



DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 27TH COMBAT SUPPORT GROUP (TAC)  
CANNON AIR FORCE BASE NM 88103

CAFB - B Red



04 APR 1990

Mr. Jack Ellvinger, Chief  
Hazardous Waste Bureau  
NM Environmental Improvement Division  
Harold Runnels Building  
1190 St. Francis Drive  
Santa Fe, New Mexico 87503

RE: NMEID Notice of Violation Letter (1 Mar 90) Landfill 5 Cell 3 Closure

Dear Mr. Ellvinger

The following information is provided in response to the referenced Notice of Violation (NOV) letter received by Cannon AFB on 6 March 1990.

Time constraints, generalization items listed in the general design criteria on Pages 16-19, and inaccurate information (shown on Figure 7 Page 37) created problems finalizing the closure as prescribed in the approved closure plan. Mr. Kelley Crossman of your office realized that there would possibly be a need to make additional changes to the approved Closure Plan. In order to meet the schedule, he recommended via telecon with Mr. Jim Richards on 10 Aug 88, that Cannon proceed with construction using best engineering judgement. Any changes should be submitted in a summary instead of obtaining prior approval from NMEID. (Cannon had already requested an extension to the effective date of closure because of A/E design and specification problems. Changes were being submitted to EID for approval and time was running out. Other delay problems were funding approval and IFB procedure.)

Cannon Response to Item 1.a.

The initial Test Cap siting was about 50' North of the final cap. However, while preparing this area, it was discovered that the Test Cap would be on top of another cell. Cannon decided it would be best to construct the Test Cap in an area within Landfill 5 that had not been used for a cell. Therefore, the Test Cap was moved to its present location.

Cannon Response to Item 1.b.

The air monitoring data and QA/QA Summary was addressed in the Health and Safety Closeout Report. This information was initially submitted by the contractor to satisfy this requirement. Attachments 1 thru 3 provide additional information on the air monitoring portion of the QA/QC Program. Adequate information is available to complete the report generated from the Quality Control Program. A sample of precisely what you want would be helpful.

Cannon Response to Item 1.c.

A brief summary of the QA/QC Plan is all testing (Air, Soil, and Material)

results were equal, exceeded or were within reasonable tolerance and conformity to the plan. Tailgate briefings were effective. No lost time accidents occurred.

Copies of additional accumulated data are attached: Survey Report, 20 Sep 89 (Atch 4); Vegetative Soil Analysis Report 22 Aug 89, (Atch 5); Seed Specifications, 3 Aug 89 (Atch 6); Polymeric Membrane Liner Warranty, 31 Aug 89 (Atch 7); Manufacturer's Certification of Fencing System, 25 Aug 89 (Atch 8); Time-Loss Illness Report, 20 Sep 89 (Atch 9); Polymeric (Hypalon) Liner Installation Details/Plans, 5 Jul 89 (Atch 10); Progress Photos (Atch 11); Hypalon Installation Certification, 29 Aug 89 (Atch 12); As Built Revised Submittal 1 Jul 89 (Atch 13); Filter Sand Test Data, 2 Aug 89 (Atch 14); Gray Clay Soil Test Data, 25 Jul 89 (Atch 15); Footing Test Data on Concrete Poured 9-10 Aug 89 (Atch 16); Sand Filter Tests, 25 Jul 89 (Atch 17); Sand Filter Sieve Analysis, 15 Jun 89, (Atch 18); and Sand-Clay Mixture Lab Test, 28 Jun 89 (Atch 19).

Cannon Response to Item 1.d.

While conducting fine grading on the original cell cap subgrade, the findings indicate that the speculation made on Page 19 of the approved Closure Plan was not true. Solid waste was detected six to eight inches below the surface. However, based on the recommendations made by NMEID (Mr. Kelley Crossman), contractors revised the As-Built submittal 1 Jul 89, and with engineering judgement, the decision was made to allow the change to be made. The revised As-Built submittal was in review prior to detection of the waste. See the additional information provided on items 2.a. and 2.b.

Cannon Response to Item 2.a.

Issues pertaining to the location of cells in Landfill 5 were discussed in a previous NOV. Cannon received the NOV in May 1988 as a result of the first Comprehensive Groundwater Monitoring Evaluation (CME) inspection conducted by EPA in 1985. The cell layout in Cannon's Landfill planning document and the approved plan is in error. Based on file research, an area contour map developed in 1975, aerial photos, and persons knowledgeable of cell locations, a new plat was developed and cells were staked in May 1988. Mr. Richards pointed out the error in the Closure Plan design and specs. After checking the area, the stakes installed in May 88 were found. These stakes were about 15' West of the stakes flagged for the cap. The stakes flagged for the cap were found by using a tape and measuring from the new fence installed around the landfill area in 1985. Observations made in 1985 when the Closure Plan was developed were NOT applicable in 1989 (Page 19, Paragraph 3). Settling was occurring and a distinct crack in the surface revealed the outline of the cell wall. Therefore, the above information, engineering judgement, and visual observation were the reasons for moving the cap 15' to the West.

The attached revised As-Built submittal dated 1 Jul 89 (Atch 13) was in review prior to initiating site preparation work. As shown, the drain trough was placed on a twelve inch thick, reinforced structural concrete footing. The footing is shown in the project photos. The approved change was based on engineering judgement.

Cannon Response to Item 2.b

Regarding the test construction timing, time restraints did not allow the contractor to do a separate test area with all its tests and observations. Special care was taken to install the final cap in strict accordance with the requirements and based on engineering judgement this conforming performance reflects the reality of the project. The attached information shows that the tests performed on the final cap met, exceeded or were within reasonable tolerance and conformity with the requirements specified for the Test Cap. The Test Cap was installed so that if anyone wanted to test it, see the layering or whatever other feature, such observations would be possible.

Cannon Response to Item 3.a.

Regarding the presence of Methylene Chloride at Cell 3, a letter from IT Corporation dated 15 Mar 90 is attached (Atch 20) addressing the analytical results review.

I trust that the additional information provided is satisfactory to correct the Notice of Violations cited.

If you have questions regarding this response, please contact Mr. Jim Richards at 784-4639.

Sincerely



DAVID E. BENSON, Colonel, USAF  
Commander

- 20 Atch
- 1. Air Monitoring Info
- 2. Air Monitoring Info
- 3. Air Monitoring Info
- 4. Survey Report
- 5. Veg. Soil Analysis Report
- 6. Seed Specs.
- 7. Liner Warranty
- 8. Cert. of Fencing Sys.
- 9. Time-Loss Report
- 10. Liner Install Details/Plan
- 11. Progress Photos
- 12. Hypalon Install. Cert.
- 13. As-Built Submittal
- 14. Filter Sand Test Data
- 15. Gray Clay Soil Test Data
- 16. Footing Test Data
- 17. Sand Filter Tests
- 18. Sand Filter Sieve Analysis
- 19. Sand-Clay Mixture Lab Test
- 20. Ltr From IT Corporation

cc: HQ TAC/DEEV w/Atch

*Attachments in  
magazine folder  
labeled Prop. to Prop  
downy Cell 3.*



August 23, 1989

Project No. 301289  
Contract No. F29605-89-C-009

Mr. Phil Armstrong  
Senior Project Manager  
Bardley Construction, Inc.  
830 Washington NE  
Albuquerque, NM 87113

Dear Mr. Armstrong:

I have enclosed the final results of air monitoring performed for the closure of Landfill Cell 3 at Cannon Air Force Base (A.F.B). As you will note, sample results, after accounting for blank values and sample volume, are essentially negative. Therefore, it is my opinion, based upon these result and real-time monitoring results, that there has bee no significant exposure of site personnel or the public to toxic organic contaminants.

A copy of these data have been sent via Federal Express to Mr. Jim Richards at Cannon Air Force Base at his request.

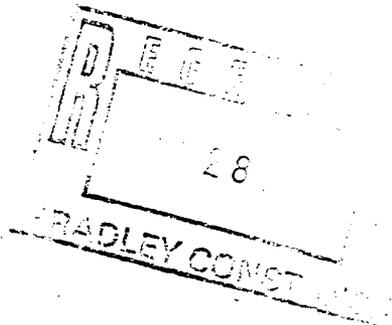
Please do not hesitate to contact me if you should have any comments or questions regarding these data.

Sincerely,

A handwritten signature in black ink, appearing to read 'B. Klenk', written over a horizontal line.

Brian G. Klenk  
Health and Safety Manager

BK:tdg  
Encs.







# CURTIS & CURTIS, INC.

CLOVIS, NM 88101 (505) 762-4759

*"Specializing In Investments That Grow!"*

KIND: Buffalograss  
VARIETY: Texoka, Treated  
ORIGIN: Texas  
PURITY: 98.55%  
INERT: .08%  
WEED SEED: .09%  
OTHER CROP: 1.28%  
NOXIOUS: NONE

LOT NUMBER: 5726  
GERMINATION: 91.00%  
DORMANT: .00%  
TOTAL BERM: 91.00%  
TESTED: 2/89  
TEXAS PERMIT: TX P772  
NET WEIGHT: 12.25

Atch 7

# STEVENS

Elastomerics

August 31, 1989

Mr. Philip Armstrong  
BRADLEY CONTRUCTION  
8300 Washington, N.E.  
Albuquerque, NM 87113

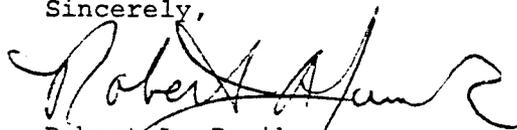
Dear Mr. Armstrong:

I have enclosed your Hypalon Warranty for Cannon AFB, cell 3.

A 20 year, pro-rata, warranty for weatherability and defects in workmanship is the maximum warranty available.

If you have any questions concerning our product or the warranty, please don't hesitate to contact me.

Sincerely,



Robert A. Janik  
Product Specialist

RAJ/lk

cc: Rick Taylor

SEP 1 1989

# STEVENS

Elastomerics

JPS Elastomerics Corp.

CONTAINMENT MEMBRANE DIVISION

395 PLEASANT STREET  
NORTHAMPTON, MA 01060  
(413) 586-8750

WARRANTY NO. 704

DATE August 16, 1989

## JPS ELASTOMERICS CORP. LIMITED 20 YEAR WARRANTY FOR POND/PIT LINERS AND COVERS

JPS Elastomerics Corp., as manufacturer, warrants each JPS Elastomerics Corp. liner which is manufactured, sold as first quality and installed under Watersaver supervision and/or control (1) to be free of any defects in materials and/or workmanship at the time of sale and (2) to have a useful life from the date of sale for a period of (20) Twenty years under the normal uses and service for which it is designed and manufactured in any customary weather which may be encountered and which is not customarily considered to be in the nature of an act of God, casualty or catastrophe such as (but not limited to) earthquake, flood, piercing hail, tornado, etc. Normal use and service excludes, among other things, the exposure of the liner to harmful chemicals, mechanical abuse by machinery, equipment or people or excessive pressures or stresses from any source.

Should defects or premature loss of use within the scope of the above warranty occur, JPS Elastomerics Corp. will supply repair or replacement materials on a pro rata basis at the then current price in such manner as to charge the customer only for that portion of the warranted (20) Twenty year life which has elapsed since he purchased the material. To enable JPS Elastomerics Corp.'s technical staff to properly determine the cause of any alleged defect and to take appropriate steps to effect timely corrective measures if such defect is within the warranty, any claim for alleged breach of warranty must be made and presented to JPS Elastomerics Corp. within thirty (30) days after the alleged defect was first noticed or the defect and all warranties will be deemed to have been waived by the purchaser.

JPS Elastomerics Corp.'s liability under this warranty shall in no event exceed the amount of the sale price of the material sold to the purchaser for the particular installation in which it failed, and under no circumstances shall JPS Elastomerics Corp. have any liability for any special, direct, indirect or consequential damages arising from loss of production or any other losses owing to failure of the material or installation, and no allowance will be made for repairs, replacements or alterations made by the purchaser unless with JPS Elastomerics Corp.'s consent in writing. JPS Elastomerics Corp. neither assumes nor authorizes any person other than an officer of the Company to assume for it any other or additional liability in connection with the JPS Elastomerics Corp.'s liner. All damages to parties other than the purchaser-user are specifically disclaimed.

If JPS Elastomerics Corp.'s liner is installed by other than Watersaver Co., Inc. or a contractor under supervision and/or control, neither this warranty nor any other warranty shall be in effect or enforceable.

Any materials sold, other than as first quality, are sold as is and without warranty of any kind or nature.

Included in this warranty are reservoir cover products provided by JPS Elastomerics Corp. provided these cover products are specifically made and installed for cover applications.

# Master-Halco, Inc.

Atch 8

4807 AMARILLO HWY., RT. 3, BOX 263, LUBBOCK, TX 79401 • TELEPHONE: (806) 763-4591

August 25, 1989

Bradley Construction, Inc.  
8300 Washington, N.E.  
Albuquerque, N.M. 87113

Re V & R Fence Co.  
Closure of Cell 3 Landfill Area 5

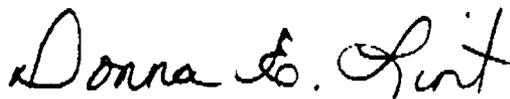
Dear Mr. Armstrong

Let it be known that all materials for the Cannon Air Force Base Closure of Cell 3 Landfill Area 5 as stated in the above contract, will meet the following provisions, as stated in the attached submitters, when furnished to V & R Fence Co. of Clovis, N.M. for this project by Master Halco, Inc.

## Specifications

- ASTM A 392 Chain Link Fencing Fabric (2" Diamond 9 ga. Wire 1.2 oz. Zinc Coating)
- ASTM A 120 Chain Link Fencing Posts, Top Rail, Braces, & Terminal Posts with Wall Thickness and Weights as follows
  - 1.660 OD = 0.111 \* 1.84#/ft.
  - 1.900 OD = 0.120 \* 2.28#/ft.
  - 2.375 OD = 0.130 \* 3.11#/ft.
- ASTM F 900 Chain Link Fencing Gate (Per Shop Drawing Submitter)
- ASTM F 626 Chain Link Fencing Accessories (Per Shop Drawing Submitter)

Respectfully,



Master Halco, Inc.  
Donna E. Lint  
Branch Manager



20 - 27 - 43

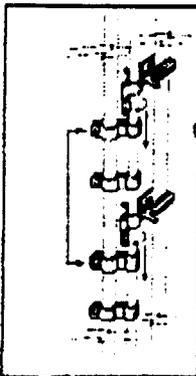
**CARRIAGE BOLTS**  
Galvanized, with nuts



Minimum order of 100

PART NO.	PER SACK	WEIGHT EACH	SIZE	SACK PRICE	LESS SACK PRICE
10720	1000	.0350	1/4" x 3/4"	.	.
10701	2000	.0440	5/16" x 1 1/4"	.	.
10702	1000	.0470	5/16" x 1 1/2"	.	.
10717	1000	.0530	5/16" x 1 3/4"	.	.
10715	1000	.0540	5/16" x 2"	.	.
10716	1000	.0600	5/16" x 2 1/4"	.	.
10718	1000	.0700	5/16" x 2 1/2"	.	.
10703	1000	.0690	3/8" x 1 1/4"	.	.
10704	1000	.0760	3/8" x 1 1/2"	.	.
10706	1000	.0880	3/8" x 2"	.	.
10707	1000	.0940	3/8" x 2 1/4"	.	.
10708	1000	.1000	3/8" x 2 1/2"	.	.
10710	1000	.1140	3/8" x 3"	.	.
10712	1000	.1280	3/8" x 3 1/2"	.	.
10719	1000	.1750	3/8" x 4"	.	.

**INDUSTRIAL LATCH ASSEMBLY**  
Pressed Steel



Optional with 2 guides and 2 forks at extra cost.

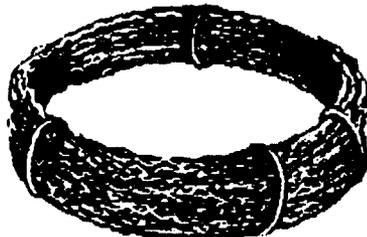
PART NO.	PER SACK	WEIGHT EACH	SIZE	SACK PRICE	LESS SACK PRICE
17201	10	4.80	1 5/8" OD Assembly	.	.
17202	10	4.80	1 7/8" OD Assembly	.	.
17211	75	.96	1 5/8" OD Guide	.	.
17212	75	.96	1 7/8" OD Guide	.	.
17213	25	1.56	1 5/8" OD Fork	.	.
17214	25	1.56	1 7/8" OD Fork	.	.
*17217	10	12.00	1 5/8" IND Drop Rod Assy Complete	.	.
*17218	10	12.00	1 7/8" IND Drop Rod Assy Complete	.	.

\* With Welded Fork to 1 3/8" x 7" Rod



20 - 27 - 43

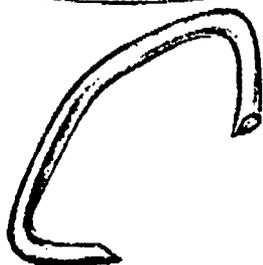
**COIL SPRING TENSION WIRE**



PART NO.	FEET PER POUND	APPROX. COIL WEIGHT	SIZE	PRICE PER POUND
23541	11'	100 lbs.	7 gauge, type 3 zinc coating	
23542	11'	100 lbs.	7 gauge, commercial zinc coating	
23548	11'	100 lbs.	7 gauge, aluminized	

Sold in full coils only.

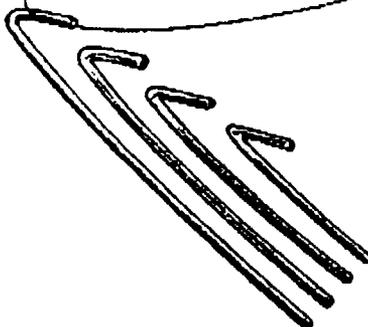
**HOG RINGS**



PART NO.	PER POUND	BOX WEIGHT	SIZE	FULL BOX PER LB.	LESS BOX PRICE
23601	224	25	12 1/2 gauge Steel		
23602	88	25	9 gauge Steel		
23621	264	10	9 gauge Alum.		
23614	88	25	9 gauge Class III		

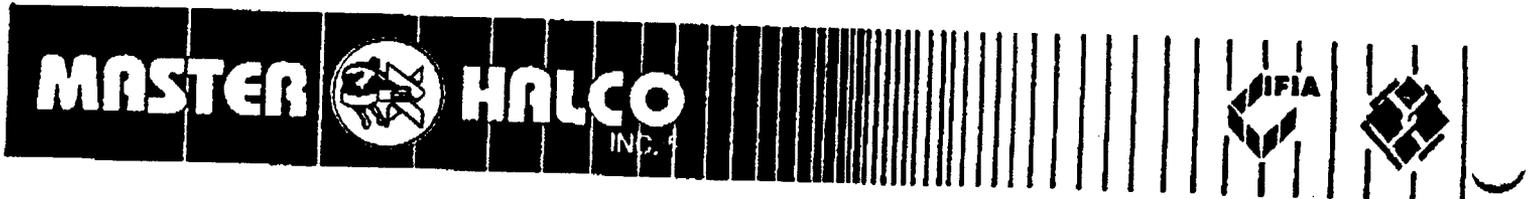
For Hog Ringer see Tool Section.

**ALUMINUM TIES**



PART NO.	PER CARTON	WEIGHT CARTON	SIZE	CARTON PRICE	LESS CARTON PRICE
23550	6300	51.00	(1 3/8") 5 5/8", 11 ga. No. 32		
23555	5600	50.00	(1 7/8") 6 1/2", 11 ga. No. 33		
23552	3700	47.00	(1 7/8") 6 1/2", 9 ga. No. 13		
23553	3100	48.00	(2 3/8") 8 1/4", 9 ga. No. 16		
23558	2000	39.40	(2 7/8") 10 1/2", 9 ga.		
23559	1000	18.00	(1 7/8") 6 1/2", 6 ga. No. 23		
23560	2400	48.00	(2 3/8") 8 1/4", 6 ga. No. 26		

100 pieces minimum



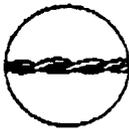
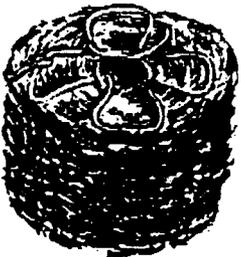
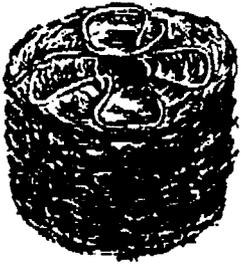
20 - 27 - 43

**HOT DIP GALVANIZED AFTER WEAVING CHAIN LINK FABRIC**

**2" - 9 GAUGE**

HEIGHT	PART NO. K-K	PART NO. B-K	PART NO. B-B	WEIGHT PER FOOT	PRICE PER FOOT 2,000' (A)	PRICE PER FOOT 500' (B)	PRICE PER FOOT LESS 500' (C)
3'	55402			2.18 LBS.			
42"	55403			2.31 LBS.			
4'	55404			2.91 LBS.			
5'	55405			3.64 LBS.			
6'	55417	55406	55446	4.37 LBS.			
7'	55461	55460	55407	5.10 LBS.			

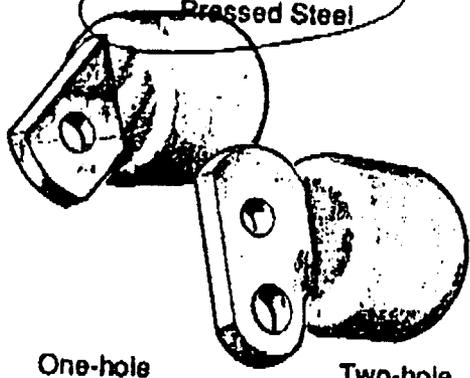
**BARB WIRE**



PART NO.	PER REEL	WEIGHT EACH	SIZE	REEL PRICE
13502	80 Rods	78 lbs.	2 pt. Import, Galvanized	
13501	80 Rods	82 lbs.	4 pt. Import, Galvanized	
13503	80 Rods	82 lbs.	4 pt. Domestic, Galvanized	
13526	80 Rods	88 lbs.	4 pt. Class III .80, Galvanized	
13522	80 Rods	87 lbs.	4 pt. 5" 12 1/2 gauge, Aluminized	
13512	1000 ft.	50 lbs.	4 pt. Full Aluminum	
13531	80 Rods	62 lbs.	12 1/2 Gauge Barbless	
13532	80 Rods	44 lbs.	14 Gauge Barbless	

Sold only in full reels: 1,320' each

**RAIL-ENDS**  
Pressed Steel



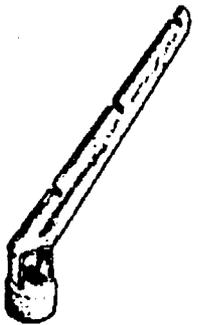
One-hole

Two-hole

PART NO.	PER SACK	WEIGHT EACH	SIZE
12506	100	.39	1 5/8" OD
12508	50	.51	1 7/8" OD
12510	50	.60	2 3/8" OD
12507	100	.47	1 5/8" OD 2-Hole
12509	50	.59	1 7/8" OD 2-Hole

**SACK PRICE**  
**LESS SACK PRICE**

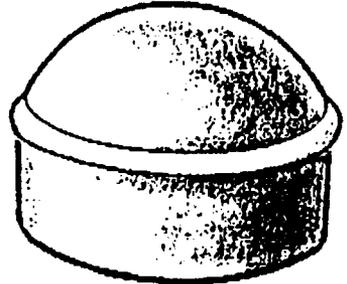
**TEXAS BARB WIRE ARM**  
Pressed Steel



PART NO.	PER SACK	WEIGHT EACH	SIZE
13131	50	1.6	1 5/8" x 1 3/8"
13132	50	1.7	1 7/8" x 1 3/8"
13135	50	1.7	1 7/8" x 1 5/8"
13136	50	2.0	2 3/8" x 1 5/8"

**SACK PRICE**  
**LESS SACK PRICE**

**CAPS**  
Pressed Steel



PART NO.	PER SACK	WEIGHT EACH	SIZE
11601	250	.12	1 3/8" OD
11602	250	.16	1 5/8" OD
11603	200	.27	1 7/8" OD
11604	125	.34	2 3/8" OD
11605	100	.53	2 7/8" OD
11606	125	.42	3" Full OD
11607	25	.67	3 1/2" OD
11608	25	1.00	4" OD
11609	25	1.628	4 1/2" OD
11610	10	3.50	6 5/8" OD

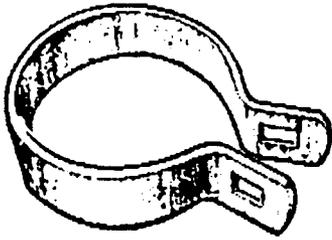
**SACK PRICE**  
**LESS SACK PRICE**

TERMS: Please See Pages AA Prices Subject To Change Without Notice  
©Master-Hako, Inc. 1988 - Effective Date: February 27, 1989

A-7

PRICES ARE PER EACH (SACK OR LESS SACK)  
\* Non-Stock/Special Order

**BRACE BANDS 12 ga. x 7/8"**  
 Pressed Steel - Galvanized  
 (Without Bolts)



Use carriage bolt

PART NO.	PER SACK	WEIGHT EACH	SIZE
10651	250	.17	1 3/8" OD
10652	250	.19	1 5/8" OD
10653	250	.21	1 7/8" OD
10654	250	.24	2 3/8" OD
10655	100	.29	2 7/8" OD
10657	100	.33	3 1/2" OD
10658	100	.38	4" OD
10659	100	.45	4 1/2" OD
10660	50	.65	6 5/8" OD
10701	2000	.0440	5/16"x 1 1/4"

SACK PRICE	LESS SACK PRICE
.	.
.	.
.	.
.	.
.	.
.	.
.	.
.	.
.	.
.	.

**BEVELED BRACE BANDS**  
 12 ga. x 7/8"  
 Pressed Steel - Galvanized  
 (Without Bolts)



Use carriage bolt

PART NO.	PER SACK	WEIGHT EACH	SIZE
10452	300	.20	1 5/8" OD
10453	250	.22	1 7/8" OD
10454	250	.27	2 3/8" OD
10455	200	.33	2 7/8" OD
10458	100	.41	4" OD
10460	50	.76	6 5/8" OD
10701	2000	.0440	5/16"x 1 1/4"

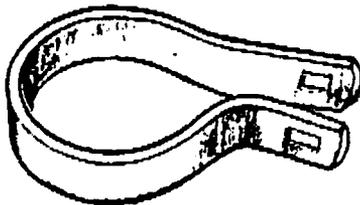
SACK PRICE	LESS SACK PRICE
.	.
.	.
.	.
.	.
.	.
.	.
.	.

TERMS: Please See Pages AA Prices Subject To Change Without Notice  
 ©Master-Halco, Inc. 1988 - Effective Date: February 27, 1989

A-4

PRICES ARE PER EACH (SACK OR LESS SACK)  
 \* Non-Stock/Special Order

**TENSION BANDS 12 ga. x 7/8"**  
 Pressed Steel - Galvanized  
 (without Bolt)



Use carriage bolt

PART NO.	PER SACK	WEIGHT EACH	SIZE
10551	200	.21	1-3/8" OD
10552	200	.25	1-5/8" OD
10553	200	.26	1-7/8" OD
10554	200	.31	2-3/8" OD
10555	100	.35	2-7/8" OD
10557	100	.41	3-1/2" OD
10558	100	.46	4" OD
10559	100	.52	4-1/2" OD
10560	50	.68	6-5/8" OD
10701	2000	.0440	5/16"x 1-1/4"

SACK PRICE	LESS SACK PRICE
.	.
.	.
.	.
.	.
.	.
.	.
.	.
.	.
.	.
.	.

TERMS: Please See Pages AA Prices Subject To Change Without Notice  
 ©Master-Halco, Inc. 1988 - Effective Date: February 27, 1989

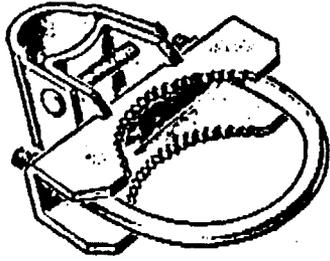
A-1

PRICES ARE PER EACH (SACK OR LESS SACK)  
 \* Non-Stock/Special Order



20 - 27 - 43

**BULLDOG INDUSTRIAL HINGE, COMPLETE**  
Pressed Steel



PART NO.	PER SACK	WEIGHT EACH	SIZE
15649	10	3.20	2 3/8" X 1 5/8"
15650	10	3.20	2 3/8" X 1 7/8"
15651	10	3.30	2 7/8" X 1 5/8"
15652	10	3.30	2 7/8" X 1 7/8"
15655	10	3.70	4" X 1 5/8"
15656	10	3.70	4" X 1 7/8"
15657	10	3.90	4 1/2" X 1 5/8"
15658	10	3.90	4 1/2" X 1 7/8"
15659	4	5.90	6 5/8" X 1 5/8"
15660	4	5.90	6 5/8" X 1 7/8"

SACK PRICE LESS SACK PRICE

**TENSION BARS 3/16" x 3/4"**  
Galvanized



PART NO.	PER SACK	WEIGHT EACH	SIZE
13701	25	1.35	34"
13702	25	1.59	40"
13703	25	1.83	46"
13704	25	2.31	58"
13705	25	2.79	70"
13706	25	3.27	82"
13707	25	3.74	94"
13709	25	4.70	118"
13710	25	5.66	142"

SACK PRICE LESS SACK PRICE

20 - 27 - 43

**SLEEVES**  
Outside Type



PART NO.	PER SACK	WEIGHT EACH	SIZE
12601	100	.36	1 3/8" OD x 6"
12602	50	.62	1 5/8" OD x 6"
12603	50	.72	1 5/8" OD x 7"

SACK PRICE LESS SACK PRICE



20 - 27 - 43

**TRUSS TIGHTENER**  
Pressed Steel



PART NO.	PER SACK	WEIGHT EACH	SIZE
18150	100	.24	Residential

SACK PRICE	LESS SACK PRICE



18101	100	.59	5 3/4" x 1" Industrial
-------	-----	-----	------------------------

Also Used for  
Gate Truss Tightener

**THREADED TRUSS RODS**  
Galvanized 3/8" diameter  
with nut



PART NO.	PER SACK	WEIGHT EACH	SIZE
17901	25	3.95	10' 6"
17902	25	4.13	11'
17903	25	4.51	12'
17950	25	7.52	20'

SACK PRICE	LESS SACK PRICE



**INDUSTRIAL GATE SPECIFICATION**

**(a) Frame Size**

Standard gates are manufactured from pipe sizes as shown. Frame sizes other than those listed, quoted on request. (All Industrial Gates — Non Stock).

**(b) Construction**

All gates are welded corner construction. Necessary bracing and truss rods furnished as required. Gates manufactured to fit opening between posts. The following clearance allowance already made: 2" ground clearance on single or double drive, 2" for single gate latch, 2" for single gate hinges, 4" for center locking device on double drive gates, and a total of 4" which includes both sets of hinges on double drive gates.

**(c) Fabric**

Fabric will be 2" mesh, 9 gauge.

**(d) Hardware**

Gates include: Single — caps only; Double — caps, Industrial drop rod assembly. Please refer to "Gate Hardware" Section "B" for your specific hardware needs.

**(e) Barb Wire**

Figure overall height for all gates, including barb wire if required. Same price with or without barb wire (specify which style). Barb wire will be 3 strands, 4 point, 12-1/2 gauge. Example: 7' overall (a) 6' fabric + 3 strands barb wire or (b) 7' fabric (no barb wire).

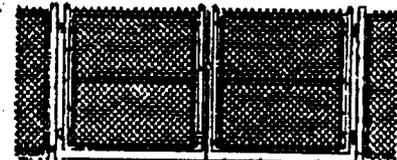
**(f) Posts**

Posts are not included in price of gates. Check post chart for recommended size.

**(g) Gate Post Recommendation**

O.D. FRAME SIZE	GATE HEIGHT	GATE LEAF WIDTH	O.D. PIPE SIZE
1-5/8"	6' OR LESS	UP TO 4'	2-3/8"
		OVER 4' TO 12'	2-7/8"
		OVER 12' TO 18'	4"
1-5/8"	OVER 6'	UP TO 6'	2-7/8"
		OVER 6' TO 14'	4"
		OVER 14' TO 20'	6-5/8"
1-7/8"	ANY HEIGHT	UP TO 6'	2-7/8"
		OVER 6' TO 12'	4"
		OVER 12' TO 18'	6-5/8"
		OVER 18' AND ABOVE	8-5/8"

**DOUBLE DRIVE GATES**



Style 305 (Without Barb Wire)  
Style 405 (With Barb Wire)

21.14

**(h) Gate Pipe Frame Recommendation**

For gate fabric height 6' or less - 1-5/8" OD (CQ-20) with minimum 1.40 lbs. per foot. For gate fabric height over 6' - 1-7/8" OD (CQ-20) with minimum 1.76 lbs. per foot.

**(i) Gate Interior Bracing**

Gate leaf should have interior bracing spaced horizontal and/or vertical so that no members are more than 8' apart. Bracing should be 1-5/8" OD (CQ-20) with minimum weight, 1.40 lbs. per foot.

**(j) Extras**

For Gate Elts in place of welded corner add: Single — \$10.00; Double — \$20.00.

For chain link with wood slats add \$.90 per square foot.

For sizes in between those listed, go to the next larger size. Add 10%.

For full weight pipe frames, call for quote.

It's specifically designed and manufactured for heavy industrial use and because of its greater tensile and yield strengths and resistance to corrosion, it's recognized as an acceptable substitute for Schedule 40.

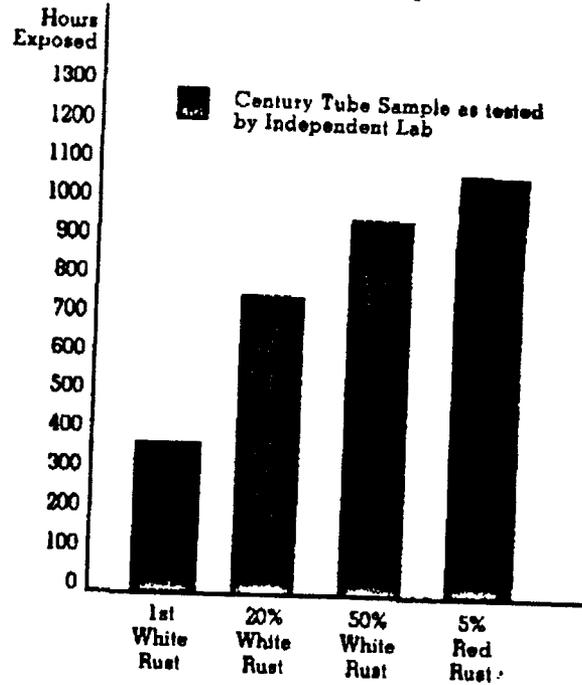
CMT-40 is manufactured using our famous Daiwa-Z Process, which is licensed in major industrial countries around the world including the United States, England, Japan, and Sweden. The patented Daiwa-Z Process is an in-line, fully automated manufacturing process in which the steel is continuously roll-formed to tubular shape, then welded along its length to form virtually seamless tubing.

This continuous tubing passes through molten zinc and is hot-dip galvanized uniformly on the outside surface with an average zinc weight of one ounce per square foot. The zinc coating is then overcoated with a chromate conversion and "Daiwakote", which is an acrylic coating that provides superior resistance to white and red rusting. And, the inside of our tubing is coated with an organic material that gives further protection against rust.

Top grade materials, highly trained personnel, in-line galvanizing, and con-

tinuous quality control combine to produce the finest tubing in the industry. Century's bright, mirror-like finish guarantees years of maintenance free service. So when the job calls for heavy industrial uses, call for CMT-40.

**Salt Spray Test Results (ASTM B117)**  
Exterior Coating



Interior Coating  
Less than 5% red rust when tested at 400 hours.

**CMT-40 Dimensions**

Fence Industry O.D.	Nominal Pipe Size I.D.	Decimal Equivalent	Minimum Wall Thickness	Nominal Zinc Weight Oz/Ft <sup>2</sup>	Minimum Wt/Ft (Pounds)	Minimum Yield Strength	Section Modulus	Bending Moment
1 3/8	1"	1.315	.104	1.0 ± 0.1	1.35	50,000	.1111	5555
1 5/8	1 1/4"	1.660	.111	1.0 ± 0.1	1.84	50,000	.1961	9805
2	1 1/2"	1.900	.120	1.0 ± 0.1	2.28	50,000	.2810	14050
2 1/2	2"	2.375	.130	1.0 ± 0.1	3.11	50,000	.4881	24405
3	2 1/2"	2.875	.160	1.0 ± 0.1	4.64	50,000	.8773	43865

Manufacturer's certification of materials specification is available when requested at time of order.

- Meets Federal Specification RR-F-191/3C
- Meets ASTM F669 and A-569
- Bending strength exceeds that of schedule 40 pipe as specified by AASHTO

Atch 9



**Bradley**

GENERAL CONTRACTORS

September 20, 1989

CEL3-012

Base Contracting Division  
27 TFW/LGCK Building 150  
Cannon AFB, New Mexico 88103-5320

(505) 784-2948  
FAX 784-4684

Attn: Mrs. Caroline Ponce  
Contracting Officer

Ref: Closure of Cell No. 3, Landfill Area No. 5  
F29605-89-C-0009  
Cannon AFB, NM

Subj: Schedule of Material Submittals Item No. 18 -  
Time-Loss Illness Report Spec. 1D:9.6

Dear Mrs. Ponce,

Regarding subject Submittal Item, please consider the following information as our response to the contract requirement that we submit something to fill out the blank on the Schedule of Material Submittals format.

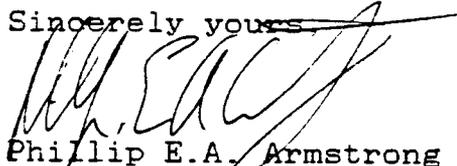
Bradley Construction, Inc. had no worker with a lost time accident or illness on this project. For that we are grateful.

Therefore, we have no need to generate the paperwork required by this Item 18.

We hope that this summary statement will satisfy the contract requirement to pay some attention to the blank on the form. If it doesn't, let us know and we can write more words to say that nothing happened and the item is thereby rendered a nullity.

Thank you for your time and attention to this matter.

Sincerely yours,

  
Phillip E.A. Armstrong  
Senior Project Manager

Bradley Construction, Inc.  
8300 Washington NE  
Albuquerque N.M. 87113  
(505) 823-2800  
1-800-432-5476 in state

cc: J. Bradley

Atch 10



# WATERSAVER COMPANY, INC.

P.O. BOX 16485 • DENVER, COLORADO 80218-0485 • (303) 289-1818

Fax: 303-287-3136      Telex: 432208 AQUA UI  
Plant and Office — 5870 E. 58th Avenue, Commerce City, Colorado 80022-3832

Established 1943

July 5, 1989

Mr. Phillip Armstrong, Proj Mgr.  
Bradley Construction, Inc.  
8300 Washington, NE  
Albuquerque, NM 87113

SUBJECT: HANDLING OF HYPALON LINER

Dear Mr. Armstrong;

The following comments relate to the packaging and handling of the liner prior to and during installation.

PACKAGING: The liner is palletized on a 3'x7' wooden pallet, and is double accordion folded in both directions. The long dimension (length) will always PULL off the pallet first.

Since we are shipping a panel 18.75'x415' for the first phase of the installation and knowing that the "PULL" direction (length) unfolds first, I recommend "PULLING" out 70' of material off the pallet first, measure, and cut with a scissors. This piece in reality is now 18.75' by 70' after the cut. Open the entire panel and then cut the 18.75' in half to create two pcs. about 9.4'x70'. These become the short legs of the rectangle.

Remaining on the pallet is 345' of liner. Instead of trying to lay out this entire piece of liner and then cutting; it may be more practical to continue to cut 70' sections and field splice as needed. Both long sides are then being cut simultaneously and it makes better sense from a handling standpoint.

NOTE: There are arrows on the cardboard cover and on the liner itself marked PULL and SPREAD. While there is no 'right' side of the liner technically speaking, the arrows become important to ensure that the 1/4" tab faces downward towards the subbase as desired. The 18.75' wide panel doesn't present the handling problems the larger 50'x345' panel will become if the arrows are not followed.

It will be important for the larger panel to be "SPREAD" towards the cell if it is layed out on either of the long sides adjacent to the concrete gutter.

The best pieces of equipment to use to "pay" out the liner are either a 4 yd. front-end loader or a terrain type fork lift.

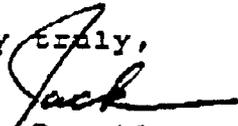
CAUTION: HYPALON IS HEAT SENSITIVE! This means that the material is fairly raw (uncured) at this stage of installation and WILL stick to itself if a fold or large wrinkle is stepped on or not layed out smoothly. Once exposed to sunlight it is starting to cure.

Simply stated, it is better to handle the material in the cooler morning hours, at least during the handling, cutting and positioning phase. The material could stick to itself and may not pull apart without damaging the mating surfaces. If damage occurs, then patching must be effected and that can be very time consuming.

Withthe elevated temperatures at this time of year, caution becomes the operative word.

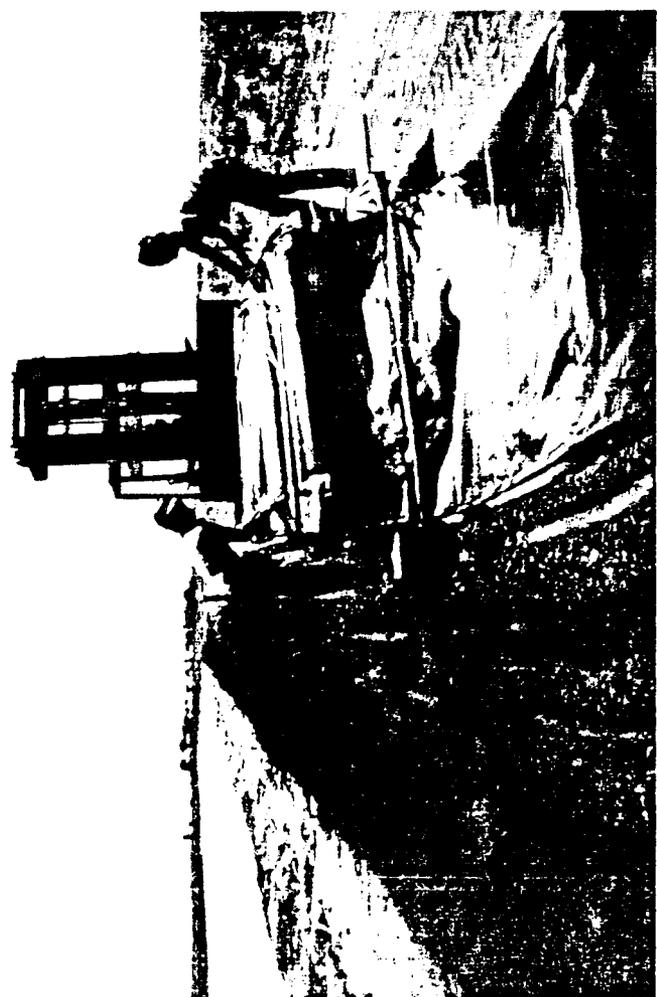
If you or your field supervisors have any questions, please don't hesitate to call and discuss anything I have attempted to put in this letter. My telephone number is 602-966-6892.

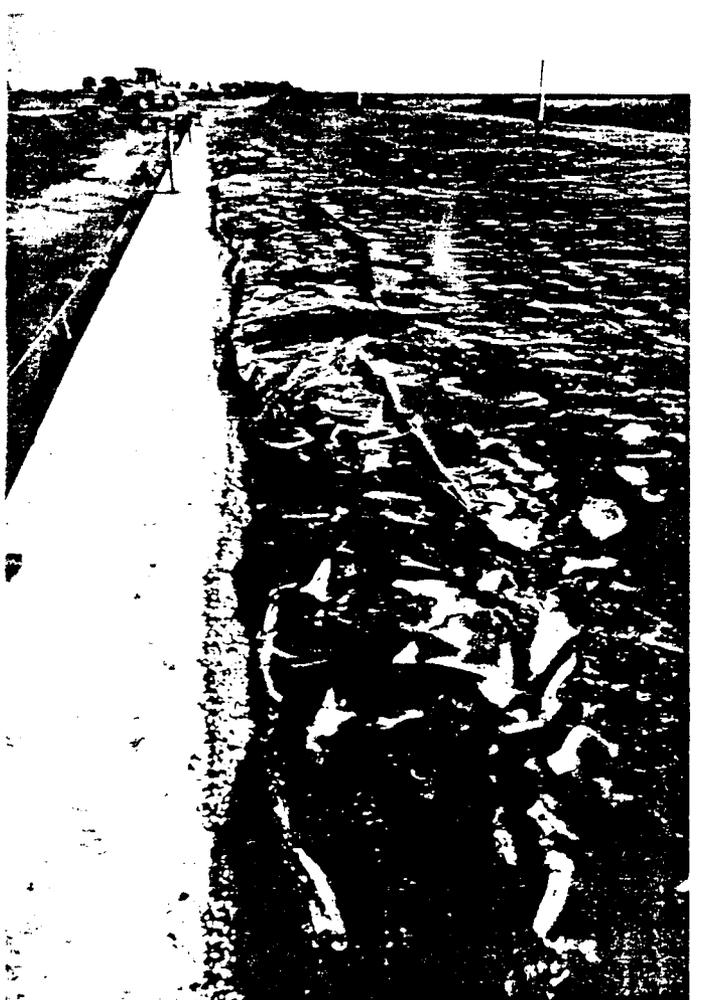
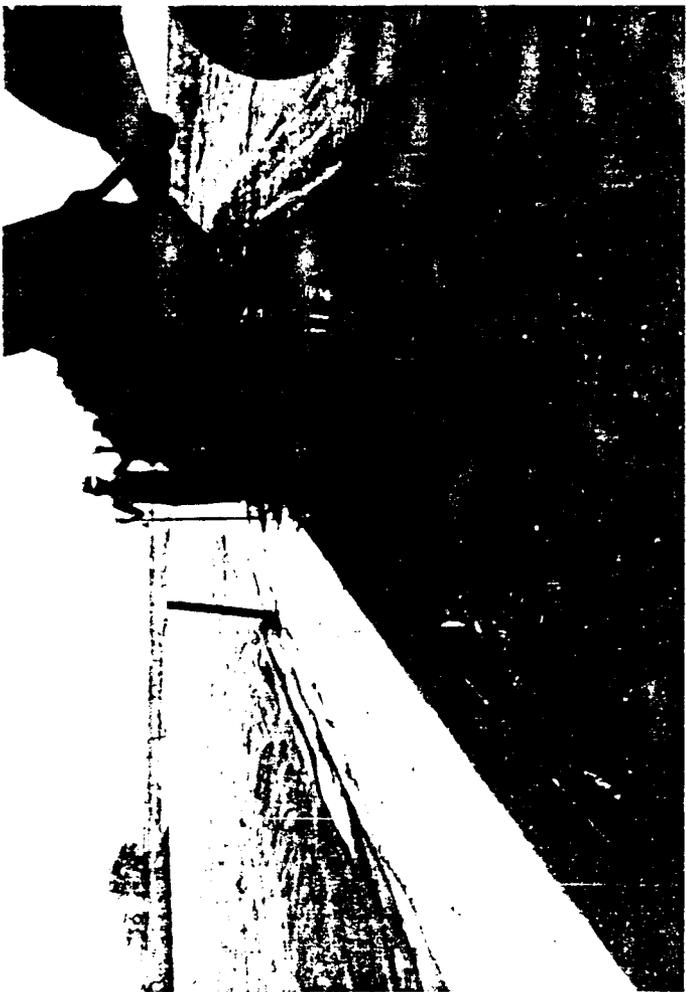
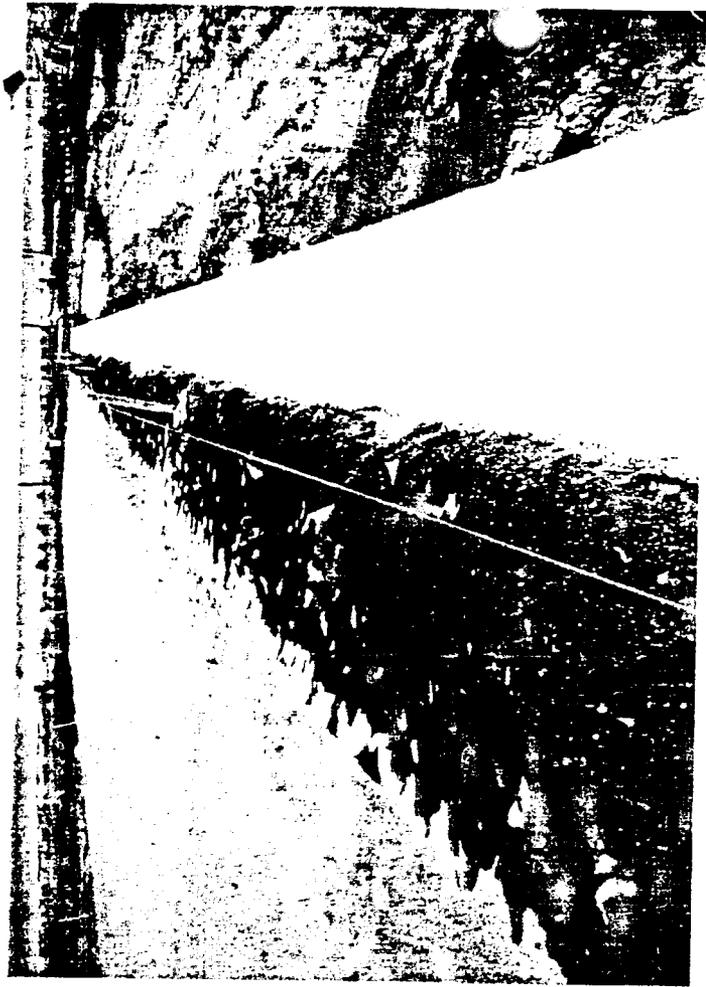
Very truly,

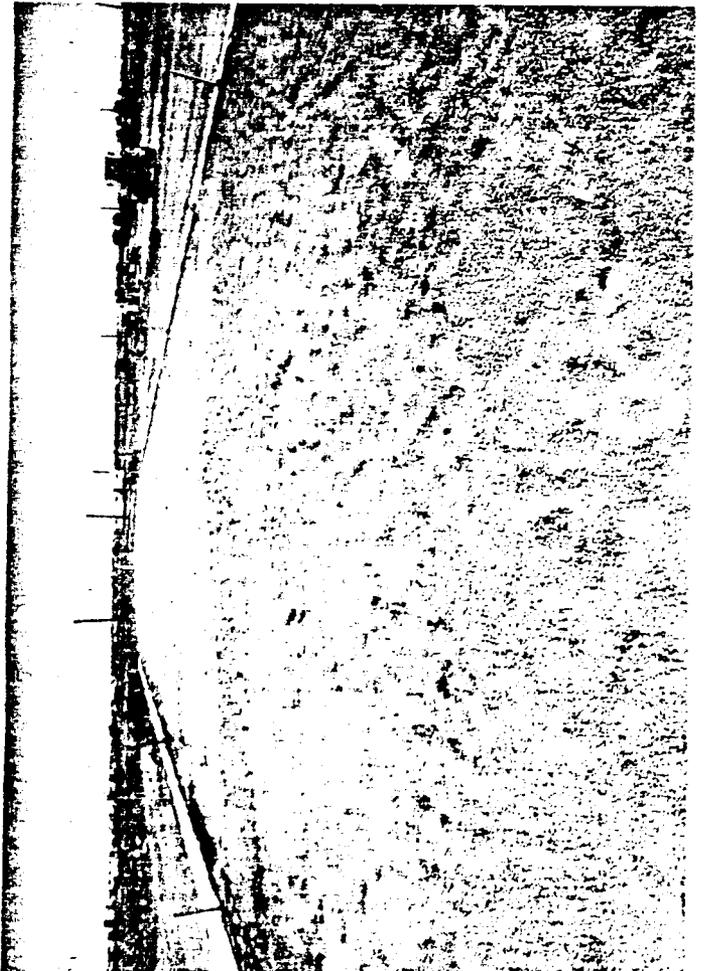
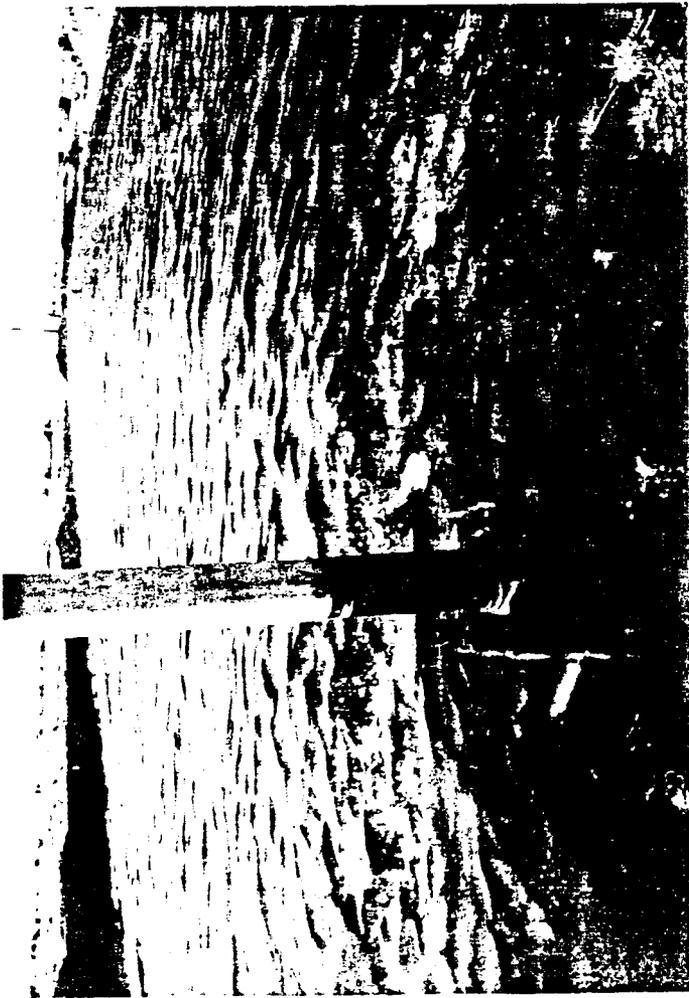
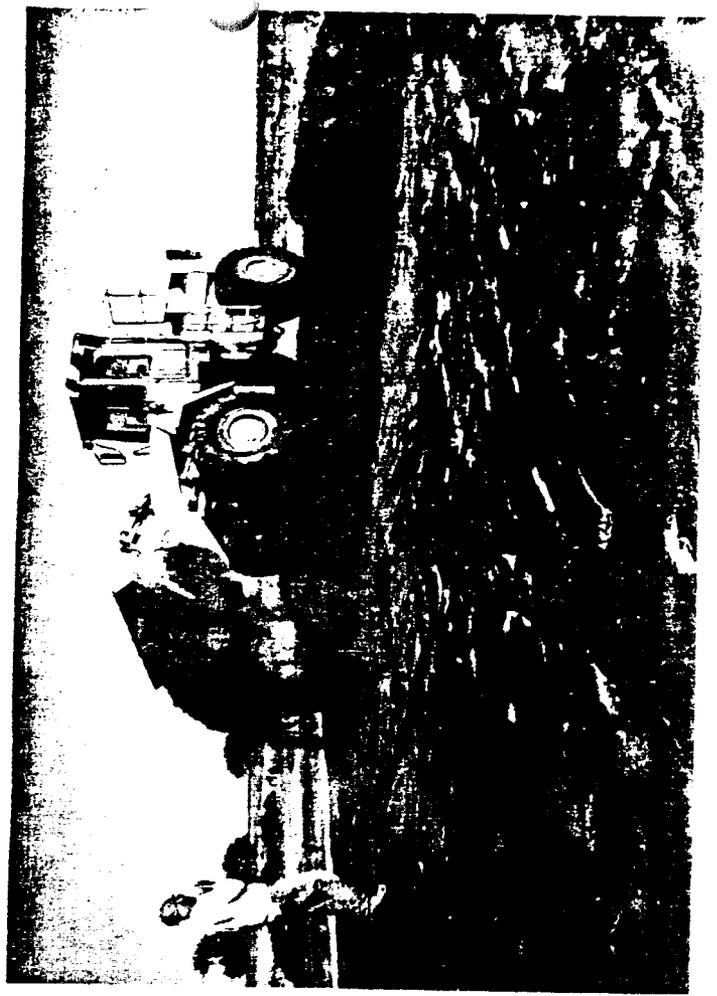
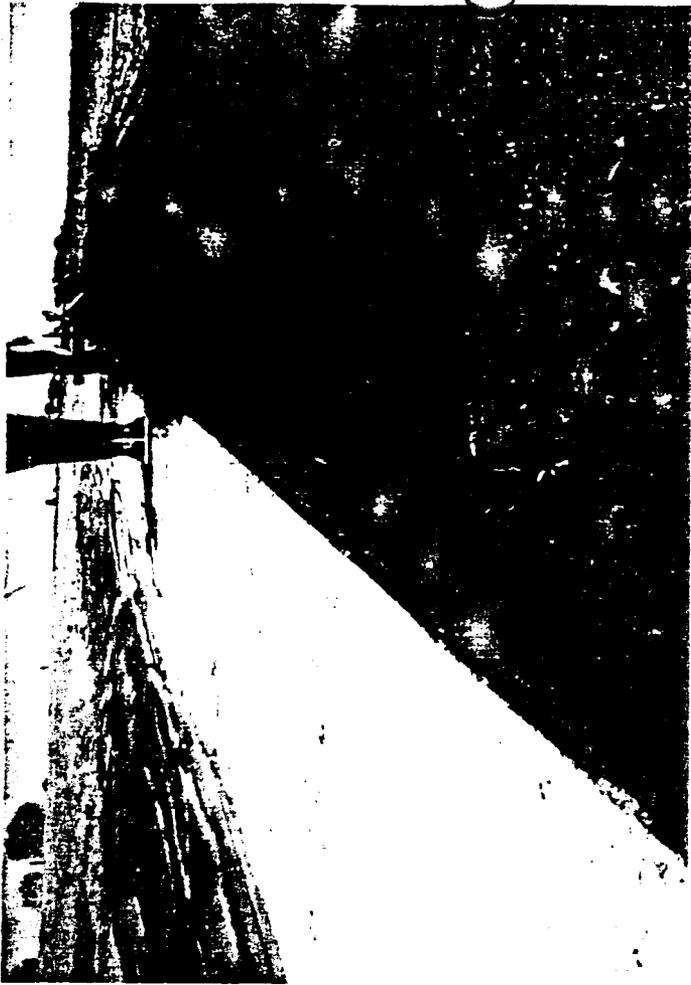


Jack Brantl  
Regional Manager  
WATERSAVER COMPANY, INC.

Atch II







Atch 12



# WATERSAVER COMPANY, INC.

P.O. BOX 16465 • DENVER, COLORADO 80216-0465 • (303) 289-1818

Fax: 303-287-4186      Telex: 4820061 AQUA UH  
Plant and Office — 8870 E. 88th Avenue, Commerce City, Colorado 80022-8932

Established 1944

August 29, 1969

Mr. Phillip Armstrong  
Bradley Construction Inc.  
8300 Washington, NE  
Albuquerque, NM 87113

SUBJECT: LETTER OF CERTIFICATION  
REF: CLOSURE OF CELL #3, LANDFILL AREA 5  
CANNON AFB, NM  
F29505-89-C0009

DEAR Mr. Armstrong:

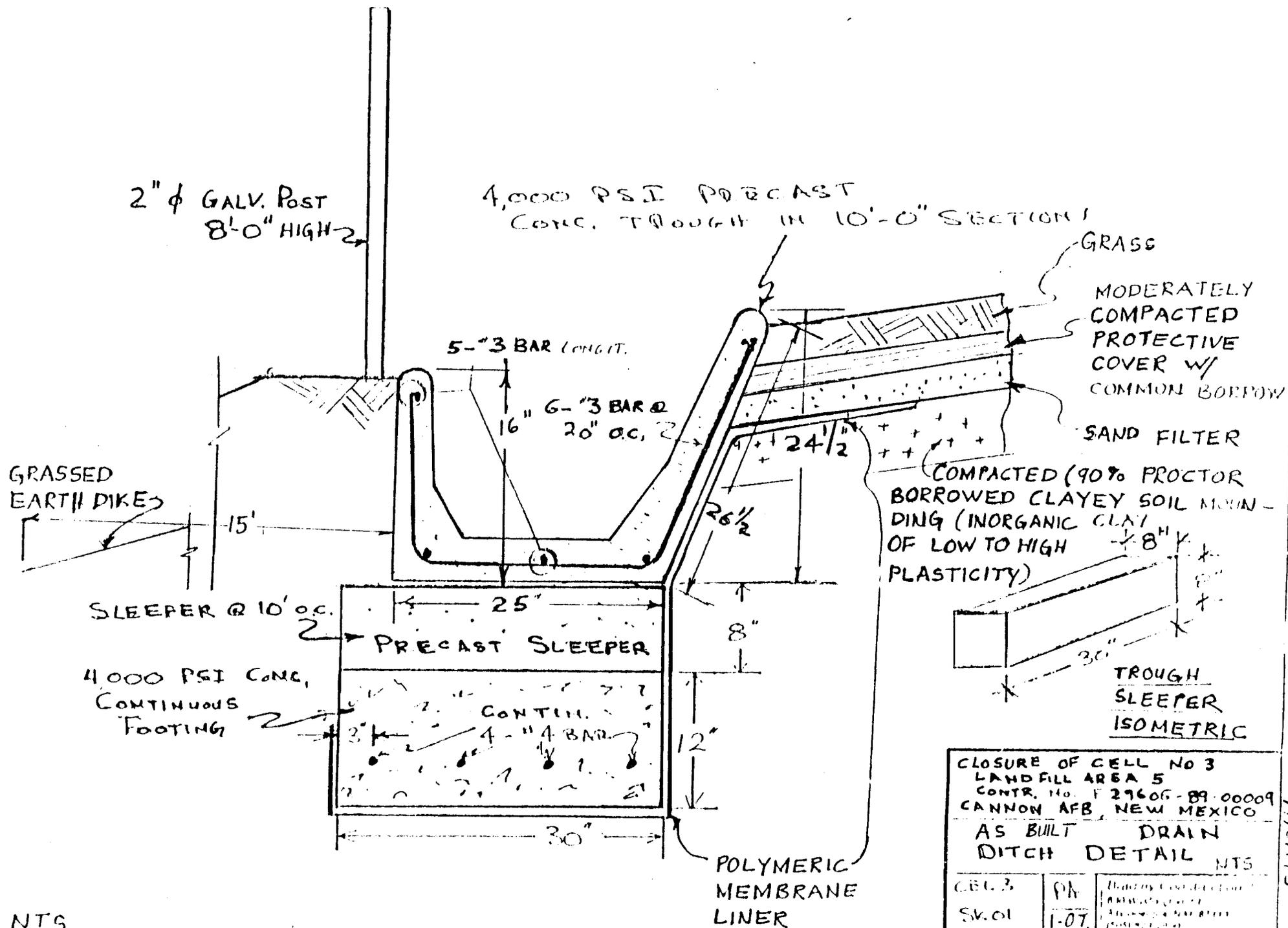
By this letter we certify that the 36 mil I.G. HYPALON polymeric membrane liner was installed over a satisfactory and acceptable surface.

All field seams and necessary patches were made in accordance to industry standards and practices and inspected during and after the liner installation.

The vent pipes projecting thru the liner were sealed using factory fabricated pipe boots with appropriate adhesives and clamp.

Very truly,

Jack Brantl  
Regional Manager  
WATERSAVER COMPANY, INC.



CLOSURE OF CELL NO 3  
LAND FILL AREA 5  
CONTR. No. F 29606-89-00009  
CANNON AFB, NEW MEXICO

AS BUILT DRAIN  
DITCH DETAIL NTS

CEL. 3	PA	Quantity of material approved for use
SK. 01	1-07, 89	Approved by position and date of signature

NTS

ATCH 13

4 Feb 14



ROBERT L. LYDICK  
Professional Engineer and  
Land Surveyor

LYDICK  
TESTING LABORATORY  
CLOVIS, NEW MEXICO 88101

ROBERT CHAD LYDICK  
Professional Engineer and  
Land Surveyor, P. E.

TO: Bradley Construction

FILE NO:

PROJECT: Cell # 3 Landfill, CAFB  
P.O. No. 8167

TYPE OF MATERIAL: Filter Sand

DATE OF TEST: 8-2-80

TYPE OF TEST: Field Density  
(Nuclear)

<u>TEST NO.</u>	<u>LOCATION</u>	<u>DRY DENSITY % MAXIMUM</u>	<u>MOISTURE CONTENT %</u>
SF-1	North 1/3 of Cell Area	96.1	8.4
SF-2	Middle of Cell Pad	96.0	9.1
SF-3	South 1/3 of Cell Pad	97.4	7.1

CONTROL DENSITY: 121.5

OPTIMUM MOISTURE: 12.0

REQUIRED COMPACTION: 90.0%

LYDICK TESTING LABORATORY

BY Robert Lydick

Copies to: Bradley Construction

⋮



ROBERT L. LYDICK  
Professional Engineer and  
Land Surveyor

LYDICK  
TESTING LABORATORY  
CLOVIS, NEW MEXICO 88101

ROBERT CHAD LYDICK  
Professional Engineer and  
Land Surveyor, P. E.

TO: Bradley Construction Company

FILE NO:

PROJECT: Cell # 3 Landfill, CAFB  
P.O. 8167

TYPE OF MATERIAL: Gray Clay Soil

DATE OF TEST: 7-25-89

TYPE OF TEST: Field Density  
(Nuclear)

<u>TEST NO.</u>	<u>LOCATION</u>	<u>DRY DENSITY % MAXIMUM</u>	<u>MOISTURE CONTENT %</u>
BF-1	10' South Left Side	102.1	18.4
BF-2	60' South Right Side	101.9	16.0
BF-3	110' South Left Side	93.8	16.6
BF-4	160' South Right Side	92.8	21.6
BF-5	210' South Left Side	90.0	21.1
BF-6	260' South Right Side	95.8	18.0

CONTROL DENSITY: 106.0 #/Cu.Ft.

OPTIMUM MOISTURE: 18.4

REQUIRED COMPACTION: 90.0%

LYDICK TESTING LABORATORY

BY Robert Lydick

Copies to: Bradley Construction

⋮

Atch 16



**ROBERT L. LYDICK**  
Professional Engineer and  
Land Surveyor

**LYDICK**  
**TESTING LABORATORY**  
CLOVIS, NEW MEXICO 88101

**ROBERT CHAD LYDICK**  
Professional Engineer and  
Land Surveyor

**TO:** Bradley Construction Co.

**FILE NO:**

**RECEIVED FROM:** Contractor

**CYLINDERS MADE BY:** Contractor

**CONCRETE FOR:** Cell # 3, Landfill, CAFB  
P.O. No. 8167

CYLINDER MARK	LOCATION	AGE DAYS	DATE POURED	DATE CRUSHED	TOTAL LOAD POUNDS	PSI
Set-2	Footings	28	8-10-89	9-7-89	160,500	5676
"	"	28	" "	" "	158,500	5606

**STRENGTH REQ. 7 DAY** \_\_\_\_\_ **PSI:**

**28 DAY** 3000 \_\_\_\_\_ **PSI:**

**LYDICK TESTING LABORATORY**

**Copies to:** Bradley Const.

**BY** Robert Smith



**ROBERT L. LYDICK**  
Professional Engineer and  
Land Surveyor

**LYDICK**  
**TESTING LABORATORY**  
CLOVIS, NEW MEXICO 88101

**ROBERT CHAD LYDICK**  
Professional Engineer and  
Land Surveyor

TO: Bradley Construction Co.

FILE NO:

RECEIVED FROM: Contractor

CYLINDERS MADE BY: Contractor

CONCRETE FOR: Cell #3, Landfill, CAFB  
P.O. No. 8167

CYLINDER MARK	LOCATION	AGE DAYS	DATE POURED	DATE CRUSHED	TOTAL LOAD POUNDS	PSI
Set-1	Footings	28	8-9-89	9-6-89	144,500	5111
"	"	28	" "	" "	144,000	5093 73200

STRENGTH REQ. 7 DAY \_\_\_\_\_ PSI:

28 DAY 3000 \_\_\_\_\_ PSI:

LYDICK TESTING LABORATORY

Copies to: Bradley Const.

BY Robert Lydick

Atch 17

BRADLEY CONSTRUCTION, INC.  
8200 Washington, NE  
Albuquerque, NM 87113  
(505) 823-2800

TRANSMITTAL LETTER

JULY 25, 1989  
CELL3 - CAFB013

To: Base Contracting Division (505) 784-2948  
27 TFW/LGCK Building 150 FAX 784-4684  
Cannon AFB, New Mexico 88103-5320

Attn: Mrs. Caroline Ponce or TSgt. Carson 784-4518  
Contracting Officer

Ref: Closure of Cell No. 3, Landfill Area No. 5  
F29605-89-C-0009  
Cannon AFB, NM

We are sending you  Attached  Under Separate Cover

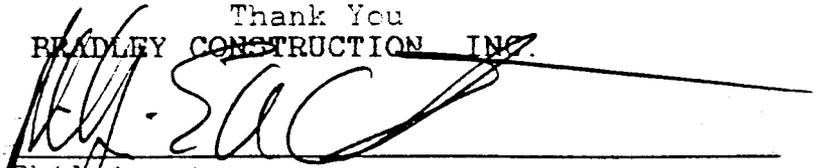
- Shop Drawings  Copy of Letter  Sepias
- Catalogue Cuts  Change Order  Plans
- Samples  Product Data  Specifications
- Other  INVOICE  As-Built Drawings

COPIES	DATE	NUMBER	DESCRIPTION
1	7-24-89		Western Technologies letter Regarding Sand Filter Layer permeability
1	7-17-89		Western Technologies, Inc. Report on Permeability of Filter Sand
1			Pages 10 and 11 of Soils Textbook on Permeability of soils

- For Approval  Approved  Revise/Resubmit
- For Your Use  Approved As Noted  For Bids Due
- Per Your Request  Partially Rejected  Return Plans
- For Review/Comment  Rejected  Submit Field Drawings

REMARKS: Please advise us at your earliest convenience of this material's acceptability. This information is as a supplement to Submittal No. 6 of 7-14-89. The Specification Permeability is  $1 \times 10$  to the minus 2, the sand we propose has a permeability of  $1.6 \times 10$  to the minus 2. The scale is logarithmic, the sand falls into normally acceptable variance values.

COPY TO: FILE

Thank You  
BRADLEY CONSTRUCTION, INC.  
  
Phil Armstrong  
SENIOR PROJECT MANAGER



**WESTERN  
TECHNOLOGIES  
INC.**

8305 Washington Place, N.E.  
Albuquerque, New Mexico 87113  
(505) 823-4488

Bradley General Contractors  
8300 Washington, N.E.  
Albuquerque, New Mexico 87113

July 24, 1989

Attn: Mr. Phil Armstrong

Re: Cell #3 Landfill 5, PO#08201  
Cannon AFB Project #86-0056  
Clovis, New Mexico

WTI No. 32490529

The sand submitted for testing is relatively coarse for a concrete sand and is at the high range of the specification of 3.1 F.M. The permeability of the sand was  $1.6 \times 10^{-2}$  CM/SEC. The specification for this sand is  $1.0 \times 10^{-2}$  CM/SEC, using water to determine permeability.

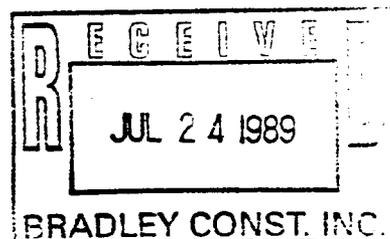
It is our understanding that the sand will be used to collect gasses. Based on our experience, the permeability should be higher than specified based on the initial and final pressures on the design.

If you have any questions, please do not hesitate to contact me at (505)823-4488.

Sincerely,  
WESTERN TECHNOLOGIES INC.

Micheal Ollerich, P.E.  
Director of Geotechnical Engineering

/jn0709E





**WESTERN  
TECHNOLOGIES  
INC.**

8305 Washington Place, N.E.  
Albuquerque, New Mexico 87113  
(505) 823-4488

**LABORATORY REPORT**

**PHYSICAL PROPERTIES OF AGGREGATES**

Client Bradley Construction P.O. #08201 Job No. \_\_\_\_\_  
8300 Washington, NE  
Albuquerque, NM 87113  
Attention: Phil Armstrong  
 Lab/Invoice No. 32490529  
 Date of Report 7-17-89  
 Reviewed By *Phil Armstrong*

Project Cannon AFB Project #86-0056

Location Clovis, NM Sampled By Phil Armstrong/Client Date 7-17-89

Type of Aggregate Sand Filter Submitted By Phil Armstrong/Client Date 7-17-89

Source of Aggregate Cell #3 landfill 5 Authorized By Phil Armstrong/Client Date 7-17-89

Sieve Analysis, ASTM C136- Test Standards are ASTM unless otherwise noted.

Sieve Size	% Passing Accumulative	Specification	Test	Result	Specification	Test STD
		ASTM C33	Fineness Modulus	3.09	2.3-3.1	C125-
4"		Modified	Dry Rodded Unit Weight, pcf			C29-
3"			Lightweight Pieces, %			C123-
2"			Clay Lumps and Friable Particles			C142-
1½"			Organic Impurities			C40-
1¼"			Sand Equivalent Value			C2419-
1"			Resistance to Abrasion	% Wear, rev.		C131-
¾"		% Wear, 500 rev.			Grading	
½"		% Wear, rev.			C535-	
¾"	100	100		% Wear, 1000 rev.		Grading
¼"	100		Scratch Hardness, % by: Weight   Count			C235-
No. 4	95	95-100	Fractured Faces, % by: Weight   Count			
8	76		Liquid Limit   Plasticity Index			D4318-
10	71		Cleanness Value			Calif. 227-
16	59	45-80	Permeability	K=1.6x10 <sup>-2</sup>		
30	41		Moisture Density Relations	Max. Dry Density, pcf		<input type="checkbox"/> D698- <input type="checkbox"/> D1557- <input type="checkbox"/> AASHTO T99- <input type="checkbox"/> AASHTO T180-
40	28			Optimum Moisture, %		
50	16	10-30		Method		
100	4	2-10	Specific Gravity	Absorption, %		<input type="checkbox"/> C127- <input type="checkbox"/> C128-
200	1.1			Bulk (Dry)		
				Bulk (SSD)		
Finer than 200 ASTM C117-				Apparent		

Copies to: 3-Client

Since both ends of the sample are subjected to an equal water head, there is no flow of water through the sample. However, if one end of the sample, point *a* in Fig. 1-4(b), is subjected to a higher head than the other end, point *b*, the water flows through the sample from *a* to *b* at a velocity *v*:

$$v = ki \quad (1-10)$$

where *v* = discharge velocity = quantity of water that percolates across a unit area of the sample in a unit time;

*k* = coefficient of permeability, depending on the characteristics of the soil;

*i* = hydraulic gradient  $= h/l$ ; *h* being the hydraulic head; *l*, the length of sample.

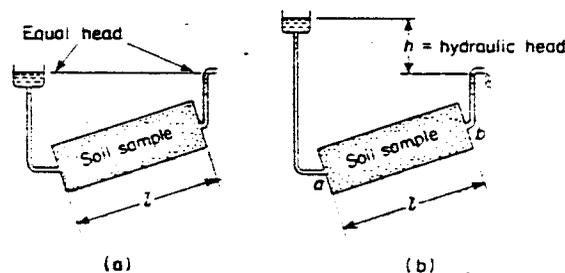


Fig. 1-4 Schematic diagram illustrating the seepage of water through soil.

The empirical equation above is known as Darcy's law. The value of *k* may be determined by laboratory methods or in the field by pumping tests. For ordinary foundation problems, the range of *k* values given by Peck, et al. (1953) may be useful.

Type of soil	Permeability, <i>k</i> , cm/sec	Drainage quality
Clean gravels	$10^2$ to $10^4$	Good
Clean sands	1	
Clean sand and gravel mixtures	$10^{-1}$ to $10^{-4}$	
Very fine sands	$10^{-5}$	Poor
Organic and inorganic silts, mixtures of sand, silt and clay, glacial till, stratified clay deposits	$10^{-6}$	
Impervious soils, e.g., homogeneous clays below zone of weathering	$10^{-7}$ to $10^{-9}$	Very poor

### 1-7 Engineering Properties of Granular Soils

Granular soils are sand, gravel, cobbles, or mixtures of them. Fine sand is an exception, because its engineering properties are on the borderline

between the granular and the fine-grained soils. A granular soil has the following significant engineering properties:

1. It is generally excellent foundation material for supporting structures and roads. Except for loose sand, the bearing capacity is large and the settlement is small. Settlement takes place shortly after application of load.
2. It is the best embankment material, because it has high shear strength, it is easy to compact, and it is not susceptible to frost action.
3. It is the best backfill material for retaining walls, basement walls, etc., because it exerts small lateral pressure, it is easy to compact, and it is easy to drain.
4. It cannot be used alone in earth embankment for dikes, reservoirs, etc., because of its high permeability. An excavation in such soils below ground level requires extensive dewatering.
5. It is prone to settlement under vibratory load.

The engineering properties of granular soils are largely influenced by the following factors: compactness, grain size and grain size distribution, and shapes of grains.

**A. Compactness.** The shear strength and compressibility of granular soils are most intimately related to the compactness of the grains, which is described as loose, medium (firm), or dense (compact). Quantitatively, the compactness is expressed in terms of *relative density*:

$$D_d = \frac{e_{max} - e}{e_{max} - e_{min}} \times 100$$

or

$$D_d = \frac{D_{max}(D - D_{min})}{D(D_{max} - D_{min})} \times 100$$

where  $D_d$  = relative density expressed in per cent,

$e_{max}$  = void ratio in loosest state,

$e_{min}$  = void ratio in most compact state,

*e* = in-place void ratio,

$D_{max}$  = greatest dry density,

$D_{min}$  = least dry density,

*D* = in-place dry density.

The compactness of a man-made fill is commonly expressed in terms of percentage of compaction. A representative soil sample is compacted in the laboratory to determine the maximum unit weight under a certain compaction procedure. If the actual in-place unit weight is equal to 95 per cent or 106 per cent of the maximum weight obtained in the laboratory, the fill is said to

Atch 18



ROBERT L. LYDICK  
Professional Engineer and  
Land Surveyor

LYDICK  
TESTING LABORATORY  
CLOVIS, NEW MEXICO 88101

ROBERT CHAD LYDICK  
Professional Engineer and  
Land Surveyor

Project: Cell # 3 Landfill, CAFB

Type of Test: Sieve Analysis

Date of Test: 6-15-89

Type Mat'l: Sand Filler (Concrete Sand)  
Stephens Concrete

Contractor: Bradley Construction  
P.O. No. 8167

Screen Size	% Passing	Required Limits
3/8"	100.0	100
#4	96.7	95-100
#16	60.5	45-80
#50	23.9	10-30
#200	6.5	2-10

Liquid Limit N/A

Plastic Limit N/A

Plasticity Index N/A

LYDICK TESTING LABORATORY

Lab. No. 005

BY Robert Lydick

Copies to: Bradley Construction  
:  
:  
:  
:



**WESTERN  
TECHNOLOGIES  
INC.**

8305 Washington Place, N.E.  
Albuquerque, New Mexico 87113  
(505) 823-4488

*Atch 19*

LABORATORY REPORT

**PHYSICAL PROPERTIES OF SOILS**

Client Bradley Construction  
8300 Washington  
Albuquerque, NM 87113

P.O. #08201

Job No. \_\_\_\_\_

Lab/Invoice No. 32490459

Date of Report 6-28-89

Reviewed By *[Signature]*

Project Cannon Air Force Base #86-0056

Location Clovis, NM Sampled By Armstrong/Client Date 6-19-89

Type of Material Sand-Clay Mixture (SC) Submitted By Armstrong/Client Date 6-19-89

Source of Material Cell No. 3 Landfill Area Authorized By Armstrong/Client Date 6-19-89

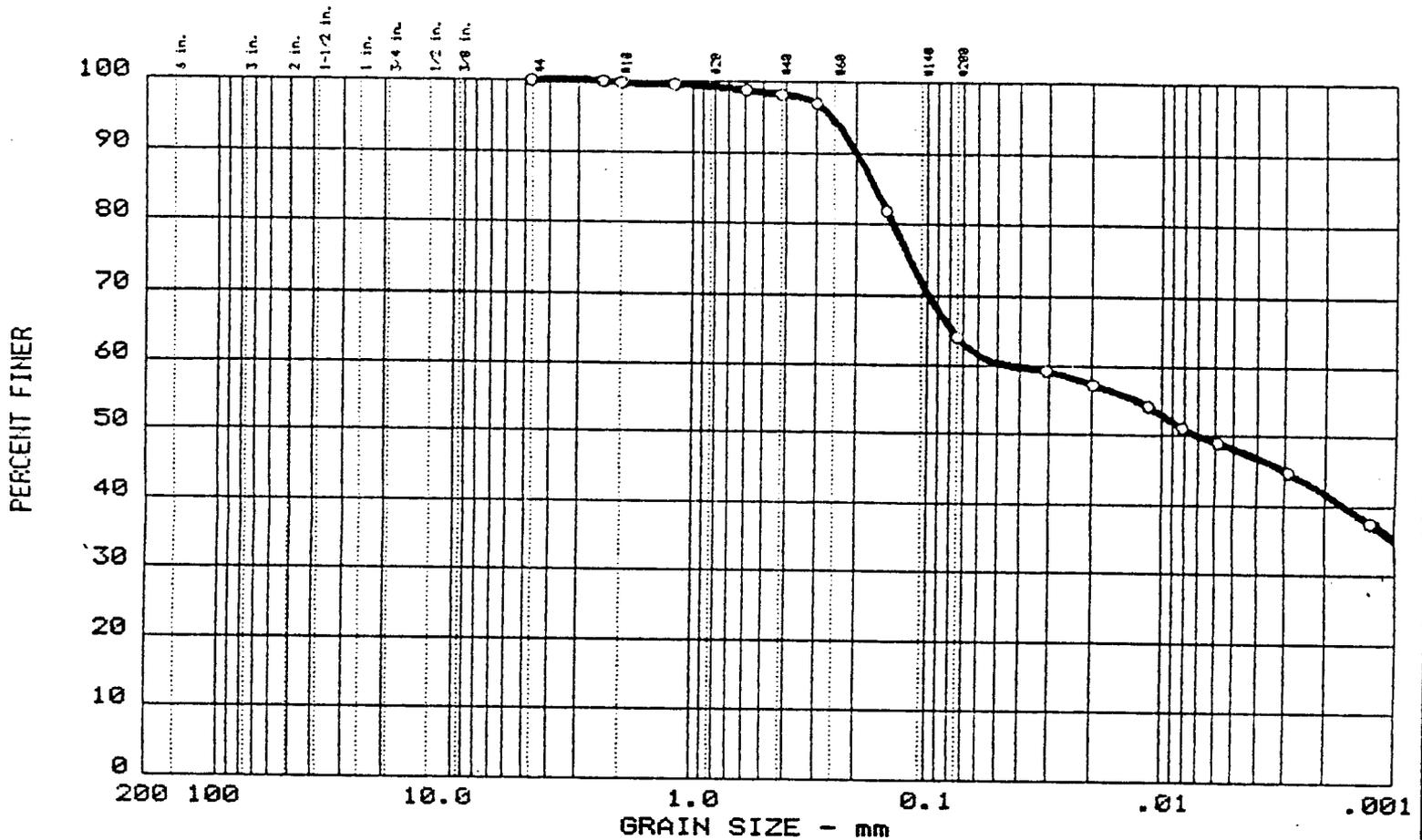
Sieve Analysis, ASTM D422-  
5

Sieve Size	% Passing Accumulative	Specification	Soil Classification
			Liquid Limit and Plasticity of Soils LL = <u>45</u>
3"			ASTM D424- PI = <u>22</u>
2½"			Moisture - Density Relations Maximum Dry Density, pcf <u>104.8</u> Optimum Moisture, % <u>20.4</u> <input checked="" type="checkbox"/> ASTM D698-78; <input type="checkbox"/> ASTM D1557- ; Method <u>A</u>
2"			
1½"			Specific Gravity of Soils (minus No. 4 material) ASTM D854- Specific Gravity _____
1"			
¾"			Resistance 'R' Value of Compacted Soils ASTM D2844- 'R' Value _____
½"			
⅜"			Other:  Permeability: $K_t, \text{ cm/sec} = 2.06 \times 10^{-7}$
¼"			
No. 4			
8			
10			
16	100		
30	99		
40	97		
50	94		
100	62		
200	31		
Finer than 200 ASTM D1140-			

Copies to: 3-Client

RECEIVED  
- 5 1989  
BRADLEY CONST. INC.

# GRAIN SIZE DISTRIBUTION TEST REPORT



Test	%+3"	% GRAVEL	% SAND	% SILT	% CLAY
0 2	0.0	0.0	35.9	16.0	48.1

LL	PI	D85	D60	D50	D30	D15	D10	Cc	Cu
0									

MATERIAL DESCRIPTION	USCS	AASHTO
0 SANDY CLAY - dark brown	CL	

Project No.: 3249W014  
 Project: Cannon A.F.B.  
 0 Location: Cell No. 3 Landfill Area. 5

Date: 7-7-89

Remarks:  
 Bucket sample @ base of stockpile

GRAIN SIZE DISTRIBUTION TEST REPORT  
 WESTERN TECHNOLOGIES INC.



Date: 7-7-89  
 Project No.: 3249W014  
 Project: Cannon A.F.B.

## Sample Data

Location of Sample: Cell No. 3 Landfill Area 5  
 Sample Description: SANDY CLAY - dark brown  
 JSCS Class: CL Liquid limit: 45  
 AASHTO Class: Plasticity index: 22 ASTM D4318-84

## Notes

Remarks: Bucket sample @ base of stockpile

Fig. No.: Permeability :  $k_t$ , cm/sec =  $2.0 \times 10^{-7}$

## Mechanical Analysis Data ASTM D422-63

	Initial	After wash
Dry sample and tare=	1401.90	439.00
Tare =	191.60	191.60
Dry sample weight =	1210.30	447.40
Minus #200 from wash=	63.0 %	

Tare for cumulative weight retained= 0

Sieve	Cumul. Wt. retained	Percent finer
# 4	0.00	100.0
# 8	0.70	99.9
# 10	3.20	99.7
# 16	5.80	99.5
# 30	14.70	98.8
# 40	21.90	98.2
# 50	36.90	97.0
# 100	219.60	81.9
# 200	435.10	64.1

## Hydrometer Analysis Data ASTM D422-63

Separation sieve is number 10  
 Percent -# 10 based on complete sample= 99.7

Weight of hydrometer sample: 50

Hygroscopic moisture correction:

Moist weight & tare = 91.20

Dry weight & tare = 90.60

Tare = 65.50

Hygroscopic moisture= 2.4 %

Calculated biased weight= 49.0

Table of composite correction values:

Temp, deg C: 25.5 26.7

Comp. corr: - 2.5 - 2.0



Meniscus correction only:  
 Specific gravity of solids = 2.57  
 Specific gravity correction factor = 1.019  
 Hydrometer type: 152H

Elapsed time, min	Temp, deg C	Actual reading	Corrected reading	K	Rm	Eff. depth	Diameter mm	Percent finer
2.0	26.7	30.5	28.5	0.0129	29.5	11.5	0.0310	59.3
5.0	26.7	29.5	27.5	0.0129	28.5	11.6	0.0197	57.2
15.0	26.7	28.0	26.0	0.0129	27.0	11.9	0.0115	54.1
30.0	26.7	26.5	24.5	0.0129	25.5	12.1	0.0082	51.0
60.0	26.7	25.5	23.5	0.0129	24.5	12.3	0.0059	48.9
250.0	26.7	23.5	21.5	0.0129	22.5	12.6	0.0029	44.8
1410.0	25.5	20.5	18.0	0.0131	19.5	13.1	0.0013	37.5

Fractional Components

% + 3 in. = 0.0      % GRAVEL = 0.0      % SAND = 35.9  
 % SILT = 16.0      % CLAY = 48.1

D95= 0.17    D60= 0.041    D50= 0.007



**TO VIEW THE MAP AND/OR  
MAPS WITH THIS DOCUMENT,  
PLEASE CALL THE  
HAZARDOUS WASTE BUREAU  
AT 505-476-6000 TO MAKE AN  
APPOINTMENT**