SPECIFICATION NO. EP-243-N
INSULATION OF E-1930 STEAM GENERATOR SYSTEM
EL PASO REFINERY

1.0 SCOPE

This specification covers the requirements for furnishing all labor, material and equipment (except as noted herein) for installing insulation on a kettle type steam generator and associated piping being erected at the Standard Oil Company of Texas Refinery at El Paso, Texas. The following drawings are part of this specification:

Standard Insulation for Hot Piping	GA-N-99783
Standard Insulation for Hot Equipment	GA-N-99785
Standard Insulation Item Nos.	GB-N-99993
Outline Drawing for E-1930	EFP-8243-Rev. 2
Piping Spool Drawings	PC-19-20790, sheets 93-99

2.0 INSULATION

The insulation work for this project is divided into two (2) parts which are described below.

2.01 Insulation of Steam Generator (Part I)

a. Insulation and aluminum weathercoat to be installed on the kettle portion only of steam generator E-1930 shown on Drawing No. EFP-8243-Rev. 2. Insulation to be 2" thick, block type "Hydrous Calcium Silicate" material applied per GA-N-99785. Insulation thickness specified does not include weathercoating. See para. 3.0 for details of aluminum weathercoating.

b. Do not cover nameplate, clips, support feet, and weephole nipples.

c. Do not insulate exchanger flanges or the top of the steam dome. (Designated S-2 on Drawing EFP-8243-Rev. 2).

2.02 Insulation of Piping (Part II)

a. Insulation shall be sectional type "Hydrous Calcium Silicate" installed in accordance with Drawing GA-N-99783. In general all piping that is:

6" and smaller requires 1" thick insulation.
8" and larger requires 1½" thick insulation.

The specified thickness does not include weathercoating which is required overall piping insulation.

b. Pipe spool drawings are attached for each run of pipe to be insulated. These drawings indicate the extent and type of insulation required.

c. One run of 1-1/2" pipe (shown on Drawing PC-19-20790, Sheet #98) is steam traced. This line shall be insulated with oversized rigid pipe covering, calcium silicate type. Materials and insulating techniques used shall be as shown on Drawing GA-N-99783.

On all steam traced lines, a bare copper wire (14 gauge) shall be installed under the tie wire of the weathercoat for the full length of the steam tracer to mark its route.

d. All aluminum weathercoating shall be secured with stainless steel straps. Refer to "Schedule D - Aluminum Jacket" on Drawing No. GA-N-99783-2 attached.

3.0 ALUMINUM WEATHERCOATING

When aluminum weather coating is specified, the following procedures shall be used.

3.01 Materials

Materials shall be corrugated aluminum sheet, 0.016" minimum thickness. Temper shall be 3/4 hard with copper content not exceeding 0.40%.

All attaching fixtures shall be austenitic stainless steel except sheet metal screws may be aluminum.

All aluminum sheets shall have a vapor barrier of the epoxy resin type .001" thick or equal approved by Company. "Paper-type" vapor barriers are not acceptable.

3.02 Installation on Exchanger

All aluminum weathercoating on the steam generator shall be installed in accordance with Note C7 on Drawing No. GA-N-99785-4 attached. Use of studs and stud welding gun is unacceptable.

3.03 Installation on Piping

See para. 2.02 (d) of this specification.

4.0 INSTALLATION

4.01 All piping, steam tracing, and the steam generator will be installed prior to application of insulation.

4.02 It is anticipated that all piping and equipment will be installed by the week of 21 December 1970. Insulation work shall begin on 28 December 1970. Scheduled dates are subject to change due to insulation availability and changes in construction schedule.

5.0 MATERIALS AND FACILITIES FURNISHED BY COMPANY

5.01 Company will furnish at job site fresh water, air and electricity as required.

5.02 Company will provide contractor with necessary working space at job site and a storage area within a reasonable distance from job site for materials, supplies, tools and equipment, but will not furnish means for protecting these from the elements.

5.03 Company will furnish staging for insulation of piping. Contractor may use such staging at his risk. Should suitable staging not be available to contractor when required, written agreement shall be reached in the field on the extra due contractor for furnishing his own staging. Work shall not proceed until this extra work has been authorized.

6.0 MATERIALS AND WORK FURNISHED BY CONTRACTOR

6.01 Contractor shall provide all labor, tools, special equipment and materia for a complete insulation job in every detail except those listed in Section 5.0 as being furnished by Company.

6.02 All flushing, anchorages, clips, supports, angles or reinforcements required for complete application of insulation shall be furnished and installed by contractor, except as noted in 5.0 above.

6.03 Contractor shall remove all insulation, debris, tools, equipment and excess material immediately on completion of the job.

7.0 EXECUTION OF THE JOB

7.01 Work shall be performed in accordance with Company's time schedule, as stated generally in this specification.

7.02 No substitution of materials specified herein will be permitted unless specifically approved in writing by Company. Substitutions proposed by Contractor must, in his view, provide overall quality for the job equal to or better than that provided by specified materials.

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ITEM NO.	DESCRIPTION
M1	1" THICK SECTIONAL TYPE MODERATE TEMPERATURE PIPE INSULATION
M2	1½" THICK SECTIONAL TYPE MODERATE TEMPERATURE PIPE INSULATION
M3	2" THICK SECTIONAL TYPE MODERATE TEMPERATURE PIPE INSULATION
M6	1" THICK SECTIONAL TYPE INTERMEDIATE TEMPERATURE PIPE INSULATION
M7	1½" THICK SECTIONAL TYPE INTERMEDIATE TEMPERATURE PIPE INSULATION
M8	2" THICK SECTIONAL TYPE INTERMEDIATE TEMPERATURE PIPE INSULATION
M9	2½" THICK SECTIONAL TYPE INTERMEDIATE TEMPERATURE PIPE INSULATION
M10	3" THICK SECTIONAL TYPE INTERMEDIATE TEMPERATURE PIPE INSULATION
M14	1" THICK SECTIONAL TYPE HIGH TEMPERATURE PIPE INSULATION
M15	1½" THICK SECTIONAL TYPE HIGH TEMPERATURE PIPE INSULATION
M16	2" THICK SECTIONAL TYPE HIGH TEMPERATURE PIPE INSULATION
M17	2½" THICK SECTIONAL TYPE HIGH TEMPERATURE PIPE INSULATION
M18	3" THICK SECTIONAL TYPE HIGH TEMPERATURE PIPE INSULATION
M21	1" THICK SECTIONAL TYPE VERY HIGH TEMPERATURE PIPE INSULATION
M22	1½" THICK SECTIONAL TYPE VERY HIGH TEMPERATURE PIPE INSULATION
M23	2" THICK SECTIONAL TYPE VERY HIGH TEMPERATURE PIPE INSULATION
M24	2½" THICK SECTIONAL TYPE VERY HIGH TEMPERATURE PIPE INSULATION
M25	3" THICK SECTIONAL TYPE VERY HIGH TEMPERATURE PIPE INSULATION
M26	3½" THICK SECTIONAL TYPE VERY HIGH TEMPERATURE PIPE INSULATION
M34	1" THICK BLOCK TYPE MODERATE OR INTERMEDIATE TEMP INSULATION
M35	1½" THICK BLOCK TYPE MODERATE OR INTERMEDIATE TEMP INSULATION
M38	2" THICK BLOCK TYPE INTERMEDIATE TEMPERATURE INSULATION
M39	2½" THICK BLOCK TYPE INTERMEDIATE TEMPERATURE INSULATION
M42	1½" THICK BLOCK TYPE HIGH TEMPERATURE INSULATION
M43	2" THICK BLOCK TYPE HIGH TEMPERATURE INSULATION
M44	2½" THICK BLOCK TYPE HIGH TEMPERATURE INSULATION
M45	3" THICK BLOCK TYPE HIGH TEMPERATURE INSULATION
M46	3½" THICK BLOCK TYPE HIGH TEMPERATURE INSULATION
M50	1½" THICK BLOCK TYPE VERY HIGH TEMPERATURE INSULATION
M51	2" THICK BLOCK TYPE VERY HIGH TEMPERATURE INSULATION
M52	2½" THICK BLOCK TYPE VERY HIGH TEMPERATURE INSULATION
M53	3" THICK BLOCK TYPE VERY HIGH TEMPERATURE INSULATION
M54	3½" THICK BLOCK TYPE VERY HIGH TEMPERATURE INSULATION
M60	1" THICK CELLULAR GLASS PIPE INSULATION
M61	1½" THICK CELLULAR GLASS PIPE INSULATION
M62	2" THICK CELLULAR GLASS PIPE INSULATION
M63	2½" THICK CELLULAR GLASS PIPE INSULATION
M64	3" THICK CELLULAR GLASS PIPE INSULATION, DOUBLE LAYER
M65	3½" THICK CELLULAR GLASS PIPE INSULATION, DOUBLE LAYER
M66	4" THICK CELLULAR GLASS PIPE INSULATION, DOUBLE LAYER
M67	4½" THICK CELLULAR GLASS PIPE INSULATION, DOUBLE LAYER
M68	5" THICK CELLULAR GLASS PIPE INSULATION, DOUBLE LAYER
M69	5½" THICK CELLULAR GLASS PIPE INSULATION, DOUBLE LAYER
M70	6" THICK CELLULAR GLASS PIPE INSULATION, TRIPLE LAYER
M71	6½" THICK CELLULAR GLASS PIPE INSULATION, TRIPLE LAYER
M72	7" THICK CELLULAR GLASS PIPE INSULATION, TRIPLE LAYER
M73	7½" THICK CELLULAR GLASS PIPE INSULATION, TRIPLE LAYER

ITEM NO.	DESCRIPTION
M86	PREFABRICATED CELLULAR GLASS VALVE COVER, THICKNESS TO MATCH PIPE INSULATION
M87	PREFABRICATED CELLULAR GLASS ELBOW COVER, THICKNESS TO MATCH PIPE INSULATION
M88	PREFABRICATED CELLULAR GLASS TEE COVER, THICKNESS TO MATCH PIPE INSULATION
M89	PREFABRICATED CELLULAR GLASS FLANGE COVER, THICKNESS TO MATCH PIPE INSULATION
M98	MINERAL WOOL FELT, 2" THICK - J-M "ZEROTEX"
M100	MODERATE TEMPERATURE INSULATING CEMENT FOR USE WITH SELECTED INSULATION BLOCK
M101	HIGH TEMPERATURE INSULATING CEMENT FOR USE WITH SELECTED INSULATION BLOCK
M102	HIGH TEMPERATURE WOOL INSULATING CEMENT - J-M NO.450
M103	HIGH TEMPERATURE FINISHING CEMENT - J-M NO.301 OR 352
M104	HIGH TEMPERATURE HYDRAULIC SETTING CEMENT - J-M NO.678
M107	HIGH TEMPERATURE SEMI-VISCOUS WEATHERCOAT - E.P. "STALASTIC"
M108	ABRASION RESISTANT WEATHERCOAT - B.F. "SEALFAS" 30-36
M109	"LAYKOLD" WEATHERCOAT - CHEVRON ASPHALT COMPANY
M111	12 OZ. IMPREGNATED COTTON BRATTICE CLOTH - B.F. LAGGING CLOTH
M112	8 OZ. WHITE COTTON CANVAS
M113	1½ OZ. ASBESTOS CLOTH - J-M NO.444
M114	GLASS FABRIC, ASPHALT IMPREGNATED, OPEN WEAVE
M117	45 LB. ASPHALT SATURATED ASBESTOS BASE FELT - J-M NO.45R
M121	28 GAGE FLAT GALVANIZED STEEL SHEET
M122	22 GAGE FLAT GALVANIZED STEEL SHEET
M123	16 GAGE FLAT GALVANIZED STEEL SHEET
M124	28 GAGE SHEET ALUMINUM-ALLOY, WITH MOISTURE BARRIER BACKING
M125	20 GAGE SHEET ALUMINUM-ALLOY, WITH MOISTURE BARRIER BACKING
M126	16 GAGE SHEET ALUMINUM-ALLOY, WITH MOISTURE BARRIER BACKING
M127	0.016" THICK CORRUGATED ALUMINUM PIPE JACKET WITH MOISTURE BARRIER BACKING - CHILDERS MFG.
M130	1" MESH x 20 GAGE GALVANIZED POULTRY NETTING
M131	16 GAGE GALVANIZED IRON WIRE
M132	14 GAGE GALVANIZED IRON WIRE
M134	3/4" x 0.020" TYPE 302 STAINLESS STEEL STRAPPING - ACME
M135	TYPE 302 STAINLESS STEEL BUCKLE FOR 3/4" x 0.020" STRAPPING - ACME
M136	¼" x 0.015" TYPE 302 STAINLESS STEEL STRAPPING - ACME
M137	TYPE 302 STAINLESS STEEL BUCKLE FOR ¼" x 0.015" STRAPPING - ACME
M138	TYPE 304 STAINLESS STEEL DUAL SPRING EXPANSION UNIT - WESTERN ASBESTOS CO.
M140	STAPLE, TINNED AND COPPERIZED

ITEM NO.	DESCRIPTION
M151	JOINT SEALER AND BEDDING COMPOUND, TEMPERATURE RANGE -50°F TO 300°F - BENJAMIN FOSTER "FOAMSEAL" 30-46
M152	VINYL ASPHALT VAPORPROOFING MASTIC, TEMPERATURE RANGE -50°F TO 150°F - VIMASCO VICARLON 49
M153	CUTBACK ASPHALT VAPORSEAL, TEMPERATURE RANGE -30°F TO 150°F - LION MOKORODE SEAL-KOTE
M154	VINYL BORE COATING, TEMPERATURE RANGE -300°F TO 300°F - VIMASCO CARLON 500
M155	HOT ERECTION ASPHALT, TEMPERATURE RANGE -50°F TO 150°F - CHEVRON PETROLASTIC NO.185
M160	ADHESIVE VAPORPROOFING TAPE - J.M. ZEROTAPE
M165	1" THICK CELLULAR INSULATING BLOCK
M166	1½" THICK CELLULAR INSULATING BLOCK
M167	2" THICK CELLULAR INSULATING BLOCK
M168	2½" THICK CELLULAR INSULATING BLOCK
M169	3" THICK CELLULAR INSULATING BLOCK
M170	3½" THICK CELLULAR INSULATING BLOCK, DOUBLE LAYER
M171	4" THICK CELLULAR INSULATING BLOCK, DOUBLE LAYER
M172	4½" THICK CELLULAR INSULATING BLOCK, DOUBLE LAYER
M173	5" THICK CELLULAR INSULATING BLOCK, DOUBLE LAYER
M174	5½" THICK CELLULAR INSULATING BLOCK, DOUBLE LAYER
M175	6" THICK CELLULAR INSULATING BLOCK, DOUBLE LAYER
M176	6½" THICK CELLULAR INSULATING BLOCK, TRIPLE LAYER
M177	7" THICK CELLULAR INSULATING BLOCK, TRIPLE LAYER
M178	7½" THICK CELLULAR INSULATING BLOCK, TRIPLE LAYER
M179	8" THICK CELLULAR INSULATING BLOCK, TRIPLE LAYER
N201	3/8" DIA STEEL ROD
N205	ANGLE 3 x 2 x 1/4 - 2" LONG, STEEL CLIPS
N209	3/4" MESH GALVANIZED EXPANDED FLAT METAL LATH

NOTES

I.

A. INSULATION-SECTIONAL FOR HOT PIPING (M1-M26)

1. MODERATE TEMPERATURES, 100°F - 350°F - SINGLE LAYER ONLY.
   GLASS FIBER, PHENOLIC RESIN BONDED, "FIBERGLAS," 5-6 LB. DENSITY, MAY BE SUBSTITUTED FOR INTERMEDIATE TEMPERATURE PIPE INSULATION ONLY ON SPECIFIC APPROVAL OF THE COMPANY.

2. INTERMEDIATE TEMPERATURES, 100°F - 650°F - SINGLE LAYER ONLY.
   a. HYDROUS CALCIUM SILICATE - "THERMOBESTOS."
   b. COMPRESSED ANOSITE ASBESTOS - "UNIBESTOS" 750.
   c. 85% MAGNESIA (550°F MAX.) ONLY ON SPECIFIC APPROVAL OF THE COMPANY.

3. HIGH TEMPERATURES, 650°F - 1,100°F - DOUBLE LAYER REQUIRED.
   a. HYDROUS CALCIUM SILICATE - "THERMOBESTOS."
   b. COMPRESSED ANOSITE ASBESTOS - "UNIBESTOS" 1200.

4. VERY HIGH TEMPERATURES, 1,000°F AND ABOVE - DOUBLE LAYER REQUIRED.
   CALCINED DIATOMACEOUS SILICA - "SUPEREX" FOR INNER LAYER. INTERMEDIATE TEMPERATURE OR HIGH TEMPERATURE MATERIAL MAY BE USED FOR OUTER LAYER.

B. INSULATING BLOCK FOR HOT EQUIPMENT (M34-M54)

1. MODERATE TEMPERATURES, 100°F - 350°F.
   GLASS FIBER BLOCK INSULATION - "FIBERGLAS," 5-6 LB. DENSITY, MAY BE SUBSTITUTED FOR INTERMEDIATE TEMPERATURE INSULATING BLOCK ONLY ON SPECIFIC APPROVAL OF THE COMPANY.

2. INTERMEDIATE TEMPERATURES, 100°F - 650°F.
   a. HYDROUS CALCIUM SILICATE - "THERMOBESTOS."
   b. COMPRESSED ANOSITE ASBESTOS BLOCK - "UNIBESTOS" 750.
   c. 85% MAGNESIA BLOCK. (550°F MAX) ONLY ON SPECIFIC APPROVAL OF THE COMPANY.

3. HIGH TEMPERATURES, 650°F - 1,100°F.
   a. HYDROUS CALCIUM SILICATE - "THERMOBESTOS."
   b. COMPRESSED ANOSITE ASBESTOS BLOCK - "UNIBESTOS" 1200.

4. VERY HIGH TEMPERATURES, 1,000°F AND ABOVE.
   CALCINED DIATOMACEOUS SILICA - "SUPEREX" FOR INNER LAYER. INTERMEDIATE TEMPERATURE OR HIGH TEMPERATURE MATERIAL MAY BE USED FOR OUTER LAYER.

C. INSULATION-SECTIONAL FOR COLD PIPING (M60-M73)

1. CELLULAR GLASS, PIPE INSULATION, SECTIONAL AND SEGMENTAL WITHOUT JACKET - PITTSBURG CORNING "FOAMGLAS."

D. INSULATING BLOCK FOR COLD EQUIPMENT (M165-M179)

1. CELLULAR GLASS FLAT BLOCKS, CURVED SEGMENTS, BEVELED LAGS OR HEAD SEGMENTS - PITTSBURG CORNING "FOAMGLAS."

II. MANUFACTURERS "BRAND NAMES" OR "TRADE NAMES" SHOWN ON THIS DRAWING ARE PRODUCTS ACCEPTABLE TO COMPANY. COMPARABLE PRODUCTS BY OTHER MANUFACTURERS MAY BE PROPOSED, BUT THE USE OF ANY SUBSTITUTE MUST HAVE PRIOR COMPANY APPROVAL IN WRITING.

REFERENCE DRAWINGS

STANDARD INSULATION FOR HOT PIPING	GA-N99783
STANDARD INSULATION FOR COLD PIPING	GA-N99784
STANDARD INSULATION FOR HOT VESSELS	GA-N99785
STANDARD INSULATION FOR COLD VESSELS	GA-N99786
STANDARD STEAM TRACING DETAILS	GA-L99888

REVISIONS

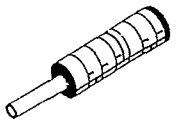
STANDARD OIL COMPANY OF CALIFORNIA
ENGINEERING DEPARTMENT SAN FRANCISCO

SCALE NONE DATE 6-1-66
DR. CH. PHS DR. APP. CATE ENGR.
OPR'G DEPT. APPROVED
ENG. DEPT. RPS

STANDARD INSULATION ITEM NUMBERS

W.O.
S.O.

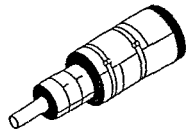
GB-N99993-0



SERVICE
FOR 1½" PIPE AND SMALLER AT ALL TEMPERATURES OR 3" PIPE AND LARGER TO 650°F MAXIMUM.

INSTALLATION
1) PIPE SHALL BE FREE OF DIRT, SCALE AND FOREIGN MATTER.
2) INSTALL INSULATION AS SHOWN. STAGGER CIRCUMFERENTIAL JOINTS.
3) SECURE INSULATION 12" O.D. AND SMALLER WITH 16 GA. GALVANIZED WIRE (A193) OR 3/4" × 0.020" STAINLESS STEEL STRAPS (A134) OR 5" CENTERS. SECURE INSULATION OVER 12" O.D. WITH 14 GA. GALVANIZED WIRE (A127) OR 3/4" × 0.020" STAINLESS STEEL STRAPS (A134) ON 5" CENTERS. BUNDLE TIE WIRE ENDS FLUSH INTO INSULATION.
4) FILL ALL VOIDS WITH INSULATING CEMENT (A102).
5) INSTALL WEATHERCOAT PER SCHEDULE A OR D, AS SPECIFIED BY COMPANY.

D E T A I L - A — INTERMEDIATE TEMPERATURE INSULATION



SERVICE
FOR 2" AND LARGER PIPE ABOVE 650°F MINIMUM.

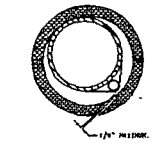
INSTALLATION
1) PIPE SHALL BE FREE OF DIRT, SCALE AND FOREIGN MATTER.
2) INSTALL INSULATION AS SHOWN. STAGGER CIRCUMFERENTIAL JOINTS.
3) SECURE INSULATION 12" O.D. AND SMALLER WITH 16 GA. GALVANIZED WIRE (A193) OR 3/4" × 0.020" STAINLESS STEEL STRAPS (A134) OR 5" CENTERS. SECURE INSULATION OVER 12" O.D. WITH 14 GA. GALVANIZED WIRE (A127) OR 3/4" × 0.020" STAINLESS STEEL STRAPS (A134) ON 5" CENTERS. BUNDLE TIE WIRE ENDS FLUSH INTO INSULATION.
4) FILL ALL VOIDS WITH INSULATING CEMENT (A102).
5) INSTALL OUTER LAYER OF INSULATION PER NOTES 2 AND 3 ABOVE. USE ONLY STAINLESS STEEL STRAPS FOR FASTENING INSULATION. NO BRICK JOINT SHOULD LAY OVER TUNNEL JOINTS.
6) FILL ALL VOIDS WITH INSULATING CEMENT (A102).
7) INSTALL WEATHER COAT PER SCHEDULE A OR D, AS SPECIFIED BY COMPANY.

D E T A I L - B — HIGH TEMPERATURE INSULATION

SERVICE
FOR 8" PIPE AND LARGER TO 350°F MAXIMUM. THIS DETAIL MAY BE SUBSTITUTED FOR "DETAIL E" ONLY ON SPECIFIC APPROVAL OF THE COMPANY.

INSTALLATION
1) PIPE SHALL BE FREE OF DIRT, SCALE AND FOREIGN MATTER.
2) INSTALL INSULATION AS SHOWN, STAGGER CIRCUMFERENTIAL JOINTS.
3) SECURE INSULATION AT SAG SIDES WITH STAPLES (A190) ON 5" CENTERS.
4) *INSTALL WEATHERCOAT PER SCHEDULE B, EXCEPT AS SPECIFIED IN LINE IDENTIFICATION SHEET.*

D E T A I L - C — MODERATE TEMPERATURE INSULATION



TRACER SHEET	
TRACER SIZE	SPH
3/8" (NOM.) COPPER	1 1/4 INCHES
3/8" (NOM.) COPPER	2 1/4 INCHES
1/2" STEEL PIPE	3 3/4 INCHES
1/2" STEEL PIPE	4 1/2 INCHES
1" STEEL PIPE	5 INCHES

INSTALL TRACER SHIELD TO PIPE CASES SHIELDS ARE 20 GA. SHEET STOCK (A134) BENDED 9/32" TO GA. IRON WIRE (A132) ON 12" CENTERS.
TRACER & TRACER SHIELD TO BE PULLED INTO CONTACT PIPE WHERE POSSIBLE.
TRACER SHIELD NOT REQUIRED WITHIN 2 FEET OF A FLANGE OR FITTING.
FILL ALL VOIDS, CRACKS AND OPEN JOINTS ON SURFACE OF INSULATION WITH INSULATING CEMENT (A102).
INSTALL WEATHERCOAT PER SCHEDULE A OR D AS SPECIFIED BY COMPANY.

OVERSIZE PIPE INSULATION THICKNESS AS SPECIFIED

SERVICE NOTES AND INSTALLATION PROCEDURE PER *DETAIL A OR B.*

D E T A I L - D — STEAM TRACED PIPE

INSTALLATION NOTES

C 1 WHEN LINE IDENTIFICATION SHEET SPECIFIES INSULATED VALVES, FLANGES AND FITTINGS ARE TO BE INSULATED ALSO.

C 2 PIPE LARGER THAN 30" SHALL BE INSULATED AS A VESSEL. SEE DRAWING 64-N99795.

C 3 PIPING IS NOT TO BE INSULATED UNTIL HYDROSTATIC TESTING IS COMPLETED

C 4 NO SAND OR FILLER IS TO BE ADDED TO "LAYKOLD" ASPHALT EMULSION WEATHERCOAT.

C 5 LARGE STEAM TRACED VALVES AND FITTINGS SHALL BE INSULATED SIMILAR TO DETAIL "J." CASTING AND BOLTING UP WITH INSULATING CEMENT IS PERMITTED IF NECESSARY.

C 6 ON VERTICAL LINES MORE THAN 20 FT. LONG PROVIDE INSULATION SUPPORT LUGS ABOVE BOTTOM ELBOW AND AT 10 FT. CENTERS THEREAFTER.

C 7 ON HIGH TEMPERATURE, BONDED LAYER LINES, PROVIDE WEATHERCOAT EXPANSION JOINTS AT TANGENT POINTS OF ELBOWS. EXPANSION JOINT TO CONSIST OF 20 GA. GALVANIZED STEEL JACKET 6" WIDE PLACED BETWEEN PIPE WEATHERCOAT AND WEATHERCOAT OF THE ELBOW.

WEATHERCOATING SCHEDULE

SCHEDULE A - 45 LB. ASBESTOS FELT - *PIPE ONLY*
1. CEMENTITE WRAP 45 LB. ASBESTOS FELT (A117) 2000MM INSULATION, LAP LONGITUDINAL AND CIRCUMFERENTIAL JOINTS 2". LAPS TO BE SECURED TO SIDE WATER. LONGITUDINAL LAPS TO BE ON HORIZONTAL OF HORIZONTAL RUNS.
2. SECURE FELT WITH 19 GA. GALVANIZED IRON WIRE (A132) ON 9" CENTERS FOR INSULATION UP TO 10" O.D. ON SMALL. SECURE WITH 1/2" WIDE STAINLESS STEEL STRAPS (A134) ON 9" CENTERS FOR INSULATION OVER 10" O.D. USING ONE BUCKLE (A112) PER STRAP.
3. CLOSE "FISHMOUTHS" IN WEATHERCOAT WIRE ONE ON TWO STAPLES (A190) CENTERED BETWEEN WIRES ON STRAPS.

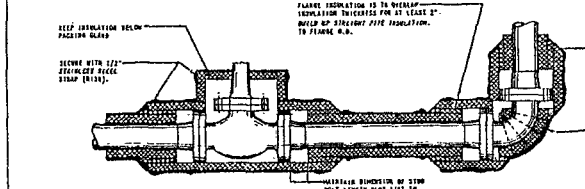
SCHEDULE B - GLASS FABRIC AND "LAYKOLD" - PIPE AND FITTINGS. *PIPE (ALL SIZES) AND SMALL FITTINGS (EQUIVALENT TO 8" O.D. OR LESS)*
1. WARM PIPE SURFACE WITH TACK COAT OF "LAYKOLD" WEATHERCOAT (A109) 1/8" THICK MIT.
2. WHILE STILL WET, WRAP WITH GLASS FABRIC (A119), LAP JOINTS IN FABRIC 2" AND FULL SEMICY INTO LAYKOLD (A109).
3. SMOOTH ON FINISH COAT OF "LAYKOLD" (A109) 1/8" THICK WET.

LARGE FITTINGS (INSULATION OVER 12" O.D. - OR SUBJECT TO MOISTURE).
1. LACE 1" X 20 BARE HEX GALVANIZED POULTRY NETTING (A130) AROUND INSULATION.
2. APPLY A 1/8" THICK WET COAT OF "LAYKOLD" (A109) TO A SMOOTH FINISH.
3. WEATHERCOAT INSULATION OF FITTINGS BEFORE INSULATION ON PIPE.

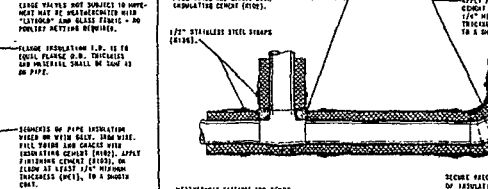
SCHEDULE C - LIGHTER CLOTH OR CANVAS, AND "SEALFAS" - PIPE AND FITTINGS. *INDOOR APPLICATIONS - SALT WATER SPECIFIED BY THE COMPANY.*
1. REVISE ON A HEAVY COAT OF "SEALFAS" ABRASION RESISTANT COATING (A106) OVER INSULATION.
2. WHILE COATING IS WET, EMBED ASBESTOS WOOF 12 OUNCE COTTON DUCK CLOTH (A115) OR 8 OUNCE CANVAS (A112) TIGHTLY OVER THE INSULATION, PULL EVENLY INTO THE "SEALFAS". LAP CIRCUMFERENTIAL JOINTS 2" AND LONGITUDINAL JOINTS 4".
3. FINISH A HEAVY COAT OF "SEALFAS" OVER THE CLOTH.

SCHEDULE D - ALUMINUM JACKET - *PIPE ONLY*
1. CEMENTITE WRAP CORRUGATED ALUMINUM JACKET WITH MOISTURE BARRIER BACKING (A137) AROUND INSULATION. LAP CIRCUMFERENTIAL AND CIRCUMFERENTIAL JOINTS 3". *STAGGER CIRCUMFERENTIAL JOINTS AND LOCATE ON THE UPPER SIDE OF HORIZONTAL RUNS.*
2. ON 12" O.D. INSULATION AND SMALLER SECURE WITH 1/2" STAINLESS STEEL STRAPS (A134) AND STAINLESS STEEL BUCKLES (A112), ONE BUCKLE PER STRAP, SPACED ONE STRIP OF EACH CIRCUMFERENTIAL JOINT AND ON 9" CENTERS BETWEEN JOINTS.

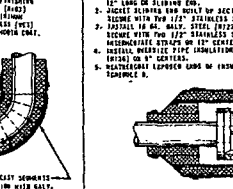
SCHEDULE E - GALVANIZED STEEL JACKET - *PIPE ONLY* - INSULATION SUBJECT TO INCARCERATION, DAMAGE - ONLY WHERE SPECIFIED BY THE COMPANY.
1. INSTALL 45 LB. ASBESTOS FELT WEATHERCOAT PER SCHEDULE A, EXCEPT SECURE WITH 16 GAGE GALVANIZED IRON WIRE (A132) OR 1/2" STAINLESS STEEL STRAPS (A134) FOR 12" O.D. INSULATION AND SMALLER AND 3/4" STAINLESS STEEL STRAPS (A134) FOR 14" O.D. INSULATION AND LARGER.
2. WRAP 22 GAGE GALVANIZED STEEL (A128) OVER THE ASBESTOS FELT PER SCHEDULE D, USING 1/2" STAINLESS STEEL STRAPS (A134) AND STAINLESS STEEL BUCKLES (A112) FOR 12" O.D. INSULATION AND SMALLER AND 3/4" STAINLESS STEEL STRAPS (A134) AND STAINLESS STEEL BUCKLES (A135) FOR 14" O.D. INSULATION AND LARGER.
3. *AS AN ALTERNATE, WHERE SPECIFIED BY THE COMPANY,* 18-8 STAINLESS STEEL PER DETAIL A OR B EXCEPT ON HOT PIPE VALVES WITH COVERS, INSTALL 26 GAGE GALVANIZED IRON JACKET (A139) PER 2.



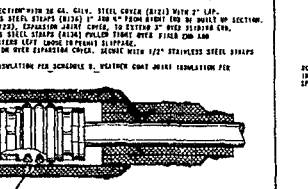
D E T A I L - E — PIPE SUPPORTS - NOT APPLICABLE TO ALLOY PIPE



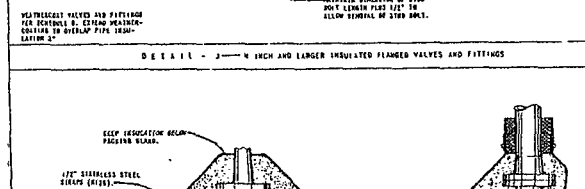
D E T A I L - F — UNINSULATED VALVES AND FITTINGS



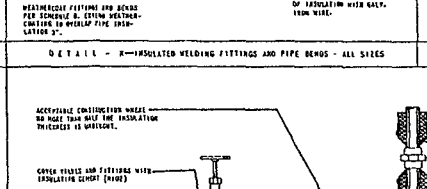
D E T A I L - G — EXPOSED ENDS



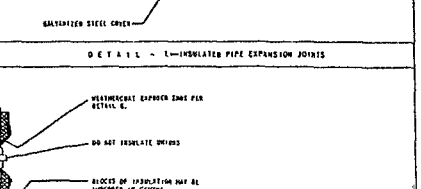
D E T A I L - H — INSULATED FLANGES



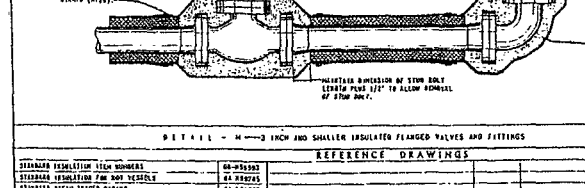
D E T A I L - J — 4 INCH AND LARGER INSULATED FLANGED VALVES AND FITTINGS



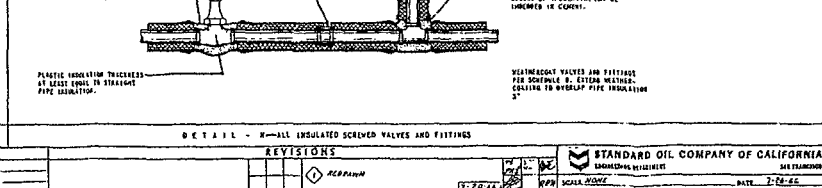
D E T A I L - K — INSULATED WELDING FITTINGS AND PIPE BENDS - ALL SIZES



D E T A I L - L — INSULATED PIPE EXPANSION JOINTS



D E T A I L - M — 3 INCH AND SMALLER INSULATED FLANGED VALVES AND FITTINGS



D E T A I L - N — ALL INSULATED SCREWED VALVES AND FITTINGS

REFERENCE DRAWINGS

STANDARD INSULATION ITEM NUMBERS	68-N99983
STANDARD INSULATION FOR HOT VESSELS	64-N99745
STANDARD STEAM TRACED PIPING	63-L99888

REVISIONS

1	REDRAWN	7-20-66	RPH
2	REVISED DETAIL A - SERVICE - 1½" PIPE WAS 2" AND DETAIL B SERVICE 2" PIPE WAS 3"	6-27-67	RPH

STANDARD OIL COMPANY OF CALIFORNIA
ENGINEERING DEPARTMENT
SAN FRANCISCO

SCALE NONE — DATE 2-28-66
DR. A.F. — TR. E.W.W. — CK. HAT C.C. — ENGR. F.B.
OFFICE DUTY — APPROVED
ENG. DUTY D.A.C. — RPH 4/68

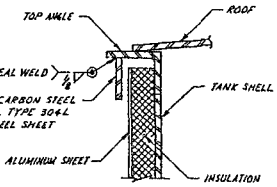
STANDARD INSULATION FOR HOT PIPING

WO.
JO.
GA-N99783-2

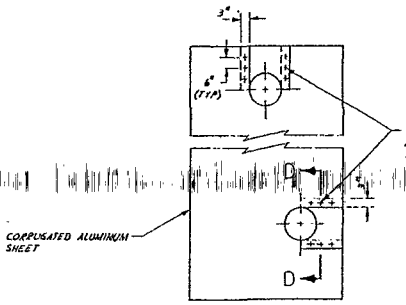
STANDARD DRAWING

CHEV BB
012442

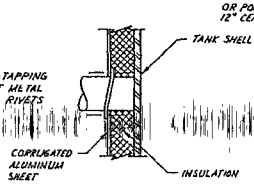
NOTE:
ALL FIELD WELDS TO BE MADE BY TANK ERECTOR.



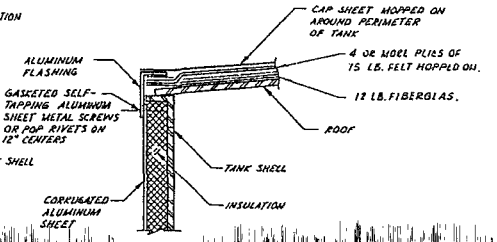
DETAIL C



DETAIL A

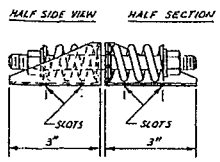


D-D



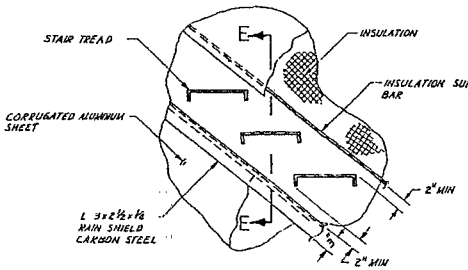
DETAIL G

BUILT UP WEATHERCOATING ON ROOF WITHOUT GUTTER

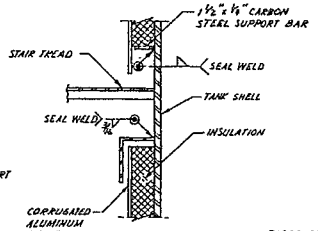


DETAIL K

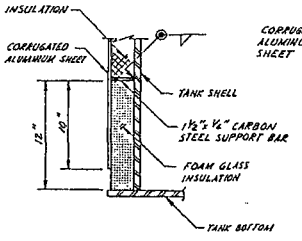
DUAL SPRING EXPANSION UNIT TYPE 304 STAINLESS STEEL (N138) WESTERN ASBESTOS COMPANY



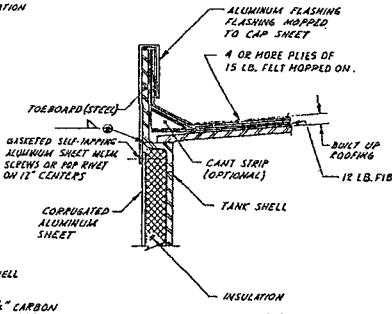
DETAIL B



E-E

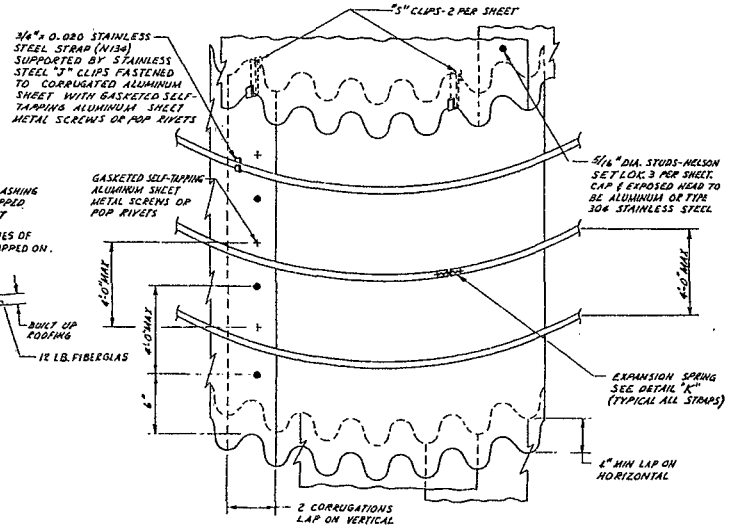


DETAIL F



DETAIL H

BUILT UP WEATHERCOATING ON ROOF WITH GUTTER



INSTALLATION OF WEATHERPROOFING

REFERENCE DRAWINGS	
STANDARD INSULATION ITEM NUMBERS	GB-N99993-0

REVISIONS			
1	ADDED: 12 LB. FIBERGLAS TO DET. G & H CH'D: TITLE	7-3-67	

STANDARD OIL COMPANY OF CALIFORNIA
ENGINEERING DEPARTMENT SAN FRANCISCO

SCALE NONE DATE 6-23-66
DR ADAMSON CH. ETG MK'D. APP. ENGR.
OPR'G DEPT. APPROVED
ENG. DEPT. "H"

(SUPERSEDES GB-124904)

STANDARD INSULATION AND ALUMINUM WEATHERPROOFING DETAILS FOR HOT TANKS.

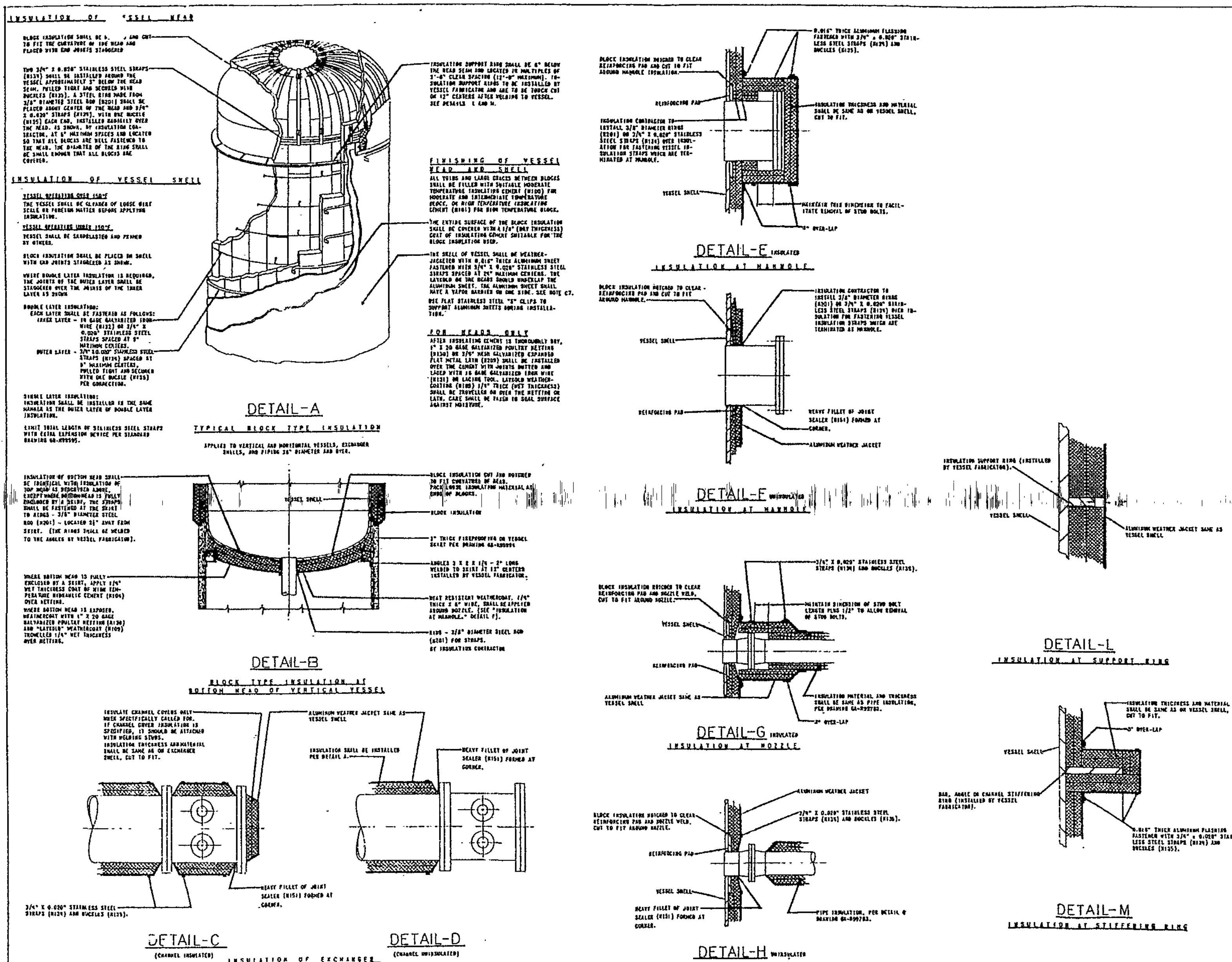
W.O.
S.O.

GB-N99995-1

STANDARD DRAWING

PRINTED IN U.S.A.

CHEV BB
012443



CONSTRUCTION NOTES

C1 MANHOLE AND SUPPORTS WILL NOT BE INSULATED UNLESS SPECIFICALLY NOTED.

C2 NOZZLES WILL NOT BE INSULATED UNLESS THE VALVES AND FITTINGS IN THE CONNECTING LINES ARE INSULATED, IN WHICH CASE THE NOZZLES WILL BE INSULATED AS SHOWN

C3 ALL ALUMINUM JACKET TO HAVE VAPOR BARRIER ON INSIDE.

C4 BLOCK INSULATION IS INDICATED AS DOUBLE LAYER FOR ILLUSTRATIVE PURPOSES, BUT DETAILS APPLY TO NUMBER AND THICKNESS OF LAYERS AS DESCRIBED IN SUMMARY.

C5 INSTALLATION OF CLIPS FOR SUPPORTING BLOCK INSULATION ON BOTTOM HEADS OF VERTICAL VESSELS AND INSTALLATION OF INSULATION SUPPORT RING FOR ALL TYPES OF VESSELS WILL NOT BE PART OF INSULATION APPLICATION CONTRACT, EXCEPT AS NOTED, ALL OTHER MATERIAL BY INSULATION CONTRACTOR.

C6 CARE SHALL BE TAKEN TO INSURE COMPLETE WEATHER-PROOFING OF PLATFORM CLIPS, DAVIT SUPPORTS, ETC. IN ORDER THAT MOISTURE WILL NOT PENETRATE TO INSULATION AROUND THESE APPURTENANCES.

C7 ALUMINUM WEATHER JACKET 0.016" THICK WITH VAPOR BARRIER BACKING, CHILDERS OR APPROVED EQUAL SHALL BE USED. IT SHALL BE SECURED TO THE VESSEL BY STAINLESS STEEL BANDS ON 2 FOOT MAXIMUM CENTERS. HORIZONTAL JOINTS SHALL BE LAPPED 2 INCH AND FASTENED ON 6 INCH CENTERS WITH GASKETED SELF-TAPPING ALUMINUM SHEET METAL SCREWS OR POP RIVETS. VERTICAL JOINTS SHALL BE BUTTED AND BATTENED USING A 16 GAGE OR HEAVIER BATTEN 4 INCH WIDE SECURED BY STUDS, SELF TAPPING SCREWS OR POP RIVETS.

DESIGN NOTES

D1 THIS DRAWING IS INTENDED FOR VESSELS, HEAT EXCHANGERS AND EQUIPMENT NORMALLY OVER 150°F.

REFERENCE DRAWINGS

REVISIONS

STANDARD OIL COMPANY OF CALIFORNIA
ENGINEERING DEPARTMENT
SAN FRANCISCO

SCALE NONE
DATE APRIL 14 1958

APPROVED

STANDARD INSULATION FOR HOT VESSELS, HEAT EXCHANGERS AND HOT EQUIPMENT.

W.O.
S.O.

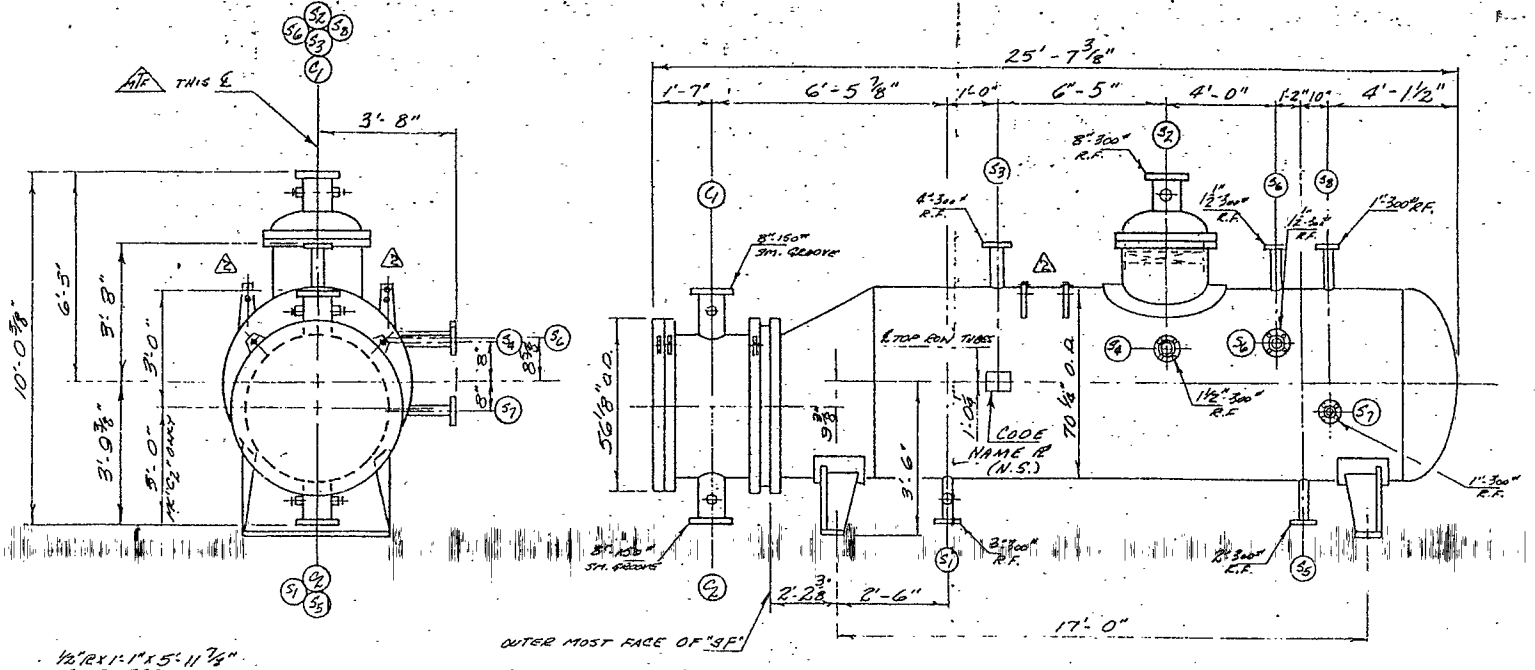
GA-N99785-4

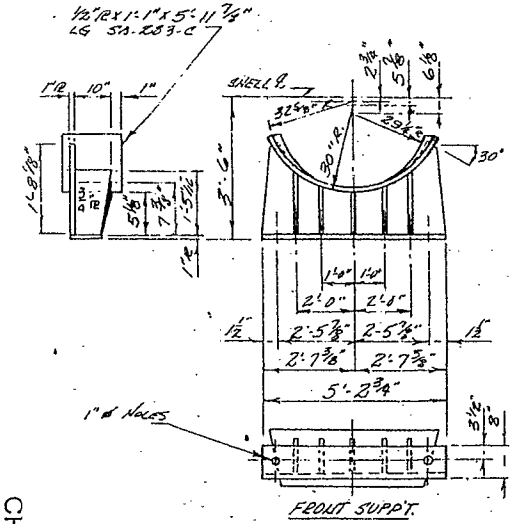
CHEV BB
012444

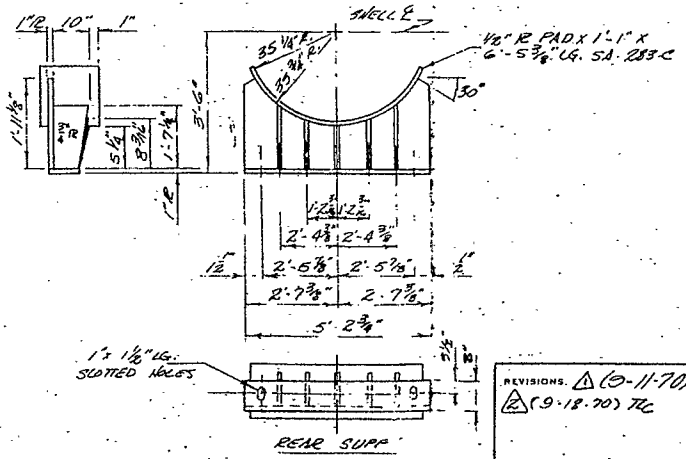
19-230 E-1930

EPR-3165 8243 Rev 2 Certified

Shows Clips for Platform RMC







Note:
NOZZ. "S1" & "S2" TO HAVE ONE (1) 3/4" I.P.S. COUNT. (U.S.) & ONE (1) 3/4" I.P.S. COUN. (F.S.) NOZZ. "C1" & "C2" TO HAVE ONE (1) 3/4" I.P.S. (U.S.) & ONE 3/4" I.P.S. COUN (F.S.)

SUPPORT DETAILS
ALL WELDS TO BE CONTINUOUS
MAT'L: SA-283-C

REVISIONS. △ (9-11-70) WAG.
℄ (9-18-70) TC

TEXAS METAL FABRICATING CO., INC. HOUSTON

MADE	TC	8/6/70
CHKD.	BP	9-2-70
APV'D.	[illegible]	9-4-70

ASSEMBLY & SUPPORT DETAILS

NO. 5193 SHEET 2 REV 2 OF 13

CHEV BB 011445