EL-1000 REV. 6-64

DU PONT
REG U.S. PAT. OFF.
ESTABLISHED 1802

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED

P. O. Box 406
WILMINGTON, DELAWARE 19898

ELASTOMER CHEMICALS DEPARTMENT
ELASTOMERS LABORATORY

July 18, 1968

Mr. John Hendershot
Unit Liner Company
P. O. Drawer 1460
Wewoka, Oklahoma 74884

Dear Johnnie,

I'm sorry that I haven't been in touch with you earlier, but things have been pretty hectic, and my vacation also intervened.

I am attaching a copy of my letter to George Reid, which has some information regarding the samples we obtained when I visited Oklahoma. This bears out our experience - namely, that HYPALON® film works in the pits. We know that by conventional testing procedures, the HYPALON film has less than adequate oil resistance. At the same time, conventional tests do not duplicate the field conditions of time and exposure. The conclusion I have to come to is that we don't know how to predict performance in brine/oil pit service by common laboratory procedure. You and I both know that HYPALON film such as you have purchased has an outstanding record of service in the field. I hope that Dr. Reid and his group will be able to develop some torture test that will be meaningful in terms of experience. I mention all this in answer to the comments about HYPALON that you passed on to me.

The data we obtained indicates to me the progressive cure of the HYPALON, sometime between four months in the winter, and a year and a half.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

The recommendations for use of our products are based upon tests believed to be reliable. However, we do not guarantee the results to be obtained.

I have received the oil and the samples. As soon as we have our tests finished, I'll be in touch with you. Many thanks for your letters and all the trouble you have taken to pass on your comments and experience. From what Mitch tells me, things are starting to move for you, and I'm glad to hear that.

Best regards,

S. W. Schmitt

Attachment

SWS:jc

EL-1000-T REV. 12-64

DUPONT
ESTABLISHED 1802

E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
P. O. Box 406
WILMINGTON, DELAWARE 19898

ELASTOMER CHEMICALS DEPARTMENT
ELASTOMERS LABORATORY

July 18, 1968

Professor George Reid
Director, Department of Civil Engineering
University of Oklahoma
Norman, Oklahoma 73069

Dear George,

I have completed the physical tests on the HYPALON® samples obtained during my visit to Oklahoma. These results, together with a few brief comments are shown below.

A. Maud Pit

Service Record - Installed January 1967, oil contamination completely covers surface of water in pit.

Appearance - Oil was visible on the surface of the liner up to within 1 to 2 feet of the top of the pit. At the time of inspection, the fluid level was down to about 1 1/2 feet in depth. A gridiron pattern of wrinkling was apparent below the high water mark. To the hand, the oil - soaked material was tough, and rubbery with no apparent ill effect from being exposed to the crude oil. Tests were performed on samples cut from overlaps of seams. Therefore, these particular samples were exposed to the liquid on both sides.

Results of Tests - Properties determined on the samples are shown below. Since samples of the original, unexposed material were unavailable, typical properties of fresh HYPALON film (uncured) are shown are comparison.

	Oil Exposed	Typical Original
Tensile Strength, psi	1600	1000
Elongation, %	400	500 - 600
Specific Gravity	1.427	1.5 (approx.)

B. Hembry Lease

Service Record - Installed January 1968, heavy oil contamination of salt water.

Appearance - Same as (A) above.

Results of Tests - In this case, samples were taken from oil exposed material, and from a section which had only been exposed to weather. The weathered sample would be expected to be very close to original properties, considering the time of year that it was exposed.

	Weathered	Oil Exposed
Tensile Strength, psi	1000	900
Elongation, %	575	540
Specific Gravity	1.505	1.372

I see by some of John Hendershot's letters that your program is underway. Let me know if we can be of any assistance

Sincerely,

S. W. Schmitt

cc: John Hendershot
Unit Liner Company
P. O. Drawer 1460
Wewoka, Oklahoma 74884

Case 3807

CHARLES C. LOVELESS, JR.
SUITE 727 PETROLEUM BUILDING
ROSWELL, NEW MEXICO

REG. PETROLEUM ENGINEER
TEXAS
NEW MEXICO

TELEPHONE
OFFICE MAIN 2-1958
HOME MAIN 2-7313

July 19, 1968

Mr. A. L. Porter, Jr.
Oil Conservation Commission
State of New Mexico
Santa Fe, New Mexico

Dear Pete:

I am such a rambler when I get on the witness stand as on the occasion of the open pit hearing last Wednesday, that I never really know whether what I say has any real signifigance. There were a couple of points that did not seem to come out too plainly. First, there seemed to be some doubt that the evaporation units sized 100'x40' (three total) would indeed evaporate 30 BPD year round. The other point which seemed to me left dangling, at least in my own mind, was the question of pit liners and the resulting need to inspect by the State authorities.

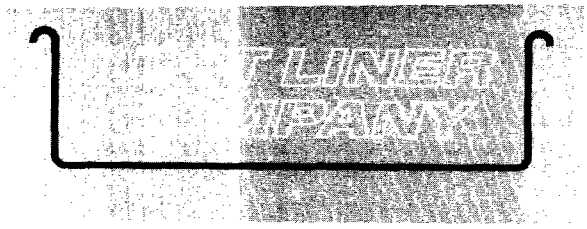
At the outset of my testimony I tried to emphasize that too rigorous standards would defeat the whole purpose of granting an exception to marginal wells. If liner standards were set at thicknesses of 30-40 mils as in Texas, the cost of the evaporative pit would be in the order of $10-12,000 due to liner costs alone. At least, some of the salesmen quoted prices (40-50¢) per square foot, and this would knock out quite a few marginal wells. I sincerely believe after visiting with Mr. L. L. Yeager who represented the Griffolyn people, the reinforced polyethylene which runs 6-10 mils in thickness will do an equally good job and at one-tenth the cost. There are several manufacturers of the reinforced polyethylene all equally good. These films run around 4.5-5¢ and would keep the price of the pits at a minimum. The most important thing, once the liner is in, is to protect it from livestock.

Now, as for inspection: Joe Ramey's observation that every pumper would have a yellow wax pencil may be well taken. I doubt it. Perhpas there is a better way to gage the opening levels such as an upright ruler on a weighted base which could be tossed in to the center of the pit and pulled out with a string. I think the point is exaggerated and if the penalty for fudging were strong enough most operators would play square.

These were just some after thoughts. In closing, let me assure you that I would guarantee an operator that the pit like the one we built for experimentation would handle 30BPD notwithstanding the many varried data on rates of evaporation.

Sincerely,

Charles



P. O. Drawer 1460 • Wewoka, Oklahoma 74884

PRICE LIST

EARTHEN PIT LINERS—f.o.b. Chicago, Illinois.

*UCB-030—$0.40 per square foot
**BHF-030—$0.45 per square foot

Liners larger than 20,000 square feet quoted on request.

STANDARD API STEEL TANK LINERS—Available *UCB-030 only-f.o.b. Wewoka, Okla.

Bolted Size (Capacity)	Price Liner Only	Welded Size (Capacity)	Price Liner Only
100 bbls	$ 236.50	100 bbls	$ 222.50
200 bbls	322.50	200 bbls	322.50
250 bbls	355.00	210 bbls	345.00
300 bbls	425.00	300 bbls	425.00
500 bbls (hi or low)	545.00	400 bbls	487.50
750 bbls	685.00	500 bbls	575.00
1,000 bbls (hi or low)	875.00	1,000 bbls	850.00

Quote on request: (1) Liners for larger, non-standard or wooden tanks.
(2) Installation hardware, flanges, etc.

PORT-a-LINE TANK with LINER—f.o.b. Oklahoma City, Oklahoma

Dimensions	Capacity	*UCB-030	**BHF-030
4 x 12	80 bbls	$ 487.50	$ 530.00
4 x 16	143 bbls	592.50	652.50
4 x 20	223 bbls	735.00	815.00
4 x 25	349 bbls	985.00	1,082.50
4 x 30	503 bbls	1,267.50	1,392.50
4 x 35	685 bbls	1,525.00	1,675.00
4 x 40	895 bbls	1,840.00	2,020.00
4 x 45	1,132 bbls	2,125.00	2,337.50
4 x 50	1,398 bbls	2,587.50	2,792.50

Dimensions 4 x 60 to 4 x 120 (capacities to 8,000 bbls) quoted on request

---

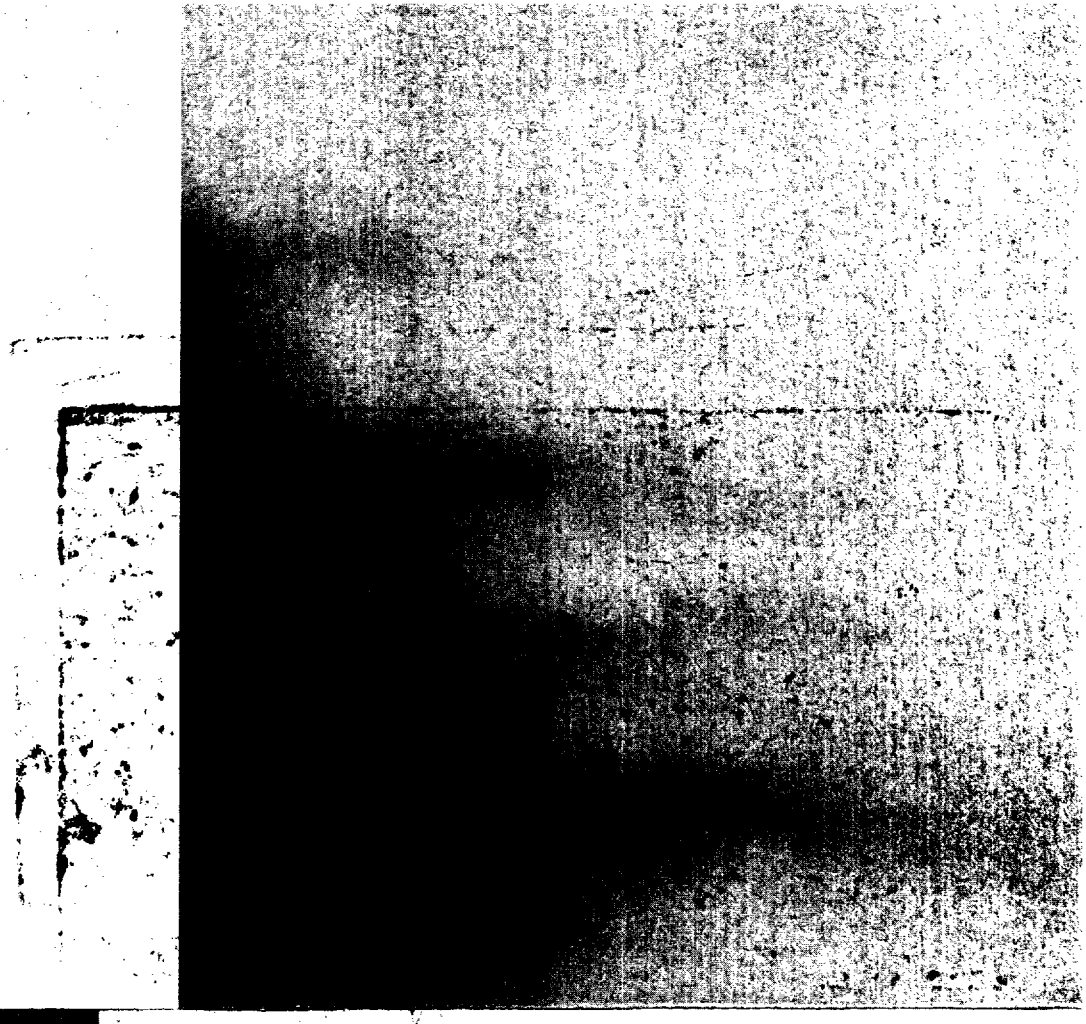
*UCB-030—UNIT LINER .030 gauge polymeric vinyl.
**BHF-030—UNIT LINER .030 gauge synthetic rubber.

All liners are one-piece electronically sealed of materials especially compounded to contain oilfield fluids.

Prices subject to applicable state and local taxes and to change without notice.

POLLUTION ABATEMENT

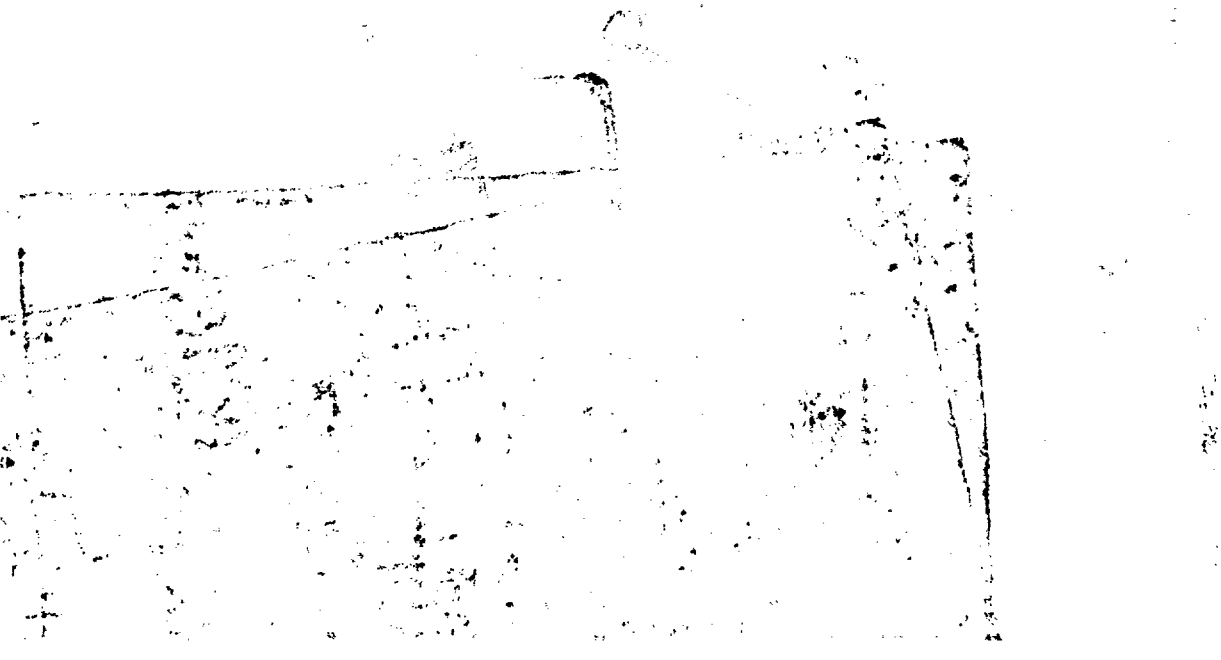
BULLETIN NO. 1



UNIT LINER COMPANY

P. O. Drawer 1460 / Wewoka, Oklahoma 74884

Bulk Rate
U. S. POSTAGE
PAID
Wewoka, Okla.
Permit No. 4



FOUR-STATE AREA RULINGS PROTECT FRESH WATER RESOURCES:

TEXAS	*The Railroad Commission has statewide Rule 8 amended by Special Order No. 20-56841 effective Jan. 1, 1969.*
KANSAS	*Kansas State Board of Health has Article 8 adopted April 1, 1966.*
OKLAHOMA	*The Corporation Commission has Rule 811 as amended by Order No. 62481 effective June 1, 1967.*
NEW MEXICO	*The Oil Conservation Commission has Order No. R-3221-A, effective October 16, 1967.*

- Such rules, orders and articles have been adopted in these and other states for one primary purpose—TO AID IN THE PROTECTION AND CONSERVATION OF FRESH WATER RESOURCES—by providing for the control of oilfield brines, wastes and other deleterious substances resulting from the drilling, production, refining and processing of oil and natural gas.

- The *NEED* exists within the oil and related industries for an effective and economic means to better contain and control its brines and other wastes to avoid intrusion and contamination of fresh water.

- The need has been exploited—compounding the problem. Companies have hastily arisen with grandiose claims. Solutions were quickly conceived and materials that were never designed for oilfield application were pressed into service. In many cases, this resulted in a needless added expense for the oil operator.

- Mr. Roy D. Payne, Director of Field Operations of the Railroad Commission of Texas, states, "We feel the operator should be interested in securing the best material possible because most liners are rather expensive and in the event an inferior material is used the Commission will *require it to be replaced,* which would result in a double expense for the operator."

m No. 0668

ENTER . . . *UNIT LINER COMPANY*

This Company was organized by oil operators who recognized the problems in our industry and realized the inadequacy and inferiority of most of the materials and methods being used.

- Aggressive action generated tremendous interest and immediate assistance by large suppliers and manufacturers in devising, developing, manufacturing and supplying the best possible available materials and methods to comply with the rules and regulations.

- Further, at the request of Unit Liner, The Oklahoma Economic Development Foundation, Inc., of Norman, Oklahoma, is sponsoring a cooperative research project directed by Dr. George W. Reid, a foremost pollution expert and Chairman of the Civil Engineering Department of The University of Oklahoma to identify oilfield fluid containment requirements and independently establish the capabilities of lining materials for this use.

RESULT: ***Three solutions by Unit Liner Company for positive control of oilfield fluids.***

• LINERS FOR STANDARD OILFIELD TANKS

Electronically welded one-piece liners . . . free hanging . . . suspended from tank top . . . no bonding or special preparation.

• LINERS FOR EARTHEN PITS OR PONDS

One-piece liner provides impervious barrier to oilfield and related fluids.

• PORT-a-LINE TANK WITH LINER

A simple and versatile replacement for tank, pit or pond storage or for emergency use. Complete assembly, ready for installation.

Write now for additional details, specifications and samples.

Unit Liner Company
P. O. Box 15495
Tulsa, Oklahoma 74115

UNIT LINER COMPANY

Unit Liner Company
P. O. Drawer 1460
Wewoka, Oklahoma 74884

INSTALLATION

1. **Earthen Pits.** A pit to desired dimensions is excavated. Exercise care to assure straight, level and uniform sides, slopes and bottom. All sharp debris is removed. The liner of HYPALON, prefabricated to size, is unrolled in the pit and the edges are anchored.

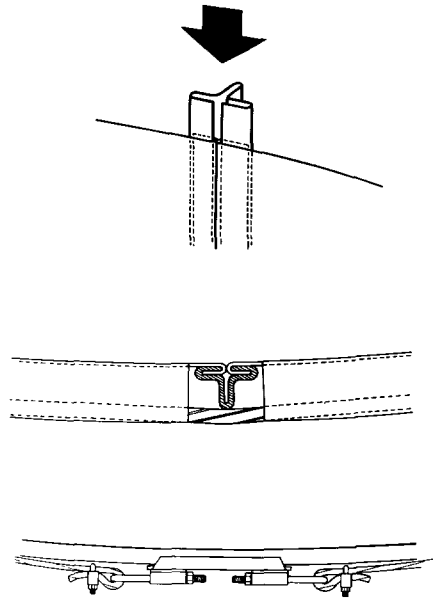
2. **Port-a-Line Tanks.** Four-feet-high by eight-feet-long steel sections are assembled into a circle on level and smooth soil. The liner of HYPALON, prefabricated to tank dimensions, is installed and secured by preformed extrusions electronically welded to the liner.

OTHER CONSIDERATIONS

- Review fluid contaminants with Unit Liner Company
- Installation should be by Unit Liner approved firms

SPECIFICATION

UNIT LINER BHF-030 shall be manufactured from a synthetic rubber compound containing as the sole polymer not less than 45%, by weight, of Du Pont HYPALON for uncured film. It shall be a uniform 30 mils in thickness, smooth and free of pinholes, and it shall conform to the following physical requirements:



Details of Connector Cleat and Cable Clamp

PHYSICAL PROPERTIES OF UNIT LINER BHF-030*
based on Du Pont HYPALON synthetic rubber

Property	Test Method	Requirement
Tensile strength	ASTM D412	1000 psi minimum
Elongation at break	ASTM D412	250% minimum
After heat aging	ASTM D412 (14 days @ 212°F.)	
Tensile strength		1300 psi minimum
Elongation at break		150% minimum
Water resistance	ASTM D471	
% weight increase	7 days @ 70°F.	5% maximum
	14 days @ 120°F.	10% maximum
Low temperature properties		
Cold bend test	ASTM D2136 (1/8" mandrel)	–30°F. No crack
Brittleness point	ASTM D746	–45°F.
Ozone resistance	ASTM D1149 300 pphm, 20% strain 104°F. for 400 hours	No effect

*Materials made in U.S.A.

PRINTED IN U.S.A.

DATA & SPECIFICATION FOR "UNIT LINER BHF-030"

DESCRIPTION

This file sheet describes UNIT LINERS based on Du Pont HYPALON® synthetic rubber for use as an impervious barrier where fluid containment service conditions are severe.

APPLICATIONS

This elastomeric liner has been expressly developed to contain oilfield fluids in:

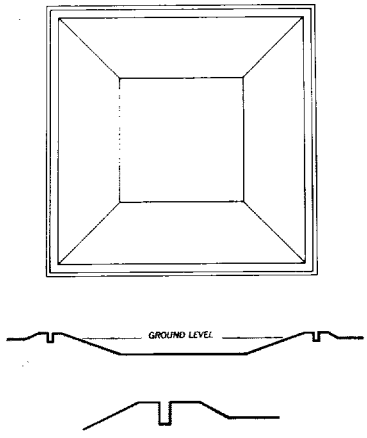
- Earthen pits
- Port-a-Line tanks

AVAILABLE TYPES

The earthen pit liner of HYPALON is manufactured to size in one piece as specified. For pits larger than 20,000 square feet, the liner is prefabricated into maximum size sections and joined in the field. Steel Port-a-Line tanks with a liner of HYPALON are provided in incremental diameters from 12 feet to 120 feet.

ADVANTAGES

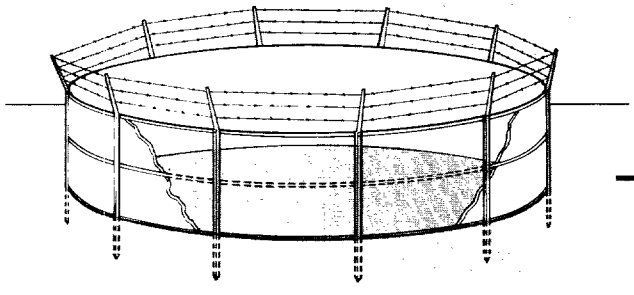
- Economically prevents escape of oilfield fluids
  Low cost per year of service
- Easy to transport and install
- Minimum installation preparation
- Seams are electronically welded for maximum strength
- Component parts selected for maximum service life



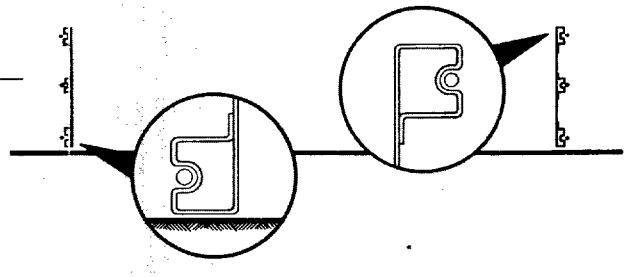
Earthen Pit Liner

Advantages due to the properties of Du Pont HYPALON

- highly resistant to hail damage
- excellent aging and weathering characteristics
- flexible and elastic over a wide temperature range
- highly resistant to hydrocarbon oils, fuels, salt brine, chemicals
- resists mold, mildew, fungus
- resists puncture and tearing



Port-a-Line Tank



Tank Liner Details

INSTALLATION

1. **Earthen Pits.** A pit to desired dimensions is excavated. Exercise care to assure straight, level and uniform sides, slopes and bottom. All sharp debris is removed. The liner of HYPALON, prefabricated to size, is unrolled in the pit and the edges are anchored.

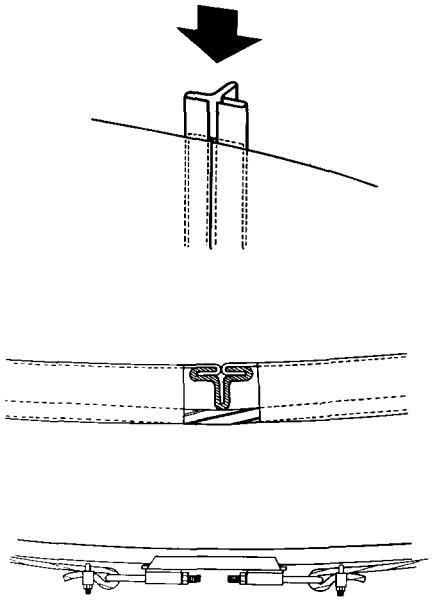
2. **Port-a-Line Tanks.** Four-feet-high by eight-feet-long steel sections are assembled into a circle on level and smooth soil. The liner of HYPALON, prefabricated to tank dimensions, is installed and secured by preformed extrusions electronically welded to the liner.

OTHER CONSIDERATIONS

- Review fluid contaminants with Unit Liner Company
- Installation should be by Unit Liner approved firms

SPECIFICATION

UNIT LINER BHF-030 shall be manufactured from a synthetic rubber compound containing as the sole polymer not less than 45%, by weight, of Du Pont HYPALON for uncured film. It shall be a uniform 30 mils in thickness, smooth and free of pinholes, and it shall conform to the following physical requirements:



Details of Connector Cleat and Cable Clamp

PHYSICAL PROPERTIES OF UNIT LINER BHF-030*
based on Du Pont HYPALON synthetic rubber

Property	Test Method	Requirement
Tensile strength	ASTM D412	1000 psi minimum
Elongation at break	ASTM D412	250% minimum
After heat aging	ASTM D412 (14 days @ 212°F.)	
Tensile strength		1300 psi minimum
Elongation at break		150% minimum
Water resistance	ASTM D471	
% weight increase	7 days @ 70°F.	5% maximum
	14 days @ 120°F.	10% maximum
Low temperature properties		
Cold bend test	ASTM D2136 (1/8" mandrel)	−30°F. No crack
Brittleness point	ASTM D746	−45°F.
Ozone resistance	ASTM D1149 300 pphm, 20% strain 104°F. for 400 hours	No effect

*Materials made in U.S.A.

Unit Liner Company
P.O. Box 1946
Tulsa, Oklahoma 74101

UNIT LINER COMPANY

DATA & SPECIFICATION FOR "UNIT LINER BHF-030"

DESCRIPTION

This file sheet describes UNIT LINERS based on Du Pont HYPALON® synthetic rubber for use as an impervious barrier where fluid containment service conditions are severe.

APPLICATIONS

This elastomeric liner has been expressly developed to contain oilfield fluids in:

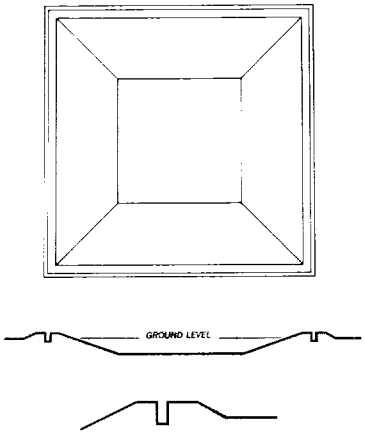
- Earthen pits
- Port-a-Line tanks

AVAILABLE TYPES

The earthen pit liner of HYPALON is manufactured to size in one piece as specified. For pits larger than 20,000 square feet, the liner is prefabricated into maximum size sections and joined in the field. Steel Port-a-Line tanks with a liner of HYPALON are provided in incremental diameters from 12 feet to 120 feet.

ADVANTAGES

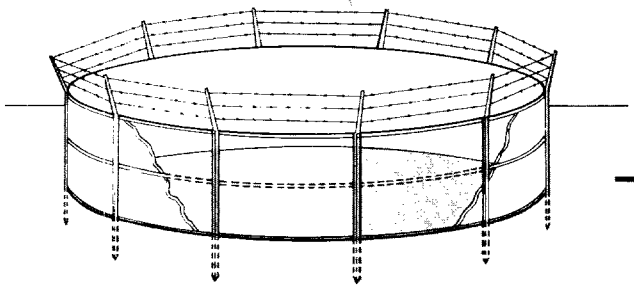
- Economically prevents escape of oilfield fluids
  Low cost per year of service
- Easy to transport and install
- Minimum installation preparation
- Seams are electronically welded for maximum strength
- Component parts selected for maximum service life



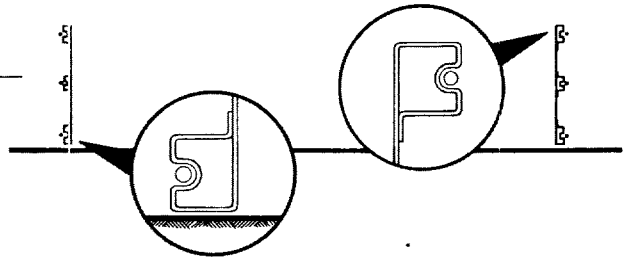
Earthen Pit Liner

Advantages due to the properties of Du Pont HYPALON

- highly resistant to hail damage
- excellent aging and weathering characteristics
- flexible and elastic over a wide temperature range
- highly resistant to hydrocarbon oils, fuels, salt brine, chemicals
- resists mold, mildew, fungus
- resists puncture and tearing



Port-a-Line Tank



Tank Liner Details

INSTALLATION

1. Tank Liners. All sharp objects or protrusions in the tank must be removed or covered to protect liner. "J" bolts are installed around the periphery of the top of the tank. Tubing is inserted through the hem around the top of the liner and the liner is drawn to the top of the tank and suspended from the "J" bolts.

2. Earthen Pits. A pit to desired dimensions is excavated. Excercise care to assure straight, level and uniform sides, slopes and bottom. All sharp debris is removed. A cushion of fine sand 2" to 3" thick is spread over the pit area. The liner, prefabricated to size, is unrolled in the pit and the edges anchored.

3. Port-a-Line Tanks. Prefabricated steel sections eight feet long are assembled into a circle on level soil covered by 2" to 3" sand cushion. The liner, prefabricated to tank dimensions, is installed and secured by preformed extrusions electronically welded to the liner.

OTHER CONSIDERATIONS

- Review fluid contaminants with Unit Liner
- Installation should be by Unit Liner company approved firms

SPECIFICATION

Unit Liner UCB-030 — A polymeric vinyl film manufactured from a thermoplastic polymer compounded by Union Carbide Corporation for Unit Liner Company. It shall be 30 gauge, uniform in thickness, smooth and free from pinholes and shall conform to the following Typical Test Values:

Tensile Strength, p.s.i.
Machine Direction 2332
Transverse Direction 2061

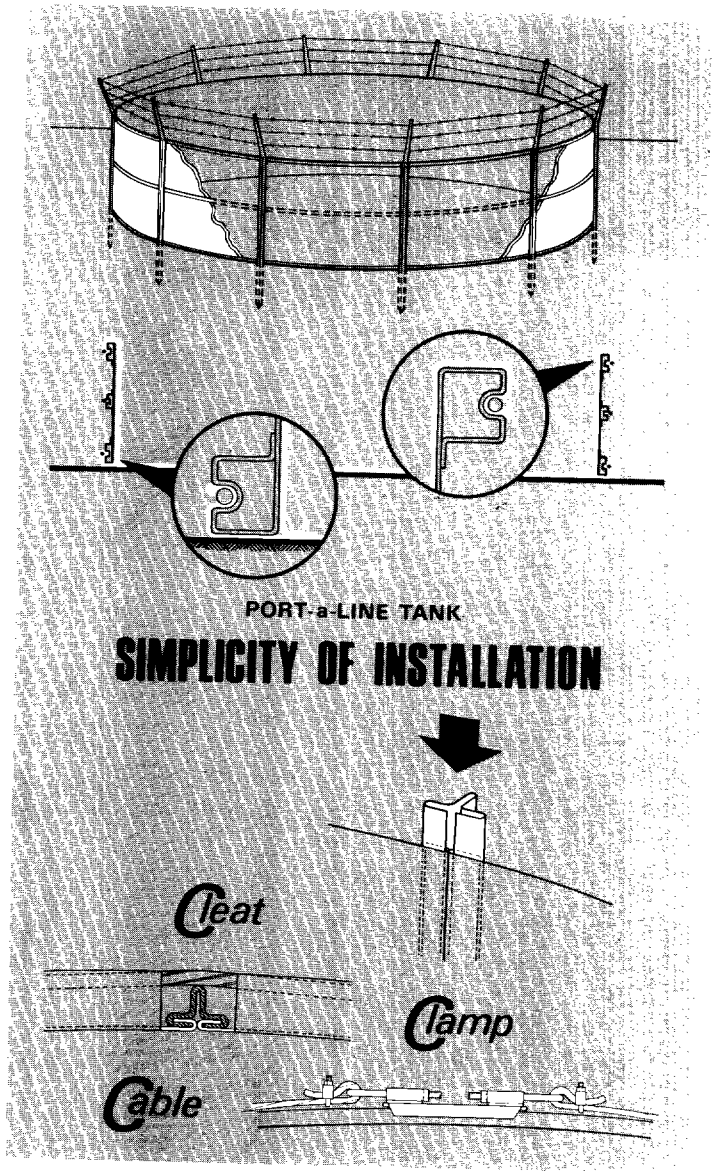
Elongation, %
Machine Direction 366
Transverse Direction 353

100% Modulus, p.s.i.
Machine Direction 995
Transverse Direction 946

Graves Tear, lbs/inch
Machine Direction 307
Transverse Direction 316

Low Temperature Impact . . . . . −12°F

Flammability, 45° S.P.I. Test—Self Extinguishing



Unit Liner Company
P.O. Drawer 1460
Wewoka, Oklahoma 74884

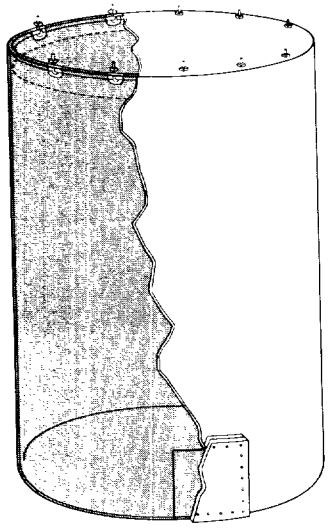
Unit Liner Company
P.O. Box 15495
Tulsa, Oklahoma 74115

FORM NO. ULO568

DATA AND SPECIFICATION FOR "UNIT LINER UCB-030"

DESCRIPTION

This file sheet describes UNIT LINERS based on UCB-030 Polymeric Vinyl Film for use as an effective impervious barrier to oilfield and related fluids.



STANDARD TANK

APPLICATIONS

This lining has been specifically designed to exhibit excellent resistance to degradation by fluids containing hydrocarbon oils, salt brine, or chemicals in:

- **STANDARD TANKS—WELDED-BOLTED-WOODEN**
- **EARTHEN PITS**
- **PORT-a-LINE TANKS**

AVAILABLE TYPES

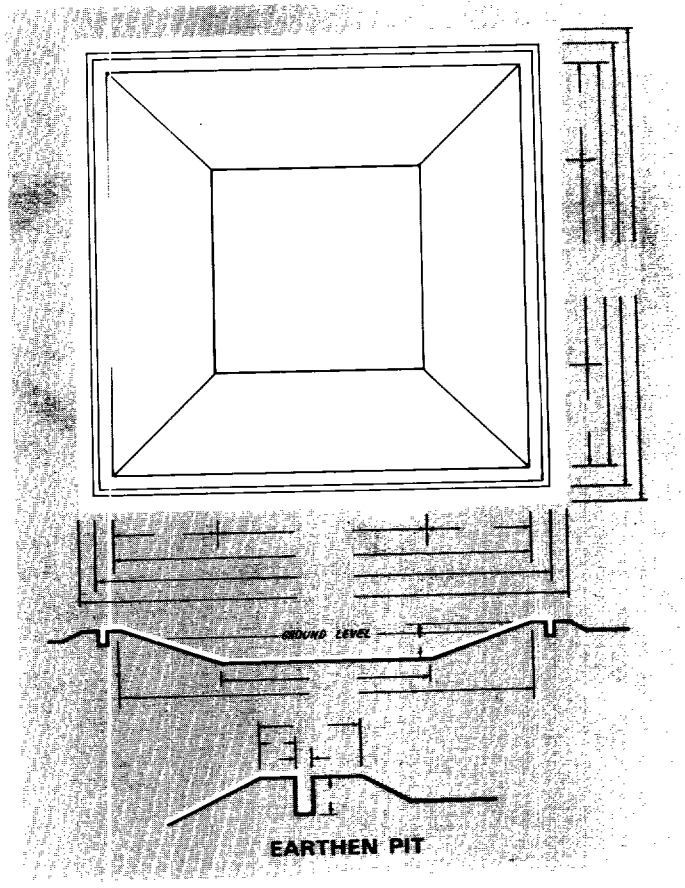
Tank liners of UCB-030 are prefabricated to fit standard API steel tanks (welded or bolted) and, where applicable, incorporate flanges designed to fit extended-neck type cleanouts. UCB-030 liners for Earthen Pits are one-piece prefabricated to size. For pits larger than 20,000 square feet, maximum size sections are joined in the field. UCB-030 Liners are provided in incremental diameters from 12 feet to 120 feet to fit Port-a-Line Tanks in heights from 4 feet to 8 feet. Liners to fit non-standard sizes or types can be custom made on special order.

ADVANTAGES

- Positively prevents escape of harmful or deleterious fluids
- Seams electronically welded for maximum strength
- Easy to handle, transport and install
- Minimum installation preparation
- Effective, low cost per barrell storage

ADVANTAGES DUE TO PROPERTIES OF UCB-030

- Stable homogeneous product—no further treatment or curing required
- Remains flexible over wide temperature range—good low temperature properties
- Good light stability and weathering characteristics
- High tear and puncture resistance
- Resists mold, mildew and fungus



EARTHEN PIT

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission

LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

P. O. BOX 2088
SANTA FE

August 13, 1968

Mr. David White
Pan American Petroleum Corporation
Post Office Box 1410
Fort Worth, Texas 76101

Re: Case No. 3806
Order No. R-3221-B-1
Applicant:
OCC

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC
Other Mr. Ralph Gray

New state regulations require a sealed pit, and we have the answer to your needs.

Our new process of fiberglassing provides a **ONE-PIECE, SEAMLESS** pit lining of any desired thickness from one to twelve ounces per square foot. A standard pit is two ounces per square foot.

There is no additive that reduces chemical resistance and causes loss of Barcol hardness and flexural strength.

Our fiberglass application assures a thorough saturation and mixture of fiber, catalyst and resin in a CONTINUOUS surface spread over a thirty-pound felt base. It will conform to ground imperfections, yet still provide uniform structural rigidity and strength. A final seal coat of clear resin is then applied before complete curing of the coating to insure a bond that will not peel or leak.

The process is an Isothalic Isopolyester resin, which we have used successfully for eight years in tank applications, mixed with chopped fiberglass filaments at the time of application.

Let us show you a sample of this coating which, we think, will revolutionize and solve the pit lining problem.

FOR MORE INFORMATION

OR PRICES

ON PIT LININGS AND

FIBERGLASS TANK LININGS,

— C A L L —

(505) 393-5661

— or W R I T E —

P. O. Box 1409

Hobbs, New Mex. 88240

Mr. Elrod

R & R SERVICE CO.

is pleased to

announce a

New Concept in

PIT LININGS

309 SOUTH CECIL PHONE (505) 393-5661

R & R SERVICE CO.

P. O. Box 1409
HOBBS, NEW MEXICO 88240

PIT LININGS SAND BLASTING

TANK COATINGS TANK BATTERY PAINTING

ISOPOLYESTER & COAL TAR EPOXY

POLLUTION ABATEMENT

BULLETIN NO. 1

UNIT LINER COMPANY

P. O. Drawer 1460 / Wewoka, Oklahoma 74884

Bulk Rate
U. S. POSTAGE
PAID
Wewoka, Okla.
Permit No. 4

FOUR-STATE AREA RULINGS PROTECT FRESH WATER RESOURCES:

TEXAS	*The Railroad Commission has statewide Rule 8 amended by Special Order No. 20-56841 effective Jan. 1, 1969.*
KANSAS	*Kansas State Board of Health has Article 8 adopted April 1, 1966.*
OKLAHOMA	*The Corporation Commission has Rule 811 as amended by Order No. 62481 effective June 1, 1967.*
NEW MEXICO	*The Oil Conservation Commission has Order No. R-3221-A, effective October 16, 1967.*

- Such rules, orders and articles have been adopted in these and other states for one primary purpose—TO AID IN THE PROTECTION AND CONSERVATION OF FRESH WATER RESOURCES—by providing for the control of oilfield brines, wastes and other deleterious substances resulting from the drilling, production, refining and processing of oil and natural gas.

- The *NEED* exists within the oil and related industries for an effective and economic means to better contain and control its brines and other wastes to avoid intrusion and contamination of fresh water.

- The need has been exploited—compounding the problem. Companies have hastily arisen with grandiose claims. Solutions were quickly conceived and materials that were never designed for oilfield application were pressed into service. In many cases, this resulted in a needless added expense for the oil operator.

- Mr. Roy D. Payne, Director of Field Operations of the Railroad Commission of Texas, states, "We feel the operator should be interested in securing the best material possible because most liners are rather expensive and in the event an inferior material is used the Commission will *require it to be replaced,* which would result in a double expense for the operator."

orm No. 0668

ENTER . . . *UNIT LINER COMPANY*

This Company was organized by oil operators who recognized the problems in our industry and realized the inadequacy and inferiority of most of the materials and methods being used.

- Aggressive action generated tremendous interest and immediate assistance by large suppliers and manufacturers in devising, developing, manufacturing and supplying the best possible available materials and methods to comply with the rules and regulations.

- Further, at the request of Unit Liner, The Oklahoma Economic Development Foundation, Inc., of Norman, Oklahoma, is sponsoring a cooperative research project directed by Dr. George W. Reid, a foremost pollution expert and Chairman of the Civil Engineering Department of The University of Oklahoma to identify oilfield fluid containment requirements and independently establish the capabilities of lining materials for this use.

RESULT: ***Three solutions by Unit Liner Company for positive control of oilfield fluids.***

• LINERS FOR STANDARD OILFIELD TANKS

Electronically welded one-piece liners . . . free hanging . . . suspended from tank top . . . no bonding or special preparation.

• LINERS FOR EARTHEN PITS OR PONDS

One-piece liner provides impervious barrier to oilfield and related fluids.

• PORT-a-LINE TANK WITH LINER

A simple and versatile replacement for tank, pit or pond storage or for emergency use. Complete assembly, ready for installation.

Write now for additional details, specifications and samples.

Unit Liner Company
P. O. Box 15495
Tulsa, Oklahoma 74115

UNIT LINER COMPANY

Unit Liner Company
P. O. Drawer 1460
Wewoka, Oklahoma 74884

INSTALLATION

1. Tank Liners. All sharp objects or protrusions in the tank must be removed or covered to protect liner. "J" bolts are installed around the periphery of the top of the tank. Tubing is inserted through the hem around the top of the liner and the liner is drawn to the top of the tank and suspended from the "J" bolts.

2. Earthen Pits. A pit to desired dimensions is excavated. Excercise care to assure straight, level and uniform sides, slopes and bottom. All sharp debris is removed. A cushion of fine sand 2" to 3" thick is spread over the pit area. The liner, prefabricated to size, is unrolled in the pit and the edges anchored.

3. Port-a-Line Tanks. Prefabricated steel sections eight feet long are assembled into a circle on level soil covered by 2" to 3" sand cushion. The liner, prefabricated to tank dimensions, is installed and secured by preformed extrusions electronically welded to the liner.

OTHER CONSIDERATIONS

- Review fluid contaminants with Unit Liner
- Installation should be by Unit Liner company approved firms

SPECIFICATION

Unit Liner UCB-030 — A polymeric vinyl film manufactured from a thermoplastic polymer compounded by Union Carbide Corporation for Unit Liner Company. It shall be 30 gauge, uniform in thickness, smooth and free from pinholes and shall conform to the following Typical Test Values:

Tensile Strength, p.s.i.
Machine Direction 2332
Transverse Direction 2061

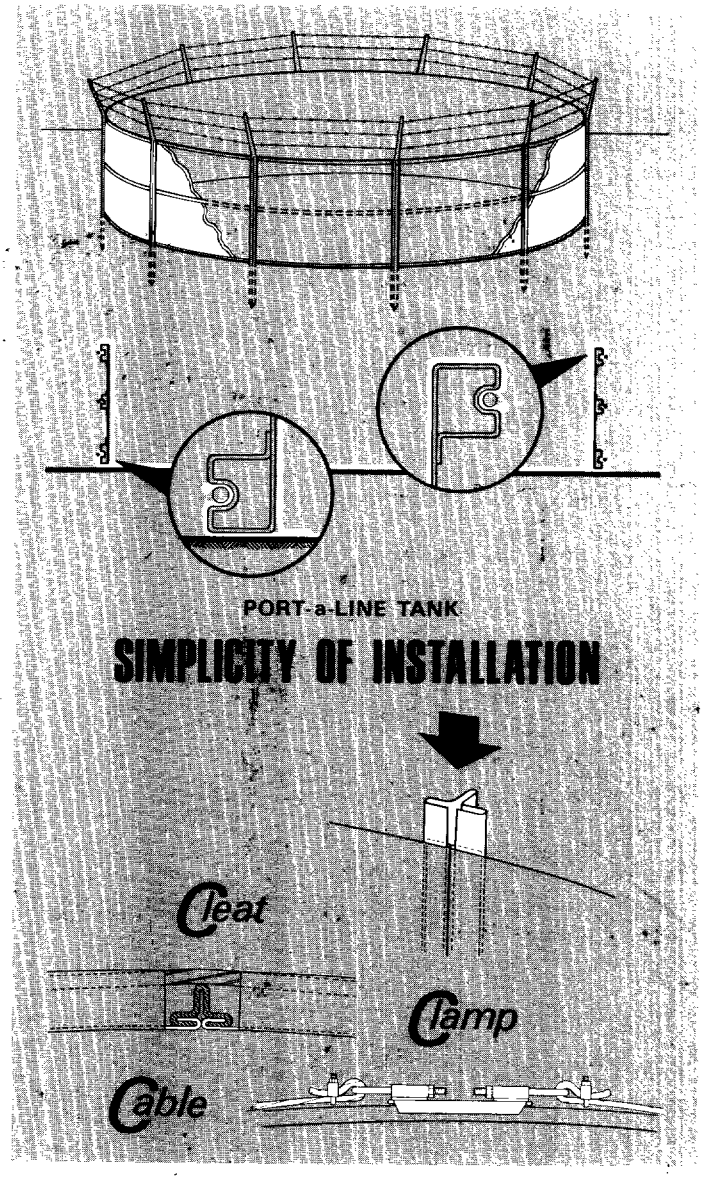
Elongation, %
Machine Direction 366
Transverse Direction 353

100% Modulus, p.s.i.
Machine Direction 995
Transverse Direction 946

Graves Tear, lbs/inch
Machine Direction 307
Transverse Direction 316

Low Temperature Impact . . . . . −12°F

Flammability, 45° S.P.I. Test—Self Extinguishing



Unit Liner Company
P.O. Drawer 1460
Wewoka, Oklahoma 74884

UNIT LINER COMPANY

Unit Liner Company
P.O. Box 15495
Tulsa, Oklahoma 74115

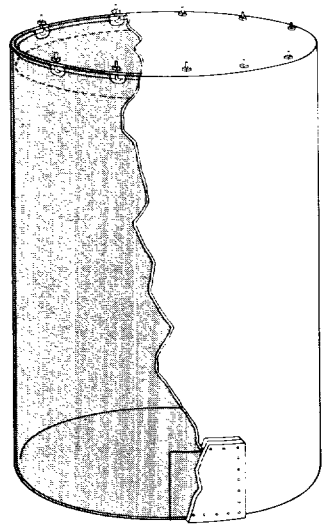
FORM NO. ULO568

PRINTED IN U.S.A.

DATA AND SPECIFICATION FOR "UNIT LINER UCB-030"

DESCRIPTION

This file sheet describes UNIT LINERS based on UCB-030 Polymeric Vinyl Film for use as an effective impervious barrier to oilfield and related fluids.



STANDARD TANK

APPLICATIONS

This lining has been specifically designed to exhibit excellent resistance to degradation by fluids containing hydrocarbon oils, salt brine, or chemicals in:

- **STANDARD TANKS—WELDED-BOLTED-WOODEN**
- **EARTHEN PITS**
- **PORT-a-LINE TANKS**

AVAILABLE TYPES

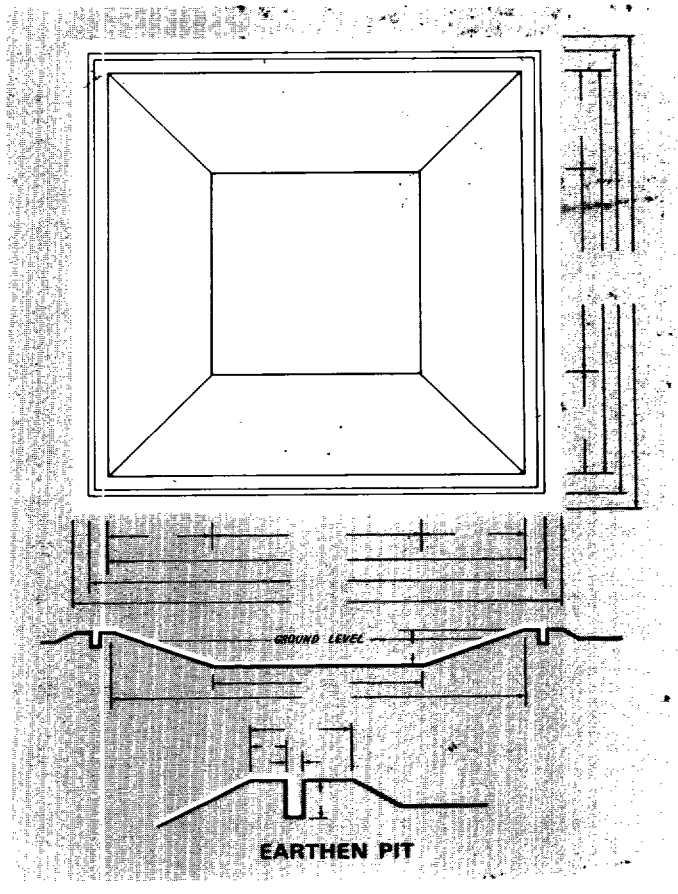
Tank liners of UCB-030 are prefabricated to fit standard API steel tanks (welded or bolted) and, where applicable, incorporate flanges designed to fit extended-neck type cleanouts. UCB-030 liners for Earthen Pits are one-piece prefabricated to size. For pits larger than 20,000 square feet, maximum size sections are joined in the field. UCB-030 Liners are provided in incremental diameters from 12 feet to 120 feet to fit Port-a-Line Tanks in heights from 4 feet to 8 feet. Liners to fit non-standard sizes or types can be custom made on special order.

ADVANTAGES

- Positively prevents escape of harmful or deleterious fluids
- Seams electronically welded for maximum strength
- Easy to handle, transport and install
- Minimum installation preparation
- Effective, low cost per barrell storage

ADVANTAGES DUE TO PROPERTIES OF UCB-030

- Stable homogeneous product — no further treatment or curing required
- Remains flexible over wide temperature range — good low temperature properties
- Good light stability and weathering characteristics
- High tear and puncture resistance
- Resists mold, mildew and fungus



EARTHEN PIT

UNIT LINER COMPANY

P.O. DRAWER 1460 / WEWOKA, OKLAHOMA 74884 / TELEPHONE 405-257-2398

July 24, 1968

Mr. A. L. Porter
Oil Conservation Commission
Land Office Building
Santa Fe, New Mexico

Dear Mr. Porter:

I have returned to Wewoka and want to take this opportunity to express our thanks for permitting John Owen and myself to review the history, activity and materials of the Unit Liner Company with you and your staff.

As we stated, Unit Liner is making every effort to formulate methods and [illegible] materials to adequately supply the oil operators needs to conform to the [illegible] regulations. To this end we always welcome the opportunity to [illegible] the various interested organizations. We certainly [illegible] hope that we in turn were of assistance to your cause.

Just yesterday we received two interesting letters from Mr. S. W. Schmitt of Du Pont and felt they were of a nature that you might like to have them in your personal file. Both of these letters apply to the Du Pont Hypalon material that we distribute for field pit liners.

If at any time you have any suggestions as to how we might better provide materials or service of our type to the oil industry, we would most sincerely appreciate your contacting us. Also, if there are areas where we may develop information to assist you, please do not hesitate to call on us.

Again thank you for your courtesy and time to present the case of Unit Liner.

Very truly yours,

J. A. Hendershot

J. A. Hendershot

JAH:ah
Enclosures-2
cc: Mr. Joe Ramey (w/attachments)

ILLEGIBLE

PLEASE FURNISH FURTHER INFORMATION ON:

EARTHEN PIT:

Desired Working Capacity _____ Barrels (Maximum Capacity less one foot freeboard)

Approximate Dimensions: _____ Length _____ Width _____ Depth _____ Slope

PORT-a-LINE TANK WITH LINER

Desired Capacity: _____ Barrels — OR — Diameter _____

TANK LINER

API Tank Size (Capacity) _____ Barrels — Welded _____ or Bolted _____

Extended-Neck Type Cleanout Openings? _____ Yes _____ No.

Type Fluid and Expected Use: _____

_____

Other Pertinent Data: _____

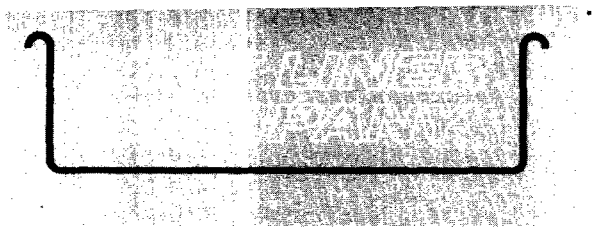
_____

Name _____ Title _____

Company Name _____

Address _____

City _____ State _____ Zip



P. O. Drawer 1460 • Wewoka, Oklahoma 74884

PRICE LIST

EARTHEN PIT LINERS—f.o.b. Chicago, Illinois.

*UCB-030—$0.40 per square foot
**BHF-030—$0.45 per square foot

Liners larger than 20,000 square feet quoted on request.

STANDARD API STEEL TANK LINERS—Available *UCB-030 only-f.o.b. Wewoka, Okla.

Bolted Size (Capacity)	Price Liner Only	Welded Size (Capacity)	Price Liner Only
100 bbls	$ 236.50	100 bbls	$ 222.50
200 bbls	322.50	200 bbls	322.50
250 bbls	355.00	210 bbls	345.00
300 bbls	425.00	300 bbls	425.00
500 bbls (hi or low)	545.00	400 bbls	487.50
750 bbls	685.00	500 bbls	575.00
1,000 bbls (hi or low)	875.00	1,000 bbls	850.00

Quote on request: (1) Liners for larger, non-standard or wooden tanks.
(2) Installation hardware, flanges, etc.

PORT-a-LINE TANK with LINER—f.o.b. Oklahoma City, Oklahoma

Dimensions	Capacity	*UCB-030	**BHF-030
4 x 12	80 bbls	$ 487.50	$ 530.00
4 x 16	143 bbls	592.50	652.50
4 x 20	223 bbls	735.00	815.00
4 x 25	349 bbls	985.00	1,082.50
4 x 30	503 bbls	1,267.50	1,392.50
4 x 35	685 bbls	1,525.00	1,675.00
4 x 40	895 bbls	1,840.00	2,020.00
4 x 45	1,132 bbls	2,125.00	2,337.50
4 x 50	1,398 bbls	2,587.50	2,792.50

Dimensions 4 x 60 to 4 x 120 (capacities to 8,000 bbls) quoted on request

---

*UCB-030—UNIT LINER .030 gauge polymeric vinyl.
**BHF-030—UNIT LINER .030 gauge synthetic rubber.

All liners are one-piece electronically sealed of materials especially compounded to contain oilfield fluids.

Prices subject to applicable state and local taxes and to change without notice.

Charlie Loveless suggests that we have an upper limit ~~to~~ of wool production per 40 acre tract to be eligible for swap-pit.

Also minimum tensile strength

File prior to construction of pit

membrane permits —

design —

owner —

inspection prior to installation of

liner —

other inspection at demise of

Com. —

if there is leakage - disposal

must cease until repair —

---

must maintain evap. free of

oil film —

---

10 95 — —

7.65 —

order
1. add paragraph to give Dist Sup. auth. to OK pit —
2. Make paragraph dealing with header pit also auth other methods.

order or sump
3. Sump — with 4 laterals —

30 mil minimum for flexible pliable material

— adequately fenced —

max water disposal per pit?

Specifications of construction

Application filed with Dist Sup
1. Drawing
2. materials
3. amt of water
4. Detection device

Preparation of pit —
rolling —
smoothing
rock free

---

permit system for pits

UNION CARBIDE CORPORATION
FIBERS AND FABRICS DIVISION
270 PARK AVENUE, NEW YORK, N.Y. 10017 • AREA CODE 212 551-2345

July 11, 1968

Mr. John A. Hendershot
Unit Liner Company
P. O. Drawer 1460
Wewoka, Oklahoma 74884

Dear Mr. Hendershot:

The following information is provided for your use in discussing oil field pit and tank lining materials with the New Mexico Oil Conservation Commission.

Union Carbide has developed a flexible vinyl sheeting specifically formulated for use in the above applications, identified as KDA 2023, Black, .030" (Unit Liner Company code UCB030). This material will effectively contain pollutants generated by oil well operations and should provide a significant aid in fresh water conservation efforts.

KDA 2023 is based on polyvinyl chloride resins, blended with other additives to provide essential properties, and is fused and processed in our Bound Brook, New Jersey plant into a stable, homogeneous continuous sheet. The nature of the material allows it to be welded into large pieces for pit liners, or into complex shapes for use as liners for tanks of any shape. Both dielectric sealing and salvent sealing are applicable to produce seams which have bond strength equal to the original physical value of the material.

The blend of ingredients used, and the manufacturing process employed to produce the sheet yields the following properties:

Flexibility: KDA 2023 can be sealed and installed easily, even during adverse weather conditions without danger of cracking. The low temperature impact value is -12°F.

Toughness: Considerable strain and abuse do not affect the product. Tensile strength exceeds 2,000 lbs. per square inch. Tear strength is above 300 lbs. per inch. Elongation before breaking is over 300%.

PLEASE FURNISH FURTHER INFORMATION ON:

EARTHEN PIT:

Desired Working Capacity . . Barrels (Maximum Capacity less one foot freeboard)

Approximate Dimensions: . . Length . Width . . Depth . . Slope

PORT-a-LINE TANK WITH LINER

Desired Capacity: . . . . . Barrels — OR — Diameter . . . . .

TANK LINER

API Tank Size (Capacity) . . . Barrels — Welded . . or Bolted . .

Extended-Neck Type Cleanout Openings? . . . . . Yes . . . . . No.

Type Fluid and Expected Use: . . . . . .

. . . . . .

Other Pertinent Data: . . . . . .

. . . . . .

Name _____ Title _____

Company Name _____

Address _____

City _____ State _____

Weatherability: Continuous exposure in both XW and XIA type weatherometers for 200 hours reveal no change other than in appearance values of fading or dulling. No blooming, shrinking, spotting or tackiness was observable.

Extraction Resistance: Under accelerated laboratory conditions, there is no indication that KDA 2023 loses servicability when exposed to crude oil, brine, pumping well fluid, and bottom settlement. A constant monitoring of tensile strength, elongation, and weight change shows no significant degredation.

Fungus Resistance: Rated "excellent" tested by method ASTMD 1924, "Recommended Practice for Determining Resistance of Plastics to Fungi."

Based on careful observation after vigorous exposure, it is our belief that KDA 2023, Black, .030" will fulfill the need for an impervious lining material for fluid containing devices associated with oil pumping operations. This contention is reinforced by an on-site inspection of actual environmental conditions by our technicians, a review of the objectives and regulations with a western states regulatory commission, and an inspection of our testing techniques and facilities by the staff of a western state University concerned with the pollution control problem.

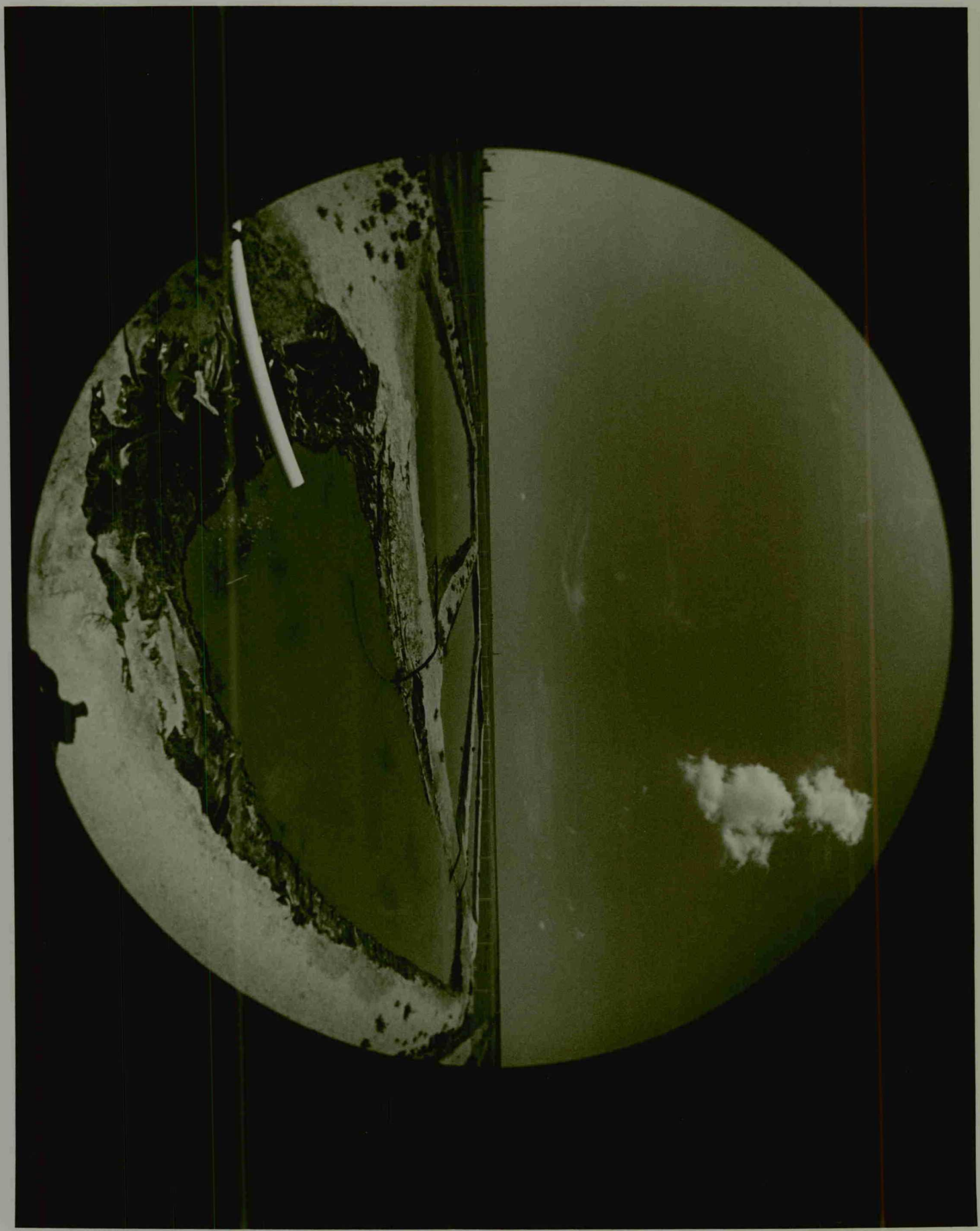
Our evaluation program is continuing, both in the field and in the laboratory. We would be pleased to discuss any aspect of this project with the New Mexico Commission at their request and convenience.

Very truly yours,

T. M. Hurley

T. M. Hurley
Market Program Manager

TMH:rs



TENNECO OIL COMPANY • P. O. BOX 1031 • 1800 WILCO BUILDING • MIDLAND, TEXAS 79701

July 10, 1968

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Case No. 3807
Salt Water Disposal

Gentlemen:

We note with interest the Commission's consideration of standardizing evaporation pits for salt water disposal. For those areas where subsurface means of salt water disposal are not economically practical, we urge that the Commission provide administrative methods for the use of standardized evaporation pits.

We recommend that evaporation pits be readily utilized for the disposal of up to 50 barrels of water per day per proration unit. In this area, where average annual evaporation losses will exceed 75 inches per year, this volume of produced water can be handled practically in surface pits.

Your consideration of these suggestions would be appreciated.

Yours very truly,

TENNECO OIL COMPANY

J. F. Carnes
District Production Engineer

JFC:gs

'68 JUL 11

MIDWEST OIL CORPORATION

1500 WILCO BUILDING

MIDLAND, TEXAS

GENERAL OFFICES
1700 BROADWAY
DENVER 2, COLORADO

DIVISION OFFICE
1200 CONTINENTAL NATIONAL
BANK BUILDING
FORT WORTH 2, TEXAS

July 10, 1968

Mr. A. L. Porter, Jr.
New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

Dear Mr. Porter:

In re: Case #3807

It is my understanding that case #3807 to be heard July 17, 1968 will consider salt water disposal by means of lined evaporation pits.

In instances of relatively small amounts of produced water this procedure should be attractive to the Conservation Commission, oil producer and rancher. This idea will prevent premature abandonment of low productivity wells.

Yours very truly,

MIDWEST OIL CORPORATION

C. F. Qualia

C. F. Qualia
District Production Supt.

CFQ/raj

'68 JUL 11

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

P. O. Box 1809
Durango, Colorado 81301

July 25, 1968

Mr. Dan Nutter
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico 87501

Dear Dan:

I enjoyed attending your recent hearing concerning the lining of salt water pits. The testimonies were quite informative.

I was on a field trip in San Juan County, Utah, this week and I brought back a sample of the material which Union Oil Company of California and Texaco Inc. use to line salt water storage pits. I am sending you a sample of the material.

I do not know who sells the material but I have heard it called "Gulfseal." This sealer comes in 3 feet by 6 feet sheets which are overlapped and sealed. The expense is probably more than it would be for polyethylene linings but appears to be very satisfactory in this area.

Sincerely yours,

Jerry W. Long

Jerry W. Long
District Engineer

'68 JUL 26 PM 1

S P E C I F I C A T I O N S F O R T H E D E S I G N
A N D C O N S T R U C T I O N
O F L I N E D E V A P O R A T I O N P I T S

File Case 3807

NEW MEXICO OIL CONSERVATION COMMISSION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

They shall be fungus- and rot-resistant and shall be sun-resistant or provision made to protect the material from the sun as specified in Section 6 (E).

4. LEAKAGE DETECTION SYSTEM

(A) A leakage detection system of an approved design shall be built into the pit-bed and shall be inspected and approved by the Commission prior to installation of the liner.

(B) Leakage detection systems may consist of but are not necessarily limited to approved fail-safe electric detection devices or the drainage-and-sump method.

(C) If an electric grid detection system is used, provision must be made for adequately testing all components to ensure the system remains functional.

(D) If the drainage-and-sump method of leakage detection system is used, a network of gravel-packed drainage canals or slotted or perforated drainage pipes shall be installed. The network shall be of sufficient density that no point in the evaporation pit-bed shall be more than 20 feet from a drainage canal or drainage pipe or a lateral thereof. Slope for all drainage lines and laterals shall be at least six inches per 50 feet. All drainage shall be to the outer perimeter of the pit and shall gather into concrete or corrosion-proof metal sumps. (See Fig. 2)

5. PREPARATION OF PIT-BED FOR INSTALLATION OF LINER

(A) The bed of the pit and the inside grades of the levee shall be smooth and compacted and shall be free of holes, rocks, stumps, clods, or any other debris which might rupture the liner. In extremely rocky areas, it will probably be necessary to cover the pit-bed with a compacted layer of sand or other suitable material.

(B) Drainage canals shall be dug and sloped prior to requesting inspection of the pit-bed. They shall not be gravel-filled nor shall they receive the slotted drainage pipe (if used) until after the slope and direction of drainage has been approved.

(C) A trench shall be dug on the top of the levee the entire perimeter of the pit for the purpose of anchoring flexible liners.

1. LOCATION

(A) Evaporation pits shall not be located in any watercourse or in any lake-bed, sink-hole, or other depression. Pits adjacent to any such watercourse or depression shall be located safely above the high-water level of such watercourse or depression.

2. DESIGN AND CONSTRUCTION

(A) Evaporation pits shall be so designed and constructed as to provide a minimum of 600 square feet of evaporative surface for each barrel (42 U. S. gallons) of water to be placed in said pits on a daily average basis throughout the year.

(B) Pits shall be located on level ground and shall be approximately square. They shall be constructed by excavating and levelling a maximum of six inches below ground level. Excavated material shall be used to form the levees around the pit, said levees to rise a minimum of 18 inches above ground level.

(C) Levees shall be compacted and shall be so constructed as to have an inside grade no flatter than 1:2. Levees shall have an outside grade no steeper than 1:3 (See Fig. 3).

(D) The top of levees shall be flat and level and shall be at least 18 inches wide.

3. MATERIALS

(A) Materials used for lining evaporation pits shall be impermeable and may be rigid, semi-rigid, or flexible.

(B) If rigid or semi-rigid materials are used, leak-proof expansion joints shall be provided, or the material shall be of sufficient thickness and strength to withstand, without cracking, expansion and contraction and settling movements in the underlying earth.

(C) If flexible membrane types of materials are used, they shall be of at least 30 mil thickness and shall have good resistance to tears or punctures.

(D) All materials used for lining evaporation pits shall be resistant to hydrocarbons, salts, and aqueous acids and alkalis.

(C) Syphons or other suitable means shall be employed to draw water from well beneath the oil-water interface in the header pit for transfer to the evaporation pit. The syphon shall be located as far possible from the inflow line into the header pit.

(D) Header pits shall at all times be kept free of appreciable oil build-up to avoid running oil into the evaporation pit.

(E) A settling tank with a minimum capacity of 30 days water production may be used in lieu of a header pit provided that it shall be maintained in leak-proof condition and provided that the water draw-off connection shall be so located and the water-oil interface so maintained as to prevent any flow of oil into the evaporation pit.

8. FENCES AND SIGNS

(A) A fence shall be constructed and maintained in good condition around the evaporation pit installation. Fences shall be constructed with a minimum of four strands of barbed wire on sturdy posts no more than 20 feet apart. Corners shall be braced in two directions. Fences shall not be constructed on the levees.

(B) A sign not less than 12" x 24" with lettering of not less than two inches shall be posted in a conspicuous place on the fence surrounding the evaporation pit installation. The sign shall be maintained in legible condition and shall identify the operator of the evaporation system, the location of the system by quarter-quarter section, township and range, and the permit number of the permit authorizing the installation.

This trench shall be located nine inches out from the slope break and shall be a minimum of six inches deep. (See Fig. 3)

6. INSTALLATION OF FLEXIBLE MEMBRANE LINERS

(A) The liner shall be put in place only after the pit-bed, leakage detection system, and levee walls have been inspected and approved by a Commission representative.

(B) The pit liner shall be installed and joints sealed according to manufacturer's specifications and with approval of the Commission representative.

(C) The liner shall be laid as evenly and wrinkle-free as possible and shall rest smoothly on the pit-bed and the inner face of the levees, and shall be of sufficient size to extend down to the bottom of the anchor trench, and to come back out and a minimum of two inches beyond. (See Fig. 3)

(D) An anchor of used pipe, old sucker-rods, or other similar material shall be placed over the liner in the anchor trench and said trench backfilled. The anchor shall extend the entire perimeter of the evaporation pit.

(E) If the lining material used for the pit is not sun-resistant, at least one inch sand or other suitable material shall be spread uniformly to cover the liner over the floor of the pit. Gravel or other wave-resistant material with sufficient angle of repose to remain in place shall be used to cover the sloping inner wall of the levee. This material shall extend at least to the anchor trench.

7. HEADER PIT OR SETTLING TANK

(A) A header pit capable of containing a minimum of 30 days produced water shall be installed to receive the salt water to be evaporated prior to running it into the evaporation pit.

(B) Header pits shall be constructed similarly to evaporation pits (including minimum depth of two feet from top of levee to floor of pit and leakage detection system) and shall be lined with neoprene or some other highly oil-resistant material of at least 30-mil thickness.

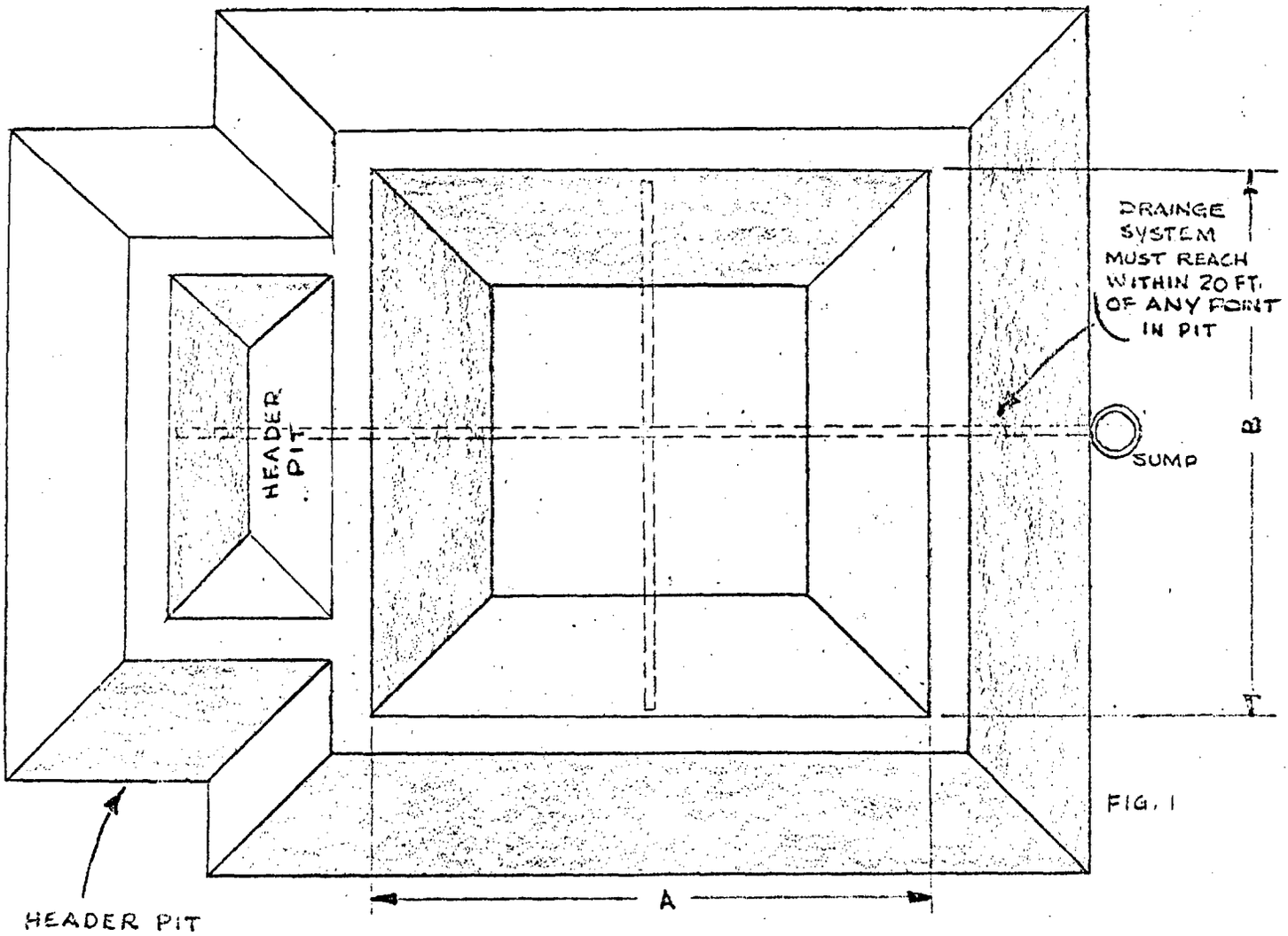


FIG. 1

HEADER PIT MUST HAVE ADEQUATE CAPACITY TO CONTAIN 30 DAYS WATER PROD.

DIM. "A" x "B" MUST EQUAL AT LEAST 600 SQ. FT FOR EACH BBL. OF WATER TO BE PLACED IN PIT ON DAILY AVE. BASIS

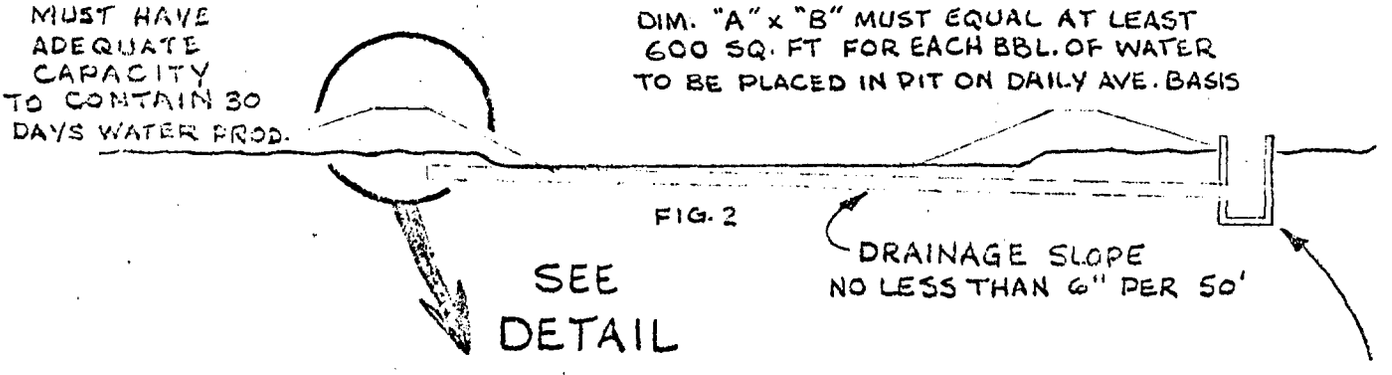


FIG. 2

SEE DETAIL

DRAINAGE SLOPE NO LESS THAN 6" PER 50'

SUMP TO BE OF CONCRETE OR OTHER CORROSION-PROOF MATERIALS MUST BE KEPT COVERED.

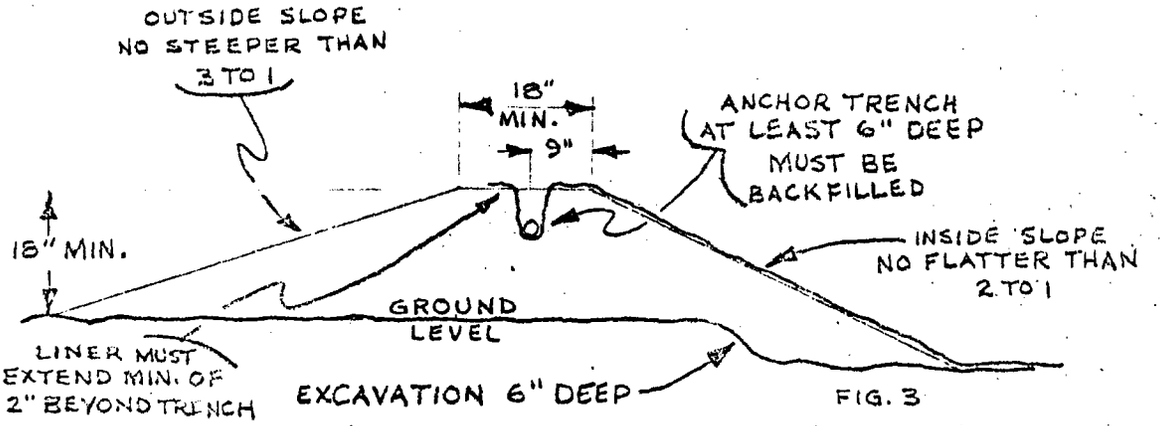


FIG. 3

N.M.O.C.C.

SALT WATER EVAPORATION PIT DESIGN SPECIFICATIONS

PROVIDED HOWEVER, that under certain circumstances, operators will be allowed the use of lined pits for evaporation of produced water.

To qualify for authority to utilize lined evaporation pits, a lease should have a settled or decreasing rate of water production.

The installation proposed must provide adequate storage capacity to safely contain all water produced during the fall, winter and early spring months when evaporation rates are at their minimum. The installation must provide a header pit lined with a suitable oil-resistant material to trap any oil carried over with the water, said header pit draining into the evaporation pits through suitably placed syphons well below the water-oil interface.

Adequate facilities must be provided to facilitate detection of leakage from the evaporation pits, which shall be lined with a satisfactory material which is resistant to salts and aqueous acids and alkalis. The material must also be SUN-resistant or provision made to protect it from exposure to the sun.

PLASTI-STEEL
Plastic Products Inc.
1005 Wichita Plaza • Area 316 AM 2-6861 • Wichita, Kansas 67202

'67 MAY 19 AM 8 58

May 17,1967

Mr. A. L. Porter, Jr., Director
The New Mexico Oil Conservation Commission
State Capital
Santa Fe, New Mexico

Dear Mr. Porter:

We are pleased to send you the enclosed brochure on our "Plasti-Steel Tanks", a unit we developed for use as storage of oil field, refinery and plant saltwater wastes and other contaminating fluids.

Our units have the approval or acceptance of the regulatory bodies of the states of Kansas, Oklahoma, Arkansas and Texas.

As considerable interest is being shown in them by some of the oil companies operating in New Mexico, we would appreciate a letter from you, possibly along the lines of those from Mr. M. L. Wood and Mr. Bruce F. Latta (copies attached) if after studying the information on our tanks, you would care to send it.

Very truly yours,

PLASTIC PRODUCTS, INC.

M. C. Green

M. C. "Jack" Green, President

MCG:dlm

Encl.

PLASTI-STEEL
Plastic Products Inc.
1005 Wichita Plaza • Area 316 - AM 2-6861 • Wichita, Kansas 67202

Here is the Best

Most Functional

Most Practical

Answer to Your

Storage & Pollution Problems!

In production you have to handle fresh water, saltwater and wastes - any one of which presents problems. Many states have tightened regulations controlling pollution and contamination. There doubtless will be some regulatory measures taken against excessive fresh water waste. "Plasti-Steel Tanks" comply with existing and pending regulations - the ineffective, pollution-prone dirt pits and reservoirs of the past do not.

In addition to solving the regulation problem, consider these advantages that "Plasti-Steel Tanks" offer you:

*The installed cost of a "Plasti-Steel Tank" is approximately the same as that of an impervious lined and fenced pit or reservoir of comparable capacity. It costs a third to a half what a conventional wood or coated steel tank would cost you.

*"Plasti-Steel Tanks" have an uncommonly high salvage value - either for re-use or for resale as farm and ranch stock watering tanks, grain and feed storage, etc. A pit or reservoir has no salvage value, actually will cost you on abandonment. Steel and wood tanks depreciate rapidly and have low resale value.

*"Plasti-Steel Tanks" consist of a pre-fabricated, sectional, bottomless steel tank and a one-piece, fabricated-to-size "bag" liner. They can be transported, erected, dismantled and reset with a minimum labor and equipment cost to you. They are suitable for temporary as well as permanent storage.

*They require no additional fencing. They are stock, weed and debris proof.

*They are designed for installation on or above surface grade. Require only a minimum of dirt work - usually hand grading and removal of rocks, brush, weeds, etc. will suffice.

(OVER)

*As a surface or above surface installation, they can be visually inspected by your personnel or regulatory agencies. Should leaks occur they can be readily detected - greatly reducing or completely eliminating the hazard of pollution!

*In areas where evaporation can be effective, "Plasti-Steel Tanks" have better evaporative properties than pits of equal capacity and they have far less area for rainfall accumulation.

*On waterfloods, they are more serviceable and cost less to operate than a lined earthen reservoir.

*They can be easily equipped for draw-off of concentrations to reduce or prevent solid build ups or with spreaders for mass distribution (Skimmer-Sedimentation-Aeration, Etc.)

*The plastic liner materials are of the highest quality, impervious to all normal oil field products.

In other words - "Plasti-Steel Tanks" can solve many of your oil field storage and pollution problems in an economic and practical way.

"Plasti-Steel Tanks" are field proven, with hundreds now in use throughout the Mid-Continent area by both Major and Independent oil companies. Because of their exceptional sturdiness and environmental adaptivity, these tanks offer you a serviceable unit under the severest wind and weather abuses (tornados excepted) and can be used for:

Accumulation Tanks	Aeration Tanks	Reserve Tanks
Collecting Tanks	Evaporating Tanks	Settling Tanks
Storage Tanks	Skimming Tanks	Treating Tanks

We would appreciate an opportunity to give you more details, discuss a specific problem or show you some of our installations first-hand.

Won't you use the enclosed reply card so we can?

Cordially,

PLASTIC PRODUCTS, INC.

M. C. "Jack" Green

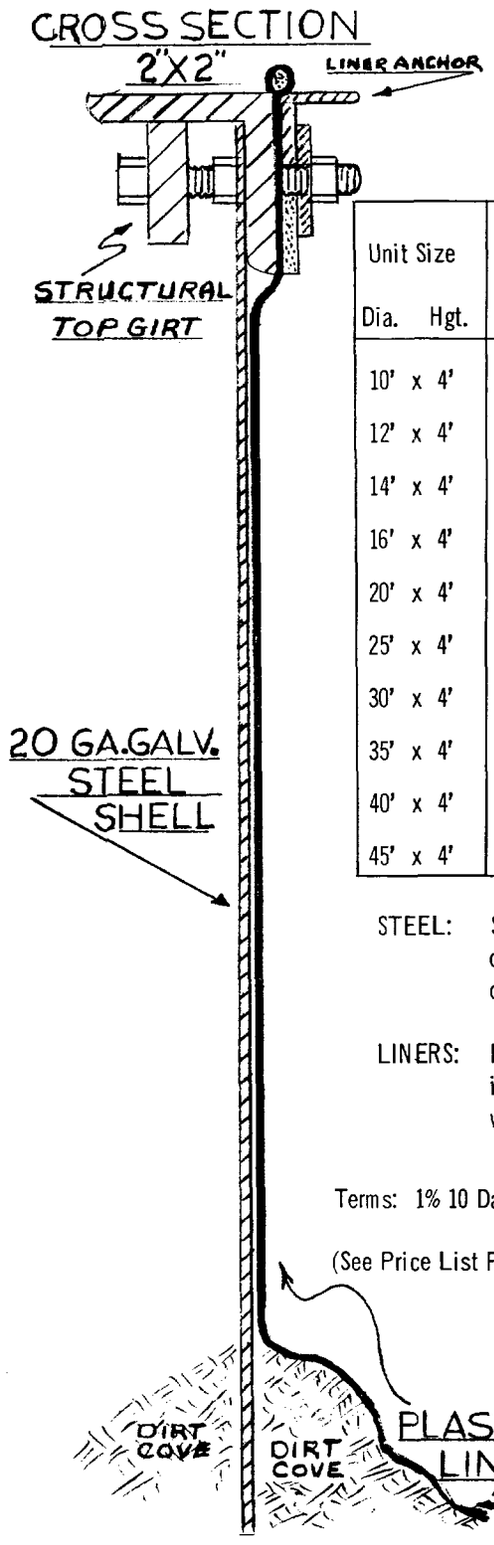
P.S. Take a look at the enclosed sample of Plastic Liner Material used in "Plasti-Steel Tanks". It's the best quality on the market!

PLASTIC PRODUCTS, INC.

1005 WICHITA PLAZA - AREA 316 - AM 2-6861 - WICHITA, KANS. - 67202

PRICE LIST

LIST P–5 EFFECTIVE 3–1–67



STANDARD

PLASTI-STEEL TANK

(Complete Unit)

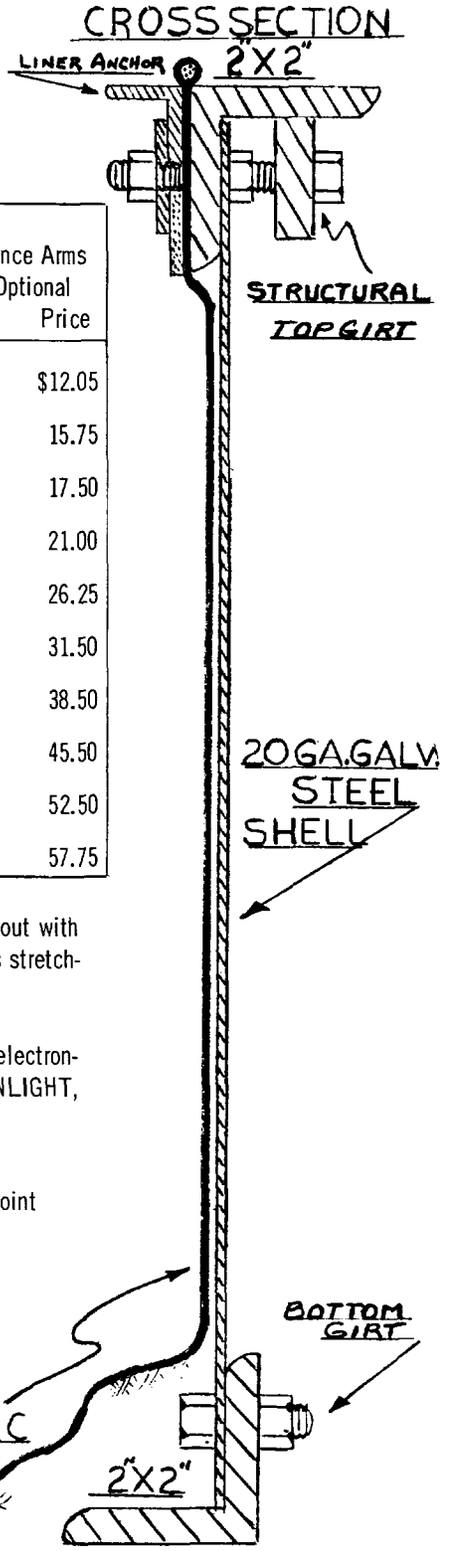
Unit Size Dia.	Unit Size Hgt.	Capacity in Barrels	Price Complete Unit Steel Design No. 1 and .030" Plastic Liner	Price Complete Unit Steel Design 1-A and .030" Plastic Liner	Fence Arms Optional No.	Fence Arms Optional Price
10'	4'	60 Bbls.	$ 256.95	$ 283.70	7	$12.05
12'	4'	80 Bbls.	313.50	346.50	9	15.75
14'	4'	110 Bbls.	377.00	413.50	10	17.50
16'	4'	143 Bbls.	440.85	484.35	12	21.00
20'	4'	224 Bbls.	542.55	597.55	15	26.25
25'	4'	364 Bbls.	679.50	749.50	18	31.50
30'	4'	500 Bbls.	878.70	961.70	22	38.50
35'	4'	687 Bbls.	1,053.80	1,152.80	26	45.50
40'	4'	900 Bbls.	1,262.95	1,379.45	30	52.50
45'	4'	1136 Bbls.	1,461.20	1,585.70	33	57.75

STEEL: Sidewalls furnished in coils of 4' wide x 25' to 40' lengths – stretchout with double splice plates for joining. Structural girts furnished in 20' lengths stretchout, complete with necessary hardware for erection.

LINERS: Premium Quality Materials, pre-fabricated to size, in one piece, with electronically sealed joints. IMPERVIOUS TO OIL, BRINE, WASTES AND SUNLIGHT, with temperature range -35° to 160° F.

Terms: 1% 10 Days, Net 30 F.O.B. Destination R/T Shipping Point

(See Price List P-6 for sizes 50' x 4' to 120' x 8')



PLASTIC PRODUCTS, INC.

1005 WICHITA PLAZA - AREA 316 - AM 2-6861 - WICHITA, KANS. - 67202

PRICE LIST

LIST P–6 EFFECTIVE 3–1–67

HEAVY DUTY

PLASTI-STEEL TANK

(Complete Unit)

Unit Size Dia.	Hgt.	Capacity in Barrels	Price Complete Unit Steel Design No. 2 and .030" Plastic Liner	Fence Arms Optional No.	Price
50'	x 4'	1,400 Bbls.	$ 2,129.20	40	$ 70.00
60'	x 4'	2,000 Bbls.	2,727.70	47	82.25
70'	x 4'	2,750 Bbls.	3,412.10	55	96.25
80'	x 4'	3,600 Bbls.	4,118.20	62	108.50
90'	x 4'	4,540 Bbls.	4,898.50	71	122.50
100'	x 4'	5,600 Bbls.	5,721.80	78	140.00
120'	x 4'	8,080 Bbls.	7,521.20	94	164.50

UNIT WITH STEEL DESIGN 3 (See Dwg.)
(18 Ga. GALV. SIDEWALL – 3" x 2" Top & Bottom Girts – 2" x 2" Center

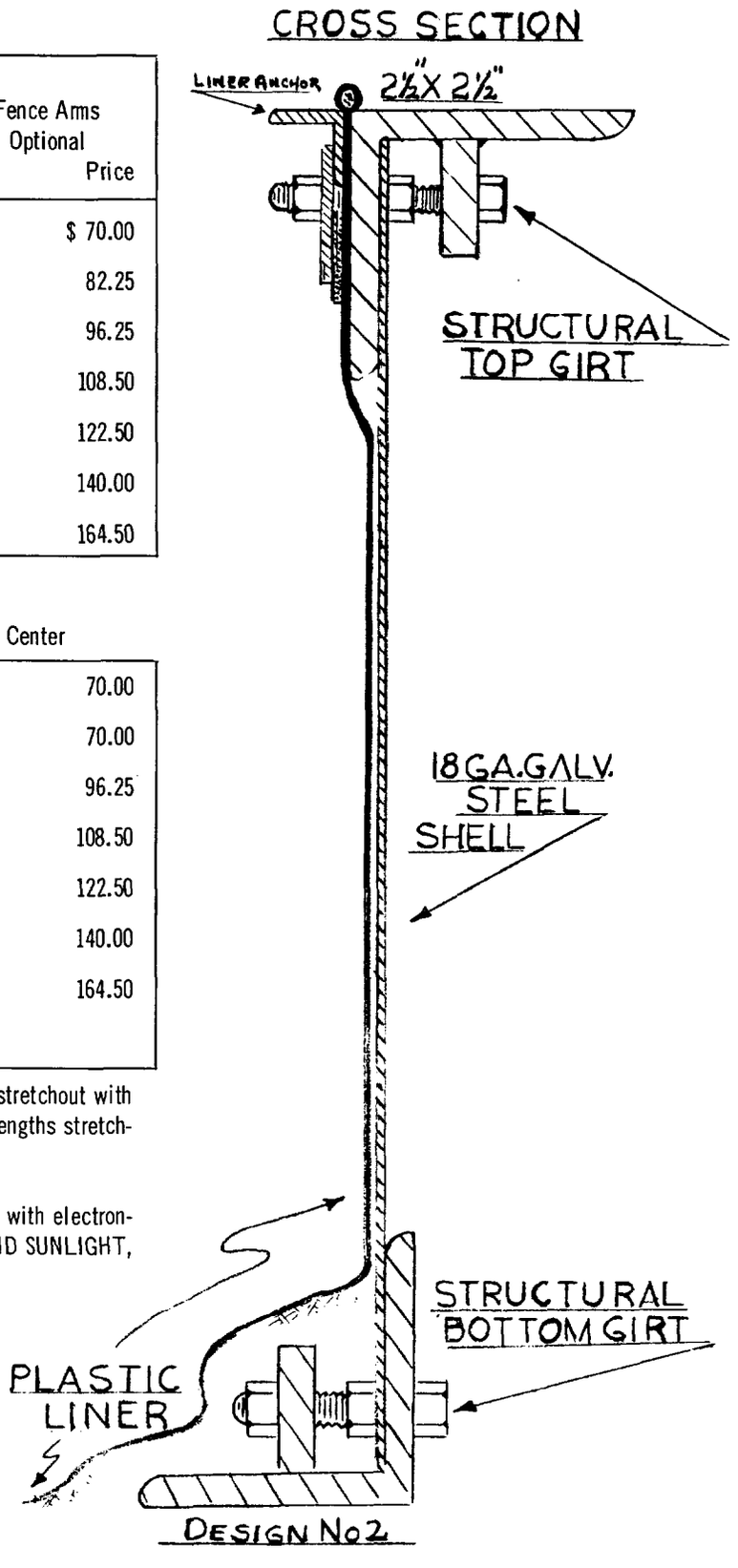
50' x 8'	2,800 Bbls.	3,465.10	40	70.00
60' x 8'	4,000 Bbls.	3,465.10	47	70.00
70' x 8'	5,500 Bbls.	5,299.10	55	96.25
80' x 8'	7,200 Bbls.	6,268.20	62	108.50
90' x 8'	9,080 Bbls.	7,323.20	71	122.50
100' x 8'	11,200 Bbls.	8,414.40	78	140.00
120' x 8'	16,160 Bbls.	10,726.00	94	164.50

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

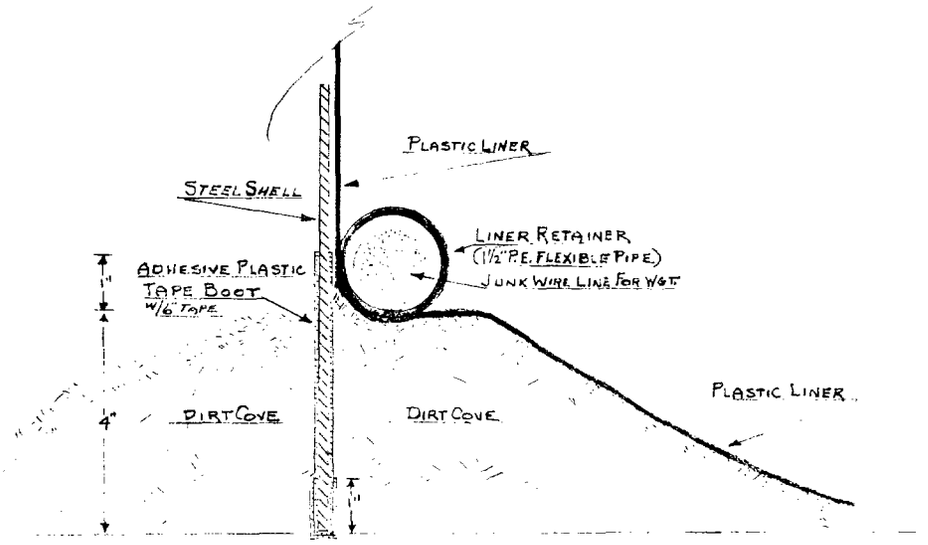
STEEL: Sidewalls furnished in coils of 4' wide x 25' to 40' lengths – stretchout with double splice plates for joining. Structural girts furnished in 20' lengths stretch-out, complete with necessary hardware for erection.

LINERS: Premium Quality Materials, pre-fabricated to size, in one piece, with electronically sealed joints. IMPERVIOUS TO OIL, BRINE, WASTES AND SUNLIGHT, with temperature range -35° to 160° F.

Terms: 1% 10 Days, Net 30 F.O.B. Destination R/T Shipping Point



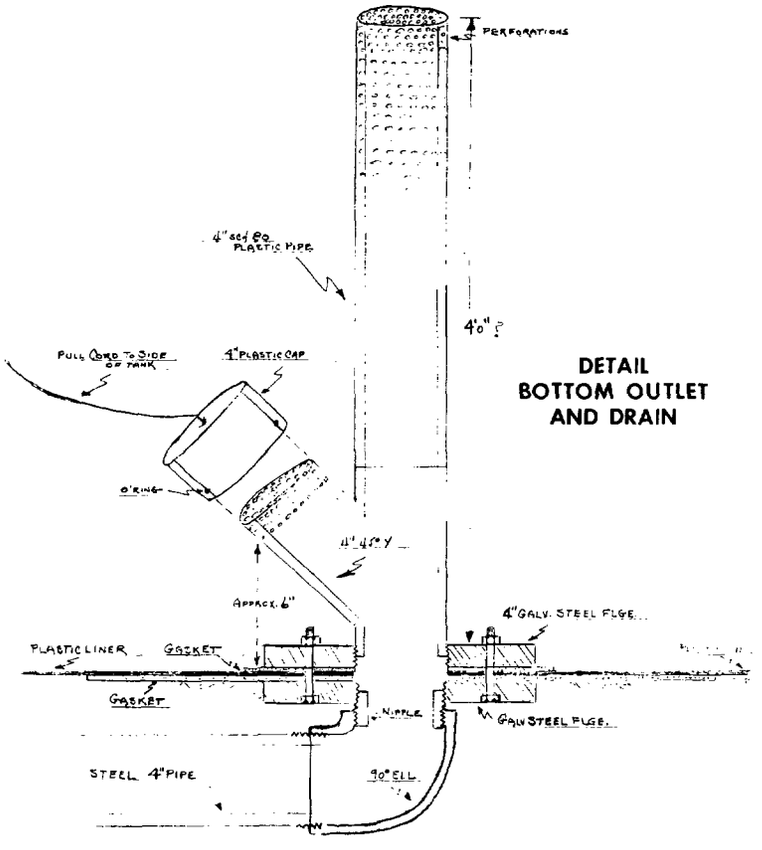
PLASTI-STEEL TANKS
PATENT PENDING



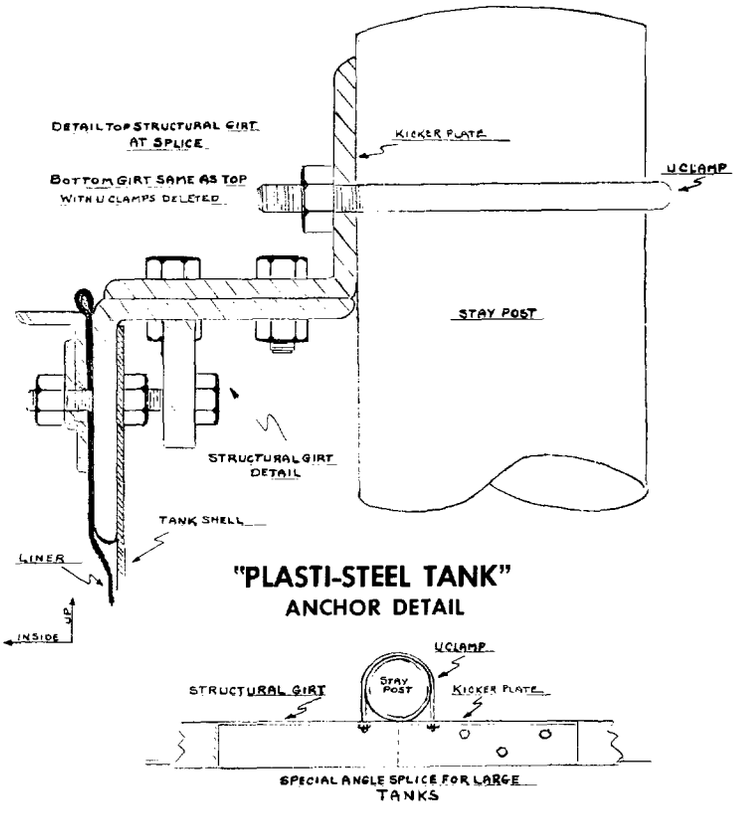
CROSS SECTION TANK BOTTOM

SUGGESTED
CORROSION RESISTANT TANK BOOT
FOR CORROSIVE GRADES

DWG. 181 9-19-66

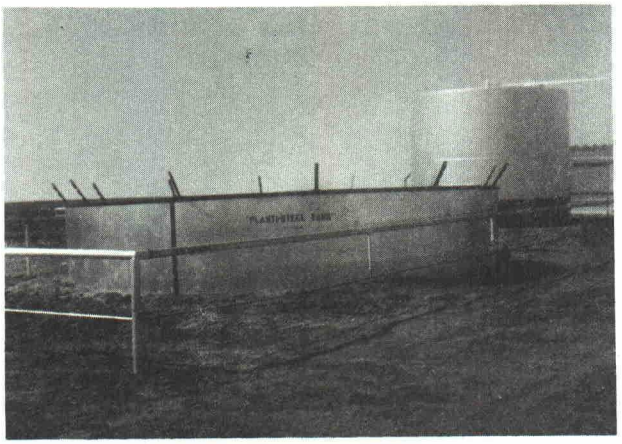


DETAIL BOTTOM OUTLET AND DRAIN



"PLASTI-STEEL TANK" ANCHOR DETAIL

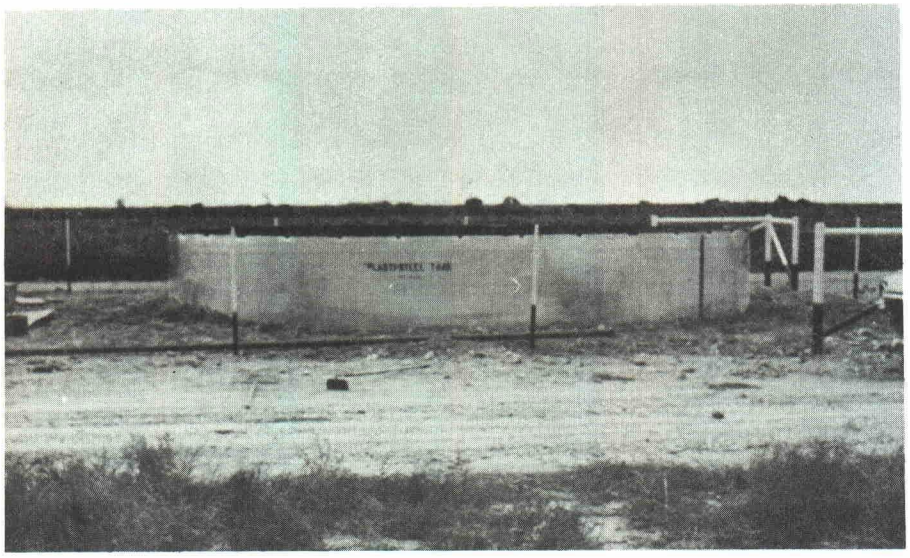
PLASTIC PRODUCTS, INC.
1005 WICHITA PLAZA - AREA 316 - AM 2-6861 - WICHITA, KANS. - 67202



GAS DISTILLATE COLLECTING TANK

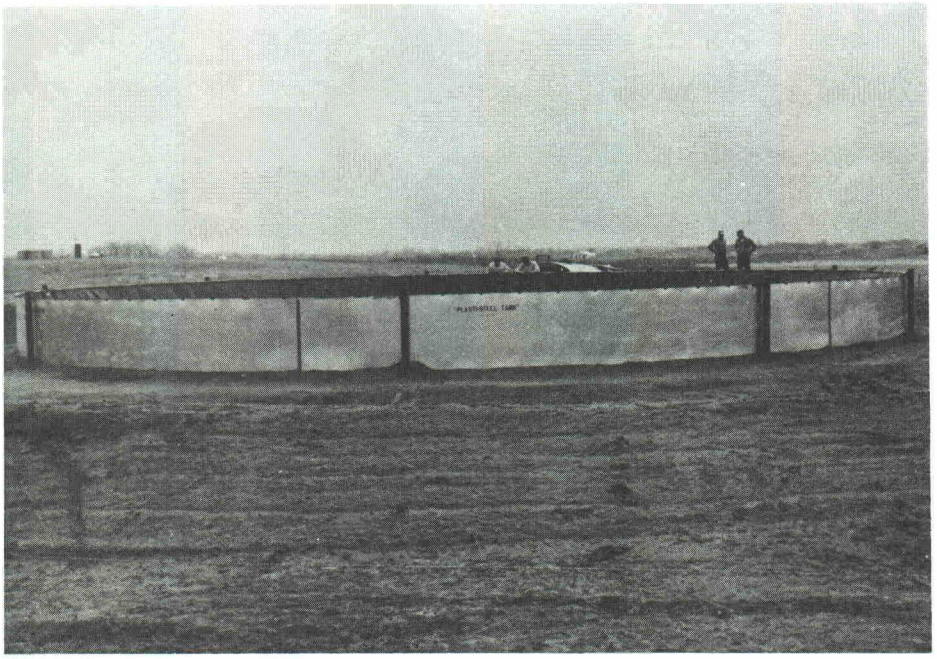
" PLASTIC STEEL TANKS"

AVAILABLE IN
SIZES
100 BBL. TO 16,000 BBL.



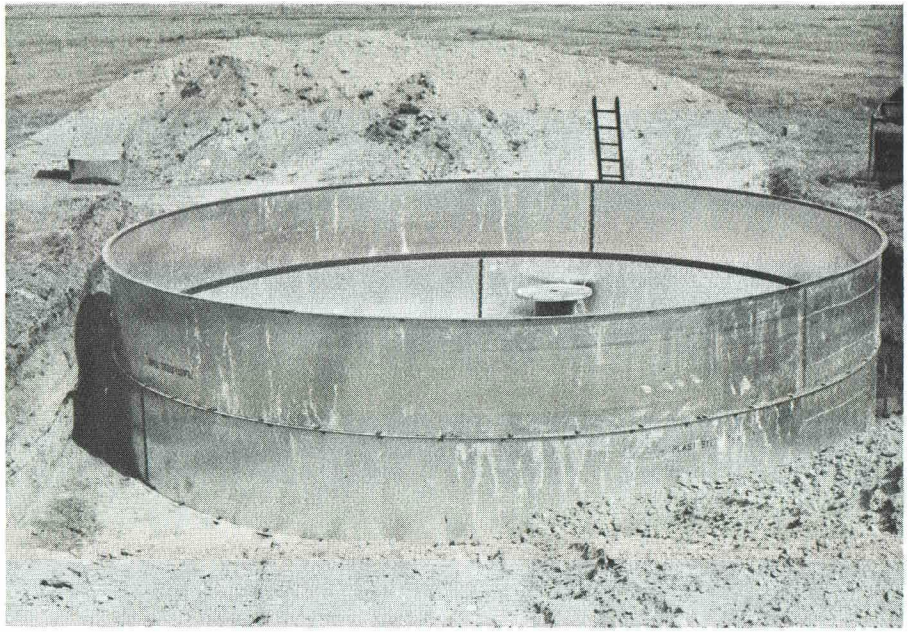
OIL WELL ACCUMULATION TANK

FOR HANDLING
SALTWATER – FRESHWATER
CRUDE OIL – OIL RESIDUES
and
WASTES



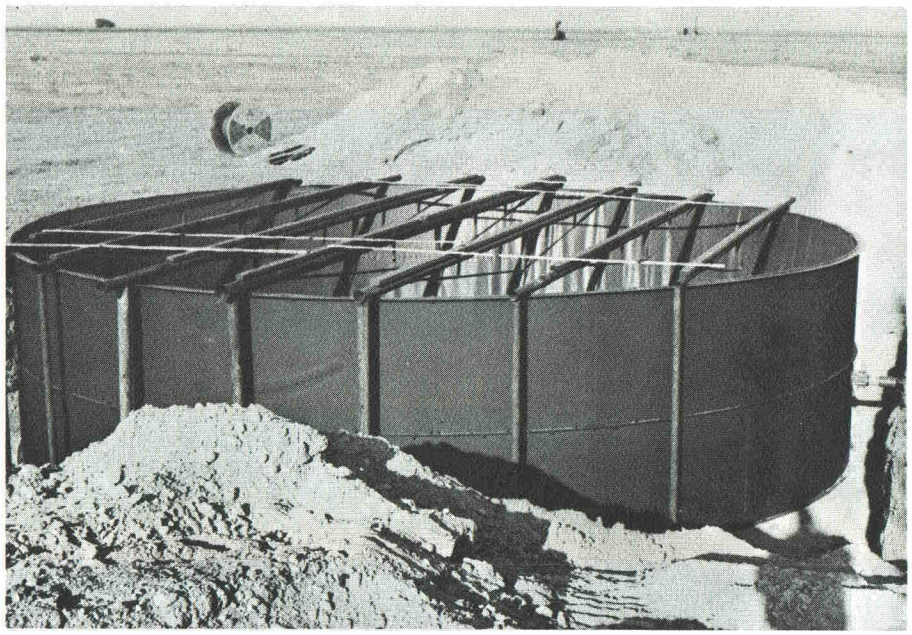
WATERFLOOD RESERVE TANK

PLASTIC PRODUCTS, INC.
1005 Wichita Plaza Wichita, Kansas 67202



① 2 RING STEEL SHELL

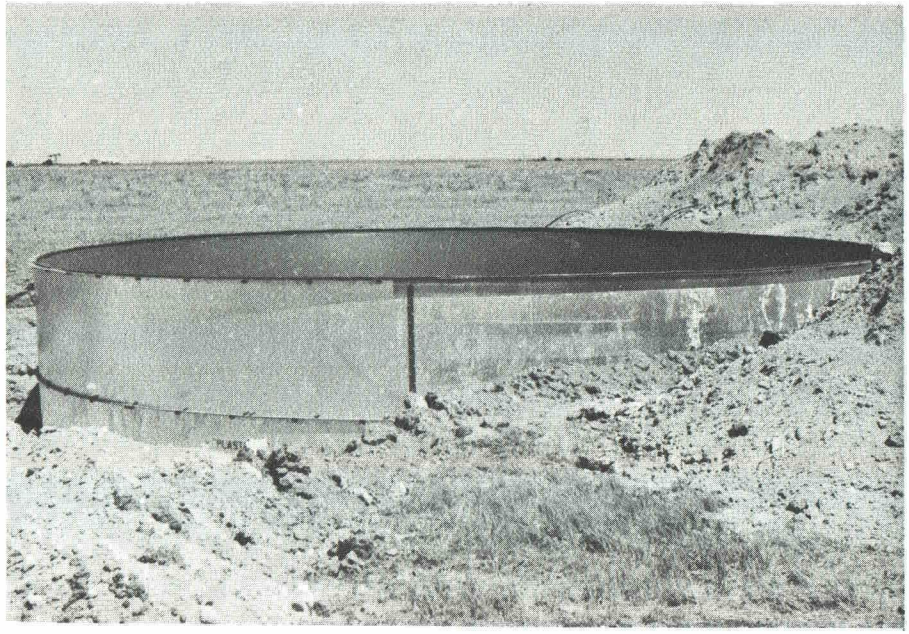
PLASTIC PRODUCTS, INC.
1101 WICHITA PLAZA
WICHITA, KANSAS



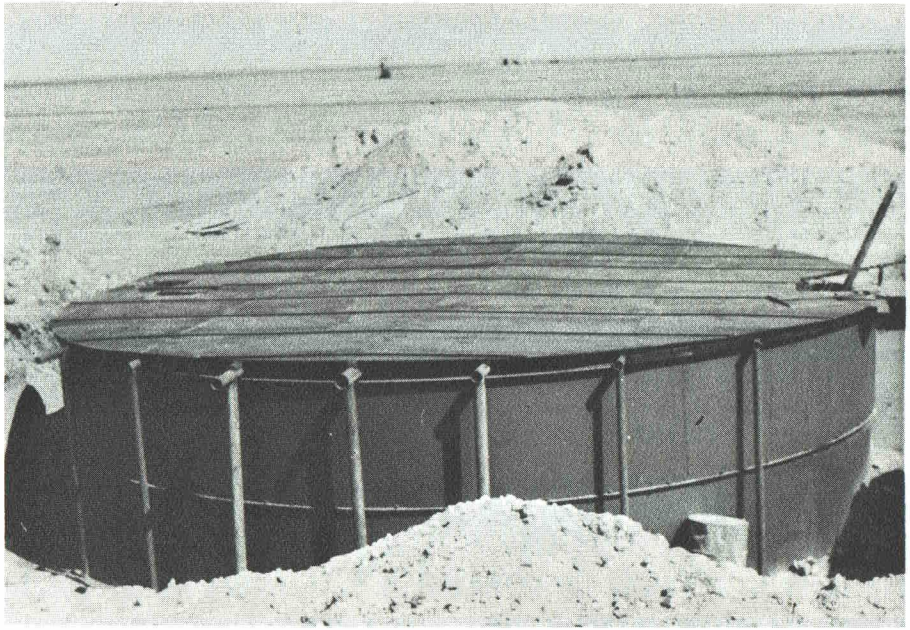
35'X8' "PLASTI-STEEL TANK" ③
1350 Bbl. CAPACITY
PAT. PEND.

DECK STRUCTURALS

SIZES FROM 16'X4' (140 BBl.)
TO 120'X8' (16,000 BBl.)



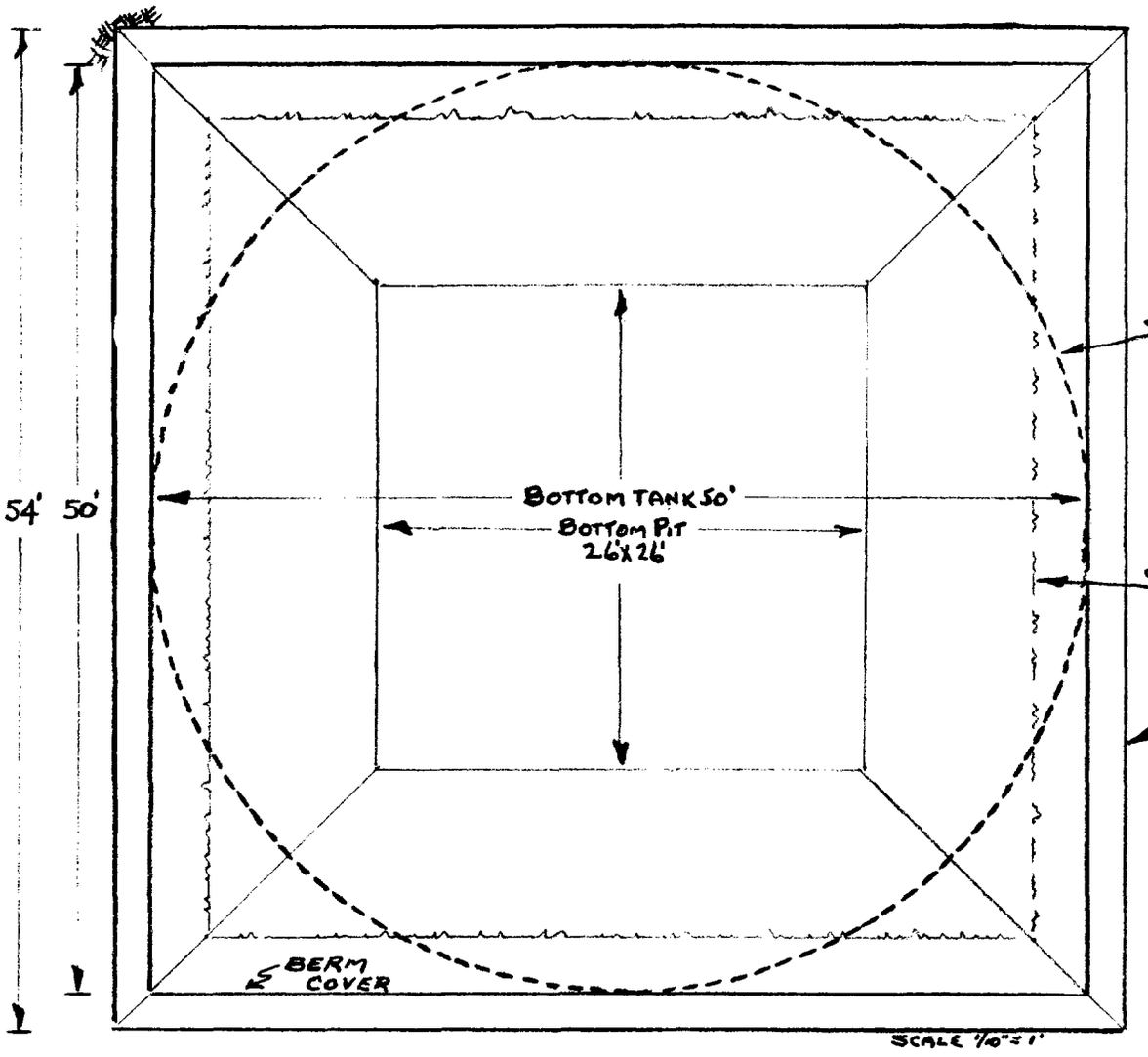
② PLASTIC LINED TANK



④ TANK COMPLETE WITH CONSTRUCTION PLYWOOD DECK

PLASTIC PRODUCTS, INC.

1005 WICHITA PLAZA - AREA 316 - AM 2-6861 - WICHITA, KANS. - 67202

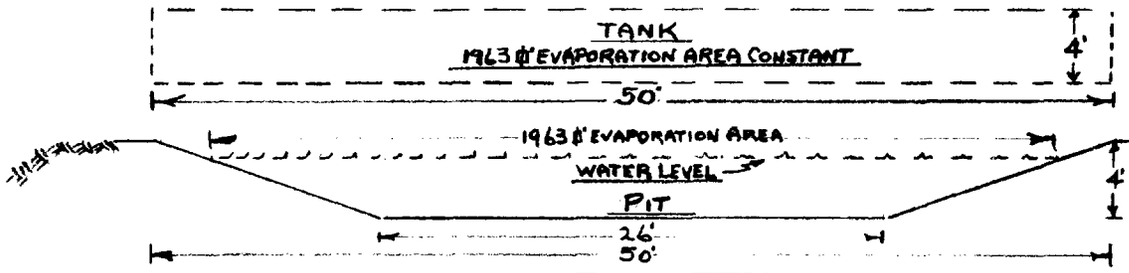


COMPARISON
4'x50' PLASTI-STEEL TANK
vs
4'x50'x50' PIT

50' DIA. TANK
1963 [/]' Evaporation Area Constant
1963 [/]' Cumulative Precipitation Area
Max. Cap. 1400 Bbls.

WATER LEVEL IN PIT
WITH 1963 [/]'
EVAPORATION AREA

50'x50' PIT
676 [/]' Min. Evaporation Area
2500 [/]' Max. Evaporation Area
2916 [/]' Cumulative Precipitation Area
Max. Cap. 1130 Bbls.



Note

©

COMPARATIVE VALUES PLASTI-STEEL TANK vs PIT						1/30/65
UNIT	EST. COST COMPLETE	MAX. STORAGE BBLS.	MIN. EVAPORATION AREA	MAX. EVAPORATION AREA	CUMULATIVE PRECIPITATION AREA	BBLS. PER YR. CUMULATION W/24" PRECIP.
4' x 50' TANK	APPROX. SAME	1400 BBLS.	1963 [/]'	1963 [/]'	1963 [/]'	876 BBLS.
4' x 50' x 50' PIT		1130 BBLS.	676 [/]'	2500 [/]'	2916 [/]'	1307 BBLS.
TANK		+25%	+300%	-25%	-32%	-32%

NOTE: WATER LEVEL IN PIT WOULD HAVE TO BE MAINTAINED AT NEAR CAPACITY TO HAVE SAME EFFECTIVE EVAPORATION AREA AS TANK WHICH IS CONSTANT AT ALL WATER LEVELS

Plastic Products Inc.
DESIGNERS – DEVELOPERS – FABRICATORS
1101 WICHITA PLAZA AREA 316-262-6861

DWG. 113

PLASTIC PRODUCTS, INC.

1005 WICHITA PLAZA - AREA 316 - AM 2-6861 - WICHITA, KANS. - 67202

EVAPORATIVE-COLLECTING
"PLASTI-STEEL TANK"

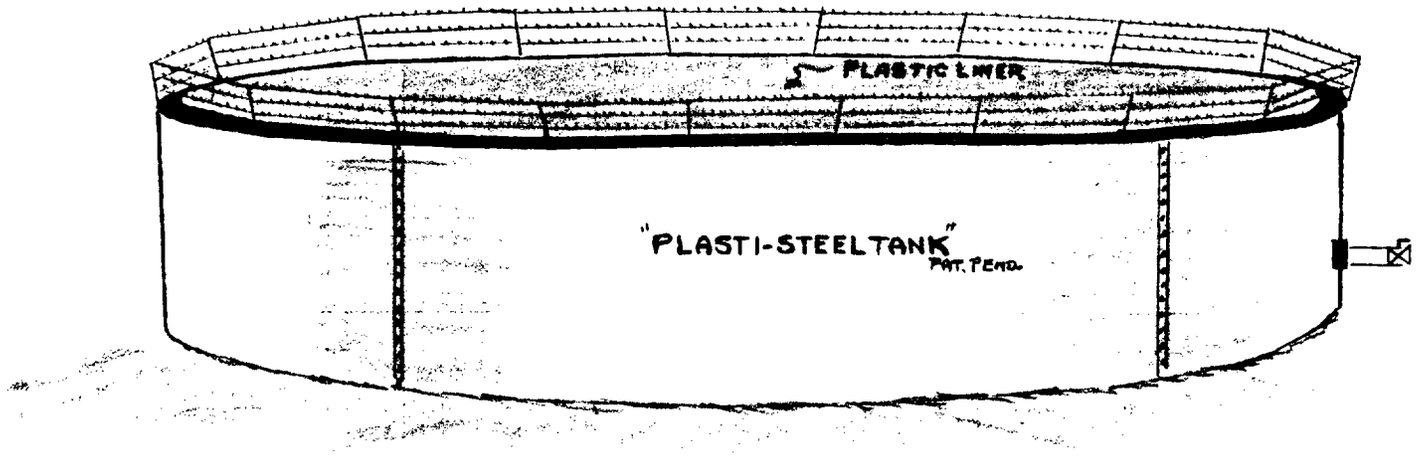


TABLE FOR ESTIMATING EVAPORATIVE VALUES

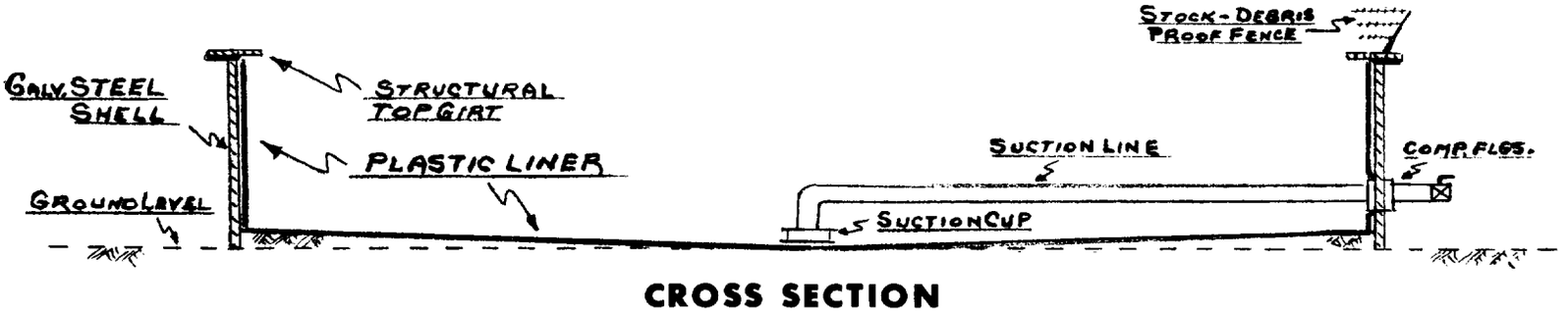
SIZES

Size	16'x4'	20'x4'	25'x4'	30'x4'	35'x4'	40'x4'	45'x4'	50'x4'	60'x4'	70'x4'	80'x4'	90'x4'	100'x4'	120'x4'
Capacity	143 Bbl.	224 Bbl.	364 Bbl.	500 Bbl.	687 Bbl.	900 Bbl.	1,136 Bbl.	1,400 Bbl.	2,000 Bbl.	2,750 Bbl.	3,600 Bbl.	4,540 Bbl.	5,600 Bbl.	8,080 Bbl.
Evaporation	201' ☑	314' ☑	490' ☑	707' ☑	962' ☑	1,257' ☑	1,590' ☑	1,964' ☑	2,827' ☑	3,848' ☑	5,026' ☑	6,361' ☑	7,854' ☑	11,309' ☑

NOTE: Evaporation valves are practically constant where tank has an inch of water in it or is full. To calculate evaporation, take sq. feet of evaporation x estimated evaporation per sq. feet per year for area (i.e., 30' x 4' tank evaporation area 707 sq. ft. x 2 Bbl. per ft. per year/ For Panhandle Area = 1404 Bbl.)

DWG. 134 2-24-66

SUGGESTED DESIGN
EVAPORATIVE-COLLECTING TANK
WILL
Remove Concentrations-Prevent Solid Buildup

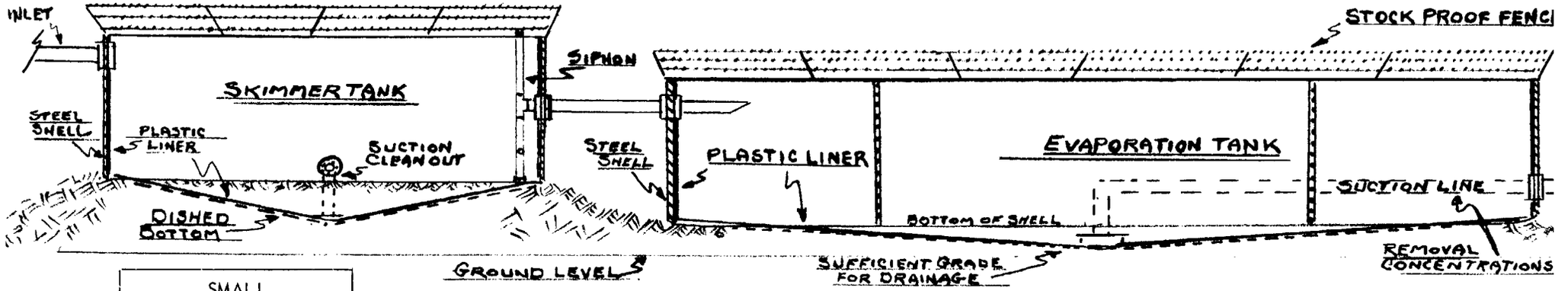


CROSS SECTION

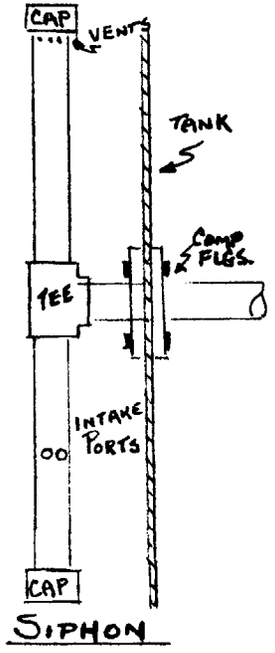
"PLASTI-STEEL TANK"

PAT. PEND.

SKIMMER-EVAPORATION ASSEMBLY



SMALL SKIMMER TANKS	
10' x 4'	60 BBL.
12' x 4'	80 BBL.
14' x 4'	110 BBL.



Tank Size Dia. Hgt.	Capacity	Aeration or Evaporation Area
16' x 4'	143 Bbl.	201
20' x 4'	224 Bbl.	314
25' x 4'	364 Bbl.	490
30' x 4'	500 Bbl.	707
35' x 4'	687 Bbl.	962
40' x 4'	900 Bbl.	1,257
45' x 4'	1,136 Bbl.	1,590
50' x 4'	1,400 Bbl.	1,964
60' x 4'	2,000 Bbl.	2,827
70' x 4'	2,750 Bbl.	3,848
80' x 4'	3,600 Bbl.	5,026
90' x 4'	4,540 Bbl.	6,362
100' x 4'	5,600 Bbl.	7,854
120' x 4'	8,080 Bbl.	11,310

PLASTIC PRODUCTS, INC.

1005 WICHITA PLAZA - AREA 316 - AM 2-6861 - WICHITA, KANS. - 67202

1-20-66 Revised 3-1-67

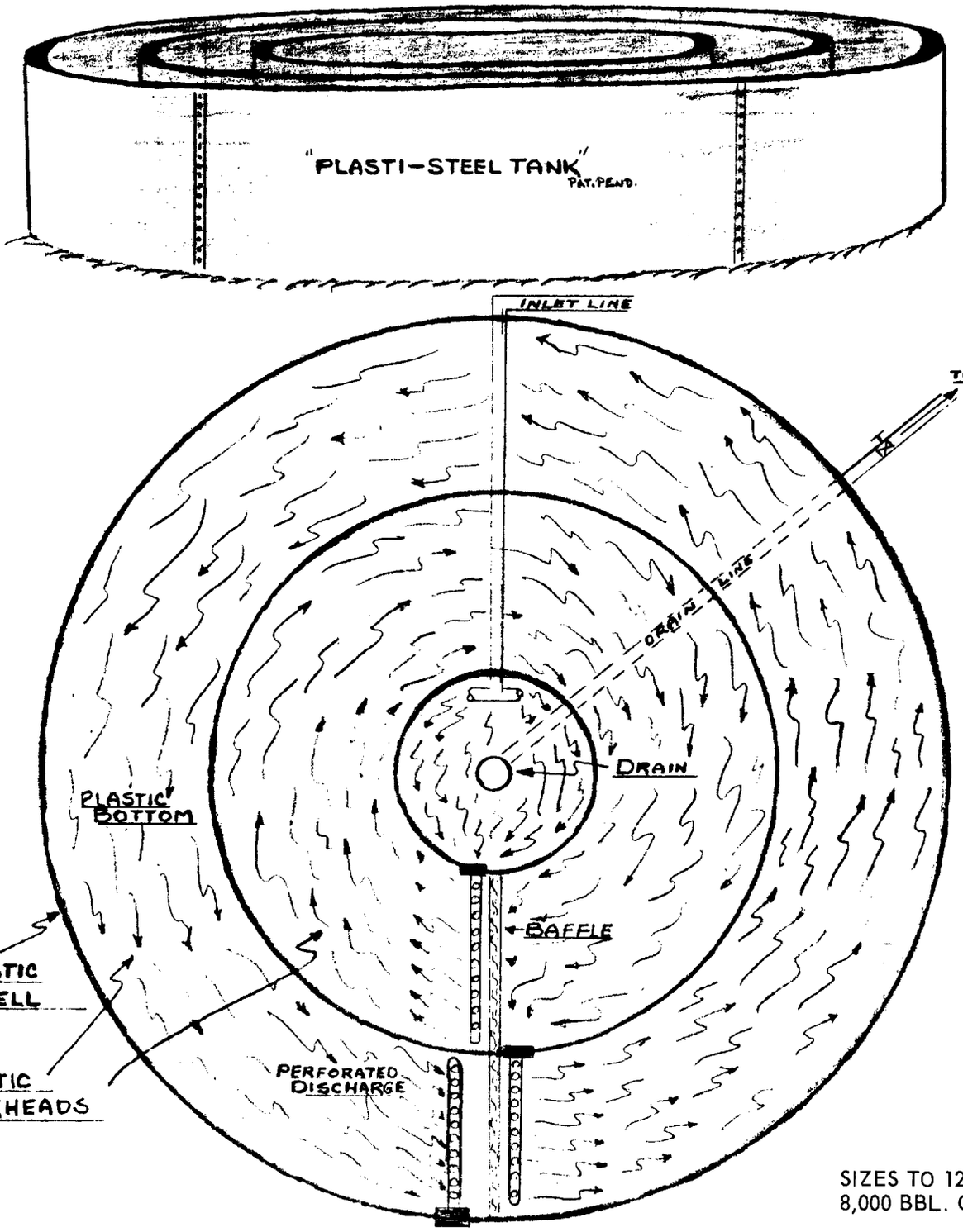
DWG. 135

PLASTIC PRODUCTS, INC.

1005 WICHITA PLAZA - AREA 316 - AM 2-6861 - WICHITA, KANS. - 67202

3 SECTION ASSEMBLY

SEDIMENTATION-FILTERING-SKIMMING



SIZES TO 120' x 4'
8,000 BBL. CAPACITY

SUGGESTIVE DESIGN

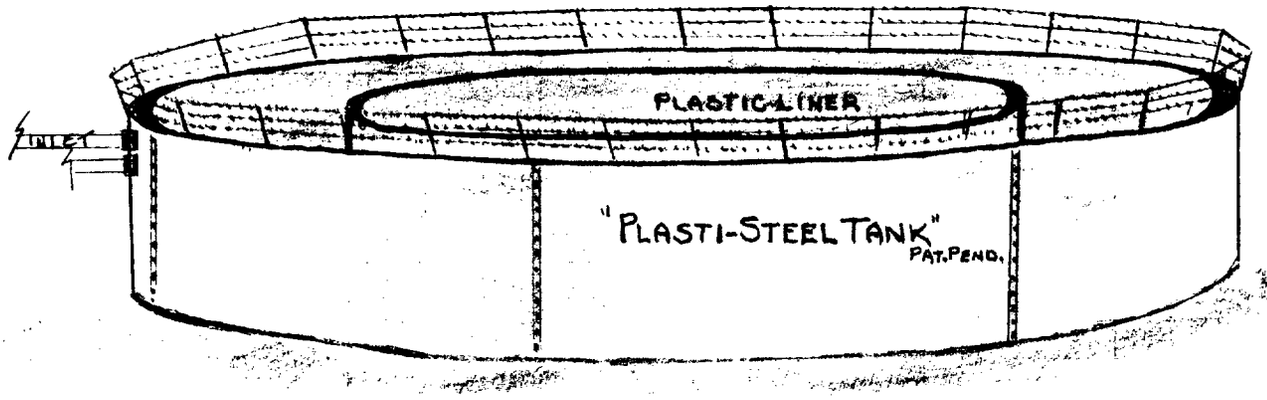
SEDIMENTATION ASSEMBLY

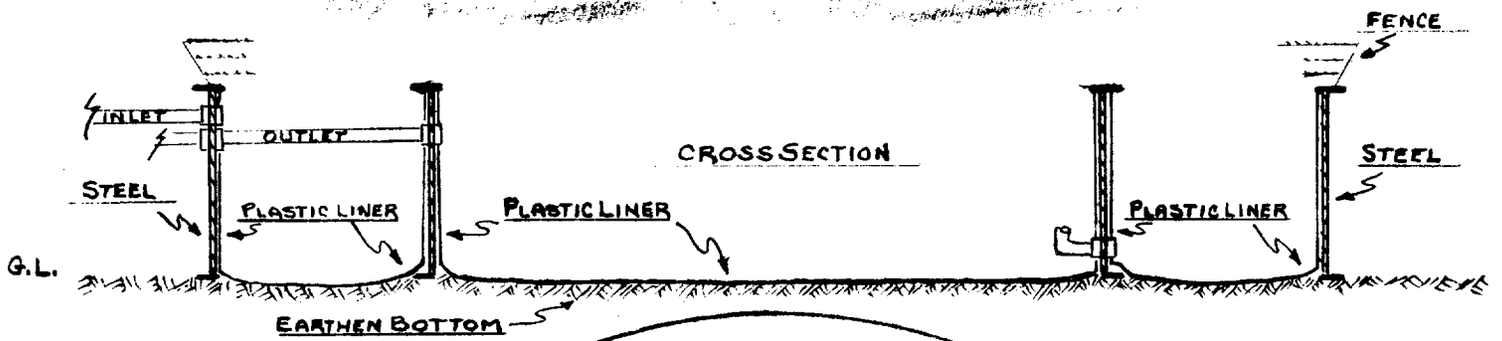
2-23-66 – Revised 3-1-67

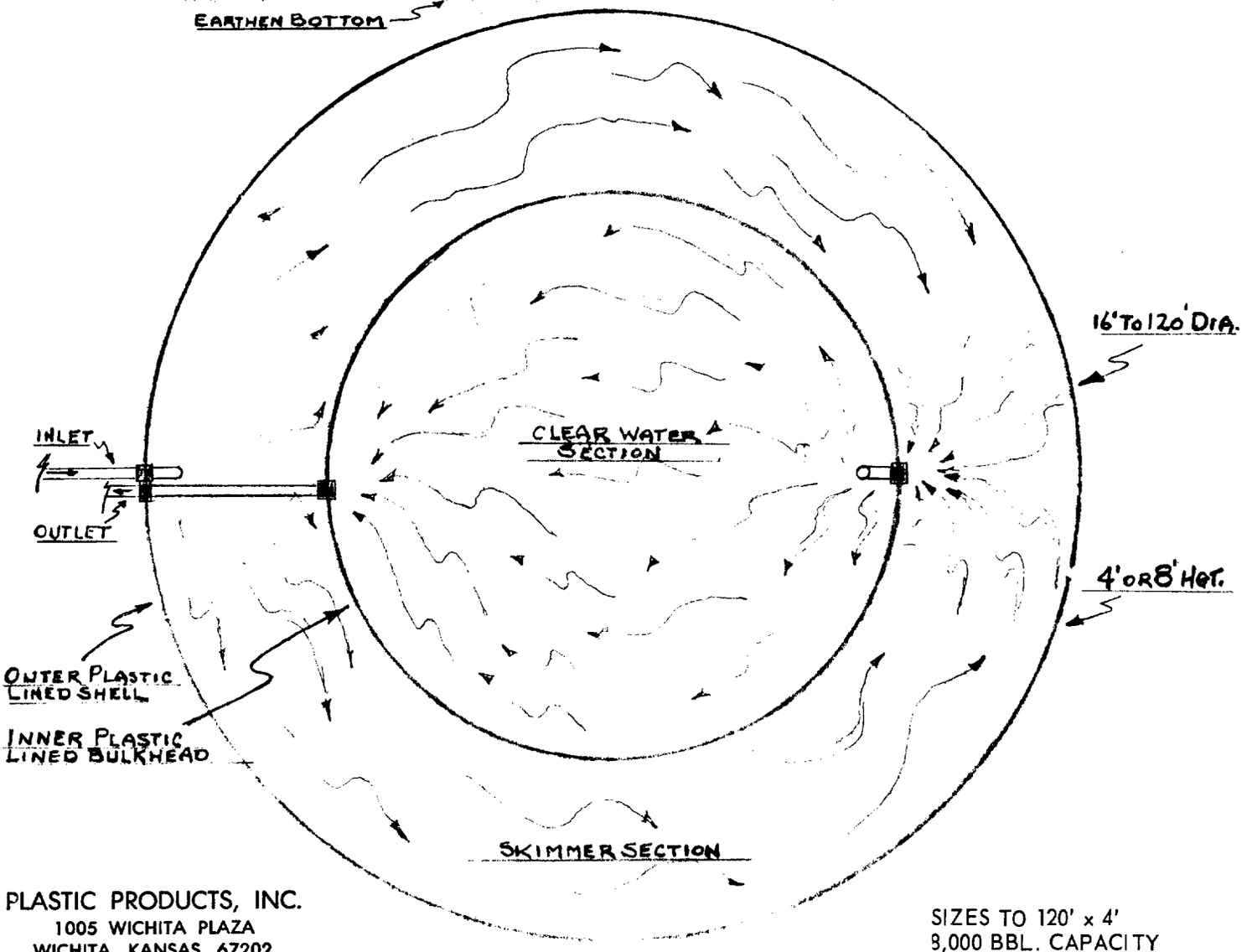
DWG. 133

PLASTIC PRODUCTS, INC.

1005 WICHITA PLAZA - AREA 316 - AM 2-6861 - WICHITA, KANS. - 67202







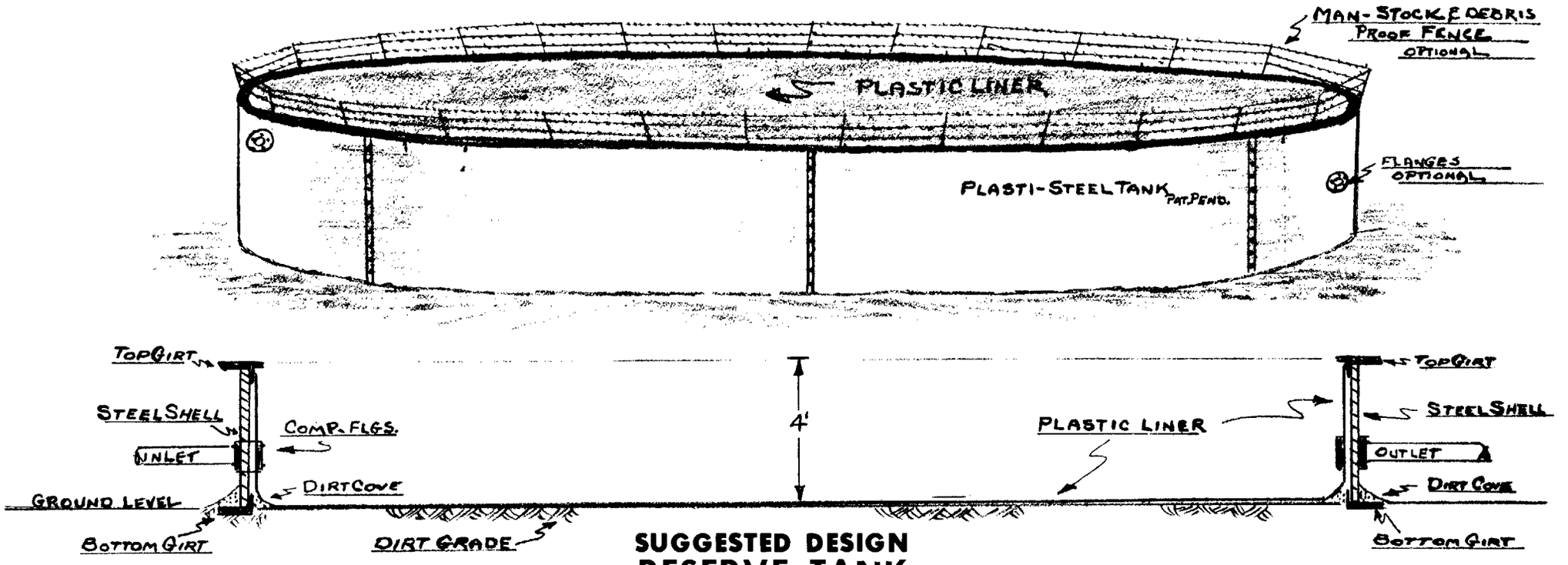
PLASTIC PRODUCTS, INC.
1005 WICHITA PLAZA
WICHITA, KANSAS 67202
Area 316 – AM 2-6861

SUGGESTIVE DESIGN

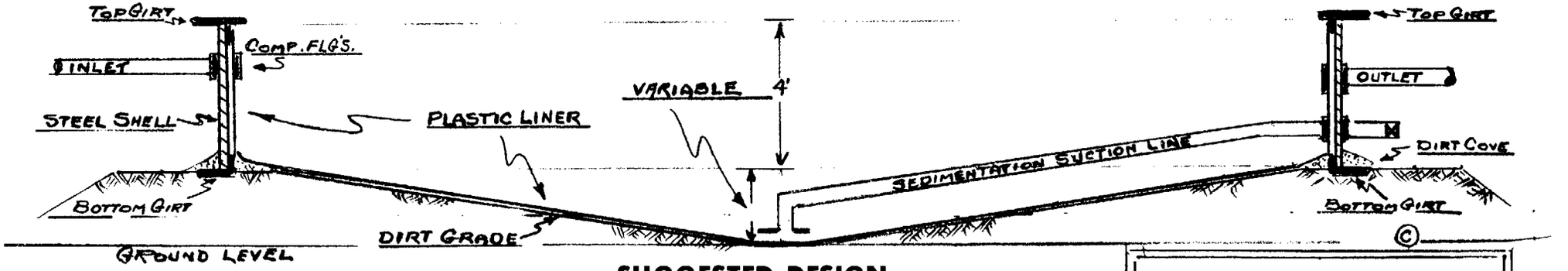
SKIMMER ASSEMBLY

SIZES TO 120' x 4'
8,000 BBL. CAPACITY

DWG. 139
4-10-66 – Revised 3-1-67



SUGGESTED DESIGN
RESERVE TANK



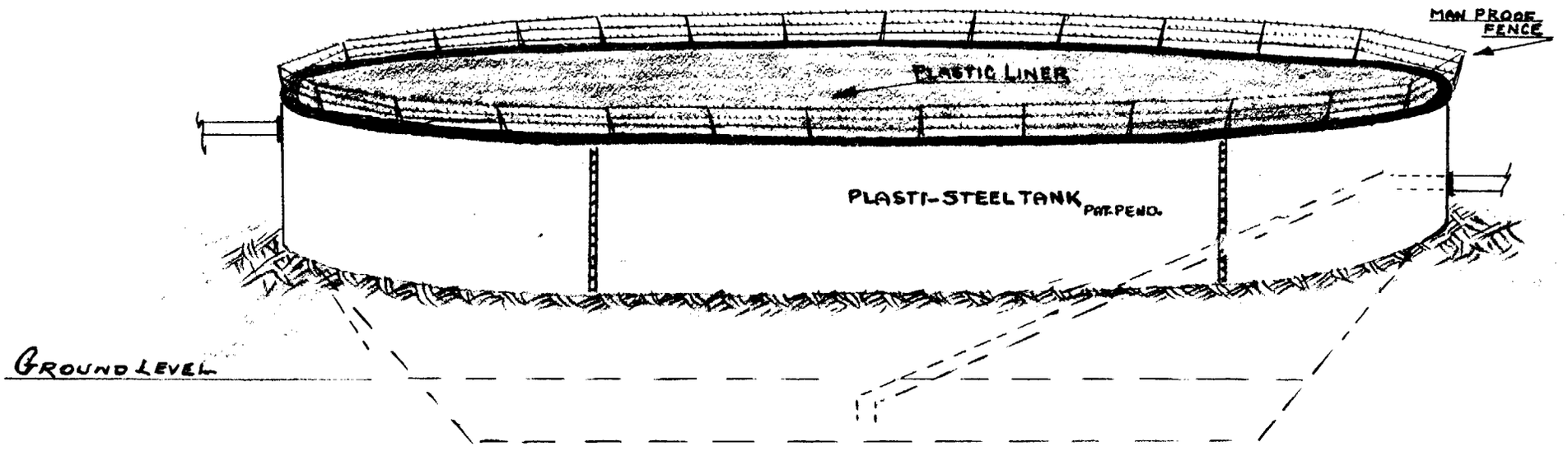
SUGGESTED DESIGN
SEDIMENTATION TANK

SIZES TO –
120' x 4' – 8,000 BBL.
120' x 8' – 16,000 BBL.

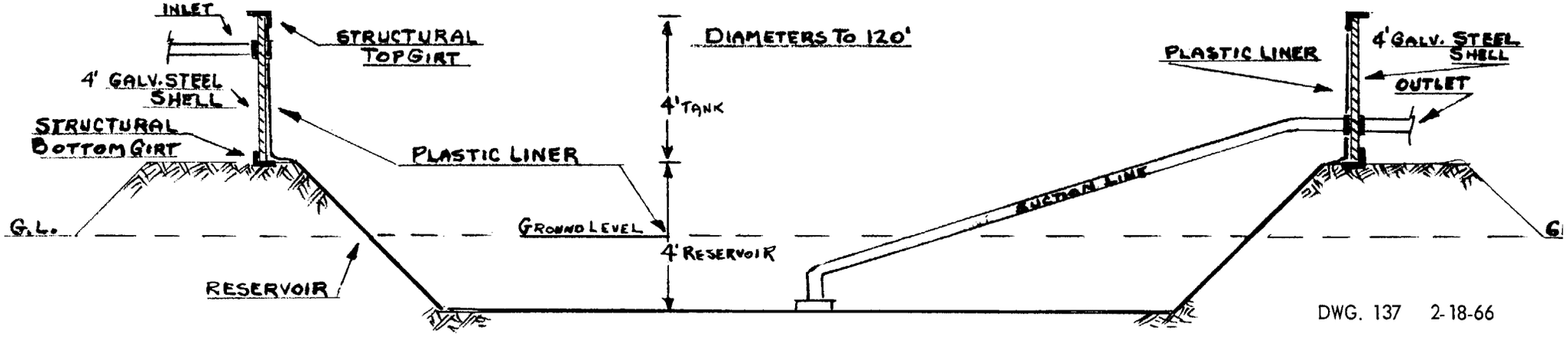
PLASTIC PRODUCTS, INC.

1005 WICHITA PLAZA - AREA 316 - AM 2-6861 - WICHITA, KANS. - 67202

DWG. 136 2-1-66



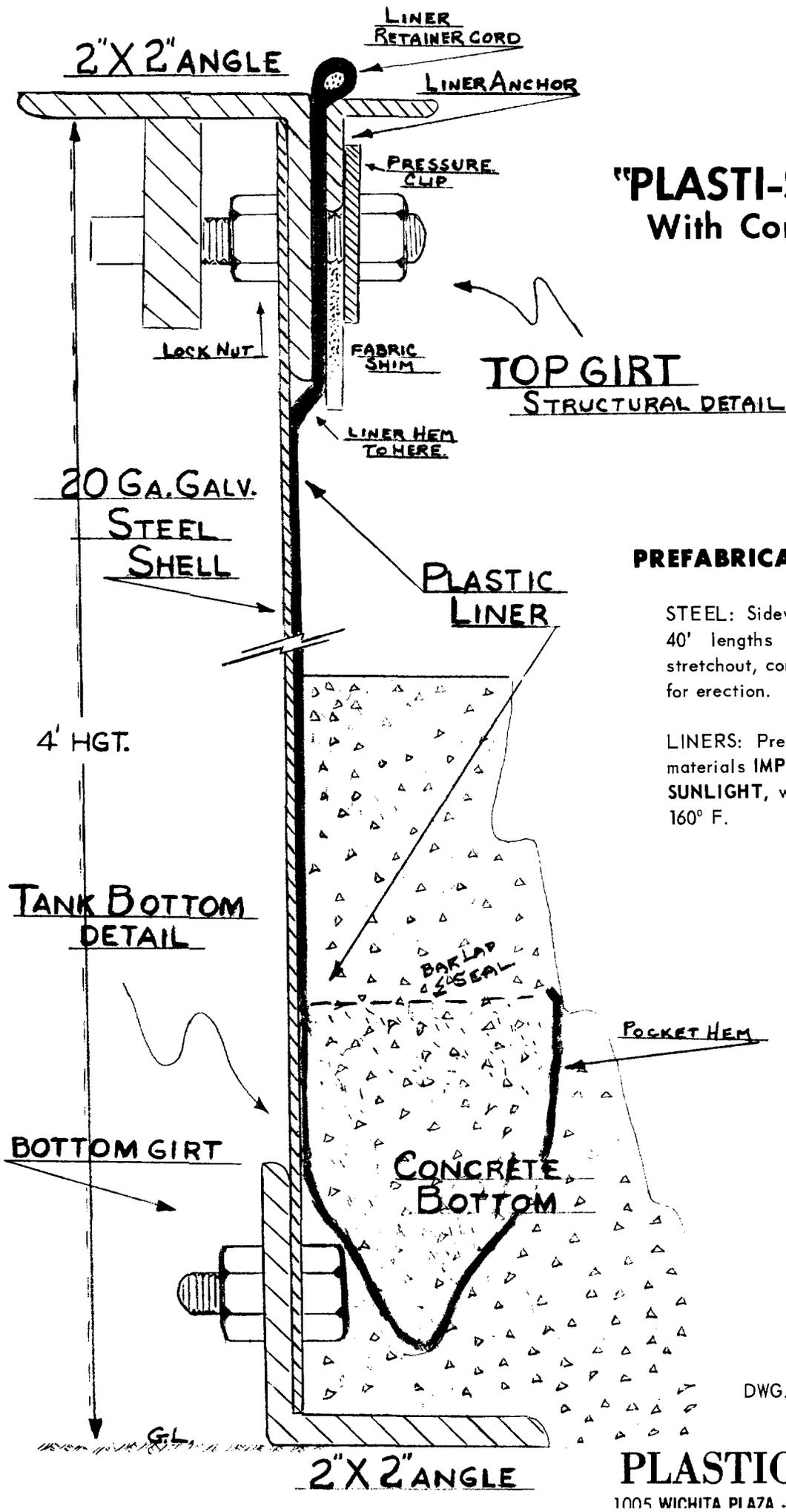
COMBINATION UNIT
PLASTI-STEEL TANK-RESERVOIR



DWG. 137 2-18-66

PLASTIC PRODUCTS, INC. DESIGNERS DEVELOPERS FABRICATORS

1101 WICHITA PLAZA – AREA 316 – AM 2-6861 – WICHITA, KANS. – 67202



"PLASTI-STEEL TANK"

With Concrete Bottom

PAT. PEND.

PREFABRICATED-SECTIONAL TANK

STEEL: Sidewalls furnished in coils 25' to 40' lengths stretchout, girts 20' lengths stretchout, complete with necessary hardware for erection.

LINERS: Prefabricated, of premium quality materials **IMPERVIOUS TO OIL, BRINE AND SUNLIGHT,** with a temperature range -35° to 160° F.

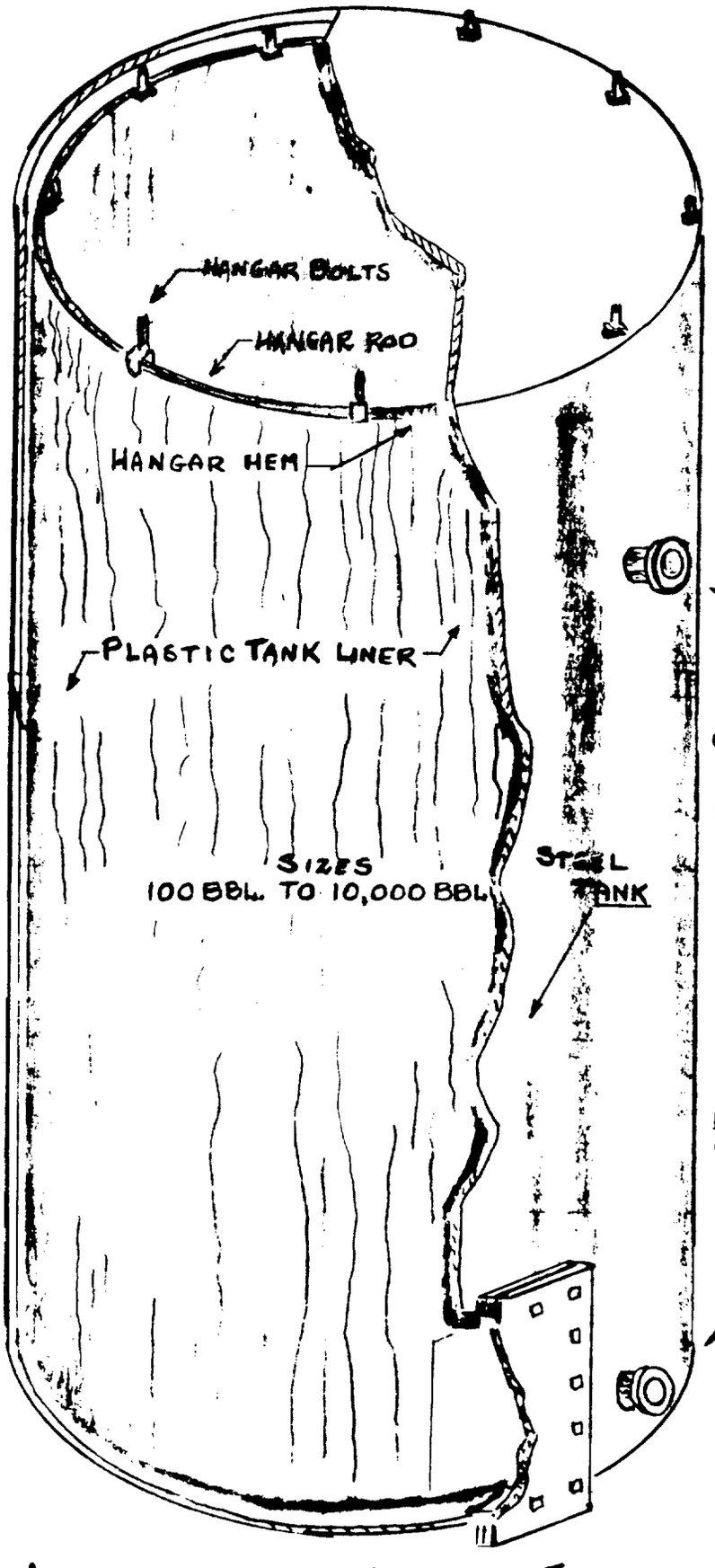
SIZES

10' TO 120' DIA

DWG. 2C7

2-7-67

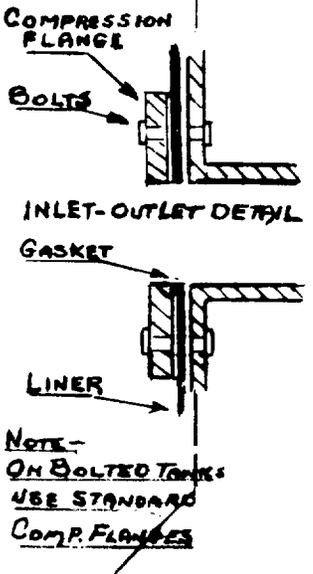
PLASTIC PRODUCTS, INC.
1005 WICHITA PLAZA - AREA 316 - AM 2-6861 - WICHITA, KANS. - 67202



PLASTIC TANK LINER

..."tank within a tank"

FOR STORAGE OF-
CRUDE OILS
SALTWATER
FRESH WATER
WASTES
CHEMICALS



NOTE-
ON BOLTED TANKS
USE STANDARD
COMP. FLANGES

LINERS FURNISHED COMPLETE WITH HANGAR HARDWARE AND INSTALLATION PROCEDURE

DWG. 106 1-10-65
REVISED

ISOMETRIC OF LINER IN TANK

PLASTIC PRODUCTS, INC.

THE KANSAS STATE DEPARTMENT OF HEALTH

ROBERT H. RIEDEL, M. D.
State Health Officer

December 29, 1965

M. C. Green, President
Plastic Products, Inc.
1101 Wichita Plaza
Wichita, Kansas 67202

Dear Mr. Green:

In reply to your letter of December 21, 1965, the State Department of Health through its Oil Field Section processes applications and issues permits for surface brine ponds. Where such ponds are not approved because they seep and are causing or are likely to cause pollution, sealed ponds or tanks may be used for the storage of oil-field brine.

From the standpoint of pollution prevention, "Plasti-Steel" tanks installed at or above ground surface may be used and are acceptable in Kansas for the storage of oil-field brine.

Sincerely,

OIL FIELD SECTION

Bruce F. Latta
Director & Chief Geologist

BFL: fw

Arkansas POLLUTION CONTROL COMMISSION
DEDICATED TO CLEAN AIR AND WATER
1100 HARRINGTON / LITTLE ROCK, ARKANSAS 72201

November 30, 1965

M. L. WOOD Director
COMMISSIONERS
R. N. DEED, Chairman
J. D. ANDERSON
R. A. DUMAS
BILLY FREE
J. T. HERRON, M.D.
T. H. HOLDER
L. D. JOHNSON
C. E. WRIGHT

Mr. M. C. Green, President
Plastic Products, Inc.
1101 Wichita Plaza
Wichita, Kansas 67202

Dear Mr. Green:

Based on the information submitted with your letter of October 25 it appears that your product would be acceptable for utilization in oil field brine control systems.

Very truly yours,

M. L. Wood, Director

MLW:co