recycler, 1 pan2 loaders, 1 water truck, 1 grader

PROGRESS OF WORK:

TO	FROM
EAR	EMB
EMB	CAZ
CAZ	GJT
GJT	WHA
WHA	PHE
PHE	RCJ
RCJ	NWK
NWK	JWF
JWF	VA
VA	GRL

Arrived at site at 0800.

Du Pont shredding Cyprus Tertiary clay from stockpile SA1. Production rate about 130 tons/hour. Adding water in hopper at 2gpm. Placed six inch first lifts on top of six inch base pads in conditioning areas CA3 and CA4. Used loader to transport shredded clay to CA4 and pan to transport to CA3. Pan is much quicker. Both conditioning areas were wet down and covered at end of day.

Conditioning Dixie Clay as follows:

CBI

1. Wet down top of lift 1 with one pass of water truck.
2. Placed and scarified six inches over all but approximately 15'x15' area in northeast corner due to running out of shredded clay. Amount of material presently in conditioning areas should be sufficient to build panel B1.
3. Wet down lift 2 with two passes of water truck prior to lunch due to high winds and low humidity.
4. After lunch, five complete passes of water truck. Wind is blowing portion of water right off the conditioning area to the east.
5. Recycled lift 2 once.
6. Five complete passes of water truck.
7. Recycled one time then stopped due to flat tire on recycler. Lift 2 appeared dry.
8. Two complete passes of water truck & one pass hitting only 8'± in from north & south sides.
9. Recycled one time then stopped to bring recycler into shop for repairs to tire. Clay in middle of area not mixed well and clumpy.
10. Obtained samples for water contents and covered area with plastic.

Visitors: J. Kaufman
J. GugliemettiRalph B. R.
Resident Eng.

DAILY FIELD REPORTREPORT NO. 13DATE: 10-7-87FILE NO. 6524

WEATHER _____

PROJECT MWMP Closure, Clay Gap Test Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

Results of water contents on sampler obtained from CB2, CB3 & CB4 yesterday are on the attached sheets.

Test panel B1 will be started tomorrow. DuPont says a surveying subcontractor will be at the site tomorrow morning.

The writer reviewed testing requirements for test panel with PTL field inspector.

High winds are getting under Dixie conditioning area covers. Covers are made of clear plastic and have been taped together at seams. Occasional holes in covers.

Left the site at 1700.

Visitors:

R. B. R.
Resident Engr.

DAILY FIELD REPORT

FILE NO

RECEIVED

OCT 16 1987

REPORT NO. 14DATE: 10-8-87FILE NO. 6524WEATHER SunnyPROJECT MWME Closure, Clay Cap Test Section

Hum = 40% Wind = 2-6 mph

TEMPERATURE 46°-71°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 shredder, 1 recycler, 1 panBessent & Pope 0800-1630 1 loader, 1 water truck, Cat 915B compactor

PROGRESS OF WORK:

3 surveyors1/3

To	Name	R	To	Name
	VEB			WW
	EAR			HSL
	EMB			AHB
	DAZ			WGB
	QJT			VLK
	WHA			SLT
	PHU			TF
	RCJ			JM
	MWK			RJP
	JVF			RWC
	UA			GRU

Arrived at site at 0745.

Bessent & Pope surveyors arrived at site at 0830.

Informed them of survey requirements for parcels.

Completed survey preparations for panel B1 at 1200.

DuPont shredding Cyprus Tertiary. Placed six inch loose lift of clay in conditioning area CAZ and covered with plastic.

New water truck arrived on site. New water truck has a 5000 gallon Magnum tank pulled by a Caterpillar 613C pan cab.

This water truck will be at site for the duration of the test sections. The original water truck will not be at the site any longer. New truck sprays to side similar to first one. Calibrated new water truck as follows:

Flow rate from one sprayer $\approx$ 300 galls/min
Speed $\approx$ 3.25 ft/sec.

Recommended DuPont uncover conditioning areas CB1 & CB4 in order to attempt to dry back lift 2 in both areas by continuously recycling the clay.

Recycler operator informed the writer he has been adjusting the rpm's upwards each time he makes a pass. His first pass done after the first application of water is at 124 rpm. His second pass, done after the remainder of water has been added is at 168 rpm. The third pass is at 284 rpm. Today while recycling CB1, he ran the recycler at 386 rpm.

The higher the rpm's the smaller the clay is broken down. The writer recommended to the operator that he operate the recycler at the highest rpm's practical.

Area CB4 was open and recycled between 1000 and 1230.

Area CB1 was open and recycled between 0900 and 1400.

Samples were obtained in CB1 to check the amount of drying.

Visitors: J. Kaufman (MRCE)

R. A. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 14DATE: 10-8-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

Test Panel B1 (1230-1530)

1. Wet down sand pad with water from side sprayer of water truck.
2. Self loading pan moved all material from conditioning area CB4 (35' x 130' x 1') to sand pad.
3. Grader spread clay in 8 inch loose lift across sand pad. Clay packs down tight under weight of grader tires.
4. Grader scarified top of lift to depth of 4 to 6 inches with teeth in front of blade in order to loosen up clay to allow deeper penetration of pads on compactor.
5. Cat 815B pad compactor passed across clay surface twice with each individual pass of the compactor offset two feet from the previous one. Operator was consistently offsetting the compactor exactly two feet each pass of the machine.
6. Pad penetration averaging 5 inches in middle of wheel and 3 inches at outside end of wheel. Maximum of 7 inches penetration in some areas likely with higher than optimum water contents.
7. Surveyors shot elevation to bottom of pad footprint at control points. J. Kaufman and the writer decided the average between the bottom of the pad footprint and the top of the loose material will be considered the bottom of the next lift. Therefore, top of eight inch loose lift is eight inches above their average level.

Visitors:

Robert B. Li
Resident Eng.

DAILY FIELD REPORT

REPORT NO. 14DATE: 10-8-87FILE NO. 6524

WEATHER _____

PROJECT MWMF CLOSURE

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

8. Wet down top of first lift with water truck to enhance bonding between lifts.
9. Surveyors reestablished grade stakes for second lift on sides of test panel.
10. Pan picked up about 75% of lift 1a2 from conditioning area C83. Problem arising in identifying top of 6" unconditioned base pad in conditioning area as pan picks up clay. Solution discussed with Dulont may be to spread red dye used to cover concrete in trenches at SRP on top of base pads to allow identification.
11. Grader spread clay in eight inch loose lift but did not scarify top.
12. CAT 815B began compaction but penetration of pads ranging from two to four inches. Recommended this lift and all subsequent lifts be scarified prior to compaction.
13. Compacted lift 2 similarly to lift 1. Average speed of CAT 815B while compacting is 4 ft/sec.
14. Excavated test pit with shovel at Sta 0+12, 8'± south of north edge of panel to top of sand pad. Clay appeared relatively homogeneous with no indication of interface between lifts 1a2.

15. Wet down top of panel B1 and covered for the night

Attached are water contents for lift 2 in conditioning area C81 before drying back efforts performed today.

Visitors: Left the plant at 1800.

Ralph B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

PUE 110

RECEIVED

OCT 16 1987

REPORT NO. 15

DATE: 10-9-87

FILE NO. 6524

WEATHER Sunny

Hum = 40% Wind = 0-2 mph

PROJECT MWME Closure, Clay Cap Test Section

TEMPERATURE 48°-77°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 shredder, 1 recycler, 1 loader

Besson & Pope 0800-1630 1 pan, 1 cat 815B, 1 drum roller
 3 surveyors 1 grader 1/3

PROGRESS OF WORK:

To	Name	R	To	Name	H
	UPG			WW	
	EAB			HSL	
	EMB			AHB	
	DAX			MGS	
	GUT			JLK	
	WHA			SLT	
	PHL			TF	
	RCJ			JM	
	BRK			RJP	
	UDF			KWC	
	LA			GRL	

Arrived at site at 0800.

Panel B1

1. Used four pan loads of clay from CB3 for lift 3.
2. Graded to 8 inch loose lift and scarified.
3. Compacted by CAT 815B. Average pad penetration = 4-5 inches.
4. Wet down top of lift.
5. Used three pan loads of clay from CB1.
 Pan spinning its wheels on top of panel due to wet surface.
 Several shearing failures in clay near center of panel under wheels.
6. Graded to 8 inch loose lift between Sta 0+20 to 0+60 and scarified. Less material placed on ramps and ends of panel.
7. Compacted by CAT 815B. Average pad penetration = 2-5 inches.
8. Grader leveled off surface of lift 4 after surveyors shot control point elevations. Rolled surface with smooth drum roller.
9. Using control points 1 through 10 average distance between bottom of pad footprints as follows:
 1st-2nd lift : 6"
 2nd-3rd lift : 3 1/2" } Avg = 5.12"
 3rd-4th lift : 6"

Ignoring control points 1, 5, 6 & 10 due to them being outside the testing area and DuPont is not placing the full 8 inches past 20 feet on each side of Sta 0+40 the average distance between bottom of pad footprints becomes:

1st-2nd lift : 6 1/4"
 2nd-3rd lift : 5 1/2" } Avg = 5.9"
 3rd-4th lift : 6"

Test panel B1 will be excavated down 6 inches at a time for testing and visual inspection.

Visitors: J. Kaufman

Ralt B. R.
 Resident Engr.

DAILY FIELD REPORTREPORT NO. 15DATE: 10-9-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

The writer recommended Benson & Pope surveyors mark the outline of the infiltrometer and the two foot border zone around it in order that it could be covered as soon as possible. Area wet down and covered with tarp by 1400 hours. Surveyors located in place density tests and borings and established initial elevations at all locations on top of rolled surface.

DuPont excavated test panel B1 using JCB 1700 rubber tired backhoe with a two foot wide smooth bucket.

PTL performed the following tests: B1-N4-3, B1-S1-3, B1-N3-3, B1-N4-2 and B1-S1-2.

Nuclear density tests being performed at 6 inch and 4 inch depth at each location.

Surveyors determine elevation of surface for each test.

At the proposed location for B1-N4-3, a four to five inch diameter pocket of uncompacted clay clods 1/4 inch diameter was encountered. The pocket was about 1/2 inch deep.

The test was offset one foot north of the proposed location. Wet densities recorded in the nuclear density tests ranged from 116.0 pcf to 117.6 pcf at all locations.

Excavation of test panel B1 and testing was stopped at 1545. Panel was wet down and covered from end to end with plastic.

P. Atkins informed the writer that DuPont heavy equipment personnel will be responsible for controlling the conditioning of clay. The writer is to provide them with the target water content and PTL will monitor progress by sampling. The writer informed DuPont the target water content range for Cyprus Tertiary panel B1 is 26-28 percent.

Visitors:

Rolt P. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 15DATE: 10-9-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

The writer recommended DuPont have the graders find the top of the six inch work pad in conditioning areas CB3 & CB4 and collect all unured conditioned clay and cover it back up until it is ready to be reconditioned.

Conditioned Dixie clay used in construction of panel B1 was most of lift 1 & 2 in CB3 & CB4 and most of lift 1 in CB1.

All Dixie conditioning areas covered up by end of day.

DuPont conditioning Cyprus Tertiary clay in CA4. Required 4 full passes and 3 passes hitting only 8 feet on north & south sides to get near optimum. PTL sampled for W_n% check.

By end of the day DuPont had an unconditioned lift 1 on in CA1, CA2 & CA3, a conditioned lift 1 on in CA4 and an unconditioned lift 2 on in CA4.

All conditioning areas were wet down and covered by the end of the day.

DuPont continued shredding Cyprus Tertiary clay. Adding water at 4 gpm to control dust.

PTL provided the writer with the results of lab W_n% performed on sampler 31-42 from conditioning area CB1. The area had been uncovered on 10-8 for 5 hours and repeatedly recycled in an effort to dry back the clay to the target water content range of 28 to 30 percent. Drying was successful.

Left the site at 1645.

Visitors:

Ralph B. R.
Resident Engr.

M R C E

 $\frac{1}{2}$

To	Name	R	To	Name	H
	WFO			WVH	
	EAB			MSL	
	OMB			AMB	
	DAB			WGE	
	GJ			HLK	
	WHA			SLT	
	PHK			TF	
	ROI			JM	
	NEWK			RJP	
	JNY			KWC	
	LA			DBL	

Panel 81

1. Completed tests S1-1, N4-1, N3-2, N3A-2, N1-3, N1-2 and N1-1.
In-situ wet densities between 113.2 pcf and 117.4 pcf.

<u>Test</u>	<u>Offset from Proposed Location</u>	<u>Remarks</u>
SI-1	—	In the bottom 1"± of lift 2, to the north of SI-1 and N4-1, there was a 4" Dia. area of uncompacted clay clumps.
N4-1	1.5' North, 2.0' East	
N3-2	1.0' South, 2.0' East	Test performed on top of 1" thick sheet of clay above an apparent shear surface.
N3A-2	2.0' West of proposed N3-2 location.	Test performed on top of apparent shear surface.
N1-3	0.5' South, 2.3' West	Test offset due to excessive "tearing" of clay by backhoe bucket at proposed location.
N1-2	1.0' North, 1.4' West	" " " "
N1-1	—	—

Rolt E. R.
Resident Engineer

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

REPORT NO. 16

DATE: 10-12-87

FILE NO. 6524

WEATHER _____

PROJECT MWME Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

2. Backhoe pushed two undisturbed sampler in B1U and one undisturbed sample in B5U.

Boring	Sample	Depth Sampled	Offset from Proposed Location	Remarks
B1U	1U	(1) 0-9"	0.1' North, 0.6' West	Push not always vertical.
"	2U	9"-18"	0.5' North, 0.75' East	Good push. Bit off vertical at 15"±.
B5U	1U	0-9"	0.6' North, 0.4' West of proposed B1U.	Good push. Hole added due to poor push for B1U-1U. Push stopped at 5" for 2 sec±.

Note

1. Depth "0" referenced to top of B1U.
(≈ top of 3rd lift)

The writer waxed and sealed the above tubes at PTH 166 at the end of the day.

3. No mixing of the Burma Rd sand pad and overlying clay was observed at the bottom of lift 1.

Dupont placed unshredded 6 inch base pads in Hubers Conditioning areas CC2, CC3 & CC4. The writer recommended Dupont condition the Huber clay in nine inch lifts on each of the four 35' x 130' conditioning areas rather than use two six inch lifts.

Visitors:

Rott R. A.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 16DATE: 10-12-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Lease

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

PTL provided results of lab water contents on CA4 lift 1 obtained 10-9-87. Results are shown on attached sheet. Du Pont placed lift 2 on top of lift 1 in CA4 today and started conditioning it along with lift 1 in CA3. PTL obtained samples from both. Next test panel to be built will be Cyprus Tertiary panel A1, target water content $w_{opt} \pm 1\%$.

Left the plant at 1745.

Visitors:

Robert R. R.
Resident Engr.

DAILY FIELD REPORT

RECEIVED

OCT 16 1987

REPORT NO. 17DATE: 10-12-87FILE NO. 6524WEATHER SunnyPROJECT MWME Closure, Clay Cap Test Section

Hum = 40% Wind = 0-10 mph

TEMPERATURE 44°-68°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 recycler, 1 grader, 1 water truckBesson & Pipe 0845-1330 3 surveyors 1 pan

PROGRESS OF WORK:

To	Name	R	T	Name
	WV			WV
	BA			WV
	EM			WV
	DA			WV
	AT			WV
	WHA			WV
	PH			WV
	RC			WV
	NR			WV
	JP			WV
	VA			WV

Arrived at site at 0730.

Besson & Pipe surveyors arrived at site at 0845.

Completed in place density tests and undisturbed sampling in Panel B1. In situ wet density's for tests B1-N2-3, B1-N2-2 and B1-N2-1 ranged from 114.3 pcf to 116.7 pcf.

Obtained two undisturbed samples in B2U from 0-9" and 9"-16" below top of the third lift. Added boring B6U (11.0' East of B2U) and obtained undisturbed samples from 0-9" and two from 9"-16" below top of third lift. Backhoe pushes tubes straight for first six inches ± but then tends to deviate from vertical. Future undisturbed sampling may be limited to six inch pusher at a time.

Panel was wet down following completion of testing and covered with plastic.

The writer waxed and sealed the undisturbed samples at PTL lab.

DuPont placed 6" bare pad in conditioning area C41 and began spreading red dye on top of other bare pads to enable identification during building of test panel.

PTL provided the water content data for the Cyprus Tertiary conditioning areas attached to the back of this report. Area C41 has 12 inches at acceptable water content, C43 has 6 inches. Top 6 inches of C43 and 6 inches on C42 are too wet. Will be dried back tomorrow.

Infiltration installation on Panel B1 should begin tomorrow.

Attached to today's report are copies of Moisture-Density, Atterberg Limits, Water Contents and Gradation Curves for the four clays.

Left the site at 1900.

Visitors: J. Kaufman

Robert B. Rie

Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

RECEIVED

OCT 16 1987

REPORT NO. 18

DATE: 10-14-87

FILE NO. 6524

WEATHER Sunny

PROJECT MWME Closure, Clay Cap Test Section

Hum = 50% Wind = 0-10 mph

TEMPERATURE 39°-68°

M R C E

CONTRACTORS WORKING:

Trautwein 0930-1630

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 grader, 1 pan, 1 recycler, 1 water truck

Besson & Pope 0800-1630 3 surveyors

PROGRESS OF WORK:

To	Name	R	To	Name
	UDS			WWS
	EAR			WGL
	EMB			WHS
	DAY			WGS
	GUT			WLR
	WHA			SLT
	PHK			TF
	ROY			JM
	MARK			RJP
	UDS			RWC
	UA			ORL

Arrived at site at 0745.

DuPont continued to condition Cyprus Tertiary Clay for test panel A1. At the end of the day, the amount of material at the proper water content is one foot in CA1, one foot in CA3 and six inches in CA2. Six inches in CA2 and in CA1 require further treatment. Panel A1 should be ready for placement Friday (10-16-87) morning. RZ w/s data attached to back of report. Amount of water required to condition clay is very close to that predicted by calculations (5 complete passes with water truck, one to two passes hitting only the outside 8 feet). Wind out of the south caused some problems in wetting sides.

Discussed problem of pan spinning wheels on top of test panel B1 during placement of loose lift. Operator says it was caused only by the wetting of the top of the previous lift and not at all by steep ramps. The writer informed him of the importance of not spinning the wheels while on the test panel. Will not wet top of previous lift unless serious drying out is occurring. Will lengthen ramps if necessary.

Trautwein arrived at site at 0930.

The writer discussed with him the issue of excavating out the top 6 inches of the test section prior to installing the infiltrometer in order to avoid testing the top, uncompacted lift. Trautwein said he would rather leave the top lift in place because he needs the full clay depth (20"-21") for embedment of the infiltrometer outside walls. He feels the top material will not affect the test and by using the tensionometers, its effect can be identified and ignored. Top lift was left in place. By 1600 trencher for outer walls had been excavated. Panel was covered at end of day.

Left the site at 1630.

Visitors: ATTACHED ARE COMPUTATIONS FOR
 ADJUSTING WATER CONTENTS FOR
 DIRM & CYPRIUS CLAY FOR TARGET RANGE OPT ± 1%

Ralph B. R.
 Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

File No
 RECEIVED

OCT 23 1987

REPORT NO. 19

DATE: 10-15-87

FILE NO. 6524

WEATHER Sunny

PROJECT MWMP Closure, Clay Cap Test Section

Hum = 28%, Wind 0-8 mph

TEMPERATURE 42°-73°

M R C E

CONTRACTORS WORKING:

Trautwein 0800-1715

1ST SHIFT

2ND SHIFT

3RD SHIFT

Dupont 0800-1630

1 recycler, 1 water truck

Becerra Pipe 0800-1400

3 Surveyors

PROGRESS OF WORK:

To	Name	R	To	Name	R
	DPG			YVW	
	EAR			WSL	
	EMB			AMB	
	DAZ			WLS	
	QJT			JLK	
	WHA			SLT	
	MHE			TF	
	RCJ			JM	
	BWK			RJP	
	JWF			KWC	
	VA			GRL	

Arrived at site at 0745.

Dupont continued to condition Cyprus Tertiary conditioning area CA1, CA2 and CA3. CA1 required additional water on the sides and CA2 and CA3 required drying back. Clay will be ready for placement tomorrow.

Trautwein completed installation of infiltrometer in test panel B1 at 1715. Layout as follows:

Legend

- + : Tensiometer location
 A: Depth below clay surface to middle of 2 1/4" porous stone.

PTZ is being instructed by Trautwein concerning recording of data.

Left the site at 1715.

Visitors: J. Kaufman

Robt A. R.
 Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

DAILY FIELD REPORT

File No
RECEIVED

OCT 23 1987

REPORT NO. 20DATE: 10-16-87FILE NO. 6524WEATHER SunnyPROJECT MWME Closure, Clay Cap Test Section

Hum = 40% Wind = 0-5 mph

TEMPERATURE 58°-75°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Trautwein

DuPont 0800-1630 1 CAT 815B, 1 grader, 1 pan, 1 water truck

Bessant Pope 0800-1600 3 surveyors 1 recycler

PROGRESS OF WORK:

To	Name	Initials	Initials	Initials
✓	PO	✓	WW	
	EAR		WHA	
	EMB		AHB	
	DAZ		WGB	
	GJT		JLK	
	WHA		SLT	
	PHE		TF	
	RCJ		JM	
	NWK		RJP	
	JWF		KWC	
	VA		QRL	

Arrived at PTL lab at 0745.

Dropped off bag samples obtained by J. Kaufman on 10-15 and requested they perform lab water content, Atterberg Limits and -200 sieve analysis on each sample. No Standard Proctor tests are to be performed at the present time.

Reviewed water content data for Cyprus Tertiary conditioning areas CA2 + CA3 lift 2 and recommended DuPont uncover them and allow them to dry back through frequent recycling until at least 1230. Recommended construction of test panel A1 begin at 1230.

Infiltrator on test panel B1 appears to be functioning without any signs of leakage. PTL recording data in manner recommended by Trautwein.

Panel A1 (1230-1530)

1. Wet down sand pad with water truck.
 2. Three pan loads taken from CA4 lift 2 for panel lift 1.
 3. Graded to 8 inch loose lift and scarified.
 4. Compacted with CAT 815B. Compactor did not walk out.
Writer observed that feet on second wheel land in footprints of first wheel.
 5. Footprints after 2 coverages of panel average 3 inches deep.
(Range = 2" - 3 1/2")
 6. Wet down top of lift 1.
 7. Two pan loads from CA4 lift 1 and two pan loads from CA3 lift 2 taken for panel lift 2.
 8. Graded and scarified
 9. Compacted with footprints between 3 and 4 inches deep. Did not walk out.
 10. Wet down top of lift 2 and covered panel with plastic.
 11. Surveyors informed writer there is 9 3/4" from the bottom of footprint of lift 2 to top of sand at survey point 3 and 12" at survey point 8.
Grader is placing too much clay on south side of panel.
- Visitors: Will attempt to correct on Monday for lifts 3 & 4.

Robert B. R.

Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

File No

RECEIVED

OCT 23 1987

M R C E

REPORT NO. 20

DATE: 10-16-87

FILE NO. 6524

WEATHER _____

PROJECT MWMP closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/2

Du Pont started conditioning Dixie clay in conditioning area CB4, lift 1A in preparation for construction of test panel B2. Mixed in clay previously removed from CA2 which had dried out two weeks ago. PTL obtained samples for water contents. Covered up CB4 with plastic.

Attached to today's report are the following plates:

1. Lab Wn % vs. Microwave Wn %
2. Gradation curves for sand pads A1, A2, B1, B2, C1, C2, D1 & D2.

Left the site at 1700.

Visitors:

Rolt R. R.
Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

DAILY FIELD REPORT

RECEIVED

OCT 23 1987

REPORT NO. 21DATE: 10-19-87FILE NO. 6524WEATHER Partly Cloudy
Hum = 55%, Wind 0-2 mph.

M R C E

PROJECT MWME Closure, Clay Cap Test
SectionTEMPERATURE 55°-84°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 grader, 1 CAT 815B, 1 drum roller, 1 pan,
Benson & Pope 0800-1630 3 surveyors 1 recycler, 1 water truck
PROGRESS OF WORK: 1/2

To	Name	In	To	Name	H
	JPG			WW	
	EAR			MSL	
	EMB			AHB	
	DAZ			WGS	
	GJT			JLK	
	WHA			SLT	
	PKR			TF	
	RCJ			JM	
	NWK			RJP	
	JWP			KWC	
	VA			GRL	

Arrived at site at 0745.

Du Pont started conditioning Dixie clay conditioning areas CB2 & CB3: lifts 1A in preparation for constructing test panel B2. PTL obtained samples of clay in both areas at end of the day to monitor progress.

Test Panel A1 (0900-1600)

1. Placed, graded and scarified 8 inch loose lift. (Lift 3)
One and a half pan loads taken from CA3 lift 1 and one and a half pan loads taken from CA2 lift 2.
2. Compacted lift with CAT 815B. Footprints range from 2 to 4 inches deep, averaging 3 inches deep. Did not walk out.
3. Wet down top of lift.
4. Placed and compacted lift 4. Two pan loads from CA2 lift 1 and two pan loads from CA1 lift 1. Writer recommended Du Pont remove one half a pan load from CA2 lift 1 which was contaminated with dried out material from top of 6 inch base pad accidentally picked up by pan. Compactor took 10 minutes to compact panel. Did not walk out. Footprints range from 2 to four inches deep averaging 3 inches deep.
5. Graded top of panel and rolled it with smooth drum compactor.
6. Surveyors layed out infiltrometer limits on panel in paint. Wet down east half of panel including infiltrometer area and covered with tarp and plastic.
7. Average thickness of compacted clay at survey points 2, 3, 4, 7, 8 & 9 is 25 inches after smooth drum rolling. Additional data as follows:

Bottom Print of Lift 1 to top of sand pad: Range = 2.9"-5.0", Avg = 3.5"

Bottom Print of Lift 2 to Bottom Print Lift 1: Range = 6.2"-9.5", Avg = 7.8"

(Avg = 6.5" on North side, Avg = 9.1" on South side)

Bottom Print Lift 3 to Bottom Print Lift 2: Range = 3.8"-6.2", Avg = 5.3"

Bottom Print Lift 4 to Bottom Print Lift 3: Range = 5.9"-8.2", Avg = 6.7"

Visitors:

Rolt B. R.

Resident Engr.

DAILY FIELD REPORT

File No.

RECEIVED

OCT 23 1987

REPORT NO. 21DATE: 10-19-87FILE NO. 6524

WEATHER _____

PROJECT MWRF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2 1/2

To	Name	R	To	Name	R
	JPG			WW	
	EAR			WSL	
	EMB			AMB	
	DAZ			WGS	
	GJT			JLK	
	WHA			SLT	
	PHE			YF	
	RCJ			JM	
	NWK			RJP	
	JWP			KWC	
	VA			GRL	

Grader operator had difficulty placing a uniform 8 inch loose lift due to the north side of the sand pad being 6 inches higher than the south side prior to placement of any clay.

8. Excavated 6 inches and PTL performed test A1-N3-3.
($\gamma_w = 120.5$ pcf)

9. Wet down remainder of pad and covered with plastic.

General Observations on Panel A1: Cyprus Tertiary clay

1. Lab $w_{opt} = 26-27\%$. In field, $w_n = 26-27\%$ appears dry and does not readily hold together under pressure. Based on field observations, w_{opt} appears closer to 27-28%. Therefore conditioning area water contents of clay used for A1 were kept between 27-29%.

2. Footprints of CAT 815B less distinct than for Dixie clay on panel B1 and shallower.

3. During scarifying, the clay breaks apart very easily as compared to Dixie clay.

Attached to today's report is a plot showing the distribution of water contents in the conditioning areas which were used to construct panel A1.

Due to excessive cracking mainly in the ramp areas of panel B1, (1/8" - 1/2" wide, up to 3" deep) Dupont wet down the clay around the infiltrometer and covered it up with tarps.

Initial readings of infiltrometer B-1 indicating $K = 4 \times 10^{-7}$ cm/sec.

Visitors: Left the site at 1715.

Robt B. R.
Resident Eng.

DAILY FIELD REPORT

REPORT NO. 22DATE: 10-26-87FILE NO. 6524WEATHER Partly CloudyPROJECT MWME Closure, Clay Cap Test Section

Hum = 50% Wind = 0

TEMPERATURE 59°-87°

RECEIVED

OCT 23 1987

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 resurfer, 1 backhoe, 1 water truck

Benson & Pope 0800-1615

PROGRESS OF WORK:

To	Name	R	To	Name
	JPG			WW
	EAR			WGL
	EMB			AHB
	OAZ			WGS
	GJT			JLK
	WHA			SLT
	PHE			TF
	RCJ			JM
	NWK			RJP
	JWF			KWC
	JA			GAL

Arrived at site at 0800.

PTL provided writer with attached water content for Dixie clay in conditioning areas CB2, CB3 & CB4. The writer informed PTL inspector and DuPont that target water content for Dixie clay panel B2 is 32%. DuPont continued conditioning CB4 and CB1. PTL obtained sampler for water contents from CB4.

Panel A1 (0845-1600)

1. PTL performed in place density tests A1-N1-3, A1-N1-2, A1-N3-3, A1-N3-2, A1-N3-1, A1-N4-3, A1-N4-2, A1-N4-1, A1-S1-3, A1-S1-2 & A1-S1-1. Wet densities range from 117.6 pcf to 123.0 pcf.
2. Obtained undisturbed sampler 10 & 20 in B10. Pushed tubes by jacking down tube using the bottom of the loader as a reaction block.

3. Compacted clay appears homogeneous. Occasional localized areas at or close to bottom of lift where uncompacted clay clods 1/8"-1" in diameter and 1/2" deep were observed. Largest area measured 15"x15" in vicinity of test A1-N3-2.
4. Wet down panel and covered with plastic at end of day.

Visitors:

Robert B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

RECEIVED

OCT 23 1987

M R C E

REPORT NO. 22

DATE: 10-20-87

FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

To	Name	R	T	A	R
	JPG				
	EAR				
	EMB				
	DAZ				
	GJT				
	WHA				
	PHE				
	RCJ				
	NWK				
	JWF				
	VA				

The writer informed R. Scott (DuPont) that panel A1 would be ready for infiltrometer installation after lunch on 10-21-87. He will inform J. Newell (CT. Main)

PTL informed the writer they did not perform Atterberg Limits on the one-point density tests from panel B1 and that the samples have already been thrown out. The writer reminded PTL to perform Atterberg Limits on all one-point density samples as specified on Dwg. T-2.

The writer discussed with the PTL inspector the need to have someone from PTL follow the conditioning of the Dixie clay using the microwave in the field tomorrow.

Left the site at 1730.

Visitors:

Rab B. R.
Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

DAILY FIELD REPORT

REPORT NO. 23DATE: 10-21-87 **RECEIVED**FILE NO. 6524WEATHER Sunny
Humid 30%, Wind 2 mphPROJECT MWME Closure, Clay Cap Test SectionTEMPERATURE 60°-71°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

MADEDuPont 0800-1630 1 recycler, 1 grader, 1 water truck, 1 backhoeBerron + Pope 0800-1600 3 surveyors 1 tractor + disc harrow

PROGRESS OF WORK:

TO	NAME	R	TO	NAME	W
	JFC			WW	
	EAR			WSL	
	EMB			AHB	
	DAZ			AVOS	
	GJT			JLK	
	WHA			SLT	
	PHE			TF	
	RCJ			JM	
	NWK			RJP	
	JWF			KWC	
	VA			GRL	

Arrived at site at 0800.

Panel A1 (0830-1100)

- Completed in place nuclear density tests A1-N1-1, A1-N2-3, A1-N2-2 & A1-N2-1. Wet densities range from 121.6 pcf to 123.5 pcf.
- Obtained undisturbed samples 1U & 2U in B2U and 1U in B5U. Boring B5U is located two feet south of B2U. Boring B5U, sample 1U was obtained by pushing the tube down with the bucket of the backhoe. Boring B1U, samples 1U & 2U were obtained by jacking the tube down.
- Occasional small pockets (4"x4"x1/4") of uncompacted clay clods usually at bottom of a lift were observed. Clay mass appears homogeneous.
- Wet down panel and covered with plastic.

Trautwein will be at the site tomorrow morning to begin installation of the infiltrometer on panel A1.

DuPont conditioned Dixie clay in CBI. According to heavy equipment fireman, J. Oliver, the constant wind is consistently drying out the top few inches of clay. He succeeded in conditioning southern half of CBI to $w_n = 32\%$ before lunch but winds dried it back. In order to add sufficient water to condition clay and compensate for wind he had water truck drive through the conditioning area using the spray bar to wet down the clay. He observed that the clay does not readily take on water after $w_n = 31.5\%$. He used the disc harrow pulled by a tractor to attempt to mix the water into the clay. Disc harrow leaves the clay in clumps about one to one and a half feet long. Clay became so wet after water truck used spray bar that recycler could not advance.

Visitors: J. Kaufman

Robert B. R.
Resident Engr.

DAILY FIELD REPORT

RECEIVED

OCT 23 1987

REPORT NO. 23DATE: 10-21-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

To	Name	R	To	Name	H
	JPG			WW	
	EAR			WSL	
	EMB			AHB	
	DAZ			WGS	
	GJT			JLK	
	WHA			SLT	
	PHE			TF	
	RCJ			JM	
	NWK			RJP	
	JWP			KWC	
	VA			GRL	

on its own but had to be pulled through the clay with a bulldozer. PTL obtained samples of clay at the above water content and area was covered with plastic. According to J. Oliver, $w_n = 31.5\% \pm$ is the apparent limit of practical recycler operation in the Dixie clay conditioning areas. However he feels that even $w_n = 31.5\% \pm$ is too difficult to work with on a production basis.

Water content data for CB4 is attached at back of report. Conditioning areas CB2, CB3 & CB4 are all at an average $w_n = 31.5\% \pm$.

J. Oliver feels he has enough Dixie clay conditioned, assuming CA1 is at an acceptable w_n , to construct panel B2. He estimates he has an average of nine inches of clay in each conditioning area. He and the writer agreed that the ramp could be built up using dried out or otherwise unacceptable material.

Model 3-50A Rex-Pactor arrived at site at 1500 hours. Compacting wheels are 6 feet in diameter and consist of four individual rings connected together. Wheel measures 28 inches in width with each ring located 8 inches center to center. Pads on the rings measure four inches wide and six inches long and 1.5 inches high. Individual pads on a single ring are located 10 inches center to center. Wheels are self cleaning.

Left the site at 1800.

Attached to today's report are the Compaction Diagram and Plasticity Chart for Cyprus Concretions.

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORT

RECEIVED

OCT 30 1987

REPORT NO. 24DATE: 10-22-87FILE NO. 6524WEATHER Sunny**M R C E**PROJECT MWME Closure, Clay Cap Test SectionHum = 40% Wind = 0-6 mphTEMPERATURE 37°-66°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

TrattweinDuPont 0800-1630 1 recycler, 1 water truck, 1 CAT 815B, 1 panBesson & Pope 0800-1600 3 surveyors

PROGRESS OF WORK:

1/2

To	Name	R	To	Name
	DPG			WN
	EAR			WSL
	EMB			AHB
	DAZ			WGB
	GJT			JLK
	WHA			SLT
	PHE			TF
	RCJ			JM
	NWK			RJP
	JWF			RWC
	VA			GRL

Arrived at site at 0800.

PTL provided the writer with the water content data for CBI attached to the back of this report. The writer and J. Kaufman agreed to use the material as the bottom lift of test panel B2. DuPont recycled CBI, with the recycler blades cutting one inch into the top of the base pad in an attempt to mix the wet clay with some drier clay. PTL obtained samples in CBI after this recycling for final water contents.

Test Panel B2 (0915-1600)

1. Wet down sand pad
2. Five pan loads from CBI, Lift 1A dumped and graded to 8 inch loose lift. Tires of grader occasionally shearing clay in one inch thick sheets during grading. Lift was not scarified due to medium consistency of spread clay. (Easily penetrated with thumb)
3. Compacted lift 1 with six passes (one time across panel) of CAT 815B. Local areas on south side of panel being torn up, exposing sand. These localized areas were observed to have 5 to 6 inches $\pm$ of clay on them rather than 8 inches. Compaction limited to six passes due to excessive tearing up of the compacted clay occurring at the start of second time across. Compactor was stopped immediately. Footprint penetrations vary from 5 to 7 inches, averaging 6 inches. At 7 inches, compactor is rolling on drum.
4. Total of five pan loads taken from CBI and CB2 lifts 1A for panel lift 2. Tires of pan occasionally shearing clay to the top of lift 1 at center of panel. No scarifying.
5. Compacted with six passes (one time across). Footprint penetrations between 5 and 7 inches, averaging 6 inches.

Visitors: J. Kaufman

Robert B. Rein

Resident Engr.

DAILY FIELD REPORTREPORT NO. 24DATE: 10-22-87FILE NO. 6524

WEATHER _____

PROJECT MWMP Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

6. Took clay from CB2 & CB3: lifts 1A for panel lift 3.
7. After six passes, footprint penetrations ranging between 4 and 5 1/2 inches with occasional 7 inch penetration areas. Directed compactor to make six additional passes. Footprint penetrations ranged from 5 to 7 inches, averaging 6 inches. The middle 12'± of the panel has predominately 7 inch penetration with compactor riding on the drum. Both sides have lower penetrations (5 to 6 inches). Possibly due to greater lift thickness in center of panel.
8. Took clay from CB3 and CB4 for panel lift 4. Slight pumping of clay under grader tires.
9. Footprint penetrations between 5 and 6 inches within 6 feet of north side of panel and within 12 feet of south side of panel. Penetration of 7 inches in middle 12 feet of panel. Twelve passes of compactor in areas of 5 to 6 inches penetration and six passes in areas of 7 inches penetration.
10. Wet down clay and covered with plastic.

Panel B2 will be tested tomorrow.

Informed DuPont the target water content for Cyprus Tertiary panel A2 is 30-31%.

DuPont started conditioning Cyprus Tertiary conditioning area CA1.

Trautwein installed infiltrometer in test panel A1.

Left the site at 1715.

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 25DATE: 10-23-87

OCT 30 1987

FILE NO. 6524WEATHER Partly CloudyPROJECT MWAF Closure, Clay Cap Test Section

Hum = 45°, Wind = 0-2 mph

M R C ETEMPERATURE 39°-71°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 recycler, 1 water truck, 1 CAT 815B, 1 panBessent & Pope 0800-1600 3 surveyors 1 drum roller, 1 grader

PROGRESS OF WORK:

1/2

To	Name	R	To	Name	R
☒	JBG		☒	WW	
☒	EAR		☒	WGL	
☒	EMB		☒	AMB	
☒	DAZ		☒	WOS	
☒	GJT		☒	JLK	
☒	WHA		☒	SLT	
☒	PHL		☒	TF	
☒	RGI		☒	JM	
☒	NWK		☒	RJP	
☒	JWH		☒	KWC	
☒	VA		☒	GRL	

Arrived at site at 0800.

Test Panel B2 (0830-1600)

1. Graded top of panel and rolled with smooth drum compactor.
2. Completed in place density tests B2-N4-3, B2-N4-2, B2-N4-1, B2-N3-3, B2-N3-2, B2-N3-1, B2-S1-3, B2-S1-2 and B2-S1-1. Location of S1 tests was shifted by the writer to two feet east of test location N3 due to thicker compacted clay and more uniform thickness of compacted clay lifts. In place wet densities determined by nuclear gauge ranged from 118.3 pcf to 121.2 pcf.
3. Pocket penetrometer readings as follows:
Lift 1: 2.0 TSF
Lift 2: 2.5 TSF
Lift 3: 2.5-3.0 TSF
4. Wet down panel and covered with plastic.

General Observations During excavation of Panel B2

1. Occasional localized areas (5"x5"x 1/2" deep) of uncompacted clay clods.
2. Observed shear planes similar to those observed in panel B1 but not as large or numerous. The writer believes they are the result of pan and grader tires slipping on wet clay during lift placement operations. One large shear surface was observed at the top of lift 3 in the vicinity of test location N3. Indentations about 1/4"-1/2" deeper than the surrounding shear surface aligned in the E-W direction were visible indicating the location of the CAT 815B footprints. The indentations were equally compact as the surrounding material.

Visitors:

Robert B. Rein
Resident Engr.

DAILY FIELD REPORTREPORT NO. 25DATE: 10-23-87FILE NO. 6524

WEATHER _____

PROJECT MWME closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

DuPont continued conditioning Cyprus Tertiary clay in preparation of placement of test panel A2.

Conditioning area CA1 is thought by DuPont to be at the target water content range (30-31%). PTL obtained samples for testing. Areas CA2 & CA4 are partially conditioned and should be completed on Monday (10-26).

DuPont anticipates starting construction of test panel A2 by Tuesday (10-27) afternoon.

The writer recommended to DuPont that they begin conditioning Cyprus Cretaceous clay after finishing with Cyprus Tertiary clay. The results of the Standard Proctor tests indicate the optimum water content is dry of the natural water content, therefore the Cyprus Cretaceous clay will require drying back prior to placement in the test panels. Drying the clay will be more easily accomplished in the present weather than later on in the fall season. DuPont agreed to start work with the Cyprus Cretaceous clay next.

Attached to today's report are the final water contents for Dixie Clay, CBI, lift 1A used in constructing test panel B2 lifts 1 & 2 and gradation curves for Cyprus Cretaceous Proctor samples 1 through 6.

Left the site at 1745.

Visitors:

Robert B. F.
Resident Engr.

NOV - 6 1987

DAILY FIELD REPORTREPORT NO. 26DATE: 10-26-87FILE NO. 6524WEATHER CloudyPROJECT MWMF Closure, Clay Cap Test Section

Hum = 45% Wind = 0-2 mph

TEMPERATURE 53-77°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 backhoe, 1 pan, 1 water truck, 1 recyclerBesson & Pope 0800-1630 3 surveyors

PROGRESS OF WORK:

1/5

To	Name	Initials
☒	PA	
☒	ENB	
☒	DAV	
☒	GJT	
☒	WHA	
☒	PHE	
☒	PCJ	
☒	NWK	
☒	JWP	
☒	VA	

Arrived at site at 0800.

Panel B2

- Completed in place nuclear density tests B2-N1-3, B2-N1-2, B2-N1-1, B2-N2-3, B2-N2-2 & B2-N2-1. Wet densities ranged from 118.0 pcf to 120.5 pcf.
- PTL inspector and the writer discussed results of sand cone density tests performed on 10-23. Tests B2-S1-2 and B2-S1-1, performed on lifts approximately 4 inches thick, both yielded wet densities significantly lower than nuclear density tests performed within one to two feet of them. (Sand cone: $\gamma_t \approx 111$ pcf, Nuclear Gauge: $\gamma_t = 119$ pcf) Two additional sand cone density tests were performed today: B2-S2-3 located 1 foot north of B2-N1-3 and B2-S2-2 located 1 foot north of B2-N1-2 to confirm the relationship between sand cone and nuclear gauge densities. Once again, sand cone test B2-S2-2 performed within a 4 inch thick lift, was found to be significantly less dense than B2-N1-2 (7 pcf less). Sand cone test B2-S2-3, performed within a 6 inch thick lift was close to the nuclear gauge density of B2-N1-3. The discrepancy between the sand cone density and nuclear gauge density observed only in lifts of about four inches is likely due to the small hole used in the sand cone test exaggerating the effects of any volume increase due to smoothing the sides of the hole prior to testing. (Pressing outward on hole walls causes increase in volume resulting in lower measured density. Greater increase with wetter clays)
- Undisturbed sampler 1U and 2U in Boring B1U and sampler 1U, 2U and 2UA were recovered in Boring B2U. The tubes were advanced by jacking against the backhoe bucket.

Visitors:

Raht B. R.
 Resident Engr.

DAILY FIELD REPORTREPORT NO. 26DATE: 10-26-87FILE NO. 6524

WEATHER _____

PROJECT MWMP Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/5

Prior to obtaining the undisturbed sampler listed above, a tube advanced by jacking was obtained and extruded in the field to check if jacking was causing any disturbance to the sampler. No evidence of any type of disturbance was observed on the extruded sample.

4. Pocket Penetrometer readings: Lift 1: 2.75 TSF
Lift 2: 2.75-4.0 TSF
Lift 3: 2.5 TSF

5. Shear surfaces were observed at both the N1 and N2 locations during excavation. The surfaces are irregular with a vertical distance of about 1 inch between the high and low points of the surface. The low areas of the surfaces appear to be the locations of footprints from the CAT 815B compactor. The elevations of the low spots are generally within 1 inch of the elevations measured for the bottom of footprints at nearby control points during panel construction. The 2 inch $\pm$ of clay overlying the shear surfaces appear poorly compacted and very cloddy and layered as if the compactor feet never reached it.

1) Possible Explanation

Writer observed during construction of panel B1 that when pan wheels slipped due to wet clay they sheared clay down to approximate level of bottom of footprints of previous lift. When pan dumps its clay load and grader spreads it out to an 8 inch loose lift, those locations which were sheared will have 8 inches of loose clay from the new lift plus loose clay which filled in the depth from the bottom of new lift to the bottom of the previous lift footprint.

(Illustration on following page)

Visitors:

Ralph B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 26DATE: 10-26-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/5

Location A: 8" loose clay to be compacted

Location B: $8" + 3" = 11"$ loose clay to be compacted.

At location B, the compactor feet cannot penetrate to the bottom few inches of the new lift directly above the shear surface and therefore it does not get bonded to the underlying shear surface and it appears cloddy and layered.

Problem with above explanation

Pan did not appear to slip often enough to cause as many shear surfaces as were observed in panel B2. Also the shear surfaces often extend more than a few feet in length and width while the pan tires are two feet wide and have about a two foot length of tire on the ground at one time. Tire slips not likely causing shears in test panel B2 because shear surface is so irregular and so clearly varies in elevation with the footprints of the compactor. Shearing appears to be related to compactor feet behavior in wet clay.

Visitors:

Robert A. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 26DATE: 10-26-87FILE NO. 6524

WEATHER _____

PROJECT MWMF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/5

2) Alternate Explanation

Compactor feet create a continuous smooth surface at footprint level and subsequent lift placed on top does not get compacted down to that depth thereby leaving a layer of uncompacted clay directly above the previous footprint level.

Possible corrective measure: Decrease lift thickness and/or increase number of passes of compactor.

Recall that panel B2 lifts 1, 2 & 4 had only six passes of the compactor rather than twelve.

General Observation on Panel B2

Significant amount of compacted clay shows signs of not being homogeneous and shows signs of clods and separations within the clay mass.

DuPont continued conditioning Cyprus Tertiary clay in CA2 and CA4. The disc harrow was used to work water into clay in CA4. It leaves the clay in clods up to 18 inches in size at $w_n \approx 30\%$.

Status of conditioning areas:

CA1

8 inches of clay at $w_n \approx 30.8\%$. (Ready for placement)

CA2

12 inches of clay at $w_n \approx 29\%$. (Conditioning continuing.)

CA3

8 inches of clay unconditioned.

CA4

8 inches of clay at $w_n \approx 31.5\%$ (Ready for placement)

Visitors:

Robert B. R.

Resident Engr.

DAILY FIELD REPORTREPORT NO. 26DATE: 10-26-87FILE NO. 6524

WEATHER _____

PROJECT MWME License

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

5/5

DuPont placed unshredded cypress (cretaceous) clay in CD2, CD3 & CD4 and covered with plastic. Clay will be recycled in the conditioning area to break it down prior to any conditioning.

Attached to today's report is water content data for CA1 & CA4 and Control Point Elevations for test panels A1, B1 & B2.

PTL delivered box of undisturbed sampler to DuPont for shipment to MRCE office.

Left the site at 1900.

Visitors:

Robert B. R.

Resident Engr.

DAILY FIELD REPORT

NOV - 4 1987

REPORT NO. 27DATE: 10-27-87FILE NO. 6524WEATHER Overcast, Drizzle (Am)Hum = 70-100%, Wind 0-5 mph

M R C E

PROJECT MWAF Closure, Clay Cap Test SectionTEMPERATURE 51°-68°Rain = 0.24"

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Trautwein

DuPont 0800-1630 1 recycler, 1 backhoe, 1 water truck

Bessona Pope 0800-1600 3 surveyors

PROGRESS OF WORK:

To	Name	R	To	Name	R
	UPG			WW	
	EAR			WSL	
	EMB			ANB	
	CAZ			WGS	
	GJT			JLK	
	WHA			SLT	
	PHB			YF	
	ROJ			JM	
	NWR			RJP	
	JWF			KWC	
	VA			GRL	

Arrived at site at 0800.

DuPont continued conditioning CAZ until 09:30 hours when they stopped work for the day due to rain and forecasted showers. Conditioning of CAZ and CA3 will be resumed tomorrow. J. Oliver informed the writer that above 29% water content the Cyprus Tertiary clay becomes much more difficult to work with. At 31% water content the recycler must move very slowly through the conditioning area and the clay even after three recycler passes remains in clumps a few inches in diameter. According to J. Oliver, conditioning of Cyprus Tertiary clay on a production basis would be impractical at water contents above 29%.

The writer recommended to DuPont that test panel B2 be constructed with Cyprus Cretaceous clay at the natural water content. The clay will be recycled in place in the conditioning area and then placed in the panel without further conditioning.

DuPont heavy equipment supervisor delivered a bag sample of brown clay containing vegetation to the writer which he says was sampled from private land adjacent to SRP within the Jackson city limits. The writer delivered the sample to PRZ and requested they perform natural water content, Atterberg Limits and sieve analysis.

Trautwein supervised DuPont installing infiltrometer on panel B2. Installation will be completed tomorrow without Trautwein.

Attached to today's report is the water content distribution used in construction of panel B2.

Left the site at 1630.

Visitors:

R. L. P. R.

Resident Engr.

DAILY FIELD REPORT

NOV - 6 1987

REPORT NO. 28DATE: 10-28-87FILE NO. 6524WEATHER Sunny

M R C E

PROJECT MWME Closure, Clay Cap Test Section

Hum = 40% Wind = 0-1 mph

TEMPERATURE 46°-68°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 pay, 1 recycler, 1 backhoe, 1 water truckBesson & Pope 0800-1600 3 surveyors

PROGRESS OF WORK:

1/2

To	Name	R	To	Name	N
☒	JMG		☒	WW	
☒	EAR		☒	WHL	
☒	EMB		☒	AHB	
☒	DAZ		☒	WGS	
☒	GJT		☒	JLK	
☒	WHA		☒	SLT	
☒	PHL		☒	FF	
☒	RCJ		☒	JM	
☒	NWV		☒	RJP	
☒	JWF		☒	KVC	
☒	VA		☒	GRL	

Arrived at site at 0745.

DuPont completed installation of infiltrometer on test panel B2.

DuPont excavated trench on east side of infiltrometer on test panel B2 to allow inspection of shear surfaces by E. Richards. He indicated shear surfaces are likely the result of shearing of wet clay by compactor feet. Does not appear to be any way to prevent them from occurring in test panels constructed with high water content clay.

DuPont recycled nine inches of unshredded Cyprus Cretaceous clay in CDI. A three inch layer of unshredded clay is beneath the nine inches to serve as a working pad.

After one pass the maximum sized clod was about 2.5 inches in diameter. After two passes the maximum sized clod decreased to 1.5 inches.

The writer will recommend that two passes of the recycler be made to break down the clay prior to placement.

The recycler moves very easily through the Cyprus Cretaceous clay at natural water content.

Samples were obtained from CDI for water contents to check if any drying out has occurred in the stockpiles.

The writer requested PTL to run oven dry and microwave water contents on the samples to establish the correlation between the two tests for this clay.

DuPont continued conditioning Cyprus Tertiary clay in CA2 and CA3 in preparation for placement of panel A2.

Samples were obtained at the end of the day for water contents.

DuPont, PTL and the writer find it more difficult to correctly judge the water content by feel of the Cyprus Tertiary clay than the Dixie clay.

Test panel A2 should be started sometime tomorrow.

Visitors: E. Richards (MRCE)

Ralph B. R.

Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

REPORT NO. 28

DATE: 10-28-87

FILE NO. 6524

WEATHER _____

PROJECT MWME Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

The writer asked N. Shramak (PTL) if they have ever performed a chemical analysis of the water from the well at Central Shops which is being used to fill the water truck on the project. He said they have never performed the test and they do not have the capability to do so. He informed the writer that he will see if he can obtain the information from someone at SRP.

Attached to today's report are data sheets for Infiltrimeters on Panels A & B.

Left the site at 1700.

Visitors:

Ralph B. R.
Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

RECEIVED

NOV - 6 1987

DATE: 10-29-87

WEATHER Sunny

Hum = 45% Wind = 0-1 mph

TEMPERATURE 41°-71°

1ST SHIFT

2ND SHIFT

3RD SHIFT

Besson + Pope 0800-1630 3 surveyors 1 recycler, 1 water truck.

PROGRESS OF WORK:

 $\frac{1}{5}$

Arrived at site at 0800.

Water content data for Cyprus Tertiary conditioning areas CA2 + CA3 indicated clay was at an average water content of $32.5\% \pm$ compared to a target water content of 30.5% . Writer recommended that DuPont begin constructing test panel A2 using clay from CA1 and CA4 and in the meantime continue to recycle and dry out clay in CA2 and CA3.

Test panel A2

1. Wet down sand pad.
2. Used all of CA1, lift 1A to spread loose 8 inch thick lift 1. Some mixing of clay and sand occurred on south side of panel due to pan gate cutting down into sand pad. Grader leveled lift but did not scarify.
3. Pactor made six passes along south side by running up and back three times without offsetting. Penetration of pads varied from 2 to 4 inches, averaging 3 inches. Slight pumping visible during compaction. The writer recommended that DuPont scarify the remainder of the first lift prior to compaction. Grader scarified lift to a depth of 4 to 5 inches.
4. Pactor made six passes over the remainder of the lift with slight pumping visible. Penetration of pads in scarified portion of lift 1 varied from 5 to 6 inches, averaging 6 inches. Writer noticed a 16 inch gap between the center rings on the front wheel of the Pactor rather than the 8 inch spacing between all other rings on the wheels. Operator can compensate by slightly offsetting compactor on each pass. Pactor does not walk out of clay.
5. Used all of CA4, lift 1A to spread loose 8 inch thick lift 2. Clay pumping beneath pan wheels. Grader leveled lift 2 and scarified.

Visitors:

Rahit B R
Resident Engg.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

DAILY FIELD REPORTREPORT NO. 29DATE: 10-29-87FILE NO. 6524

WEATHER _____

PROJECT MWME L10242

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/5

6. Pactor made six passes over lift 2. Penetration of pads varied from 4 to 5 1/2 inches, averaging 5 inches. Areas of the panel which were not scarified well (areas close to ramps) had penetrations of about 2 inches.
7. Wet down top of compacted lift with light spray prior to stopping work for lunch.
8. Used most of CA3, lift 1A to spread loose 8 inch thick lift 3. Clay from CA3 appears wetter than that from CA1 & CA4 used for lifts 1 and 2. Grader leveled lift 3 and scarified. Clay pumping under grader tires.
9. Pactor made six passes over lift 3. Penetration of pads varied from 4 to 5 inches, averaging 5 inches. Clay pumping under Pactor. Areas of panel which lie in path of 16 inch gap between rings in center wheel are very obvious. Discussed compaction pattern with J. Oliver and decided to change pattern for lift 4 to eliminate gap and add three additional passes. Pactor will start at one end of panel and offset Pactor 1 foot over after every pass. Total number of passes for middle 12 feet of panel will be nine.
10. Used top six inches from CA2, lift 1A to spread loose 8 inch thick lift 4. Clay from CA4 is wetter than that from CA1 and CA3. Grader leveled lift 4 and scarified.
11. Pactor compacted panel as described in step 9 above. Clay pumping a great deal under Pactor. Penetration of pads varied from 2 to 3 inches, averaging 3 inches. Pactor did not work its way down into clay. Additional passes would have had no effect. The writer directed the surveyors to determine the elevations of control points 1 through 10 and then recommended that DuPont attempt to compact the same lift with the CAT B150 to see if it would penetrate the clay.

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 29DATE: 10-29-87FILE NO. 6524

WEATHER _____

PROJECT MWMF closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/5

12. CAT 815B compacted panel with twelve passes (Twice across panel, two foot offset after each pass.) Penetration of footprints varied from 4 to 7 inches, averaging 6 inches. Most of the survey control points went down an average of 2 inches $\pm$ after the CAT compacted the lift as compared to their level after compaction by the Pactor. Amount of additional heave if any, not determined.
13. During compaction with the CAT 815B, the writer observed a shear failure beneath a footprint. The resulting surface was identical in size and shape to the shear surfaces observed in test panel B2. The surfaces apparently represent failure surfaces as the compactor feet shear and fail the wet clay.
14. Grader leveled off surface of panel and smooth drum compactor rolled the surface with the vibrator on. Surveyors determined that four corners of infiltrometer location are all within 0.1 feet, therefore no additional grading was required to prepare level surface for infiltrometer.
15. Dupont wet down the top of the panel and covered it with plastic. Panel will not be tested until Monday.

Observations on Pactor

1. With Cypress Tertiary clay at $w_n = 30.5\%$ ($PL = 30\% \pm$ according to PTL) Pactor worked its way down with penetrations of between 4 to 6 inches after six passes. Steady increase in penetration with increasing number of passes.
2. With clay at $w_n = 30.5\%$, no shear failures in clay under Pactor pads observed. Test pit excavation will reveal more information as shearing not usually observed with CAT 815B either during compaction.

Visitors:

Rolt B. R.

Resident Engr.

DAILY FIELD REPORTREPORT NO. 29DATE: 10-29-87FILE NO. 6524

WEATHER _____

PROJECT MWRF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/5

3. With Cyprus Tertiary clay at $w \approx 31-32\% \pm$ (Lifts 3 & 4) Pactor did not penetrate as well into the clay. Penetrations on lift 3 were between 4 to 5 inches after six passes but lift 4 penetrations were between 2 to 3 inches after nine passes. Lift 4 pumping was high and inability of Pactor to penetrate lift 4 due to high water content and "wet" lift 3 beneath it providing flexible support. Lift 3 had higher penetrations than lift 4 possibly due to "drier" less flexible lift 1 & 2 beneath it. Observing Pactor on lift 4, penetration was so slight and pumping great enough that writer does not believe any compaction or remolding of underlying top of lift 3 was occurring.
4. When Pactor was run on Cyprus Tertiary clay at $w \approx 27\% \pm$ in conditioning area, wheels did not work their way down but rode on top of clay ($w_{opt} \approx 26-27\%$)
5. Based on limited observations of Pactor described above and without the benefit of test pit observations and in-place densities, in the writers opinion the Pactor is not effective for clays at water contents less than $2\% \pm$ wet of optimum or water contents more than $4\% \pm$ wet of optimum. Within the range of 2 to 4 % wet of optimum the Pactor may be effective.

Dupont recycled Cyprus Cretaceous conditioning areas CD2, CD3 and CD4 with two passes in preparation for construction of test panel D1 tomorrow at natural water content. The above areas were sampled for water content data.

Visitors:

Ralph B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 29DATE: 10-29-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

5/5

The writer telephoned J. Kaufman and agreed on the following:

1. Compact Cyprus Cretaceous test panel D1 with CATB15B.
2. Target water content for Huber clay is 26.5%.
3. Inform PTL they do not have to perform Atterberg Limits and minus #200 sieve analysis for clay pit bag sampler from any of the four clay vendors. Bag sampler can be thrown out. Testing of panels will provide sufficient number of index tests to characterize the clays.

Attached to today's report are water content data for Cyprus Tertiary conditioning areas CA2 and CA3, lifts 1A and control point elevations for test panel A2.

Anticipated schedule of work is as follows:

1. Construct panel D1 on 10-30.
Start conditioning Huber clay on 10-30.
2. Test panel A2 on 11-2 and 11-3.
3. Test panel D1 on 11-4 and 11-5.
4. Install infiltrometer on panel A2 on 11-4 and on panel D1 on 11-6.

Left the site at 1700.

Visitors:

Ralt P. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

File No.
RECEIVED

REPORT NO. 30

DATE: 10-30-87

NOV - 6 1987

FILE NO. 6524

WEATHER Sunny

Hum = 40% Wind = 0-2 mph

M R C E

PROJECT MWME Closure Clay Cap Test Section

TEMPERATURE 50°-70°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 pan, 1 grader, 1 water truck, 1 recycler

Benson & Pope 0800-1600 3 surveyors 1 CAT 815B

PROGRESS OF WORK:

1/3

To	From	To	From
JRG	WTV		
EAR	WTV		
EMB	WTV		
DAZ	WTV		
GJT	WTV		
WHA	WTV		
WHE	WTV		
RCJ	WTV		
NWK	WTV		
JWP	WTV		
VA	WTV		

Arrived at site at 0800.

Test Panel D1 (0930-1600)

1. Wet down sand pad.
2. Test panel constructed with clay at natural water content (Avg Wn = 25%). Clay will clump together under hand pressure but easily breaks apart.
3. Spread and graded loose 8 inch thick lift 1. Clay packs down well under grader tires with no evidence of weaving or pumping.
4. CAT 815B made 2 passes on south side of panel without the lift being scarified. Penetration averaging 2 inches. The writer recommended the lift and all subsequent lifts be scarified prior to compaction.
5. CAT 815B made 12 passes over panel with no evidence of weaving or pumping. Penetration of compactor feet difficult to measure due to abundance of loose material at top of lift. Penetrations varied from 4 to 6 inches, averaging 5 inches. Clay occasionally sticking between compactor feet during compaction.
6. Wet down top of lift 1 with light spray.
7. Spread and graded loose 8 inch thick lift 2. Scarified to depth of 5± inches.
8. Compacted with 12 passes of CAT 815B. Compactor is not walking out but working its way down. Penetrations varied from 5 to 6 inches, averaging 5 inches.
9. Wet down top of lift 2 with light spray.
10. Spread, graded and scarified loose 8 inch thick lift 3.
11. Compacted with 12 passes of CAT 815B. Penetrations varied from 4 to 5 inches, averaging 4 inches. Continuing to be difficult to judge actual penetration due to loose material at top of lift.
12. Wet down top of lift 3 with light spray.
13. Spread, graded and scarified loose 8 inch thick lift 4.
14. Compacted with 12 passes of CAT 815B. Penetrations varied from 4 to 6 inches, averaging 5 inches.

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 30DATE: 10-30-87FILE NO. 6524

WEATHER _____

PROJECT MWMA Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

15. Panel covered with plastic.

General Observations on Panel D1

1. Clay is very easy to handle and work with. No evidence of problems due to water content being $5\% \pm$ above optimum water content (i.e. No weaving or pumping)
2. Average distance between bottom of footprints of consecutive lifts averaged $6\frac{1}{2}$ inches. Bottom two lifts (lifts 102) were thicker likely due to loose lifts being slightly over 8 inches, particularly on south side. Final thickness of clay after final grading will likely be about 28 inches.

DuPont placed 9 inches of unshredded Huber clay in conditioning areas CC1, CC2, CC3 and CC4. They will recycle the clay one time at its natural water content and then add water, recycling it after each pass of the water truck. Conditioning should require 3 passes of water truck over clay in second gear using spray bar.

The writer requested DuPont recycle 1 lane of CC4 twice at its natural water content to allow for a visual inspection of the effects of additional passes on the size of the clay clods. No obvious difference could be discerned visually. Maximum clod size for both one and two passes is about $1\frac{1}{2}$ to 2 inches. The writer directed PTL to obtain samples of the clay after one and two passes of the recycler for wet sieve analysis.

DuPont completed conditioning area CC4 today and started conditioning area CC3. Water content samples were obtained from CC4.

The writer visited PTL lab and discussed the following with N. Shramek:

1. MRCE has decided to cancel all Atterberg limits and minus No. 200 sieve analyses for clay pit bag samples. PTL may dispose of the samples.

Visitors:

Robert B. R.

Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

REPORT NO. 30

DATE: 10-30-87

FILE NO. 6524

WEATHER _____

PROJECT MUMF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

2. Plastic limits for Dixie and Cyprus Tertiary clays seem to be lower than expected. Average PL for Dixie Proctor sampler is typically between 27 and 29 percent according to PTL lab tests. However, in the field neither the writer or the PTL inspector has been able to roll a $\frac{1}{8}$ inch diameter thread at a water content less than at least 33 percent. At 27 percent water content, Dixie clay feels dry and is obviously well below the plastic limit. In addition, the optimum water content for four of the six Dixie Proctor tests was above 28 percent, making it very unlikely that the plastic limit could be in the range of 27 to 29 percent. For Cyprus Tertiary clay the PTL lab tests indicate the PL is typically between 26 and 30 percent. However in the field neither the writer or the PTL inspector have been able to roll a $\frac{1}{8}$ inch diameter thread at water contents in that range. In addition, the optimum water contents for all six of the Proctor tests were between 25.5 and 29.5 percent making it unlikely that the plastic limit could be in the range of 26 to 30 percent. The writer suggested that possibly the threads in the lab are not being rolled to $\frac{1}{8}$ inch diameter but actually to a larger diameter.

N. Shramok agreed there appears to be a problem with the lab plastic limits. He will run some plastic limits on the leftover Dixie Proctor sampler himself to check it out. If he decides there has been a systematic error in the plastic limits, PTL will rerun them all.

Attached to today's report is the compaction diagram for Huber clay updated to include results of Proctor #2.

Left the site at 1700.

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORT

NOV 10 1987

REPORT NO. 31DATE: 11-2-87FILE NO. 6524WEATHER SunnyPROJECT MWME Library Clay Cap Test Section

Hum = 40% Wind = 2-6 mph

TEMPERATURE 55°-80°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 pen, 1 backhoe, 1 recycler, 1 water truck

Beynon & Pope 0800-1600 3 surveyors 1 grader, 1 roller

PROGRESS OF WORK: $\frac{1}{3}$

To	Name	R	To	Name	R
	JRG			WW	
	EAR			MSL	
	EMB			AHB	
	DAZ			WGB	
	GJT			JLK	
	WHA			SLT	
	PER			YF	
	RCJ			JM	
	NWK			RJP	
	JWP			KWC	
	VA			GRL	

Arrived at site at 0800.

Test Panel D1

1. Graded off top of panel and rolled with smooth drum vibratory roller with vibrator on. Infiltrator area was graded level.
2. Completed in place density tests D1-S1-3, D1-S1-2, D1-S1-1, D1-N4-3, D1-N4-2, D1-N4-1, D1-N3-3, D1-N3-2 and D1-N3-1. Wet densities varied from 120.8 pcf to 123.1 pcf.
3. Pocket penetrometer readings as follows:
Lift 3: 4.75 ± TSF
Lift 2: 4.5 TSF
Lift 3: 4.5 TSF
4. Three isolated areas of uncompacted clay clods were observed in the test pit excavated on the west side of the infiltrator. The areas measured approximately 4" x 4" x 1/4" deep.
5. No shear surfaces were observed in this test panel. The clay mass appeared homogeneous with only a few laminations or separations evident in isolated clumps of excavated clay. The clay behaved in a brittle manner during excavation. Very thin hairline cracks about 5 inches in length would form below the level of excavation. These were observed whenever excavating an area adjacent to a previously excavated area.

Level of adjacent excavation.

6. No mixing of the clay and sand was evident at the bottom of the clay.
7. Remainder of the in place density testing and borings will be completed tomorrow.

Visitors:

Robert A. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 31DATE: 11-2-87FILE NO. 6524

WEATHER _____

PROJECT MWME Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

Du Pont continued conditioning Huber clay in conditioning areas CC1, CC2 and CC3 in preparation for construction of test panel C1. Water content samples were obtained from these areas for oven drying and microwave drying to develop correlation. The writer informed DuPont the revised target water content for test panel C1 is 27.0% by oven drying, due to high wopt for Proctor #2.

The writer informed DuPont that the target water content for Cyprus Cretaceous test panel D2, if it is to be constructed, is 22 percent by the oven dry method. The writer will inform DuPont as to the decision regarding construction of D2 as soon as possible.

Du Pont placed unshredded, unrecycled Cyprus Cretaceous clay in conditioning areas CD1, CD2, CD3 and CD4. They will likely proceed with drying back the clay from the present water content of 25 percent by recycling and exposure beginning tomorrow.

The variation between oven dry water content and microwave water content ranged from 0 to 1.8 percent. On the average, the microwave water content was 0.7 percent higher than the oven dry water content. A correlation plot will soon follow.

Attached to the back of this report are water content data for CD1, CD2, CD3 and CD4 used in construction of test panel D1 and a plot of w_{max} distribution for D1.

J. Kaufman informed the writer that according to the manufacturer, the right front and left rear wheels of the CAT 815B should have the same parts number and the left front and right rear wheels should have the same parts numbers. This ensures that the rear wheel pads do not fall in the same location as the front wheel pads during compaction. The writer inspected the CAT 815B used on the project to date and found that the right front and rear wheels have the same

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 31DATE: 11-2-87FILE NO. 6524

WEATHER _____

PROJECT MWME Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

parts number and the left front and rear wheels have the same parts number. This confirms the observations made previously by the writer that the rear pads of the CAT 815B land in the footprints of the front pads. The writer informed J. Oliver of the discrepancy and the reason for the manufacturers arrangement being desirable for compaction. He will inspect a second CAT 815B that DuPont has on the plant and if its wheels are arranged properly he will attempt to get it for the remaining test panels. If its wheels are also on incorrectly, he can attempt to switch the wheels on the CAT 815B presently at the site. The writer informed DuPont that MACE does not believe the Gleason shredder is needed any longer. It was removed from the site.

Infiltrometer Data

Approximate depth of wetting fronts for test panels A1, B1 and B2 was determined by pushing a 1/4" diameter metal rod into the clay within the outer ring to refusal at three locations in each infiltrometer.

A1

Infiltration rate = 3.1×10^{-7} cm/sec
 Wetting Front = 2.4 inches = 6.1 cm
 Height of Water = 12 inches = 30.5 cm

Permeability

$$K = \frac{3.1 \times 10^{-7}}{\left(\frac{30.5 + 6.1}{6.1} \right)} = 5.6 \times 10^{-8} \text{ cm/sec}$$

B1

Infiltration rate = 4.7×10^{-7} cm/sec
 Wetting Front = 6.5 inches = 16.5 cm
 Height of Water = 12 inches = 30.5 cm

$$K = \frac{4.7 \times 10^{-7}}{\left(\frac{30.5 + 16.5}{16.5} \right)} = 1.7 \times 10^{-7} \text{ cm/sec}$$

B2

Infiltration rate = 3.6×10^{-7} cm/sec
 Wetting Front = 4 inches = 10.2 cm
 Height of Water = 12 inches = 30.5 cm
 Visitors:

$$K = \frac{3.6 \times 10^{-7}}{\left(\frac{10.2 + 30.5}{10.2} \right)} = 9.0 \times 10^{-8} \text{ cm/sec}$$

Left the site at 1645.

Robert B. R.
 Resident Engr.

DAILY FIELD REPORT

NOV 3 1987

REPORT NO. 32DATE: 11-3-87FILE NO. 6524WEATHER CloudyPROJECT MWAF closure clay cap Test Section

Hum = 80% Wind = 1-5 mph

TEMPERATURE 51°-80°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 pan, 1 recycler, 1 backhoe, 1 bulldozer

Benson & Pope 0800-1600 3 surveyors

PROGRESS OF WORK:

1/2

M R C E			
To	Name	R	To
	JRG		WW
	EAR		MSL
	EMB		AH9
	DZ		WGS
	GJT		JK
	WHA		SLT
	PHK		TF
	RCJ		JM
	NWK		RJP

Arrive at site at 0800.

Test Panel D1

1. Completed in place density tests D1-N1-3, D1-N1-2, D1-N1-1, D1-N2-3, D1-N2-2 and D1-N1-1. Wet densities varied from 122.4 pcf to 124.4 pcf.
2. Completed borings B1U and B2U within 1 foot of proposed locations. Obtained samples 1U, 2U and 3U in each boring with each sample representing a lift. Added boring B3U, located 2 feet south of B1U proposed location. Obtained samples 1U and 2U representing full depth of clay. All tubes were advanced by jacking. Two tubes extruded in the field showed no sign of disturbance due to jacking.
3. Observed about three to four isolated locations of uncompacted clay clods between the top of lift 2 and about 3 inches above the top of lift 2 near location N1. Areas varied in size from 5" x 5" x 1" deep to 8" x 8" x 1/4" deep to 18" x 6" x 1/4" deep.
4. Clay mass appears homogeneous with no shear surfaces or evident layering.
5. Infiltration meter will be installed tomorrow.

The writer informed DuPont that panel D2 will be constructed. DuPont recycled and exposed the conditioning areas C01, C02, C03 and C04 in an attempt to dry the clay back to the target water content of 22 percent. PTL obtained samples for oven dry and microwave water contents following the drying effort. DuPont and the writer agreed panel D1 will be constructed following the completion of panels C1 and C2. (After dry and wet panels).

The writer directed PTL to perform a sieve analysis on the full Proctor samples obtained adjacent to the sand cones on Panels D1 and D2.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

NOV - 9 1987

REPORT NO. 32

DATE: 11-3-87

FILE NO. 6524

WEATHER _____

PROJECT MWMF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

M R C E

TO	Name	R	TO	Name	R
	JMS			WAV	
	EAB			WHL	
	LMB			AHB	
	PAZ			WGS	
	GJT			JLK	
	VHA			SIT	
	SAT				

Results of water contents on Huber clay in conditioning areas CC1, CC2, CC3 and CC4 are attached to back of this report. Average area water contents are 28.3%, 27.2%, 28.0% and 28.5% respectively. Target water content for panel C1 is 27.0%.

DuPont will begin constructing panel C1 tomorrow morning. Conditioning areas will be used in order of increasing average water content. Conditioning areas not in use will be being dried out by recycling and exposure.

A correlation between oven dry water content and microwave water content is being developed. Microwave water contents are generally up to 1% higher than oven dry. DuPont will begin to condition Huber clay for construction of panel C2 following construction of panel C1.

DuPont located the other CAT 815B compactor and found that the wheels on it are arranged as per the manufacturers instructions (i.e. right front and left rear have same parts number, left front and right rear have the same parts number.) The new CAT 815B arrived on site at 1600 and will be used to construct panel C1 tomorrow.

Left the site at 1830.

Robert R. R.

Resident Engineer

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

RECEIVED

NOV 12 1987

REPORT NO. 33

DATE: 11-4-87

FILE NO. 6524

WEATHER Cloudy

PROJECT MWAF Closure, Clay Cap Test Section

Hum = 70%, Wind = 1-3 mph

TEMPERATURE 64°-80°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 pan, 1 grader, 1 smooth roller, 1 recycler, 1 CAT 815B

Besson & Pope 0800-1630 3 surveyors 1 water truck

PROGRESS OF WORK:

1/3

To	Name	R	To	Name	R
	JPS			WW	
	EAP			MSL	
	EMG			ASH	
	DAZ			AKS	
	GJT			JLK	
	WHA			SLT	
	PKK			TF	
	RCH			JM	
	REK			RJP	
	JNY			KWC	
	US			GHL	

Arrived at site at 0745.

Test Panel C1

1. Wet down sand pad.
2. Spread and graded clay from conditioning area C2 (Avg W_w = 27.2%) into 8 inch loose lift. Scarified surface of lift 1.
3. Compacted lift 1 with 12 passes of CAT 815B. Footprint penetrations varied from 3 to 5 inches, averaging 4 inches. The compactor did not walk out but worked its way down with increasing passes.

Observations on CAT 815B compactor

Rear wheel pads of compactor fall in between footprints of front wheel pads about 70% of the time. The remaining 30% of the time, the rear wheel pads will be offset anywhere from 1 to 3 inches from the footprints of the front wheel pads. Neither G. Oliver or the writer can see a reason for this variation.

Compactor generally leaves a near continuous line of compacted clay in a given line of pads.

Due to the more numerous footprints, the top of the lift after compaction is more uniform in elevation and broken up than with the previous CAT 815B.

4. Wet down top of lift 1 with light spray of water.
5. Spread and graded clay from area C3 (Avg W_w = 27.2% ± after being dried back for 2 1/2 hours this morning. Scarified top of lift 2.
6. Compacted lift 2 with 12 passes of CAT 815B. Footprint penetrations varied from 2 to 4 inches, averaging 3 inches.
7. Wet down top of lift 2 with light spray of water.
8. Top of lift 2 after compaction covered with loose material and footprints buried due to low W_w and increased footprints.

Visitors:

R. L. B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 33DATE: 11-4-87FILE NO. 6524

WEATHER _____

PROJECT MWNE Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

9. Spread and graded clay from areas CC3 and CC1 (Avg W_n = 27.0% after being dried back for 4 1/2 hours this morning) into 8 inch loose lift. Scarified top of lift 3.
10. Compacted lift 3 with 12 passes of CAT 815B. Footprint penetrations varied from 3 to 6 inches, averaging 5 inches.
11. Wet down top of lift 3 with light spray.
12. Spread and graded clay from area CC1 into 8 inch loose lift. Scarified top of lift 4.
13. Compacted lift 4 with 12 passes of CAT 815B. Footprint penetrations varied from 2 to 5 inches, averaging 3 inches.
14. Graded top of panel level and rolled with smooth drum roller with vibrator on. Fine-graded top of panel in vicinity of infiltrometer location.
15. Wet top of panel and covered.

Comments on Panel C1

1. Clay felt very close to optimum water content.
2. High thickness of clay between lifts 3 and 4 due to there having been a low area in the center of the panel on the east side of Sta 40 after the compaction of lift 3. Grader spread lift to match grade stakes at sides of panel perfectly at 8 inches but middle area received more than 8 inches.
3. Shear surface caused by compactor pads exposed 1 inch ± below top of rolled surface during fine-grading for infiltrometer.

DuPont uncovered and recycled Cyprus Cretaceous conditioning areas CD1 and CD2 to dry it back in preparation of construction of test panel D2. Water content decreased 0.5% on average after 1 1/2 day of drying back yesterday.

Visitors:

R. A. B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

REPORT NO. 33

DATE: 11-4-87

FILE NO. 6524

WEATHER _____

PROJECT MWMF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

Attached to today's report are water content data for Huber clay conditioning areas CC1, CC2, CC3 and CC4, along with Cyprus Cretaceous water content data for CD1, CD2, CD3 and CD4, lifts 1A for panel D2. Also attached is a memorandum given to the writer by J. Newell regarding PTL's infiltrometer monitoring.

Left the site at 1730.

Visitors:

R. A. B. R.
Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

NOV 12 1987

DATE: 11-5-87

WEATHER Sunny

Hum = 25% Wind = 3-10 mph

TEMPERATURE 62°-87°

1ST SHIFT

2ND SHIFT

3RD SHIFT

Besson + Pope 0800-1600 3/4 + 1/4 water truck

PROGRESS OF WORK:

Arrived at site at 0800.

To	Name	R	To	Name	H
✓	WPG	✓		WW	
	FAR		✓	WHL	
	EMB			ASH	✓
	DAY		✓	WGLS	✓
	GUT			JLK	
	WHA			SLT	
	PHC			TF	
	FOI			JM	
	WWR			RJP	
	SPV			KWC	
	VA			GRL	

- Test Panel Life

Conditioning Area & L.Ft

Avg Wn $\approx$

1

CA: 1A

30.8

2

CA4: 1A

31.5

3

CA3: 1A

31+

4

CAZ: 1A

31 +

Shear surfaces were observed in test panel lifts 2, 3 and 4 corresponding to the higher water content conditioning areas. No shear surfaces were observed in lift 1 during excavation. Appears that shearing of clay by compactor pads occurs at water contents above 31%.

4. Layering of the clay was observed about 2 inches above the sand pad in the vicinity of test location N1. Compaction appeared to be poor at that location.

Visitors:

Robert B. N.
Resident Engt.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

REPORT NO. 34

DATE: 11-5-87

FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/4

In general, test panel A2 became more homogeneous with increasing depth. Likely due to decreasing water content with depth. Aside from numerous shear surfaces in lifts 2, 3 and 4 and very occasional layering, no significant defects were observed.

Remainder of in place testing will be completed tomorrow.

DuPont started conditioning Huber clay in preparation for construction of test panel C2. Conditioning area Cc4, lift 1A which was conditioned but not used in the construction of panel C1, was wet down to raise the water content from 28.5% to about 31% and recycled. Samples were obtained for water contents.

Unshredded, unconditioned clay was brought from the stockpile by the pan and spread in 9 inch lifts in Cc1 and Cc2. Cc1 was recycled once at its natural water content then wet down four times and recycled one to two times after each water application. Samples were obtained for water contents. Cc2 was recycled one time at its natural water content before the end of the day. Based upon a visual inspection by the writer, the maximum clod size after 1 recycler pass was typically 2 to 3 inches with occasional clods up to 4 inches. In Cc1, which was recycled once at its natural water content prior to wetting, the maximum clod size appeared to be about 1 1/2 inches. However these larger clods were evident by feel within the wet clay mass and they were not completely hydrated.

It appears that the unshredded clay must first be recycled at least twice at natural water content to break the clods down to a small enough size to allow rapid hydration.

One pass of the recycler on the Huber clay at natural water content does not appear to be adequate.

Visitors:

Rolt B R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

REPORT NO. 84DATE: 11-5-87FILE NO. 6524

WEATHER _____

PROJECT MWMP Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/4

J. Oliver informed the writer he had expected the clay clods to continue to break down during the repeated recycler passes made following each water application but this had not happened to the extent he hoped for. It appears that as the clay becomes wetter, the recycler teeth become more covered with wet clay and the clay clumps together more, thereby allowing any large clay clods to pass through the recycler without being broken up.

J. Oliver and the writer agreed the most effective procedure would be to make at least two passes or as many as is necessary over the clay at its natural water content with the recycler prior to adding any water to first break down the clay into easily hydratable clod sizes. The recycler is able to recycle about 175 tons one time in 20 ± minutes with the clay at its natural water content. (Huber: $W_n = 23.5\%$) Production rate for recycler generally decreases as water is added.

J. Oliver will try recycling ccr at least one more time at natural water content tomorrow before adding any water.

The writer has requested J. Oliver to keep detailed and complete notes of the conditioning operations for panel cc to enable he and the writer to make an estimate of actual project production rates.

DuPont exposed Cyprus Cretaceous conditioning area $CD1$ to the air and recycled it occasionally in an attempt to dry it out for construction of panel $D2$.

The infiltrometer partially installed on panel $D1$ by DuPont yesterday experienced numerous leaks around the outer wall. Cause of the problem appears to be voids in the grout caused by very thick grout and poor grout placement. Repairs will be made tomorrow.

Visitors:

R. A. R. L.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

REPORT NO. 34

DATE: 11-5-87

FILE NO. 6524

WEATHER _____

PROJECT MWMP Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/4

Attached to today's report are the following:

1. Control Point Elevations for Test Panels C1 and D1.
2. Distribution of water contents in conditioning area used to construct test panel C1.

Left the site at 1900.

Correction to Report No. 32

Under "Test Panel D1", item 2: Change B3U to read B5U

Visitors:

Robert B. R.
Resident Engr.

MUESER MOTTLED CONSULTING ENGINEERS
DAILY FIELD REPORT

File No
RECEIVED

NOV 12 1987

REPORT NO. 35

DATE: 11-6-87

FILE NO. 6524

WEATHER Sunny

PROJECT MWME Closure Clay Cap Test Section

Hum = 25%, Wind = 0-10 mph

TEMPERATURE 46-69

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 backhoe, 1 recycler, 1 water truck

Berron & Pope 0800-1600 3 surveyors

PROGRESS OF WORK:

1/9

Arrived at site at 0730.

Test Panel A2

1. Completed in place density tests A2-S1-3, A2-S1-2, A2-S1-1, A2-N4-3, A2-N4-2 and A2-N4-1. Wet densities ranged from 118.3 to 120.7 pcf.
2. Shear surfaces were again observed in lifts 2, 3 and 4 but not in lift 1.
3. Test panel is ready for infiltrometer installation.
4. Covered panel with plastic.

Test Panel C1

1. Completed in place density tests C1-N3-3, C1-N3-2, C1-N3-1, C1-S1-3, C1-S1-2 and C1-S1-1. Wet densities varied from 121.7 to 123.3 pcf. The writer relocated test location S1 to 2 feet east of test location N3 instead of N4 due to more uniform lift thicknesses in the vicinity of location N3.
2. No shear surfaces or layering was observed during excavation. The compacted clay is very homogeneous and very difficult to excavate with a hand shovel, particularly lift 1. The backhoe bucket cut a smooth surface during excavation with little to no tearing of the clay which is frequent in the wetter test panels. Based upon visual inspection of excavation, PTL inspector and the writer agree that so far this panel appears more homogeneous and free of defects than any constructed to date.
3. Covered panel with plastic.
4. Testing will be completed on 11-9-87.

According to J. Oliver, maximum lift thickness which can be recycled productively is 9 inches. Attempts to recycle 12 inch lifts for W_N ≥ 29% unproductive due to slow speed and bogging down of recycler.

Visitors:

Rolt B. R.

Resident Engr.

DAILY FIELD REPORTREPORT NO. 35DATE: 11-6-87FILE NO. 6524

WEATHER _____

PROJECT: MWME Closure, Clay Cap Test Section

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/9

For clay with $w \leq 29\%$, there is not much time difference between recycling 9 inches or 12 inches.

DuPont uncovered Cyprus Cretaceous conditioning areas CD1, CD2, CD3 and CD4 from 0900 to 1400 in order to dry the clay back to 22%. Samplers were obtained for water contents from each conditioning area before covering the clay at 1400. One microwave water content indicated the clay was at 21.5%. Clay still has a moist feel to it but no "cohesion". Based upon results of water contents, Cyprus Cretaceous conditioning areas will either be dried back again on 11-9-87 or kept under cover until construction of test panel D2.

Results of water contents on Huber clay in conditioning areas CC1 and CC4 indicate clay is at 30.8% and 31.3% respectively. Clay in area CC1 was conditioned yesterday starting from its natural water content (28.5%±). According to J. Oliver, at 30.8% the clay is about 1% too wet for production purposes. The added recycling necessary to work that final 1%± into the clay is not practical in his opinion.

However, for the clay in area CC4 which was conditioned yesterday starting from 28.5%, J. Oliver believes it was practical to condition the clay to 32%± based upon observing the recycler. It appears that the clay in CC4 which has been at 28.5% since 10-30-87 is so well hydrated that the recycler was able to operate effectively even after additional water was added to raise the water content to 31.3%. J. Oliver believes that when starting with a completely hydrated clay at 28.5%, the practical maximum water content for production purposes is about 32% (2%± wetter than when starting from natural water content of 28.5% and attempting to add all the water in one day.)

Visitors:

Ralph R. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 35DATE: 11-6-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/9

Conclusion

Allowing the clay time to hydrate at some intermediate water content between the initial natural water content and the intended final water content will allow a higher final water content to be achieved using the recycler on hand.

ie: Hydration improves workability of clay at a given water content.

Du Pont conditioned Huber clay in conditioning area CC2 using target water content of 29.5-30.0%. J. Oliver and the writer agreed to limit the target water content to that which would be practical on a production basis. Based upon observations of conditioning CC1, 29.5-30.0% was selected. Procedures followed during conditioning operations for CC2 were intended to be similar to those which would be followed for production purposes.

Following conditioning of CC2, samples were obtained for water contents.

J. Oliver and the writer discussed conditioning operations to date and based upon observations of conditioning of CC1, CC2 and CC4, estimated production rates for conditioning Huber clay. Attached to this report is a detailed description of conditioning operations for CC1 and CC2 along with the production rate estimate computations. Note that the estimated production rate is specific to Huber clay.

Production rates for Cyprus Tertiary and Dixie clay would likely be lower due to greater difference between natural water content and optimum water content. Production rate for Cyprus Cretaceous would likely be higher if placement could be accomplished at natural water content or after slight drying. An estimate for Cyprus Tertiary and Dixie clay production rates is included in the production rate computations using data extrapolated from Huber clay.

Visitors:

Robert R. [Signature]
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

REPORT NO. 35

DATE: 11-6-87

FILE NO. 6524

WEATHER _____

PROJECT MWME Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/9

Estimated Production Rates for Huber Clay

For target $w_n = 27\% \pm$: 975 yd^3 per recycler per 8 hour day

For target $w_n = 30\% \pm$: 540 yd^3 per recycler per 8 hour day

There is not enough Huber clay to condition a fourth conditioning area (CC3). Test panel CC2 will have to be constructed using three nine inch conditioning area lifts.

Conditioning area CC2 was recycled a second time at its natural water content. The maximum clod size after two passes was about 3 inches but more typically 2 inches. This is compared to a maximum clod size of 4 inches and typically 3 inches after only one pass of the recycler. The writer requested Dupont to make a third pass over one lane of the conditioning area to observe its effect. After three recycler passes the maximum clod size was about $1\frac{1}{2}$ inches but more typically 1 inch. Based upon these observations with Huber clay, the writer believes three recycler passes are required on the clay at its natural water content to break it down to the size the Gleason shredder was able to. However both the writer and J. Oliver believe two recycler passes are sufficient due to the additional breakdown resulting from recycling after the first two applications of water. J. Oliver observed that after two applications of water and subsequent recycling, the clay which had been recycled twice at its natural water content resembled the clay which had been recycled three times at its natural water content. Observations by the writer during the sampling of the clay for water contents tends to support this. As mentioned in yesterday's field report, one pass of the recycler on the clay at its natural water content is not sufficient even with the additional breakdown resulting from Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 35DATE: 11-6-87FILE NO. 6524

WEATHER _____

PROJECT MWMF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

5/9

wetting - recycling operations.

The efficiency of the recycler in breaking down a clay to a size acceptable for commencing water application is dependent upon the size of the clay as delivered to the site at its natural water content. This is in turn dependent upon the material properties of the clay (i.e. Plasticity, natural water content, grit content) and upon any previous handling of the clay (i.e. previous excavation and stockpiling of the clay as was the case for Huber clay).

Huber clay and Cyprus Cretaceous were recycled without any shredding being done first. Based upon field observations, the Huber clay requires two recycler passes at natural water content and the Cyprus Cretaceous also requires two passes to break down the large clay chunks. All of the Dixie clay and Cyprus Tertiary clay was shredded prior to recycling, therefore the amount of recycling at natural water content required to break them down is not definitely known. However, a comparison of the material properties of all the clays should allow an estimate to be made.

The material properties discussed below represent all of the lab test results provided to the writer by PTL to date.

<u>Clay Vendor</u>	<u>Average Values</u>				
	<u>Lab Wt %</u>	<u>LL %</u>	<u>PL %</u>	<u>PI %</u>	<u>% - 200 Sieve</u>
Cyprus Tertiary	21	62	32	30	94
Dixie	23.5	68	30	38	97
Huber	23.5	59	29	30	95
Cyprus Cretaceous	26	51	31	20	67 (48-76)

Visitors:

Ralph E. R.

Resident Engr.

DAILY FIELD REPORTREPORT NO. 35DATE: 11-6-87FILE NO. 6524

WEATHER _____

PROJECT MWRF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

6/9

Cyprus Tertiary

1. Lowest natural water content of all four clays.
2. Second highest plasticity
3. Low grit content.

During shredding operations, the Cyprus Tertiary broke down to a D₅₀ of about 0.1 inches. It also created a great deal of dust due to its low natural water content. As delivered to the site, there were not many large pieces present and it was similar to the Huber clay in size. It is also similar to the Huber clay in material properties.

The writer believes the Cyprus Tertiary could be broken down to an acceptable size for wetting with two and possibly even just one pass of the recycler. The clay would be easier to break down than Dixie clay and likely easier than Huber clay. It would probably not be as easy to break down as Cyprus Cretaceous.

Dixie Clay

1. Tied with Huber clay for second highest natural water content.
2. Highest plasticity
3. Lowest grit content.

During shredding operations, Dixie clay broke down to a D₅₀ of about 0.2 inches. It did not create as much dust during shredding operations as did Cyprus Tertiary, likely due to its higher natural water content. As delivered to the site, Dixie had the largest size pieces of clay and the greatest percentage of material in the form of large chunks, again likely due to its high natural water content and high plasticity.

The writer believes a minimum of two passes of the recycler and possibly even three passes would be required to break down the

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 35DATE: 11-6-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

7/9

Dixie clay to a size acceptable for wetting. It would probably be the most difficult of the four clays to break down by recycling. On 10-5-87 DuPont ran the recycler over some unshredded Dixie clay, however no samples were obtained.

Huber Clay

1. Tied with Dixie clay for second highest natural water content.
2. Third highest plasticity.
3. Low grit content.

As previously mentioned, Huber clay requires two recycler passes for adequate breakdown. However, the Huber clay tested in the test section was obtained from stockpiles of previously excavated clay. The stockpiles represent about 50 percent of the volume required to build the actual clay cap. Huber clay excavated fresh might tend to be similar sized as Dixie clay as delivered to the site based upon similar natural water contents. The previous excavation and handling of the Huber clay in the stockpiles has probably served to break it down in size from its size out of the ground.

Cyprus Cretaceous

1. Highest natural water content
2. Lowest plasticity
3. Highest grit content.

As delivered to the site, Cyprus Cretaceous consists of large chunks of more clayey material and broken up practically sand sized more silty and sandy material. Recycling is required to break down the clayey material and thoroughly mix the clayey material with the silty and sandy material. Two passes of the recycler

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 35DATE: 11-6-87FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

8/9

adequately broke down the clay chunks during conditioning operations for test panel D1.

Maximum Water Contents Practical for Production

The following is an attempt to relate the estimated maximum water content practical for production based upon field observations of recycler performance with the optimum water contents for Cyprus Tertiary, Dixie clay and Huber clay. Cyprus Cretaceous is practical to place in production at its natural water content which would be the maximum water content it would be placed at.

The data regarding optimum water contents for the three clays was obtained from the six original Standard Proctor performed prior to constructing the test panels and from any additional Standard Proctor performed to date as part of the test panel testing program.

<u>Clay Vendor</u>	<u>Optimum Water Content Values %</u>	<u>Avg. Wopt %</u>
Cyprus Tertiary	25.5, 26.1, 26.2, 26.4, 27.0, 27.0, 28.7, 29.5	27.1
Dixie	24.8, 25.4, 25.4, 27.3, 28.0, 28.2, 28.9, 29.2	27.2
Huber	24.7, 25.8, 26.0, 26.3, 26.5, 28.1	26.2

Based upon field observations made during the construction of test panels A1, A2, B1, B2 and C1, the writer has selected the following minimum water contents for construction of

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 35DATE: 11-6-87FILE NO. 6524

WEATHER _____

PROJECT MWME Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

9/9

a cap with the three clays at a water content close to optimum water content:

<u>Clay Vendor</u>	<u>Minimum W_n %</u>	<u>Notes</u>
Cyprus Tertiary	28.0	1. The minimum W _n % is typically no more than 1% dry of average of highest 20% of W _{opt} % values. 2. Recommended range of W _n % for placement is Minimum W _n % to 2% wet of the Minimum W _n %.
Dixie	28.0	
Huber	27.0	

<u>Clay Vendor</u>	(A) Maximum Practical W _n %	(B) Average W _{opt} %	(C) Minimum W _n %	(A) - (B) %	(A) - (C) %
Cyprus Tertiary	29.5	27.1	28.0	2.4	1.5
Dixie	30.5	27.2	28.0	3.3	2.5
Huber	29.5	26.2	27.0	3.3	2.5

Note: Max. Practical W_n % assumes
all water added in one day.

Avg = 3.0% 2.2%

Based upon the above data, the maximum water content practical for production is about 3% wet of the average optimum water content for each of the three clays and about 2% to 2.5% wet of the minimum water content as defined above.

At water contents above these values, the recycler is not able to operate productively. Recommended range of W_n % for placement is the Minimum W_n % to 2% wet of the Minimum W_n %.

Visitors: Left the site at 1730.

R. L. B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

RECEIVED
 NOV 12 1987

REPORT NO. 36

DATE: 11-9-87

FILE NO. 6524

WEATHER Cloudy

PROJECT MWMF Closure, Clay Cap Test Section

Hum = 75%, Wind = 1-5 mph

TEMPERATURE 55-78°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 p.m., 1 grader, 1 CAT 815B, 1 smooth roller,

Besson & Pope 0800-1600 3 surveyors, 1 recycler, 1 water truck

PROGRESS OF WORK:

1/4

To	Name	R	To	Name	H
	WWS			WWS	
	EAR			WBL	
	EMB			WAB	
	DAY			WOS	
	GUT			ULK	
	WMA			SLT	
	PHL			TF	
	RCS			JM	
	MAC			RJP	
	WNP			KWC	
	VA			GRL	

Arrived at site at 0800.

Due to rain being expected tomorrow, G. Oliver and the writer agreed to construct test panel C2 today.

Average water content for C2 is 28.8%. Likely that significant drying occurred Friday due to area being left uncovered for 1 1/2 hours ± under dry warm air and high winds.

The writer recommended that DuPont add a pass of the water truck in third gear and recycle the clay while test panel C2 is being constructed using lifts 1A from areas C1 and C4. Third gear pass of water increases water content by average of 1% ±. Clay took water easily.

(hydrated
2 1/2 days c
Wn = 28.8%)

Test Panel C2

1. Wet down sand pad.
2. Spread and graded clay from C3 (Avg Wn = 31.3%) into 8 inch loose lift. Lift 1 not scarified due to high water content of clay.
3. Compacted lift 1 with 12 passes of CAT 815B. Clay weaving slightly under compactor wheels.
Footprint penetrations varied from 5 1/4" to 7" averaging 7 inches.
4. No water added between lifts due to high water content of clay.
5. Spread and graded clay from C3 and C1 (Avg Wn = 30.8%) into 8 inch loose lift.
6. Compacted lift 2 with 12 passes of CAT 815B.
Footprint penetrations varied from 6 to 7 inches, averaging 7 inches.
Compactor works its way down with increasing passes.
CAT 815B compacted lift 2 in 6 minutes.

Compaction Rate = $\frac{(100)(32)}{6} = 530 \text{ ft}^2/\text{min} \approx 3500 \text{ yd}^2 \text{ per hour}$
 For 12 passes

Visitors:

Robert B. R.
 Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

REPORT NO. 36

DATE: 11-9-87

FILE NO. 6524

WEATHER _____

PROJECT MWAF Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/4

7. Spread and graded clay from CC1 into 8 inch loose lift. Clay pumping.
8. Compacted lift 3 with 12 passes of CAT 815B.
Footprint penetrations after 6 passes averaging 5 inches.
Footprint penetrations after 12 passes varied from 5 1/2 to 6 1/2 inches, averaging 6 inches.
9. Elevation of top of compacted lift (level of clay between footprints) is the same as elevation of top of loose lift prior to compaction. (i.e. no heave adjacent to compacted areas)
10. Spread and graded clay from CC2. (Avg Wn = 29.8%) into 8 inch loose lift.
11. Compacted lift 4 with 12 passes of CAT 815B. Slight weaving of clay under compactor wheels. Footprint penetrations varied from 5 to 7 inches, averaging 6 inches.
12. Much of the area of lifts was flattened down, leaving no typical footprint due to the pads of the CAT 815B having hit the entire area after 12 lifts.
13. Graded off top of panel and smooth drum rolled it with vibrator on. Graded top in vicinity of infiltrometer to level it off.
14. Wet top of panel and covered with plastic.

General Comment on Test Panel C2

Clay had Wn = 29.8-31.3%. Compared to test panels A2 (Cyprus Tertiary, wet) and B2 (Dixie, wet) this clay was easiest to handle and work with, but its average water content was also lower than A2 and B2.
At Wn = 30% ± Huber is still workable.

Water content data for CD1, CD2, CD3 and CD4 indicators average water contents are 23.0%, 22.2%, 22.9% and 23.3% respectively. Dupont uncovered CD1, CD3 and CD4 and recycled
Visitors:

Robert B. R.

Resident Engr.

DAILY FIELD REPORTREPORT NO. 36DATE: 11-9-87FILE NO. 6524WEATHER PROJECT MUMF ClosureTEMPERATURE

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/4

them to dry them to $w_n = 22\% \pm$. Water content samples obtained from C01, C03 and C04 at end of day.

DuPont removed outer wall of infiltrometer on panel D1 due to continued leakage. They will re-grout it in place tomorrow.

The writer asked P. Atkins if he could obtain the results of a chemical analysis on the water being used from the water truck (Central shops) and of the water coming from drinking coolers being used in the inner wall of the infiltrometer. He will look into it.

Infiltrometer Test Results to Date

Wetting front estimated by the writer by pushing a $\frac{1}{4}$ " diameter steel rod within the outer wall until refusal at three locations.

<u>Clay Vendor</u>	<u>Test Panel</u>	(1)			
		<u>11-9-87</u>	<u>11-9-87</u>	<u>11-7-87</u>	<u>11-9-87</u>
		<u>Wetting Front</u>	<u>Gradient</u>	<u>K (cm/sec)</u>	<u>K (cm/sec)</u>
Cyprus Tertiary	A1	4.8"	3.5	6.6×10^{-8}	8.3×10^{-8}
Dixie	B1	7.6"	2.6	1.4×10^{-7}	1.3×10^{-7}
Dixie	B2	8.0"	2.5	1.6×10^{-7}	1.5×10^{-7}

Note

- (1) Wetting front and gradient measured on 11-9-87 used in calculating K (cm/sec) for 11-7-87.

Visitors:

Ralt B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

DAILY FIELD REPORT

REPORT NO. 36

DATE: 11-9-87

FILE NO. 6524

WEATHER _____

PROJECT MWME Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/4

Attached to today's report are plots of lab wa% vs. Microwave wa% for Hiber clay and Cyprus Cretaceous. Also attached are water content data for conditioning areas CC1, CC2 and CC3 which were used to construct Test panel C2 today.

Left the site at 1845.

Visitors:

Robert P. R.
Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Progress report to be submitted on a daily basis.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

File No.
RECEIVED

NOV 17 1987

REPORT NO. 37

DATE: 11-10-87

FILE NO. 6524

WEATHER Cloudy

PROJECT MWME Closure, Clay Cap Test Section

Hum = 75-100% Wind = 10-15 mph

TEMPERATURE 64-84°

Rain = 0.16"

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 grader

Berron & Pope 0800-1100 3 Surveyors

PROGRESS OF WORK:

1/2

To	Name	R	To	Name	R
	TPG			WW	
	EAR			WEL	
	EMB			AMB	
	DAY			WGS	
	GJT			JLK	
	WHA			SLT	
	PHE			TF	
	RCJ			JM	
	NWK			RJP	
	JWF			KWC	
	VA			GRL	

Arrived at site at 0800.

No work performed today due to forecasted rain.
All laborers and all but two operators left the site by 1000.

Reviewed status of project with E. Richards and J. Kaufman
from 0900 to 1200.

Attended meeting from 1300 to 1530 with C.T. Main, Du Pont
Construction and MACE to discuss status of project to date
and additional work to be performed.

The following additional work will be performed:

1. Construct Dixie clay Test Panel B3

Test panel will be constructed by conditioning the clay
on the test panel and then compacting it.
Procedure as follows:

- Place sand pad.
- Spread 10" $\pm$ of raw, unrecycled clay on top of sand pad.
Recycle clay at natural moisture content until its broken
down to an acceptable size (maximum clod size $\approx$ 1.5"-2" $\pm$)
Leave 1" $\pm$ of clay at bottom unrecycled to serve as
pad to prevent mixing with sand.
- Add water by running truck up on clay and recycle
as needed.
- When clay is at desired water content, compact with
CAT 815B.
- Level off top of lift with grader. Place 8 inches of raw clay
on top of compacted lift surface assuming footprints
were 4 inches deep. Actual height of raw clay for new lift
to be determined in the field based on actual footprint
depth. Maximum height of raw clay to be limited to
10 inches above bottom of previous lift footprints.

Visitors: E. Richards
J. Kaufman

Rolt P. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 37DATE: 11-10-87FILE NO. 6524

WEATHER _____

PROJECT MWME Closure

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

- f. Recycle raw clay in place at natural water content and after each water application down to depth of top of previously compacted lift until at desired water content and then compact.
- g. Repeat step (f) until four lifts are compacted.
- h. Install infiltrometer on test panel and perform field testing.

Test panel B3 will be built large enough to allow room for possibly testing repair schemes for the clay cap and for possibly testing various cap cover systems.

MACE estimated 850 tons of Dixie clay are required with no allowance for waste included in that estimate. DuPont will order the clay as soon as they can.

2. Condition one Conditioning Area of Cyprus Tertiary to $w_n = 28\%$.

DuPont will salvage enough Cyprus Tertiary to condition an area to $w_n = 28\%$ to investigate the difficulty of working with this material.

C.T. Main requested that an infiltrometer be installed on a test panel before all field density testing and test pit excavation are performed. The intent is to leave room for infiltrometer relocation if installation problems arise at the original location.

Cyprus Cretaceous conditioning areas C01, C03 and C04 did not dry at all yesterday. Drying will be continued.

Left the site at 1730.

Visitors:

Rolt B.R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

File No
RECEIVED

NOV 17 1987

REPORT NO. 38

DATE: 11-11-87

FILE NO. 6524

WEATHER cloudy

PROJECT MWUF Closure, Clay Cap Test Section

Hum = 50-95%, Wind = 0-5 mph

TEMPERATURE 39-53°

Rain = 0.06"

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

M R C F

Du Pont 0800-1630 1 backhoe

Besson & Pope 0800-1600 3 Surveyors

PROGRESS OF WORK:

1/4

To	Name	R	To	Name	R
	JED			WW	
	EAR			SEL	
	EMB			AMB	
	DAZ			WOB	
	GUT			ALK	
	WHA			SEY	
	PHE			TP	
	BCJ			JM	
	NWK			RSP	
	SWP			RWC	
	VA			GHL	

Arrived at site at 0800.

Du Pont sent all but one operator home due to wet site conditions and forecasted rain.

Test Panel C1

1. Completed in place density tests C1-N4-3, C1-N4-2 and C1-N4-1. Wet densities varied from 119.7 to 122.3 pcf.
2. Observed shear surface caused by compactor footprint about 1 inch below top of lift 3. Shear surface was very limited in horizontal extent.
 No significant shear surfaces were observed in test panel.
3. Observed numerous isolated pockets of uncompacted clay clods typically 4"x4"x 1/4" deep about 1 inch above the top of lift 2. One area of uncompacted clay clods at that same level measured about 3'x2'x 1/2" deep.
 It appears the compactor did not successfully compact the clay at this level while compacting lift 3.
 The survey control points indicate that the final compacted thickness of lift 3 was 7 1/2 inches which would indicate that poor compaction at the bottom of lift 3 (1" above top of lift 2) was due to placement of a loose lift greater than 8 inches thick.
 The effect of these pockets of uncompacted clay clods on permeability is unknown. Though they represent visible imperfections in the clay panel there is no indications of any type of vertical connection between them nor any reason to expect any. The possibility exists that numerous or very large pockets of uncompacted clay clods at the same elevation may indicate that even the clay at that same elevation which appears compacted may not be compacted to the same degree as the rest of the clay in the panel, thereby creating a plane of potentially high horizontal permeability.

Visitors: J. Kaufman

R. L. B. R.

Resident Engr.

DAILY FIELD REPORTREPORT NO. 38DATE: 11-11-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/4

The presence of these uncompacted pockets indicates that with the unavoidable variation in loose lift height which will occur in production, a loose lift no greater than 8 inches high should be specified. If it is determined that they do in fact serve to increase the permeability of the panel, a loose lift height less than 8 inches high should be specified for production.

These pockets have been observed in all of the panels excavated to date, but seem to be more frequent in those test panels compacted near the optimum water content rather than the wet panels.

4. No mixing of clay and sand at clay-sand pad interface.
5. Testing of panel C1 will be resumed following the installation of the infiltrometer.

Test Panel C2

1. Completed in place density tests C2-N1-3, C2-N1-2, C2-N1-1, C2-N2-3, C2-N2-2 and C2-N2-1. Wet densities varied from 118.2 to 120.7 pcf.
2. Recovered undisturbed samples 1U and 2U in each of borings B1U and B2U. Sample 1U in boring B1U may be disturbed, particularly at the top due to the tube being over pushed with a wood block wedged in the top end. Sample 1U in boring B2U is preferable for testing purposes.
3. Observed shear surface showing footprints about 2 inches below the top of the finished smooth rolled surface in vicinity of location N2. The surface was at least 6 feet long and 1 1/2 feet wide. One side of it was excavated in the test pit and in the other direction the surface merged into intact clay. A shear surface located 2 inches below the top of lift 1 was observed with link of poorly compacted, layered and cloddy clay above.

Visitors:

Robert R. R.

Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

REPORT NO. 38

DATE: 11-11-87

FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/4

In general shear surfaces were observed mainly in lifts 2 and 3. Fewer shear surfaces were observed in this panel than in either panel A2 (Cyprus Tertiary wet, Avg $w_n \approx 31.5\%$) or panel B2 (Dixie clay wet, Avg $w_n \approx 32\%$). Also, those that were observed were of a lesser extent than those in panels A2 and B2. (Panel C2 Avg $w_n \approx 30.5\%$)

4. A smooth surface was observed about 2 inches above lift 2 which the writer believes was created during construction when the pan cut down too far when removing a load of overly dry clay he had previously dumped on the panel as part of lift 3.
5. An isolated pocket of uncompacted clay clods $14" \times 5" \times 1/4"$ was observed 1 inch above the top of lift 1 near test location N2. In general, very few pockets of uncompacted clay clods were observed, confirming the observation that they tend to occur less frequently in the wet panels.
6. Observed frequent tears in side walls and bottom of test pit following excavation with backhoe bucket. Experimenting with knife revealed that long direction of tear is always perpendicular to direction of cutting movement. Tears on sidewalls and test pit bottom follow this same pattern indicating they are not existing defects but created by the backhoe bucket during excavation. Wet panels A2, B2 and C2 all showed frequent tearing on sidewalls and test pit bottoms, much more so than dry panels A1, B1 and C1. (i.e. wetter the clay the easier it is torn up)
7. In general, panel C2 (Huber wet) has been the best looking wet panel constructed to date with Tertiary clays. Limited number and size of shear surfaces in C2 compared to A2 and B2 is biggest difference. Probable reason for better performance of panel C2 is lower average water content than for panels A2 or B2.

Visitors:

Robert P. R.
Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

DAILY FIELD REPORTREPORT NO. 38DATE: 11-11-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/4

Based upon observations to date, clay water contents above 30% to 30.5% result in panels with numerous shear planes with poorly compacted layers of cloddy clay above them. Also clays compacted at w_{at} above 30.5% exhibit major tearing during excavation.

The effect of these imperfections on permeability of clay panel remains to be seen.

At the present time, the writer believes the maximum placement water content for all three Tertiary clays should be 30%.

8. Testing of panel C2 will be completed following installation of infiltrameter.

DuPont will re-install the outer wall of the infiltrameter on panel D1 tomorrow, and if that is successful, complete the remainder of the installation.

The writer visited PTL lab and informed N. Shramek of testing requirements for upcoming deliveries of Dixie clay (Lab w_{at} on every other truckload, two Standard Proctors) and informed him that this new testing is to have priority over all other test panel lab testing.

J. Kaufman informed DuPont Construction that 850 tons with no contingency for waste is required to construct Dixie test panel B3.

Attached to today's report are control point elevations for panel C2 and plots of infiltration rate vs. time for panels A1, B1 and B2.

Left the site at 1800.

Visitors:

R. L. B. R.

Resident Engr.

DAILY FIELD REPORT

File No

RECEIVED

NOV 19 1987

REPORT NO. 39DATE: 11-12-87FILE NO. 6524WEATHER SunnyPROJECT MWMF Closure, Clay Cap Test SectionHum = 30%, Wind = 0-2 mphTEMPERATURE 32°-68°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 pan, 1 bulldozer, 1 resycler, 1 water truckBesson & Pope 0800-1500 3 surveyors

PROGRESS OF WORK:

1/2

To	Name	R	To	Name	R
	JPG			WW	
	EAR			WGL	
	QMS			AHS	
	DAY			WGS	
	OUT			JLK	
	WHA			SLT	
	PHS			TF	
	BSL			JM	
	HWK			RJP	
	SWP			KWC	
	MA			GRL	

Arrived at site at 0745.

DuPont uncovered Cyprus Cretaceous conditioning areas CD1, CD3 and CD4 to attempt to dry it back to target $w_n = 22\%$. Clay remained exposed to the air from 0830 to 1530 (7 hours) and was repeatedly recycled.

Samples were obtained at the end of the day for water contents.

The writer requested surveyors to lay out the limits for Dixie test panel B3 so DuPont could begin hauling in Burma Rd. sand for drainage layer. Southern edge of panel B3 is located 75 feet north of the northern edge of test panel B2. The north-south centerline for panel B3 coincides with the north-south centerline for conditioning area CB and panels B1 and B2.

DuPont intends to construct the panel level from Sta 0+0 to Sta 1+40.

By the end of the day, DuPont was spreading Burma Rd Sand in the panel area.

Conditioning of Cyprus Tertiary

1. Pan scraped up clay which had been spread out over the entire conditioning area. Clay consists of 6 inch base pads and material leftover from conditioning operations for panels A1 and A2. Loose lift of about 12 inches placed in location of conditioning area CA1. Only 9 inches will be conditioned.
2. Clay spread in CA1 is in chunks up to 18" in size. Clay previously compacted as part of 6 inch base pads is very hard and blocky.
3. Recycled clay three times at present water content at 168 rpm, 284 rpm and 368 rpm respectively. Maximum clud size is 3 1/2 inches, but more typically 2 inches. G. Oliver is satisfied with clay gradation after three passes as most of the recycled clay is

Visitors:

Robert R. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 39DATE: 11-12-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

close to powder and he feels the larger pieces will be broken down during recycling passes following water applications.

4. G. Oliver and the writer agreed that the clay will be conditioned to a target water content of 28% and then conditioned to a target water content of 30% ±. G. Oliver will keep careful notes of the conditioning operations including recycling times to allow for a comparison to be made between the Huber clay and the Cyprus Tertiary.
5. Inspection of recycled clay indicates moisture content and gradation of clay is uniform throughout conditioning area. Five microwave water contents performed on the clay following three passes of the recycler varied from 22.7% to 23.9%. The average natural water content of the Cyprus Tertiary from the pit was 21%. The relatively high present water content is due to the clay from the 6 inch base pads having been placed at natural water content and repeatedly wet down to prevent cracking and the leftover clay from the conditioning operations for panels A1 and A2 having varied in water content from 26% to 32%.
6. Based upon initial $w_n \approx 23.3\%$, DuPont will wet the clay with two passes of the water truck in second gear ($\Delta w_n \approx 2 \times 1.6\% = 3.2\%$) and one pass in third gear ($\Delta w_n \approx 1\%$). Scheme of water truck passes may be revised based upon results of lab w_n 's of samples obtained today.
7. Water truck made one pass in second gear and clay was recycled before work was stopped for the day.
8. Clay covered with plastic.

DuPont completed re-installation of outer wall of infiltrometer on panel D1. It will be checked for leaks tomorrow morning.

Left the site at 1700.

Visitors:

Attached to today's report are elevation for top of smooth rolled surface for panels A1, A2, B1, B2, C1, C2 and D1.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

Ralph P. R.
Resident Engr.

DAILY FIELD REPORT

LMS 110

RECEIVED

NOV 23 1987

M R C

REPORT NO. 40DATE: 11-13-87FILE NO. 6524WEATHER SUNNYHum = 30%, Wind = 0-1 mphTEMPERATURE 35°-70°PROJECT MWME Closure, Clay Cap Test Section

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 bulldozer, 1 recycler, 1 water truckBenson & Pope 0800-1000 3 surveyors

PROGRESS OF WORK:

1/4

To	Name	R	To	Name
	UPG			WW
	EAR			WSL
	EMB			AHB
	DAZ			WGS
	GJT			JLK
	WHA			SLT
	PHE			TF
	RCJ			JM
	NWK			RJP
	SWF			KWC
	VA			GRL

Arrived at site at 0800.

Water content data for Cyprus Cretaceous clay indicates clay dried out 0.2% in water content after 7 hours of exposure and repeated recycling. The average water content in conditioning areas CD1, CD2, CD3 and CD4 is 22.8%.

The writer telephoned J. Kaufman to discuss the slow progress in drying Cyprus Cretaceous back to 22%. J. Kaufman informed the writer test panel D2 could be constructed at the present water content of 22.8%.

The writer informed DuPont that panel D2 could be constructed today but DuPont decided to continue drying the clay back for today and to construct the test panel on 11-16.

Water content samples were obtained from conditioning areas CD1 and CD3 at the end of the day.

Areas CD1, CD3 and CD4 were uncovered and repeatedly recycled for 6 1/2 hours today.

DuPont continued to spread the Burma Road sand pad for test panel B3.

The writer requested the surveyors to measure the volume of the existing stockpile of Dixie clay. Based upon their measurements, the writer estimates there are about 175 tons in the stockpile.

DuPont continued conditioning Cyprus Tertiary in conditioning area CA1. By the end of the day, the clay had been conditioned up to a water content of 30.5% ±.

In general, the clay behaves similar to the Dixie and Huber clays up to a water content of 28% with the only difference being that it tends to clump a little more at these lower water contents than the other two clays.

However, as water is added to increase the water content above 28%, the clay becomes very clumpy and it requires

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 40DATE: 11-13-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING: _____

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK: _____

2/4

additional recycling passes to thoroughly mix the clay and water and to break down the clumps as compared to the Dixie and Huber clays.

The recycler had a difficult time running through the clay at water contents above 28 percent. The clay clumps to such a degree that it builds up against the back gate of the recycler causing it to bog down unless operated at a slow speed.

The writer and G. Oliver discussed the conditioning operations for Cyprus Tertiary performed to date. G. Oliver made the following observations:

1. Cyprus Tertiary clay is most difficult clay to operate recycler in. Recycler performs in Cyprus Tertiary at $W_n = 30.5\%$ as it did in Dixie clay at $W_n = 32\% - 33\%$.
2. Cyprus Tertiary clay requires more recycling effort to thoroughly mix clay and water than Dixie or Huber.
3. Maximum practical water content for production purposes is 29%.
4. If he were a contractor, he would bid 20% to 25% more for conditioning of Cyprus Tertiary than for conditioning Dixie or Huber.

The writer is in general agreement with the observations listed above. However both G. Oliver and the writer agree that the Cyprus Tertiary clay is workable and should be considered further as a potential supply for the full size project. The added difficulty associated with conditioning it can be compensated for by a contractor in his bid price.

Visitors: _____

Ralt R.R.

Resident Engr.

DAILY FIELD REPORTREPORT NO. 40DATE: 11-13-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/4

A detailed description of the conditioning operations performed for the Cyprus Tertiary clay in area CA1, lift 1B, will be provided at a later date.

The writer recommended that Dupont attempt to add additional water to the Cyprus Tertiary next week to investigate the effects of hydration on the clays workability.

The writer met with Dupont and an estimator to discuss the conditioning operations performed to date. The estimator requested and was provided with a copy of the writers estimated production rates for Cyprus Tertiary, Dixie clay and Huber clay.

The writer visited PTL lab and discussed the results of plastic limit tests performed to date with N. Shramek. He informed the writer that he re-ran one of the plastic limits for the Dixie clay Proctor samples himself and the results agree with the original test results (Proctor No. 5: Initial PL = 27%, Re-run PL = 26%). He followed the ASTM dry preparation method in preparing the sample. Procedure used by PTL in preparing samples for Atterberg limits as follows:

1. Oven dry clay at 140° overnight.
 2. Break down dried clay on the No. 40 sieve.
 3. Add distilled water to dried clay and perform liquid limit test and plastic limit test.
- No hydration time is allowed for the clay prior to testing.

In re-running the plastic limit for Dixie Proctor No. 5, Neal took some of the previously dried clay, passed it through the

Visitors:

Robert R. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 40DATE: 11-13-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/4

No. 40 sieve and added sufficient distilled water to increase the water content to 40%. He then performed the plastic limit test without allowing any time for hydration.

Neal agrees that Dixie clay samples obtained in the field at water contents below 33%± are not at the plastic limit. He believes that breaking the clay down on the No. 40 sieve somehow enables it to become plastic at a lower water content. The writer does not agree.

The writer requested that PTZ perform the following tests on the new shipment of Dixie clay.

1. Obtain representative block of clay at natural water content from truck deliveries.
2. Break the block down by hand at the natural water content and mix it together.
3. Prepare one portion of the sample for Atterberg limits test in accordance with ASTM wet preparation method (i.e. add water at natural water content) without passing the clay through the No. 40 sieve.
4. Prepare second portion of sample for Atterberg limits test in accordance with ASTM dry preparation method (i.e. present PTZ method) and pass it through the No. 40 sieve.
5. Perform Atterberg limits test on both samples.

The above testing will allow a comparison to be made concerning the effects, if any, that oven drying the clay at 140° has on the Atterberg limits.

Neal will also re-run the plastic limit on Dixie Proctor No. 5 using leftover clay from his first re-run which has been hydrating at $w = 40\%$ for a few days to investigate the effects of hydration on the plastic limit.

Visitors: Left the site at 1630.

Robert P. R.
Resident Engr.

DAILY FIELD REPORT

File No

RECEIVED

REPORT NO. 41DATE: 11-16-87

NOV 23 1987

FILE NO. 6524WEATHER CloudyPROJECT Mumf Closure, Clay Cap Test SectionHum: 70%, Wind: 0-5 mphTEMPERATURE 60-78°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 pan, 1 grader, 1 water truck, 1 CAT 815BBerron & Pope 0800-1630 3 surveyors 1 backhoe

PROGRESS OF WORK:

1/3

To	Name	R	To	Name	Q
	JPG			WW	
	EAR			WSL	
	EMB			AHB	
	DAZ			WGS	
	GJT			JLK	
	WHA			SLT	
	PHE			TF	
	RCJ			JM	
	NWK			RJP	
	JWF			KWC	
	VA			GRL	

Arrived at site at 0800.

PTL informed the writer infiltration rates for panel D1 have been between 18.1×10^{-7} cm/sec and 16.5×10^{-7} cm/sec since the infiltrometer was re-installed on 11-12-87. No indications of any leaks to date.

DuPont completed grading and compacting Burma Road sand pad for panel B3. Used pan timer to compact sand due to smooth drum vibratory roller being used on a different job. DuPont expects Dixie clay deliveries to start tomorrow morning. G. Oliver informed the writer he intends to stockpile the clay in a pile somewhat wider and lower than the original stockpiles so he can run pans over the top of it. A bulldozer will form and maintain the stockpile and also serve to break some of the larger clay pieces down. Stockpile number is SB4.

Test Panel D2

Average water contents in Cyprus Cretaceous conditioning areas CD1, CD3 and CD4 dried back an average of 0.4% after 6 1/2 hours of exposure and repeated recycling on 11-13. Average water content for all four conditioning areas is 22.5%.

1. Wet down sand pad.
2. Spread and graded clay from CD1 (Avg wn = 22.5%) into 8 inch loose lift. Lift 1 was not scarified prior to compaction.
3. Compacted lift 1 with 12 passes of CAT 815B. No indications of any weaving or pumping. Clay tends to stick between the feet on the compactor wheels.

Footprint penetrations varied from 4 to 5 inches, averaging 4 inches. Difficult determining actual penetrations due to the abundance of loose material at the top of the lift after compaction.

Visitors:

Paul B. R.
Resident Engr.

DAILY FIELD REPORT

File No

RECEIVED

NOV 23 1987

REPORT NO. 41DATE: 11-16-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

M R C E

To	Name	R	To	Name	R
	JPG			WW	
	EAR			HSL	
	EMB			AHG	
	DAZ			WGS	
	GJT			JLK	
	WHA			SLT	
	PHE			TF	
	RCJ			JM	
	NWK			RJP	
	JWF			PWC	
	VA			GRL	

PROGRESS OF WORK:

2/3

4. Wet down top of lift 1 with light spray.
5. Spread and graded clay from CD2 (Avg Wn = 22.2%) and CD3 (Avg Wn = 22.6%) into 8 inch loose lift. Scarified top of lift to check effect on footprint penetration. South side of lift 2 appeared to be higher than north side.
6. Compacted lift 2 with 12 passes of CAT 815B. Footprint penetrations varied from 4 to 5 inches, averaging 5 inches.
7. Wet down top of lift 2 with light spray.
8. Spread and graded clay from CD3 into 8 inch loose lift. Scarified top of lift 3.
9. Compacted lift 3 with 12 passes of CAT 815B. Footprint penetrations varied from 4 to 5 inches, averaging 4 inches.
10. Wet down top of lift 3 with light spray.
11. Spread and graded clay from CD4 (Avg Wn = 22.6%) into 8 inch loose lift. Scarified top of lift 4.
12. Compacted lift 4 with 12 passes of CAT 815B. Footprint penetrations varied from 3 to 5 inches, averaging 4 inches.
13. Graded top of panel and rolled it with pan tires. Fine graded area of panel where infiltrometer will be installed.
14. Wet top of panel and covered with plastic.

General Comments on Test Panel D2

1. Cyprus Cretaceous clay at Wn = 22.5% was extremely easy to work with.
2. Scarifying top of graded lift seemed to have some effect on increasing depth of footprint penetration.
3. Compactor did not work out but instead worked into way down with increasing passes.

Visitors:

Rud P R
Resident Engr.

DAILY FIELD REPORT

RECEIVED

NOV 23 1987

REPORT NO. 41DATE: 11-16-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

To	Name	R	To	Name	R
	JRG			WW	
	EAR			WSL	
	EMB			AHB	
	DAZ			WGS	
	GJT			JLK	
	WHA			SLT	
	PHE			TF	
	RCJ			JM	
	NWK			RJP	
	JWF			KWC	
	VA			GRL	

DuPont installed infiltrometer on test panel C1.

J. Kaufman instructed the writer to reduce the length of test panel B3 from 140 feet to 110 feet by eliminating 30 feet of panel length on the east side of the infiltrometer location which will be centered at Sta 0+70.

The writer requested N. Shramek to have the same PRL inspector who previously visited the clay pits to visit the Dixie clay pit one time each day they deliver clay to ensure they are excavating it from the same face the first 2500 tons came from. He will arrange it.

Attached to today's report are water contents for Cyprus Cretaceous clay in conditioning areas C01, C02, C03 and C04.

Left the site at 1730.

Visitors:

Robert P. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

File No
RECEIVED

NOV 23 1987

REPORT NO. 42

DATE: 11-17-87

FILE NO. 6524

WEATHER Overcast, Rain

PROJECT MWAF Closure, Clay Cap Test Section

Hum = 95-100%, Wind = 0-5 mph

TEMPERATURE 60-70° ±
Rain = 2.0"

I R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1030 1 recycler, 1 water truck, 1 backhoe, 1 bulldozer

Besson & Pope 0800-1100 3 Surveyors

PROGRESS OF WORK:

1/2

To	Name	R	To	Name	H
	JPG			WW	
	EAR			WEL	
	EMB			AMB	
	DAZ			WSS	
	GJT			JLK	
	WHA			SLT	
	PHE			TF	
	RCJ			JM	
	NWK			RWP	
	JWF			KWC	
	VA			GRL	

Arrived at site at 0800.

DuPont stopped work at 1030 due to heavy rain.

Test Panel C1

1. Completed in place density tests C1-N1-3 and C1-N1-2. Wet densities varied from 120.4 pcf to 122.0 pcf
2. Obtained undisturbed samples 1U in both borings B1U and B5U. Boring B5U is located 1 foot north of boring B1U and was added due to non-smooth push for B1U, sample 1U. Sample 1U in B5U is preferable for testing purposes. Both samples were advanced by pushing the tube down with the backhoe bucket.
3. Observations during test pit excavation to top of lift 2 indicate clay is homogeneous. No shear surfaces were observed but footprint scars measuring 4 inches x 4 inches were observed just below the top of lift 2 in one area. Backhoe bucket able to excavate clay without much tearing occurring on clay surface.

DuPont conditioned Cyprus Tertiary clay in CA1 up to a water content of 31.5%. Required one 3 inch recycler pass and three 9 inch recycler passes. According to G. Oliver, the clay is still clumpy. Hydration improved ability of recycler to move in clay.

Dixie clay delivered three truck loads of clay today in Stockpile SB4. Bulldozer pushed clay into pile before it was covered up due to rain.

The writer selected a representative block of Dixie clay for PTL to perform their comparison Atterberg limits on. One sample will be prepared wet from the natural water content and allowed to hydrate in distilled water at least overnight; a second sample will be oven dried at 140° overnight, passed through the No. 40 sieve and

Visitors:

Robert B. R.
 Resident Engr.

DAILY FIELD REPORT

File No.

RECEIVED

NOV 23 1987

M R C E

REPORT NO. 47-DATE: 11-17-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

To	Name	R	To	Name	W
	JPG			VW	
	EAR			WHL	
	EMB			AHR	
	DAZ			WUS	
	GJT			JLK	
	WHA			SLT	
	PHE			YE	
	RCJ			IM	
	NWK			RJP	
	JWF			WRC	
	VA			WAL	

tested without allowing additional time for hydration; ~~or tested~~
sample will be air dried, passed through the No. 40 sieve and
tested without allowing additional time for hydration.

PTL informed the writer they are now air drying the clays
before running the Standard Proctor tests instead of oven
drying them overnight at 140°. They feel it is easier to mix
water into the sampler when air dried rather than when
oven dried. The writer requested PTL make a note on the
Proctor data sheet indicating whether samples were air
dried or oven dried prior to testing.

The writer reminded N. Shramek that neither a grain size
analysis or a -No. 200 sieve wash is necessary for the
one-point or full Proctor tests being performed as part of
the test panel testing program for the Dixie, Huber or
Cyprus Tertiary clays. For the Cyprus Cretaceous clay,
a full grain size analysis should be performed for each
full Proctor test and only a -No. 200 sieve wash performed
for each one-point test.

The writer informed DuPont that test panel B3 should be
shortened by 30 feet on the east side of the infiltrometer
location.

Attached to today's report are the following:

1. Conditioning area w% distribution for test panels C2 and D2.
2. Survey data for test panel D2.

Left the site at 1730.

Visitors:

Rutledge R. R.
Resident Engr.

DAILY FIELD REPORT

RECEIVED

NOV 23 1987

REPORT NO. 43DATE: 11-18-87FILE NO. 6524WEATHER SunnyPROJECT MWME Closure, Clay Cap Test Section

Hum = 30% Wind = 0-3 mph

TEMPERATURE 57-75°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Dufont 0800-1630 1 bulldozer, 1 backhoeBesson & Pope 0800-1630 3 surveyors

PROGRESS OF WORK:

1/2

To	Name	R	To	Name	R
	JPG			WW	
	EAR			HSL	
	EMB			AHB	
	DAZ			WGS	
	GJT			JLK	
	WHA			SLT	
	PHE			TF	
	RCJ			JM	
	NWK			RJP	
	JWF			KWC	
	VA			GRL	

Arrived at site at 0800.

Test Panel C1

- Completed in place density tests C1-N1-1, C1-N2-3, C1-N2-2 and C1-N2-1. Wet densities varied from 120.2 pcf to 122.3 pcf.
- Obtained undisturbed sample 2U in boring B1U and undisturbed samples 1U and 2U in boring B2U.
- About 50% of the area at the top of lift 3 in the vicinity of location N2 consisted of uncompacted clay clods up to 1 1/2 inches deep. Lift 4 was approximately 8 inches thick after compaction at this location indicating the loose lift was probably closer to 10 inches ±. The extra thick overlying lift may have prevented compactor feet from penetrating deep enough to compact clay at top of lift 3. Uncompacted clods extend down to bottom of footprint for lift 3 in some locations. Indicates 8 inch loose lift from mid-height of previous footprint is likely maximum practical lift height and must be closely controlled.
- Numerous localized areas of uncompacted clay clods ranging in size from 1" x 1" x 1/4" deep to 8" x 4" x 1/2" deep were observed in all lifts at N1 and N2 locations. These localized areas occur predominately at or near the level of the bottom of footprints for a particular lift. This level is the bottom level during compaction of any loose lift. The uncompacted areas occur at an approximate frequency of 1 per 1 1/2 square feet of lift area at the levels described above. The effect of these areas on permeability is not yet known.
- Only one localized shear surface was observed located at the top of lift 1. The shear surface merged with the compacted clay mass after extending for about 8 inches ±.

Visitors:

Ralph P. R.

Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

DAILY FIELD REPORTREPORT NO. 43DATE: 11-18-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

6. Aside from the numerous localized areas of uncompacted clay clods, the compacted Huber clay in test panel C1 appears homogeneous.
7. Infiltration rate for infiltrometer on panel C1 is 3.6×10^{-7} cm/sec two days after installation.

All testing and sampling on test panel C1 is complete.

Test Panel D2

1. Completed in place density tests D2-S1-3, D2-S1-2, D2-N4-3 and D2-N4-2. Wet densities varied from 119.4 pcf to 120.4 pcf.
2. Clay is brittle but homogeneous so far.

About 30 truckloads of Dixie clay were delivered to the site today. Approximate weight of clay delivered is 600 tons. The clay has a D₅₀ of about 3 to 5 inches with some blocks as large as 3' x 1.5' x 1'. PTL obtained one Proctor sample. Deliveries will continue tomorrow.

Du Pont cut trenches for infiltrometer on panel C2 today. Installation will be completed tomorrow.

Left the site at 1730.

Visitors:

R. A. B. R.
Resident Engr.

DAILY FIELD REPORTFile No
RECEIVED

NOV 23 1987

REPORT NO. 44DATE: 11-19-87FILE NO. 6524WEATHER CloudyPROJECT MWME Closure, Clay Cap Test SectionHum = 50-70%, Wind = 0-3 mphTEMPERATURE 50°-65°±

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 bulldozer, 1 water truck, 1 backhoeBessin & Pope 0800-1600 3 surveyors

PROGRESS OF WORK:

1/2

Arrived at site at 0800.

Test Panel D2

To	Name	R	To
	JPG		
	EAR		
	EMB		
	DAZ		
	GJT		JLK
	WHA		SLT
	PHE		TF
	RCJ		JM
	NWK		RJP
	JWF		KWC
	VA		GRL

1. Completed in place density tests D2-N4-1, D2-S1-1, D2-N3-3, D2-N3-2 and D2-N3-1. Wet densities varied from 119.0 pcf to 122.4 pcf. Tests D2-N3-3, D2-N3-2 and D2-N3-1 were supposed to be 8 inch deep tests but PTL nuclear gauge would not operate at 8 inch depth so tests were performed at 6 inch depths.
2. No shear surfaces were observed during excavation.
3. Occasional localized areas of uncompacted clay clods were observed, usually at the level of the bottom of footprints. The areas measured approximately 4" x 4" x 1/4". Areas were not numerous enough to be significant.
4. Clay behaves in a brittle manner during excavation.
5. Clay mass observed during excavation appears very homogeneous and almost completely free of defects.
6. Testing and sampling in test panel D2 will be completed after the infiltrometer is installed.

DuPont uncovered the Cyprus Tertiary clay in LA1, lift 1B to attempt to add additional water but the writer and G. Oliver agreed the clay was already too wet to consider adding water. Samplers were obtained for water contents. The clay in area LA1, lift 1B was conditioned from an initial water content of 28.1% to a final water content of about 31.5%. The clay at the final water content is in clumps about 6 inches in diameter but uniformly wet. The conditioning of the Cyprus Tertiary clay is completed.

Dixie clay delivered the final 12 truck loads of clay to the site today. Stockpile area SB4 (same location as SB3) contains about 850 tons. The remaining 150 tons was stockpiled with the existing original stockpile SB1. Both stockpiles were covered up.

Visitors:

Rolf B. R.

Resident Engr.

DAILY FIELD REPORTREPORT NO. 44DATE: 11-19-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/2

PTL obtained the second Proctor sample from the new deliveries of Dixie clay.

DuPont informed the writer that construction of test panel B3 will not be started until 11-30 at the earliest. By the end of tomorrow, all testing available will have been completed. No new infiltrometers will be installed until the week of 11-30.

Therefore following the completion of testing in test panel C2 tomorrow, the writer will return to New York until 11-30.

DuPont completed installation of infiltrometer on test panel C2.

Left the site at 1830.

Visitors:

Robert A. R.
Resident Engr.

DAILY FIELD REPORT

RECEIVED

NOV 23 1987

REPORT NO. 45DATE: 11-20-87FILE NO. 6524WEATHER Sunny

Hum = 20%, Wind = 5-15 mph

PROJECT MWAF Closure, Clay Lap Test SectionTEMPERATURE 40°-55°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

De Pont 0800-1630Besson & Pope 0800-1500

PROGRESS OF WORK:

 $\frac{1}{2}$

To	Name	R	To	Name	R
	JPG			WW	
	EAR			MSL	
	EMB			AHB	
	DAZ			WOS	
	GJT			JLK	
	WHA			SLT	
	PHE			YF	
	RCJ			JM	
	NWK			RJP	
	JWF			KWC	
	VA			GRL	

Arrived at site at 0800.

Test Panel C2

- Completed in place density tests C2-N4-3, C2-S1-3, C2-N3-3, C2-N4-2, C2-N3-2, C2-S1-2, C2-N4-1, C2-N3-1 and C2-S1-1. Wet densities varied from 118.3 pcf to 121.5 pcf.
- Areas of uncompacted clay clods measuring up to 2'x1'x2" deep to 1'x1'x1" deep were observed at the top of lift 3. Approximately 25% to 30% of the surface area at the top of lift 3 exposed in the excavations at locations N3 and N4 consisted of uncompacted clay clods. The bottom of compactor footprints was visible about 2 inches below the clods.
- Isolated shear surfaces up to 1½ feet in length were observed in all lifts, with the fewest being observed in lift 1. No shear surfaces of great extent similar to those observed in panels A2 and B2 were observed in this panel, likely due to the lower average water content in this panel.
- Clay tears easily during excavation by backhoe.
- In general, panel C2 was the least flawed (i.e. shear surfaces, uncompacted clods) of the three wet Tertiary clay panels, although the large area of uncompacted clods at the top of lift 3 was noteworthy. A review of the survey data indicates lift 4 was between 8 and 11 inches thick after compaction. Evidently the lift was placed too thick in a loose condition, preventing the compactor feet from penetrating deep enough to compact all the clods. Relative good condition of panel C2 compared to other wet Tertiary panels likely due to lower average water content.
- Testing of test panel C2 is complete.

The writer visited PTL to discuss the progress of the Atterberg limits testing on the block of Dixie clay. N. Shramak informed the writer he has modified the initial testing plan.

The actual testing program is as follows:

Visitors:

Robert B. A.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 45DATE: 11-20-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/2Atterberg Limits Comparison TestingSample 1

Distilled water added at natural water content. Clay allowed to hydrate over 48 hours. Clay not passed through the No. 40 sieve.

Sample 2

Clay air dried over 48 hours. Distilled water added and clay allowed to hydrate. Clay not passed through the No. 40 sieve.

Sample 3

Oven dried at 140°F overnight. Clay passed through the No. 40 sieve. Distilled water added and clay allowed to hydrate.

Sample 4

Oven dried at 140°F overnight. Clay not passed through the No. 40 sieve. Distilled water added and clay allowed to hydrate.

N. Shramek says the comparison Atterberg limits and the two Standard Proctors obtained from the latest 1000 tons of delivered Dixie clay should be completed by 11-30.

Attached to today's report are the updated infiltration rates for panels A1, B1, B2, C1 and D1.

PTL will close off infiltrimeters on panels C2 and D1 for the weekend (11-21 thru 11-22) due to no personnel being available to refill bags on these high flow infiltrimeters.

PTL will close off any infiltrimeter considered unable to last 4 days without having the bags refilled over the Thanksgiving vacation. Likely will be only panel D1.

All worked stopped until 11-30.

Visitors: Left the site at 1515.

Rahit B. R.
Resident Engr.

DAILY FIELD REPORT

RECEIVED

DEC - 4 1987

REPORT NO. 46DATE: 11-30-87FILE NO. 6524WEATHER CloudyPROJECT MWMF Closure

Hum = 65% Wind = 1-10 mph

TEMPERATURE 46°-57°

M R C B

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 pan, 1 grader, 1 water truck, 1 recyclerBesson & Pope 0800-1600 3 surveyors 1 CATBISB

PROGRESS OF WORK:

1/3

To	Name	R	To	Name	R
✓	EAR	✓	✓	WW	
	EMB			YSL	
	DAZ			AMB	
	GJT			WGS	
	WHA			JLK	
	PHE			SLT	
	RCJ			TF	
	NWK			JM	
	JWP			RJP	
	VA			KWC	
				GRL	

Arrived at site at 0800.

Test Panel B3

1. DuPont and the writer agreed to construct the panel from Sta 0+0 to Sta 1+10 excluding ramps. The top of the sand pad is approximately 45 feet wide.
2. The writer requested surveyors to establish elevation control points 1 through 18 located between Sta 0+20 and Sta 1+00. The surveyors will also confirm that loose lift heights are not more than 10 inches above the bottom of the previous lift footprints by checking the loose lift height at control points 2, 5, 8, 11, 14 and 17 prior to commencing conditioning operations.
3. Recent rains have saturated the sand pad. No water was applied prior to placing raw clay. Sand pumped and rutted under pan tines during spreading of raw clay. Ruts were up to 2 inches deep.
4. Raw clay appears to have been broken down by bulldozer working it into a stockpile. Maximum block size observed during spreading of lift 1 was 18 inches with a typical maximum of 12 inches. Grader leveled off a 9 inch thick loose lift of raw clay. Actual clay thickness varied in vicinity of ruts in the sand pad.
5. Attempted to recycle clay at natural water content to a depth of 8 inches but sand which had heaved around ruts periodically was mixed with clay by recycler. Amount of sand-clay mixing was extensive enough that DuPont and the writer agreed to limit the depth of recycling to 7 inches for lift 1.
6. After one recycler pass at natural water content the clay was broken down to a maximum clod size of 4 1/2 inches with a typical maximum of 3 inches. After the second recycler pass the maximum clod size in the southern half of the panel was 1 1/2 inches but

Visitors:

Rahit B. R.

Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

DAILY FIELD REPORTREPORT NO. 46DATE: 11-30-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

the maximum clod size in the northern half of the panel was 3 inches. Probable reason for the difference in clod size is variation in position of gate on recycler which controls clod breakdown. Recycler made a third pass on the northern half of the pad, reducing the maximum clod size to 2 inches.

7. Recycling of 7 inches of raw clay at natural water content results in top of lift rising an average of about 1 1/2 inches.

8. Wet down clay in lift 1 with one pass of water truck in second gear. Recycled clay to depth of 3 inches and 7 inches. Wet down clay with second pass of water truck in second gear. Recycled clay to depths of 3, 3, 7 and 7 inches.

Obtained sampler of clay for water contents.

9. Compacted lift 1 with 12 passes of CAT 815B Compactor. Footprint penetrations varied from 5 to 7 inches averaging 6 inches. Penetrations may be misleading due to clay being in a fluffed up condition following recycling operations. Previous panels were all constructed by moving and grading (i.e. some compaction occurs during these operations) recycled clay prior to compaction with CAT 815B. Therefore footprint penetrations observed for this panel can be expected to be deeper than for previous test panels constructed at similar water contents.

10. Grader leveled off top of lift 1 by cutting down top half of footprint and blading material into bottom half of footprints. Based on observations, the grader did an excellent job of filling the bottom half of the footprints with cut down clay.

11. Covered panel with plastic. Work to continue tomorrow.

Dupont cut the ditch for the outer wall of the infiltrometer for panel 12. Installation should be completed tomorrow.

Visitors:

Rolt R. R.

Resident Engr.

DAILY FIELD REPORTREPORT NO. 46DATE: 11-30-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

Attached to today's report are updated infiltration rate data for infiltrometers A1, B1, B2, C1, C2 and D2.

Visited PTL lab and discussed results of comparison Atterberg limits on Dixie clay with N. Shramek. Results are summarized on sheet attached to today's report.

In general, the results of the comparison testing indicate that similar Atterberg limits are obtained regardless of whether the clay is oven dried at 140°F, air dried or wet up from the natural water content. Also, allowing the clay to hydrate prior to testing does not appear to have an effect on the Atterberg limits.

However, all of the plastic limits for the Dixie clay blocks tested were between 32 and 35 percent as compared to the previously determined plastic limits for Dixie clay which typically varied from 27 to 30 percent. The plastic limit values between 32 and 35 percent agree with the writer's observations in the field.

Neither N. Shramek or the writer can account for the higher plastic limits found for the block sample as compared to the previously performed tests other than to attribute it to natural variations in the material properties of the clay. The writer still finds it hard to accept that the plastic limit of Dixie clay can be as low as 27% based on field observations.

N. Shramek informed the writer that he obtained a plastic limit of between 28 and 29 percent for Proctor #5 after allowing it to hydrate for a few days as compared to a value of between 26 and 27 percent without allowing time for hydration.

Requested PTL to add one point to Dixie Proctors #7 and #8 at $w = 26.5\%$.

Visitors: Left the site at 1700.

Ralph B. Re
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

SHEET No. Of

FILE 6524

MADE BY RBR DATE 11-30-87

CHECKED BY DATE

FOR MWMF CLAY

SUBJECT

Comparison of Atterberg Limits on Dixie clay

Sample Preparation	Material Passed Through No. 40 Sieve	Time Allowed for Hydration	LL %	PL %	PI %	Performed By
Wet from Wnat%	No	Yes	73	33	40	N. Shramek
Air Dried	Yes	No	72	34	38	J. Mullins
Air Dried	Yes	Yes	77	35	42	J. Mullins
Over Dried @ 140°F overnight	No	Yes	73	32	41	N. Shramek
Over Dried @ 140°F overnight	Yes	Yes	73	35	38	N. Shramek

Note Previous Atterberg limits on Dixie clay performed by J. Mullins.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

RECEIVED

DEC - 7 1987

REPORT NO. 47

DATE: 12-1-87

FILE NO. 6524

WEATHER Cloudy

PROJECT MWME Closure, Clay Cap Test Section

Hum = 70%, Wind = 1-10 mph

TEMPERATURE 37°-53°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 pan, 1 grader, 1 water truck, 1 recycler

Besser & Pope 0800-1600 3 surveyors 1 CATRIFR

PROGRESS OF WORK:

1/3

To	Name	R	To	Name	H
	IPS			WW	
	EAR			WOL	
	EMB			AHB	
	OAZ			WGS	
	QJY			JLK	
	WHA			SLT	
	PRE			TF	
	PGJ			JM	
	MWK			RJP	
	JWP			KWC	
	VA			DNC	

Arrived at site at 0800.

Test Panel B3

1. Surveyors determined that graded surface of lift 1 is an average of 3 inches above the bottom of the footprints. DuPont placed and graded 7 inches of loose unconditioned clay on top of graded surface for a 10 inch (7" + 3") high uncompacted lift 2. Surveyors checked height of unconditioned clay placed along Sta's 30, 60 and 90. Height of loose lift is within 3/4 inch of desired height.
2. G. Oliver believes a contractor would elect to recycle to a depth 2 inches below the bottom of the unconditioned clay to ensure all of the clay is conditioned. Therefore he set recycler to recycle to a depth of 9 inches [7" (unconditioned clay thickness) + 2" (safety factor) = 9"]
3. Recycled 7 inches of clay at natural water content (24.3%) and about 2 inches of clay at $w = 28.7\%$ from lift 1 with recycler at 284 rpm. G. Oliver directed the recycler to move at a slower than usual speed (0.33 ft/sec) and to keep the rear gate down low in an attempt to break the clay blocks down to an acceptable size with just one pass. By having the recycler move slower and keeping the gate down low, more clay is kept within the recycler teeth for a greater length of time, thereby resulting in a greater breakdown of the clay blocks. After one pass of the recycler, the typical maximum size clnd was about 1 inch. The gradation of the recycled clay appeared very similar to the gradation after shredding with the Gleason shredder. G. Oliver and the writer agreed one pass of the recycler was adequate to break the clay down in preparation for water application.

Visitors: J. Kaufman (MRCE)

Robert B. R.
 Resident Engr.

DAILY FIELD REPORTREPORT NO. 47DATE: 12-1-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

Production rates for the recycler when recycling raw clay at its natural water content are the same whether the recycler moves slowly using only one pass or moves quicker and uses two passes (250 yd³/hr ±)
 Recycled clay at natural water content fluffed up about 3 inches in height.

4. Wet down lift 2 with one pass of water truck in second gear. Recycled clay to depths of 3" and 9" at 168 rpm.
5. Wet down lift 2 with second pass of water truck in second gear. Recycled clay to depths of 3", 3", 9" and 9" at 168 rpm. The additional passes at 3" and 9" were required to adequately mix the water in. Some areas of higher water content were observed along the tire tracks of the water truck due to greater amounts of water having collected in these low areas during spraying operations. After completion of recycling, samples of clay were obtained for water contents.
6. Compacted lift 2 with 12 passes of CAT 815B. Footprint penetrations varied from 3 to 7 inches averaging between 4 and 5 inches. The 7 inch penetrations tended to occur in areas of higher water content.
7. Graded top of lift 2 to level surface. Surveyors determined top of graded surface was an average of 3 to 4 inches above the bottom of the footprints. Therefore the writer recommended that DuPont place 6 inches of raw clay on top of graded surface for lift 3. Total uncompacted height of lift 3 will be 4" + 6" = 10". Surveyors checked height of raw clay placed for lift 3 and found it varied between 2" high and 2" low of the desired height. DuPont will recycle to a depth of 8 inches below the top of the unconditioned clay of lift 3.

Visitors:

Robert B. Ni
 Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

REPORT NO. 47

DATE: 12-1-87

FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

3. Covered the panel with plastic.

Dupont cut the ditch for the inner ring of the infiltrometer on test panel A2. No other progress was made.

Attached to today's report are the following items:

1. Distribution of water for clay used in construction of panel A2.
2. Water content data for conditioning of Cyprus Tertiary clay performed to re-evaluate difficulty of conditioning operations after meeting on 11-10-87.
3. Production rate estimate for Cyprus Tertiary clay based upon conditioning of CA1, lift 1B. along with details of procedures followed during conditioning operations for CA1, lift 1B.

Left the site at 1645.

Visitors:

Robert B. R.
Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

RECEIVED
 DEC - 8 1987

REPORT NO. 48

DATE: 12-2-87

FILE NO. 6524

WEATHER Sunny

PROJECT MWAF Closure, Clay Cap Test Section

Hum = 50%, Wind = 0-5 mph

TEMPERATURE 35-57°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

To	Name	RI	To	Name	H
	UPB			WW	
	EAR			WSL	
	EMB			AHB	
	DAZ			WGS	
	GJT			JLK	
	WHA			SLT	
	PHE			TF	
	RCJ			JM	
	NWK			RJP	
	JWP			KWC	
	VA			GHL	

DuPont 0800-1630 1 pan, 1 grader, 1 water truck, 1 recycler

Besson & Pope 0800-1630 3 surveyors 1 CAT815B, 1 backhoe

PROGRESS OF WORK:

1/3

Arrived at site at 0800.

Test Panel B3

1. Recycled clay in lift 3 prior to adding any water. Water content of clay feels about 26 percent as compared to natural water content of 24.3 percent. Higher existing water content is due to the recycler picking up about two inches of conditioned clay from lift 2. This is a result of setting the recycler teeth to go down two inches below the proposed bottom of the loose unconditioned clay to ensure all raw clay is in fact conditioned.

The conditioned clay from lift 2 has an average water content of 30.8 percent. After the wetter clay from lift 2 is recycled along with the raw clay at natural water content from lift 3, the resulting mixture appears to be at a uniform water content ($\approx 26\%$).

The maximum sized clay clods after one pass of the recycler moving at a slow speed with the gate low was about 1 1/2 inches. Results to date indicate that one pass of the recycler is sufficient to break down Dixie clay at natural water content when the recycler is operated slowly (0.33 ft/sec) and the gate is maintained in a low position.

Dixie clay is the most blocky of the four clay types investigated, therefore it is likely all the clay types could be broken down to an acceptable clod size at natural water content with one recycler pass.

2. Wet down lift 3 with one pass of water truck in third gear. Recycled clay to depths of 3 and 8 inches at 168 rpm and 284 rpm respectively.

DuPont and the writer inspected a 7 feet wide by 2 feet long area exposed by the recycler which extended down to the depth of the recycling. The recycler teeth were leaving behind a smooth surface which at the location inspected appeared to penetrate up to 1 inch into lift 2

Visitors: B. Foreman (COE)

Robt B. R.
 Resident Engr.

DAILY FIELD REPORTREPORT NO. 48DATE: 12-2-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

conditioned clay. No evidence of footprints from lift 2 was observed below the level of the recycler created smooth surface. It would be expected that below the level of the recycler penetration, the footprints of the previous lift would be evident as long as they were more than 2 inches below the level of the graded surface of lift 2.

The recycler was set to penetrate 2 inches below the proposed bottom of the raw clay for lift 3 (which is the top of the graded surface of lift 2). Therefore if the proper amount of raw clay was placed (6 inches) at that location and the bottom of the footprint at that location was more than 2 inches below the graded surface of lift 2, footprints should have been visible below the recycler created surface. If the two conditions mentioned above were met, then the only way the prints could have disappeared is if the pan and grader tires acted to compact them during the placement of the raw clay for lift 2. If however less than the full 6 inches of raw clay was placed at the location or the bottom of the footprint at that location was less than 2 inches below the top of the graded surface of lift 2, then the recycler actually penetrated below the level of the bottom of the footprints of lift 2. The result of this is that well compacted clay from lift 2 is being ripped up, recycled, and recompactd in lift 3. The clay being recompactd would likely never be recompactd as well as it had been originally since it had originally been right below the compactor footprint but when recompactd it would be at the bottom of the lift receiving less compactive effort. More information on the presence or absence of footprints at the recycler penetration level can be obtained with lift 4.

Visitors:

Robert B. [Signature]
Resident Engr.

DATE: 12-2-87

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TEMPERATURE _____

1ST SHIFT

2ND SHIFT

2RD SHIFT

3/3

- DuPont completed installation of infiltrometer on panel A2 and started installation of infiltrometer on panel D2. Installation on panel D2 should be completed tomorrow.

P. Atkins requested the writer to attend a meeting on 12-8 with L. Kibbee, G. Oliver and J. Newell to review work that has been done.

Visitors: Left the site at 1645.

Rolfe R. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

RECEIVED

DEC 10 1987

REPORT NO. 49

DATE: 12-3-87

FILE NO. 6524

WEATHER Sunny

PROJECT MWAF Closure, Clay Cap Test Section

Hum = 40%, Wind = 1-4 mph

TEMPERATURE 33-62°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 pan, 1 grader, 1 water truck, 1 recycler

Besson & Pope 0800-1600 3 surveyors 1 CATRIG, 1 backhoe

PROGRESS OF WORK:

1/3

A R C H

To	Name	R	To	Name	R
	TPG			VW	
	EAR			MSL	
	EMB			AMB	
	DAZ			WOS	
	GJT			JKL	
	WHA			SLY	
	PAE			TF	
	RCJ			JM	
	NWK			RAP	
	JWF			KWC	
	VA			GRL	

Arrived at site at 0800.

Test Panel B3

- The writer excavated down to the depth of recycler penetration at two locations to inspect the nature of the surface created by the recycler. The recycler originally recycled lift 4 to a depth of 9 inches. After recycling, the clay had fluffed up to a thickness of 12 inches. At a depth of 12 inches, a smooth surface was observed with the clay being at the water content of the conditioned lift 3 ($w = 30.5\%$), indicating the recycler had definitely penetrated into lift 3 material. One area, about $\frac{1}{2}$ inch lower than the rest of the surface appeared to be the scar of a footprint from lift 3 but no other similar scar was found in front or behind it.

Apparently either the footprints are being destroyed by the pan and grader tines during placement of loose lifts or recycler is somehow penetrating below the level of the previous lift footprint bottoms. The end result in both cases is that recycling the clay in place on the test panel is creating a smooth, continuous and level surface at the bottom of each lift. These smooth surfaces could serve to connect vertical flow paths, if there are any, in the panel, thereby allowing for increased water infiltration. Whether these smooth surfaces are successfully bonded to the overlying lift during compaction will be better determined during the test pit excavations for in place density testing.

If it were determined that the recycler was penetrating below the level of the previous lift footprint bottoms and thereby creating the surfaces, the depth of recycling could be reduced by the 2 inches DuPont adds on to ensure all of the raw clay is recycled and conditioned.

Visitors:

Rolt B. R.
 Resident Engr.

DAILY FIELD REPORTREPORT NO. 49DATE: 12-3-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/3

However, allowing for no safety factor in the depth of the recycler penetration could result in layers of loose, unconditioned clay going un-recycled and unconditioned, thereby creating layers of very high permeability offering connections to any interconnected vertical flow paths. A choice would have to be made as to which could have the greater potential for allowing significant water flow.

2. Recycled middle lane a second time prior to adding any water to break down bigger clay clods. Water contents determined for recycled lift 4 prior to any water addition is 25.4 percent. Higher than natural water content of 24.3 percent for Dixie clay due to mixing of underlying lift 3 at water content of 30.5 percent with lift 4 raw clay during initial recycling (2 inch penetration into lift 3, 7 inches of lift 4)
3. Wet down lift 4 with one pass of water truck in second gear. Recycled clay to depths of 3, 9 and 9 inches. DuPont and the writer decided to only add one pass of water to lift 4 in order to observe compaction of a lift at the lower end of the target range ($\approx 28\% \pm$) Samples were obtained for water contents.
4. Compacted lift 4 with 12 passes of CAT 815B. Speed of compactor ≈ 5 ft/sec (3.4 mph) Footprint penetrations varied from 3 to 4 inches, averaging 4 inches.
5. Graded off top of lift 4 and rolled it with vibrating smooth drum roller. Levelled top of panel off in vicinity of infiltrometer.
6. DuPont excavated into the north side of the test panel along Sta 0+95 to allow for an inspection of the compacted lifts. The bottom 3 lifts appeared homogeneous with no indications of any separations between lifts. The clay appeared

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 49DATE: 12-3-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/3

similar to the clay in test panels B1 and B2. The top lift was "cloddy", particularly in the bottom 3 to 4 inches.

The lack of homogeneity in the top lift is likely due to the lower water content and the fact that no lift was placed and compacted on top of it.

No mixing of the clay and sand was evident at the interface.

7. In place testing will be started tomorrow.

8. Covered the panel with plastic.

DuPont completed installation of infiltrometer on test panel D2. In place testing on panel D2 will be completed after testing is completed on panel B3.

Left the site at 1845.

Visitors:

Robert A. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

File No.
RECEIVED

DEC 14 1987

REPORT NO. 50

DATE: 12-4-87

FILE NO. 6524

WEATHER Sunny

PROJECT MWAF Closure, Clay Cap Test Section

Hum = 45%, Wind = 5-15 mph

TEMPERATURE 44-57°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

To	Name	R	To	Name	R
	JRJ			W/W	
	EAR			W/S	
	EMB			AMB	
	DAZ			WGS	
	GIT			JLK	
	WHA			SLT	
	PHE			YF	
	RCJ			JM	
	NWK			RJP	
	JWP			KWC	
	VX			QRL	

Du Pont 0800-1630 1 backhoe, 1 water truck, 1 grader, 1 pan

Benson & Pipe 0800-1630 3 surveyors

PROGRESS OF WORK:

1/7

Arrived at site at 0800.

Test Panel B3

- Completed in place density tests B3-N3-3, B3-S1-3, B3-N5-3, B3-N3-2, B3-S1-2, B3-N3-1 and B3-S1-1. Wet densities varied from 117.2 pcf to 122.6 pcf. The writer relocated test location S1 to 2 feet east of test location N3 due to more uniform lift thicknesses at location N3 as compared to location N4. Test B3-N5-3 was located 3 1/2' north of location N3 and its surface elevation was the recycler surface created during the recycling of lift 4. Test B3-N3-3 had its surface elevation 2.4 inches above the recycler surface created during the recycling of lift 4 and therefore for the first 2.4 inches indicator the density of clay directly above the recycler surface. The purpose of adding test B3-N5-3 was to allow a comparison to be made between the densities above and below the same recycler surface. The results were as follows:

Visitors:

Robert B. R.
 Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

REPORT NO. 50

DATE: 12-4-87

FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/7

The clay for about 3 inches above the recycler surface was cloddy and did not appear to be very well compacted. This clay was conditioned as part of lift 4 and had an average water content of 28.1%. The clay below the recycler surface was conditioned as part of lift 3 and had an average water content of 30.5%.

2. Excavating the test panel in the vicinity of test location N3 revealed that the recycler creates a smooth surface within the clay at the depth to which it penetrates. The recycler surfaces created during the recycling of lifts 4, 3 and 2 were clearly visible. No continuous smooth recycler surface was observed for the conditioning of lift 1 due to the underlying clay being uncompacted, unconditioned raw clay.

The exact penetration of the recycler for each lift could be compared against the penetration the recycler was set for because the elevation of the loose lift at control point 5 (near location N3) had been determined for each lift and the elevation of the recycler surfaces were measured during today's excavation. The results were as follows:

<u>Lift</u>	<u>Depth of Penetration Recycler was set for (inches)</u>	<u>Actual Measured Depth of Recycler Penetration (inches)</u>
4	9	9 1/2
3	8	7 1/4
2	9	9 3/4

Visitors:

Robert B. R.
Resident Eng.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

DAILY FIELD REPORTREPORT NO. 50DATE: 12-4-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/7

The data shown above indicates that at control point 5, the recycler actually penetrated between $3/4$ inch below or $3/4$ inch above the depth it was set for.

At control point 5, the recycler surface created for lift 4 penetrated just below the level of the bottom of the footprints for lift 3. As a result, no footprint scars were observed for lift 3. The recycler surfaces created for lifts 3 and 2 did not penetrate below the bottom of the footprints for lifts 2 and 1 respectively, therefore footprint scars were observed in lifts 2 and 1.

At the level of the recycler surface itself, all signs of the footprints are destroyed but just below the surfaces they could be seen. The clay filling in the footprints appears to be slightly more cloddy than the surrounding clay and it is not perfectly bonded to the footprint walls. The clay in the footprints appears to be not as well compacted as the surrounding clay. However the footprint scars are small, few and generally isolated, therefore they may not have an effect on permeability.

Some localized shear surfaces were observed in the panel, particularly in lift 2 which had the highest water content (31%). The shears are generally bowl shaped depressions filled with somewhat cloddy, lesser compacted clay similar to the footprints. No continuous shear surfaces were observed.

The clay located within 2 inches above the recycler surfaces generally tended to be more cloddy and to appear less compacted than the rest of the clay.

This is due to the clay directly above the recycler surface being the deepest clay to be compacted for each lift.

The higher the water content of the clay, the less cloddy and better compacted this lower 2 inches appeared.

As previously mentioned, the 3 inches above the recycler

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 50DATE: 12-4-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/7

surface created for lift 4 appeared more cloddy and less compacted than the clay directly above the other recycler surfaces, and its water content was 28.1%. The clay above the recycler surface for lift 4 peeled up very easily and in long pieces from the surface. Although the 2 inches of clay above the recycler surface created for lifts 3 and 2 were a bit cloddy and appeared less compacted than the rest of the clay, they were bonded relatively tightly to the underlying recycler surface and they did not peel up so easily. The clay directly above the recycler surfaces created for lifts 3 and 2 appeared to be bonded to the underlying recycler surfaces as well as a clay can be bonded to a smooth surface. The clay above the latter two recycler surfaces were at water contents of 30.5% and 31% respectively.

The recycler penetration data presented on sheet 1 of this report indicates that the clay directly above the recycler surface created for lift 4 was a maximum of 9 1/2 inches below the top of the loose lift 4. Compaction effort delivered to that depth at water content of 28.1% does not appear to have been sufficient to create a tight bond. For clay above recycler surfaces created for lifts 3 and 2 at water contents of 30.5% and 31% respectively, the compaction effort delivered to the maximum depths of 7 1/4 inches and 9 3/4 inches appears to have been sufficient to achieve an adequate bond. Water content of 28% may be too low if 7 inches of loose clay is placed for each lift.

The bottom of lift 1, directly above the sand pad appeared to be well compacted. The bottom 1 to 2 inches of lift 1 had a significant amount of sand mixed in it. Occasional areas of the bottom 1 inch of lift 1 contained 1 to 1 1/2 inch

Visitors:

RALPH A. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

REPORT NO. 50

DATE: 12-4-89

FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

5/7

clods of unrecycled, unconditioned clay. In general even the bottom 1 inch of clay at location N3 appeared well compacted. The water content of lift 1 was 28.7%. Possibly a water content of 29% is an appropriate minimum value for Dixie clay.

3. A review of the survey data revealed the following comparison of proposed loose lift heights and actual loose lift heights placed.

78% of the locations surveyed indicated that the actual loose lift placed was between 0 and 2 inches higher than the proposed lift height. 56% of the locations had 1 inch or more loose lift placed than was proposed.

The above data tends to support the practice of setting the recycler penetration for 2 inches deeper than the

Visitors:

Robert P. R.
Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

DAILY FIELD REPORTREPORT NO. 50DATE: 12-4-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

6/7

proposed loose lift height during conditioning operation. Also the recycler was observed to penetrate $3/4$ inch less than it was set for at control point 5, lift 3 which also supports the practice of adding the 2 inches as a safety factor.

4. A review of the survey data indicates that the depth from the bottom of a footprint to the top of the graded surface after compaction of a given lift ranges from 1.7 inches to 4.9 inches, averaging 3.2 inches. The range and average was the same for lifts 1, 2 and 3 due to the footprint penetrations being similar (4 to 6 inches).

It appears that the grading performed immediately after compaction knocks the top 2 inches of loose material into the footprints thereby leveling the surface.

The water contents of lifts 1, 2 and 3 were 28.7%, 31% and 30.5% representing the actual range likely to be used in production. Therefore, the depth from graded surface to bottom of footprint for the production project will likely be about $3\frac{1}{2}$ inches. As previously discussed in item 3, the actual lift placed tends to be 1 to 2 inches higher than the proposed height.

Assuming an 8 inch high loose lift were used, the actual lift placed would likely be $8+1=9$ inches. The depth to the bottom of uncompacted clay would be $9+3\frac{1}{2}=12\frac{1}{2}$ inches.

A more appropriate depth would be on the order of 10 to $10\frac{1}{2}$ inches.

Assuming a 6 inch loose lift were proposed, the actual lift placed would likely be $6+1=7$ inches. The depth to the bottom of uncompacted clay would be $7+3\frac{1}{2}=10\frac{1}{2}$ inches.

Based upon observations to date, the writer recommends 6 inch high loose lifts be placed upon the graded top of previously compacted lifts during production.

Visitors:

Robert A. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 50DATE: 12-4-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

7/7

No particular survey requirements are necessary to construct the cap using the method followed in constructing test panel B3.

5. DuPont and the writer believe Dixie clay is the most workable clay at high water contents ($\geq 30\%$). Conditioning operations for lifts 2 and 3 in panel B3 were easily performed with no bogging down of the recycler and no extensive clumping of the clay. Dixie clay tends to take water easier than the other clays.

6. In place density testing will be continued on 12-7.

Attached to today's report are the following:

1. Plot of $w\%$ distribution in lifts 1, 2, 3 and 4 in panel B3.
2. Section at control point 5, panel B3 showing elevations for recycler surfaces, footprints, top of loose lifts and top of graded surfaces.
3. Water content data for panel B3.

Correction to Previous Production Rate Estimates

Production rate estimator attached to Field Report Nos. 35 and 47 refer to loose cubic yards of clay. To convert loose cubic yards into in place compacted cubic yards divide the loose cubic yard figure by 1.25.

Left the site at 1730.

Visitors:

Robert B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS

SHEET No. Of

FILE 6524

MADE BY RBL DATE 12-6-87

CHECKED BY DATE

FOR MWMF Closure

SUBJECT Section at Control Point 5, Panel B3

Elevation (Feet)

99.75-

Loose Lift 4

99.5-

Footprints Lift 4

Finished Surface
of Panel B3

99.25-

Graded Lift 3

Loose Lift 3

99.0-

Footprints Lift 3

Recycler Surface for
Lift 4

98.75-

Loose Lift 2

Recycler Surface for Lift 3

98.5-

Graded Lift 2

98.25-

Footprints Lift 2

Loose Lift 1

98.0-

Graded Lift 1

97.75-

Recycler Surface for Lift 2

Footprints Lift 1

97.5-

Top of Sand Pad

97.40

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

RECEIVED
DEC 14 1987

REPORT NO. 51

DATE: 12-7-87

FILE NO. 6524

WEATHER Sunny

PROJECT MWME Closure, Clay Cap Test Section

Hum = 55% Wind = 0-5 mph

TEMPERATURE 39°-60°

M R C E

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 backhoe

Bessun & Pope 0800-1630 3 surveyors

PROGRESS OF WORK:

1/5

To	Name	R	To	Name	R
	TPG			VW	
	EAR			HSL	
	EMB			AHB	
	DAY			WGS	
	GJT			JLK	
	WHA			SLT	
	PHL			TF	
	RCJ			JM	
	NWK			RJP	
	JWP			KWC	
	VA			ORL	

Arrived at site at 0800.

Test Panel B3

- Completed in place density tests B3-N4-3, B3-N4-1, B3-N4-1A, B3-N1-3, B3-N1-2, B3-N1-1, B3-N2-3, B3-N2-2 and B3-N2-1. Wet densities varied from 116.8 pcf to 122.0 pcf. Test B3-N4-2 was not performed due to the top of lift 2 being within 1 inch of the top of lift 1 according to the survey control point data. The survey data indicates that only 3 inches of loose clay was placed at control point 14 (close to location N4) for lift 2, resulting in a very thin compacted lift. Test B3-N4-1A was added to determine the in place density in the 4 inches of clay directly above the sand.

- The following undisturbed samples were recovered in borings.

<u>Boring & Sample No.</u>	<u>Depth</u>	<u>Remarks</u>
B3-B1U-1U	0-8"	Recycler surface created for lift 4 at 2" depth and recycler surface created for lift 3 at 7 1/2" depth.
B3-B1U-2U	8"-17"	Recycler surface created for lift 2 at 13 3/4" depth.
B3-B5U-1U	0-9"	Boring located 1'± west of location B1U. Recycler surface created for lift 3 at 3 1/2" depth.
B3-B2U-1U	0-8 1/2"	Recycler surface created for lift 4 at 1 1/2" depth and recycler surface created for lift 3 at 7 3/4" depth.

Visitors:

Robert B. R.
Resident Engr.

Resident Engineer is to report in detail progress of work, all instructions issued, and orders delaying or releasing the execution of work. Percentage of work completed to be reported weekly. Reports to be mailed Daily.

DAILY FIELD REPORTREPORT NO. 51DATE: 12-7-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/5

3. Excavation in Vicinity of Location N4

- a. Numerous areas of uncompacted clay clods about $\frac{1}{2}$ inch deep $\frac{1}{2}$ inch to 2 inches above the top of lift 3.
- b. Recycler surface created for lift 4 encountered at El. 98.94. Surface is 1 inch above the bottom of the footprints measured for lift 3 at the nearby control point 14. Based upon the survey data obtained at control point 14, the recycler actually penetrated $8\frac{1}{2}$ inches below the top of loose lift 4 when it was set to penetrate 9 inches.
The clay within about 1 to 2 inches above the recycler surface appears cloddy and peels up easily. The clay can be broken apart with hand pressure. The water content of the clay overlying the recycler surface is about 28.1%.
- c. At El. 98.78, or about $\frac{3}{4}$ inch below the bottom of the footprints recorded for lift 3 at control point 14, isolated shear surfaces were observed. The shear surfaces are filled with clay that tends to be more cloddy than the surrounding clay and the clay is not bonded very tightly to the shear surfaces.
- d. Recycler surface created for lift 3 was encountered between El. 98.47 and El. 98.42. The recycler surface is about $1\frac{1}{2}$ inch above the bottom of the footprint for lift 2. Test B3-N4-1 was performed at the surface of this recycler surface. The clay within about 1 to 2 inches above the recycler surface is cloddy and peeled up relatively easily. At some locations the bond between the overlying clay and the recycler surface was tight but at other locations it did not appear so. Recycler actually penetrated $8\frac{3}{4}$ inches when it was set for 8 inches.

Visitors:

Robert B. M.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 51DATE: 12-7-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/5

- e. Recycler surface created for lift 2 was encountered at El. 97.84. This level is $3\frac{3}{4}$ inches below the bottom of the footprint for lift 1 due to only 4 inches of loose clay having been placed as part of lift 2 at this location (Control point 14). The clay located within 1 to 2 inches above the recycler surface appeared well compacted. It did not break down under hand pressure. Test B3-N4-1A was located on top of this recycler surface. Recycler actually penetrated $9\frac{3}{4}$ inches at this location when it had been set for 9 inches.
- f. About $\frac{1}{2}$ inch below the recycler surface created for lift 2, approximately 50 percent of the clay area consisted of uncompacted clods $\frac{1}{4}$ inch deep.
- g. The bottom 1 to 2 inches of lift 1 were mixed with sand and appeared to be not as well compacted as the rest of lift 1.

4. Excavation in Vicinity of Location N1

- a. At the top of lift 3, numerous isolated areas of uncompacted clay clods between $\frac{1}{8}$ to $\frac{1}{4}$ inch deep were observed.
- b. Recycler surface created for lift 4 was encountered at El. 98.65. The clay overlying the surface appeared well compacted and was tightly bonded to the surface. The clay-recycler surface interface was not easy to locate due to good bonding.
- c. Isolated shear surfaces were observed at the top of lift 2. The shear surfaces were filled with clay which appeared more layered than the surrounding clay.
- d. Recycler surface created for lift 3 was encountered at El. 98.21. The clay overlying the surface appeared well compacted and tightly bonded to the recycler surface.

Visitors:

R. A. R. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 51DATE: 12-7-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/5

- e. Continuous shear surfaces created by the compactor feet were observed 1 inch above the top of lift 1. These shear surfaces are similar to those observed in test panels A2, B2 and C2 (all at $w \geq 30\%$).
- f. Recycler surface created for lift 2 was encountered at El. 97.70. The clay located within 1 to 2 inches above the surface appeared well compacted and well bonded to the recycler surface.
- g. The bottom 5 inches of clay in lift 1 has had some sand mixed into it during recycling operations.

4. Excavation in Vicinity of Location N2

- a. Recycler surface created for lift 4 was encountered at El. 98.71. The clay located within 1 to 2 inches above the surface appears cloddy and poorly compacted. The clay peeled up easily from the recycler surface.
- b. Numerous shear surfaces created by the compactor feet were observed in lifts 2 and 3 similar to those observed in panels A2, B2 and C2. The clay in lifts 2 and 3 tears easily during excavation which is typical of the panels constructed at water contents $\geq 30\%$.
- c. Recycler surface created for lift 3 was encountered at El. 98.25. The 1 to 2 inches of clay located above the surface appeared cloddy.

5. Testing of panel B3 will be completed tomorrow.

The writer provided DuPont with a copy of an estimate of production rates for Dixie clay based on the construction procedure used for panel B3 for their review and comments.

Visitors:

R. J. B. R.
Resident Engr.

MUESER RUTLEDGE CONSULTING ENGINEERS
DAILY FIELD REPORT

REPORT NO. 51

DATE: 12-7-87

FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

5/5

G. Oliver informed the writer that if he were a contractor responsible for constructing the clay cap using the procedure followed for panel B3, he would require the following heavy equipment:

1 Pan, 1 Grader, 1 Water Truck, 1 CAT 815B, 1 Vibratory Roller, 3 Recyclers, 1 Bulldozer

Having 3 recyclers would enable him to always have at least two operating at one time.

DuPont informed the writer that after cleaning out pea gravel which had been caught in the water truck spray bar, the flow rate of the water truck has increased from 300 gpm to 600 gpm. The water truck now has the capacity to increase the water content of a 9 inch loose lift by 3.5% by one pass in second gear and by 2.1% by one pass in third gear.

PTL is following the following procedures in preparing samples for Atterberg limits testing:

1. Storing sample in unsealed plastic bag which is usually folded over to close off open end. (Sample either at or close to natural water content or air dried)
2. Not passing the samples through the No. 40 sieve.
3. Adding distilled water and allowing sample to hydrate at least overnight.

Left the site at 1800.

Visitors:

Rolt B. R.
Resident Engr.

DAILY FIELD REPORT

DEC 11 1987

REPORT NO. 52DATE: 12-8-87FILE NO. 6524WEATHER cloudy

M R C E

PROJECT MWMA closure, Clay Cap Test Section

Hum = 70% Wind = 0-5 mph

TEMPERATURE 48°-68°

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

Du Pont 0800-1630 1 backhoeBessan & Pope 0800-1630 3 surveyors

PROGRESS OF WORK:

1/6

To	Name	R	To	Name	R
	JBG			WW	
	EAR			WHL	
	EMB			AMB	
	DAY			WGL	
	GJI			JLK	
	WHA			SLT	
	PLE			TF	
	RCJ			JM	
	NWK			RJP	
	JWF			KWC	
	VA			GRL	

Arrived at site at 0800.

Test Panel B3 - Excavation in Vicinity of Location N2

1. Obtained undisturbed sample 20 in boring B20 at a depth of 8 1/2 - 17 1/2 inches. Recycler surface created for lift 1 is at a depth of 16 1/4 inches.
2. Recycler surface created for lift 1 was encountered at El. 97.47, which is about 1 inch above the sand. The surface appeared continuous in the test pit. The 1 to 2 inches of clay directly above the recycler surface peeled up relatively easily and did not appear very tightly bonded to the surface. The clay appeared more layered than the surrounding clay.
3. Shear surfaces created by the compactor feet were observed 5 inches below the top of lift 1. The surfaces are similar to those observed in panels A2, B2 and C2. The clay tends to tear easily during excavation which has been typical of all the wet panels.
4. The sidewalls of the excavation at location N2 appear homogeneous below the top 8 inches. The top 8 inches contain some honeycombing. This top 8 inches represents lift 4, placed at the lowest water content 28.1%.
5. All testing on test panel B3 has been completed.

General Comments Concerning Panel B3

1. The water content range used in constructing the panel was considered typical for production (28% - 31%). Based upon observations made during excavating the panel, 29% may be a better minimum water content for Dixie clay to assure homogeneity of the compacted clay. The maximum water content of 31% was workable and likely 32% would also have been workable. The only problem with higher water contents (30%) is the tendency for the compactor to create shear surfaces. The effect of these

Visitors:

Robert B. R.

Resident Eng.

DAILY FIELD REPORTREPORT NO. 52DATE: 12-8-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

2/6

surfaces on permeability is not yet known.

2. The major observable difference between the finished panel B3 and panels B1 and B2 is the presence of the horizontal recycler surfaces in B3. Adequate bonding between the recycler surface and the overlying clay appeared to be achieved when the clay was at a water content above 29%. At water contents less than 29%, the bonding did not appear to be as tight.
3. For lifts placed at the same water content, the amount of compactor created shear surfaces observed in panel B3 was less than was observed in panel B2. The writer believes this is due to the consistency of the loose clay at the time of compaction. When constructing all panels except B3, the conditioned clay was transported to the panel by pan and graded into a loose lift. The running of the pan and grader on top of the loose clay resulted in some compaction of the loose clay. The loose lift had a relatively stiff consistency by the time the compactor began running as a result of placing and grading operations. Therefore the feet of the compactor had a somewhat stiff material to penetrate and to create a shear surface against. With the method used to construct panel B3, the clay is conditioned in place and conditioning operations leave the clay in a fluffed condition (9" of loose clay fluff to 11" to 12" after conditioning). The fluffed clay has no real consistency and can only be described as loose clods. Therefore as the compactor feet penetrate the loose clay there is no real surface for them to shear against, therefore less tendency to create large extent shear surfaces.
4. Using the method of conditioning the clay in place as was done for panel B3 can occasionally result in a more uneven distribution of water contents in the lift.

Visitors:

Robert B. R.
Resident Engr.

DAILY FIELD REPORTREPORT NO. 52DATE: 12-8-67FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

3/6

During all conditioning operations, some areas of the clay tend to receive more water than others (low spots, tire tracks, areas near overlap of spray bar between lanes of water trucks). This variation is largely eliminated when the clay is conditioned off the panel because the clay becomes mixed together during the picking up of the clay by the pan for transporting it to the test panel and in the dumping of the clay on the panel by the pan and the spreading of the clay by the grader.

When the clay is conditioned in place, these areas or strips of clay of higher or lower water content will be compacted as they are since the clay is not moved after conditioning. The writer does not believe this situation is a problem because if water application is done properly with minimal overlapping of lanes etc. the variation in final water contents is usually no more than 2% to 3%. By requiring that all of the clay be wetted to at least the minimum water content specified, the variation in water content will be on the wetter side which is considered preferable to being on the dry side. Having some of the clay too wet will likely not adversely affect the cap.

5. Attached to today's report is an estimate of production rates for Dixie clay based on the results of constructing panel B3. The production rate is controlled by the rate at which the recycler can condition the clay. The production rate using the method followed for B3 for the range of water contents likely to be used in production (29%-31%) is approximately 500 cubic yards in place per recycler per 8 hour work day. The production rate for the procedure used for panel B3 will be higher than if the clay had been conditioned in a separate area only if the transporting of the clay to the placement area would hold up production. Aside from the elimination of the transporting of the conditioned clay, the

Visitors:

Robert R.

Resident Eng.

DAILY FIELD REPORTREPORT NO. 52DATE: 12-8-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

4/6

conditioning and placement operations for the two methods are virtually the same, therefore the production rates should be similar.

The installation of the infiltrometer on test panel B3 will be performed when all the parts arrive.

Test Panel D2

1. Completed in place density tests D2-N1-3, D2-N1-2, D2-N1-1, D2-N2-3, D2-N2-2 and D2-N2-1. Wet densities varied from 118.4 pcf to 121.8 pcf.
2. Obtained undisturbed samples 1U, 2U and 3U in boring B1U. Boring B2U was not made due to lack of tubes. The samples recovered in B1U contain all of lifts 1, 2 and 3.
3. The panel appeared homogeneous with no shear surfaces. Occasional areas of uncompacted clods were observed but no other visual defects. The clay behaves in a brittle manner during excavation. No mixing of the clay and sand was evident at the sand pad-clay interface.
4. All testing on test panel D2 has been completed.

All test panels (9) have been constructed and all in place testing has been completed. Infiltrometers have been installed on all test panels except B3.

Attended a meeting with P. Atkins, G. Oliver, J. Newell, L. Kibbee and S. Trautwein to discuss project. The writer expressed the following opinions:

1. Based upon results of latest conditioning operations with Cyprus Tertiary clay, it should not be eliminated for consideration as a potential source of clay.

Visitors:

Robert B. Ne
Resident Engr.

DAILY FIELD REPORTREPORT NO. 52DATE: 12-8-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

5/6

The Cyprus Tertiary clay is more difficult to condition at water contents above 28% than Dixie and Huber due to clumping and bogging down of the recycler by a factor of about 25%. Before a complete evaluation of the clay can be made, the results of the infiltrometer tests will have to be known and compared to the results for the other clays.

2. Regardless of the method used to construct the panel, (condition in conditioning area or condition in place) the production rate is controlled by the conditioning operation which is controlled by the recycler and the difference between the natural water content of the clay and the target water content (i.e. amount of water to be added). Estimated production rate for Dixie clay based on panel B3 is about 500 cubic yards in place per recycler per 8 hour work day for typical range of water contents.
3. Based upon observations made during excavation of panel B3, it appears similar to panels B1 and B2 except it contains horizontal smooth surfaces created by the recycler. Infiltrometer test results should determine the effect if any, these surfaces have on permeability.
4. Based upon construction of panel B3, in the range of water contents between 28% to 31%, for every 1% increase in the final water content, the production rate decreases by about 15%.

G. Oliver reviewed the production rate estimate and construction sequence provided to him by the writer and informed the writer he is in agreement with them.

Trautwein informed the writer that it will be difficult to determine the wetting front accurately based upon the tensiometer readings for panels A1, A2, B1, B2, C1 and C2 due to the relatively

Visitors:

Rolt B. R.

Resident Engr.

DAILY FIELD REPORTREPORT NO. 52DATE: 12-8-87FILE NO. 6524

WEATHER _____

PROJECT _____

TEMPERATURE _____

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

PROGRESS OF WORK:

6/6

high water contents the panels were constructed at. Since the in place clays are close to saturation already, the approach of the wetting front is not reflected so dramatically by the tensiometers.

Trautwein recommended determining a good water content profile with depth from the tubes to be obtained in the inner wall of each infiltrometer following the completion of the infiltrometer tents to confirm saturation.

Trautwein expressed concern to PTL over the practice of refilling tensiometers which are sucked dry of water in the Cretaceous panels D1 and D2. He believes refilling the tensiometers and their subsequent emptying is creating a saturated zone around the tensiometer and therefore readings are not necessarily indicative of the position of the wetting front but of the saturated zone around them.

According to PTL, he did not have a chance to tell them of the best way to handle an empty tensiometer. PTL will call him for a recommendation.

Attached to today's report is the recommended construction sequence based on panel B3 and the production rate estimate for Dixie clay based on panel B3.

Left the site at 1900.

Visitors:

Paul B. R.
Resident Engr.

SUBJECT Recommended Construction Sequence Based on Panel B3

PRELIMINARY

Construction Sequence

1. Grade the truck piles of clay daily during delivery to form a uniform stockpile capable of being run over by a pan. Cover the stockpile at the end of each day with a tarp.
2. Transport enough clay from the stockpile to place a 10 inch loose lift over the area to be covered. Shred the clay in place to a 1 1/2 inch maximum clod size to a depth of 8 inches using a Bros LSPRM-BA Recycler or equivalent. The bottom 2 inches of the 10 inch lift is to prevent contamination with underlying soils during clay conditioning operations.

If the shredded clay is in the water content range recommended for the cap, as confirmed by a minimum of one microwave water content determination per 2500 square feet of area, the clay is suitable for compaction.

3. If the water content of the clay is not within the recommended range, adjust the water content as necessary. For drying, use a disc harrow capable of penetrating 9 inches deep or a Bros LSPRM-BA Recycler or equivalent to periodically aerate the clay. For wetting, use a water truck in conjunction with a Bros LSPRM-BA Recycler or equivalent penetrating to a depth of 8 inches. Condition the clay until the water is mixed uniformly throughout the full 8 inches of clay.
4. When the clays water content is in the range recommended for the cap as confirmed by a minimum of one microwave water content determination per 2500 square feet of area, the clay is suitable for compaction.

FOR MWAF CLOSURE

SUBJECT

5. Compact each lift with twelve passes using an approved sheepfoot (tamping) roller ballasted if necessary for a roller weight of 3000 TO 3500 lbs. per foot of drum length.

6. After compacting the lift, use a grader to fill in the footprints with the loose conditioned clay at the top of the lift to leave behind a smooth surface.

Spread a 6 inch loose lift of clay from the stockpile on top of the previous lift. Shred the clay in place to a 1 1/2 inch maximum clod size to a depth of 8 inches using a Bros LSPRM-8A Recycler or equivalent.

Repeat Steps 3 through 6 for each lift.

DAILY FIELD REPORT

DEC 11 1987

REPORT NO. 53DATE: 12-11-87FILE NO. 6524WEATHER CloudyPROJECT MWME Closure, Clay Cap Test Section

Hum = 85%, Wind = 0-3 mph

TEMPERATURE 53°-78°**M R C E**

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

DuPont 0800-1630 1 backhoe

PROGRESS OF WORK:

To	Name	R	Ts	Name	R
✓	JEM			WVW	
✓	EAR			YSL	
	EMB			AMB	
	CAZ			AVS	
	GJT			JLK	
	WHA			SLT	
	MCE			TF	
	SSJ			JM	
	HWK			RIP	
	WPF			KWD	
	VA			GTL	

Arrived at site at 0800.

DuPont spent the day placing sand over portions of the covered test panels to secure the covers in place.

Attached to today's report is an estimate of the equipment and labor costs per in place cubic yard for a contractor to place the clay cap. The equipment and manpower requirements used were estimated by DuPont and/or the writer based upon the experience gained during the test section work. An average production rate of 500 cubic yards in place per 8 hour day per recycler was assumed based upon the results of panel B3.

G. Oliver reviewed the estimate and informed the writer he agreed with it.

The estimated cost for equipment and labor per in place cubic yard, excluding material costs, overhead, profit, is \$ 3.50.

Attached to today's report are estimated permeabilities for panels A1, B1, B2, C1, C2 and D1 based upon the most recent infiltration rates, tensiometer readings and results of probing inside the outer wall with a 1/2" metal bar.

For panels B1, B2, C1 and C2 the predicted wetting front based upon probing with the bar matched very well with the tensiometer readings. For panels A1 and D1 they did not match very well. The value considered more correct was used. Permeabilities for panels A2 and D2 were not estimated due to insufficient data.

The writer spent the remainder of the day summarizing laboratory data from PTL

Left the site at 1830.

Visitors:

Robert B. R.
Resident Engr.

FOR MWME ClosureSUBJECT Permeability Estimate

Estimated permeability for panels below calculated using infiltration rate and wetting front recorded on 12-8-87 or 12-9-87, whichever was more recent.

Test Panel	H cm	(1) D cm	$\frac{H+D}{D}$	Infiltration Rate cm/sec	Permeability cm/sec
A1	30.5	23	2.3	3.6×10^{-7}	1.6×10^{-7}
A2 ⁽²⁾	—	—	—	—	—
B1	30.5	25	2.2	1.6×10^{-7}	7.3×10^{-8}
B2	30.5	20	2.5	1.7×10^{-7}	6.8×10^{-8}
C1	30.5	12	3.5	4.6×10^{-7}	1.3×10^{-7}
C2	30.5	14	3.2	1.7×10^{-7}	5.3×10^{-8}
D1	30.5	23	2.3	9.0×10^{-7}	3.9×10^{-7}
D2 ⁽²⁾	—	—	—	—	—

Notes

(1) For panels A1 and D1, position of wetting front determined from tensiometers and by pushing $\frac{1}{4}$ " diameter rod into clay did not agree. Value which appeared more correct was used. For panels B1, B2, C1, C2 the two methods gave similar results.

(2) Not enough readings to be meaningful.

DAILY FIELD REPORTNO
RECEIVED

DEC 11 1987

REPORT NO. 54DATE: 12-10-87FILE NO. 6524WEATHER OvercastHum = 90%, Wind = 0+PROJECT MWME Closure, Clay Cap Test SectionTEMPERATURE 55°-70°±

CONTRACTORS WORKING:

1ST SHIFT

2ND SHIFT

3RD SHIFT

M R C E									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

PROGRESS OF WORK:

Arrived at site at 0800.

Provided G. Oliver with copies of pictures taken by the writer during excavation of test panel B3. He had requested them.

Discussed status of lab testing with N. Shramek of PTL. He intends to have the results of testing related to test panels provided to MRCE within four weeks. He will send the data along as he completes all the testing for an individual test panel. He intends to have the results of testing related to offsite clay borrow sites provided to MRCE within six weeks. The writer requested PTL give priority to the testing related to the test panels.

PTL will provide MRCE with weekly copies of infiltrometer data.

Transtwein recommended to PTL that they let the tensiometers being sucked dry of water in test panel D2 remain dry for a few days and then re-fill them.

Packed last box of undisturbed sampler for shipment to MRCE. Box will be shipped as soon as DuPont provides PTL with the shipping order.

The writer spent the remainder of the day summarizing lab data from PTL.

Attached to today's report are the following:

1. Control point survey data for test panel B3.
2. Updated plots of infiltration rate vs. time for test panels A1, A2, B1, B2, C1, C2, D1 and D2.

All field work for the test sections involving the writer has been completed for the present time.

Visitors: Left the site for New York at 1515.

Robert B. R.
Resident Engr.

END

DATE FILMED

02 / 12 / 91