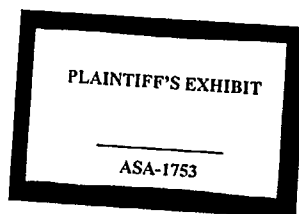


TO:	APPROVED BY
Purchasing	
Credit	
Legal	
Insurance	
Operating Vice President	

Return to Purchasing Department



Engineering, Architectural
And/Or Consulting Services
Contract Form PD-58
Revised 5/75

Order No. _____

CONTRACT FOR

FRP FLUE STRUCTURAL ANALYSIS
(Insert name of job)

ASARCO Incorporated's EL PASO PLANT

Plant at EL PASO, TEXAS

(Insert town and state)

THIS AGREEMENT, made the 30th day of APRIL, 19 81,

by and between FIBERGLASS STRUCTURAL ENGINEERING whose address is

486 W. Lake Samish Dr., Bellingham, WA 98225 (hereinafter called the

"ENGINEER") and ASARCO Incorporated, a corporation of the State of New Jersey,

whose address is 120 Broadway, New York, N.Y. 10005 and

P. O. Box 1111, El Paso, Texas 79999

(Insert address of plant or unit)

(hereinafter called the "Owner").

W I T N E S S E T H:

The Engineer and the Owner agree as follows:

Article 1. Scope of Work

The Engineer shall furnish and perform the various services required for

conducting an FRP flue structural analysis at the Asarco El Paso

Plant.

as outlined in the specifications listed below. Any attachments referred to are incorporated herein by reference and made a part hereof.

Specifications dated April 3, 1981, Exhibit "A".

Article 2. Time of Completion

The services outlined above shall be commenced on or about May 1, 1981 and shall be completed on or about June 15, 1981.

Article 3. The Contract Price

In consideration of the performance of the Contract, the Owner agrees to reimburse the Engineer as follows:

Engineer's fee in the amount of \$_____ for performance of work plus the reimbursable costs specified as follows:

As outlined in ~~Appendix A~~ Revised Appendix "A".

Article 4. Progress Payments (If Specified under Article 3)

The Owner shall make payments on account of this Contract as follows:

(a) As early as possible after the first day of each calendar month commencing with May 1981 the Engineer shall present to the Owner a statement, on forms provided or approved by the Owner, of all reimbursable costs incurred during the preceding month. This statement shall be accompanied by copies of supporting invoices and such copies of payrolls, or totalization and distribution of same, as may be required, lists of plant and equipment used with rates for same, together with any other information as the Owner may require to allow it to verify the accuracy of the statement. As soon as practicable after receipt of such statement and upon verification thereof the Owner shall pay 100 % of such amount to the Engineer.

Article 5. Acceptance and Final Payment

(a) Upon receipt of written notice in the form of a final certificate from the Engineer that the work is ready for final inspection and acceptance the Owner shall promptly make such inspection, and if and when it finds the work acceptable under the Contract and that the work provided for in this Contract has been completed, the entire balance due the Engineer, including the amount of his fee, shall be paid by the Owner to the Engineer within 30 days after the date of acceptance of the work by the Owner.

(b) Before issuance of the final certificate, the Engineer shall submit evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the work have been paid, and that the work is free of all liens and encumbrances. In case of disputed indebtedness or liens the Engineer may submit, in lieu of evidence of payment, a surety bond in form satisfactory to the Owner, guaranteeing payment of all such disputed amounts.

Article 6. Insurance

The Engineer shall maintain such insurance as will indemnify it against claims made under Workmen's Compensation Acts and against any other claims for damages for personal injury, including death, which may arise from operations under this contract, whether such operations be by the Engineer or any of its subcontractors or anyone directly or indirectly employed by either of them.

Prior to commencement of this work the Engineer shall file with the Owner completed certificates of insurance in the form of the "Insurance Certificate" attached and shall provide insurance coverage in amounts not less than those stated herein with companies acceptable to the Owner.

~~It is understood Engineer will maintain insurance coverage in such amounts and for such periods as are sufficient to protect Owner from any liability as a result of the professional errors and/or omissions of the insured (Engineers/Architects) or any person employed by the insured, and will furnish evidence of the same to Owner.~~

Article 7 - Technical Information

The Term "technical information" as used in this agreement includes but is not limited to technical data, reports, models, drawings, specifications, operating manuals, designs, computations, formulas, apparatus, processes, pat-

entable or unpatentable inventions and other engineering data. You agree to accept Asarco's decisions as to whether any particular information is technical information or is technical information which has been made or conceived under this agreement.

It is understood that in the course of your performance hereunder you may learn or have access to technical information of Asarco. You agree that you and your personnel will keep in confidence all such technical information of Asarco and that you and your personnel will not use or disclose the same without Asarco's written consent, either during the term of this agreement or at any time thereafter.

You agree to disclose to Asarco all technical information made or conceived by you or your personnel in performance, or resulting from performance, under this agreement. You agree that all such technical information made or conceived by you or your personnel shall become and remain the free and unrestricted property of Asarco and that you shall assign or cause the same to be assigned to Asarco. You agree that you and your personnel will keep in confidence all such technical information made or conceived by you or your personnel and that you and your personnel will not use or disclose the same without Asarco's written consent, either during the term of this agreement or at any time thereafter.

You agree, upon the request and at the expense of Asarco, to make or cause your personnel to make applications for Letters Patent in such countries as Asarco may designate on those of the aforesaid assigned inventions which Asarco believes to be patentable; and to assign all such applications to Asarco for its order; and to give Asarco, its attorneys and solicitors all reasonable assistance in preparing such applications, and in prosecuting such applications in the patent office or offices involved and in defending and enforcing any patent that may be issued upon any such application; and to execute all papers that may be reasonably required in the prosecution of such applications or to vest in Asarco or its assign said inventions, applications and Letters Patent.

Article 8. Status of Engineer and its Personnel

It is understood and agreed that the status of the Engineer hereunder is that of an independent contractor, that the personnel of the Engineer performing services or work hereunder shall under no circumstances be deemed to be employees of the Owner, and that any workmen's Compensation Insurance coverage for such personnel will be the sole responsibility of the Engineer. Notwithstanding the aforesaid understanding, the general instructions of the Owner in connection with accomplishing the work to be done hereunder shall be followed by the personnel of the Engineer.

During tenure of contract, Owner shall have prerogative to request change in personnel of Engineer's employees assigned to this work when in the opinion of the Owner their work is not conducive to required scope of work.

Article 9. Compliance with Laws and Ordinances

If for any reason the Engineer's or any of its Subcontractor's employees or agents acquire a status imposing liability on the Owner for employer's contributions or taxes under the Federal Insurance Contribution Act, the Federal Unemployment Tax Act, any State Unemployment Tax Act, or any other Act, Statute or Regulation thereunder, the Engineer shall be exclusively liable for, and shall indemnify the Owner against, the same and it agrees to comply with all such laws and regulations so as to relieve the Owner from any and all liability therefor and from the responsibility of making reports or keeping records with respect thereto.

Article 10. Owner's Right to Terminate Contract

If the Engineer should commit an act of bankruptcy, or make an assignment for the benefit of creditors, or if a receiver of the Engineer's property should be appointed, or if the Engineer should file a voluntary petition in bankruptcy, or if a trustee of the Engineer's property should be appointed under the reorganization or readjustment provisions of the Bankruptcy Act, or if the Engineer at any time should refuse or neglect to supply sufficient properly skilled personnel, or if he should fail to make prompt payments to subcontractors, or disregard applicable laws or ordinances or the instructions of the Owner, or should he otherwise violate any provision of the contract and fail to correct such violation promptly after service of written notice thereof by the Owner, then the Owner may, without prejudice to any of its other rights or remedy in the premises, terminate the employment of the Engineer, take possession of drawings, specifications, surveys, models, etc. and finish the work by whatever method the Owner may deem expedient.

Article 11. Arbitration

In case of any dispute or difference which may arise as to whether the work done hereunder shall fail to comply with the plans and specifications or with any of the provisions of this contract, such dispute or difference and the question of full performance of the Engineer of the obligations herein imposed shall be submitted to a board or arbitration to be selected in the following manner:

Unless otherwise provided by law, the parties may agree upon one arbitrator; otherwise, there shall be three, one named in writing by each party, and the third chosen by these arbitrators. Provided, however, that if either of the parties hereto shall fail to name an arbitrator within ten (10) days after being requested in writing to do so by the other, the arbitrator so named by the latter shall be and act as the sole arbitrator; and provided further, that in the event each of the parties names an arbitrator but the arbitrator so selected shall fail to select a third within ten (10) days, then he shall be designated by the presiding officer of the Bar Association nearest the location of the work. If there be more than one Bar Association in such locality, it shall be the senior association or the one longest established. The decision of the arbitrator or arbitrators shall be in writing and shall be final.

Article 12. Subcontracts

The Engineer will not employ any Subcontractor without the prior written approval of the Owner and the Engineer will require each such Subcontractor to execute a contract in writing containing provisions similar to all provisions of this contract which are in any way applicable to such Subcontractor and which will obligate such Subcontractor to comply with and perform all such provisions. Nothing herein shall be deemed to create a contractual relationship between any such Subcontractor and the Owner.

Article 13. Assignment

The Engineer shall not assign or sublet this contract in whole or in part nor shall the Engineer assign any moneys due or to become due hereunder without the prior written consent of the Owner.

Article 14. Applicable Law

This contract shall be construed and enforced in accordance with the laws of the state where the work hereunder is to be performed.

Article 15. Entirety Clause

This contract constitutes the entire agreement between the parties, and except as may be specifically set forth herein no changes can be made except by an agreement in writing duly executed by the parties or their duly authorized agents.

Article 16. Additional Provisions

(Add such additional provisions, if any, as the particular job required.)

Specifications dated April 3, 1981 by Asarco's Central Engineering Dept. and Fiberglass Structural Engineering Proposal dated April 21, 1981 are part of this contract, being Exhibits "A" and "B" respectively.

Fiberglass Structural Engineering
Engineer

By _____

Title Winston Renou President

ASARCO Incorporated

Owner

By L. W. Allen

Purchasing Agent

Title _____

Appendix "A" To Contract Form PD-58

"Reimbursable costs" shall be the sum of the costs to the Engineer of the following items:

A. 1. Direct cost of current actual salaries for all Engineer's employees who actually contribute time to the project in proportion to the time they devote to it. These salaries are to be in accordance with the hourly wage rates shown on Exhibit "B" attached.

2. In addition to the direct salaries, Engineer will be paid _____ percent (____%) of such salaries to cover all fringe benefits which include payroll taxes and insurance, vacation, sick leave and holiday allowances.

The total for Item A will be the direct salaries plus _____ percent (____%) for fringe benefits.

B. Overhead as _____ percent (____%) of the total of Item A above.

C. Actual cost of all out-of-pocket expenses incurred by Engineer in the performance of this work which will include:

Actual traveling and living expenses for all personnel when required to leave the District Office on duties directly applicable to the job.

Telephone, telegraph, office equipment and supplies blueprints, postage and other minor expenses directly applicable to the Job.

Required inspection and testing.

No salaries of the Engineer's executive officers, including and above General Manager, and no part of the expenses of conducting the Contractor's Main Office or regularly established Branch Offices, and no overhead expenses of any kind, except as above provided, shall be included in the cost of the Job unless otherwise expressly provided herein.

D. It is agreed that the Engineer's "Reimbursable Cost" shall be increased or decreased, as the case may be, by an amount equal to the total effect of the following:

1. Routine changes in salary and wage rates and any statutory changes in payroll taxes.

2. Extra cost of any premium time, or overtime in excess of the regular work week, plus _____% for fringes affected by the extra cost on such premium time or overtime. All overtime must be first approved by the Owner.

REVISED APPENDIX "A" TO CONTRACT PD-58

The costs for the scope of work covered by this contract shall be governed by the Proposal, Exhibit "B" from Fiberglass Structural Engineering dated April 21, 1981, and shall not exceed \$16,000, the final cost being a function of actual time spent on Phases I, II and III.

More specifically costs cover:

Phase I	Preliminary Design Review
Phase II	Field Investigation
Phase III	Anaylsis and Final Report

This contract is considered to be essentially a time and expenses contract as indicated in Exhibit "B". The not-to-exceed limit of \$16,000 is a constraint levied solely in the interest of monitoring costs and is not to be construed as requiring full performance of the scope of work within this price. If necessary to complete the scope of work, performance beyond the \$16,000 limit will be charged in accordance with the schedule of rates (Exhibit "B") and shall then be constrained to a new upper limit as mutually agreed by Owner and Engineer.

EXHIBIT "A"

SPECIFICATIONS
FOR
FRP FLUE STRUCTURAL ANALYSIS
EL PASO PLANT

Prepared by:
Central Engineering Department
Salt Lake City, Utah

Job: EA-26-EP

Date: April 3, 1981

N.Y. 3954

Plant: 623

By: *A. O. Marsh, Jr.*

A. O. MARSH, JR.
Chief Design Engineer

CONTENTS

- 1.0 GENERAL
- 2.0 SCOPE OF WORK - ENGINEERING REVIEW
- 3.0 ENGINEERING DATA FOR REVIEW
- 4.0 PROPOSAL
- 5.0 ASARCO PD-58 CONTRACT & INSURANCE FORM
- 6.0 SPECIFICATION 4.4
- 7.0 REFERENCE DRAWINGS FOR STUDY - LIST
DRAWINGS SENT UNDER SEPARATE COVER

SPECIFICATIONS
FOR
FRP FLUE STRUCTURAL ANALYSIS
EL PASO PLANT

1.0 GENERAL

The purpose of this specification is to outline the necessary work to be performed to determine the condition of the existing FRP flue systems at the El Paso Plant using information furnished by Asarco and on-site investigation of the installation.

2.0 SCOPE OF WORK - ENGINEERING CONTRACTOR

The Engineering Contractor shall perform the following work under the direction of the Asarco Chief Design Engineer:

2.1 Using test samples taken from the flues at El Paso, complete tests will be run to determine exact construction details used to develop the system/s.

2.2 Determination of effectiveness of the resin used, provisions for corrosion as specified.

2.3 Check on additives used for fire retardancy, ultraviolet barrier and protective coating used.

2.4 Check of structural integrity of system "as installed" using criteria given under Section 3.0, Engineering Data for Review.

2.5 Preparation of a final report and recommendations.

3.0 ENGINEERING DATA FOR REVIEW

3.1 Site elevation: 3800 ft. above S.L.

3.2 Ambient temperature range: 25°F. to 105°F.

3.3 Atmospheric conditions: bright sunlight

3.4 Gas temperatures in flue: 135-160°F SAT.

3.5 Gas analysis - dust in flue:

<u>%</u>	<u>Test</u> <u>Run SCO2-3</u>	
Pb	13.8	
Cu	0.26	
Zn	0.79	<u>Percent by weight</u>
Tl	0.35	
Cd	1.77	
Cl	4.4	
Fl	<0.1	
As	1.47	

3.6 Gaseous Components

<u>%</u>	<u>#/hr</u>
Pb	2.67
Cu	0.06
Zn	0.15
Tl	<0.1
Cd	0.06
Cl	<4.6
Fl	6.9
As	13.4

3.7 Assume flue cross-section filled to a depth of
1' - 6" with wet dust - density 147#/ft³ maximum.
See cross section sketch.

3.8 Gas Grade - % SO₂ by Volume

Roaster gas 3.0/3.5%

Sinter gas 4.5/5.0%

3.9 Flue Volumes - Maximum Condition

Roaster 30,000 SCFM @ 32°F. - 14.7 psi

Sinter 56,000 SCFM @ 32°F. - 14.7 psi

4.0 PROPOSAL

Upon review of the required "Scope of Work" the Engineering Contractor is requested to submit his proposal for performance of the services outlining his intended procedures and costs for same, including an estimated time schedule through development of the final report.

The proposal shall be submitted as follows:

Original to:

Mr. W. A. Bennis, V.P. Purchasing
ASARCO Incorporated
120 Broadway
New York, New York 10271

Copies to:

Mr. W. T. Sweat, V.P. Engineering
Mr. A. O. Marsh, Jr., Chief Design Engineer
c/o ASARCO Incorporated
500 Crandall Building
Salt Lake City, Utah 84101

Mr. W. R. Kelly, Manager
ASARCO Incorporated
P. O. Box 1111
El Paso, TX 79999

5.0 ASARCO PD-58 CONTRACT & INSURANCE FORM

The Engineering Contractor will be required to sign the Asarco PD-58 form, copy attached, also providing necessary insurance coverage as outlined to cover personnel on the Asarco premises as required for investigation.

6.0 SPECIFICATION 4.4

This general specification was used in conjunction with the Asarco drawings listed to bid and fabricate all FRP flues, etc. at El Paso. It is included for review and listing of operating conditions for each area.

7.0 REFERENCE DRAWINGS FOR STUDY

The listed drawings show all design details used for El Paso. These drawings are being sent under separate cover.

FRP Flue Structural Analysis Specs
EA-26-EP

5.

DRAWING LIST

EP-23402-1101-G	EP-23747-907-M
EP-23403-1101-G	EP-23749-907-M
EP-23592-907-G	EP-23750-907-M
EP-23613-907-M	EP-23751-907-M
EP-23614-907-M	EP-23752-907-M
EP-23615-907-M	EP-23755-907-G
EP-23616-907-M	EP-23761-907-M
EP-23617-907-M	EP-23762-907-M
EP-23618-907-M	EP-23763-907-M
EP-23619-907-M	EP-23764-907-M
EP-23620-907-M	EP-23765-907-M
EP-23621-907-M	EP-23781-905-G
EP-23622-907-M	EP-23782-905-G
EP-23623-907-M	EP-24149-907-M
EP-23624-907-M	EP-24150-907-M
EP-23629-907-M	EP-24151-907-M
EP-23630-907-M	EP-24152-907-M
EP-23631-907-M	EP-24153-907-M
EP-23675-904-G	EP-24154-907-M
EP-23676-904-G	EP-24155-907-M
EP-23724-907-G	EP-24156-907-M
EP-23725-907-G	EP-24157-907-M
EP-23744-907-M	EP-24158-907-M
EP-23745-907-M	EP-26907-907-M
EP-23746-907-M	

SPECIFICATION 4.4

FOR

FRP FLUES AND TANKS

Prepared by:

ASARCO Incorporated
Central Engineering Department
Design Section
Salt Lake City, Utah

EA-26-EP
Plant: 623
N.Y. 3954

Date: November 15, 1976

SPECIFICATION 4.4

FOR

FRP FLUES AND TANKS

1.0 SCOPE

These specifications cover furnishing all the necessary labor, supervision and materials to fabricate and deliver fiberglass reinforced polyester flue sections for a flue system, jug dampers, and FRP tanks complete with gaskets, inlets, outlets, etc., as outlined below and as shown on related detail drawings. Structural supports will be by others.

2.0 MATERIAL SPECIFICATIONS

2.1 All flues, jug dampers, and tanks to be fiberglass reinforced polyester and manufactured in accordance with NBS Voluntary Product Standard PS-15-69 in-so-far as practical for tolerances, fabrication and construction techniques, Wherever a difference exists between the specification and the purchaser's drawing, the drawing should govern.

2.2 Minimum thickness of flues and tanks to be 3/8".

2.3 The polyester resins shall be Dow Chemical Company Derakane 510A, or approved equivalent, with 3% antimony oxide or 5% zinc borate content.

Specs. for FRP Flues and Tanks

- (
- 2.4 Reinforcement shall include 10 mil Pellon veil inner liner (approximately 95% resin). Ninety mil of random glass fiber completely saturated with resin (approximately 75/25% resin to glass ratio), and the remainder of the specified thickness of alternate layers of circumference wound continuous glass fibers and random glass fibers (approximately 65/25% resin to glass fiber). No outer layer shall be random glass fiber.
- 2.5 The exterior surface shall have a 5 mils minimum coating of an ultraviolet barrier.
- 2.6 All flanges, on flues shall be full faced reinforced type with minimum thickness 3/4". Flange bolts to be torqued to 30 ft. lbs. Gaskets to be Nordel rubber, 40 Durometer, ASTM-2000-BA-415. Thickness as specified. (See Pg. 7 for supplier's address.)
- 2.7 Flues to have stiffener ribs spaced for service in section 3.0.
- 2.8 Flat metal washers shall be used under all nut and bolt heads against FRP flanges. Bolts, nuts and washers to be 304 stainless steel.

3.0 FLUE SERVICES

3.1 Area 2-04

C

3.1.1 Flue will be handling moist cleaning plant gases containing 3 to 5% SO_2 at a working pressure of (+)2" H_2O and temperature of 142°F.

3.2 Area 2-09

3.2.1 Flue will be handling cleaning plant gases containing 3 to 5% SO_2 at a working pressure of (-)8" H_2O and temperature of 90°F.

3.3 Area 2-10

3.3.1 Flues will be handling moist cleaning plant gases containing 3 to 5% SO_2 at a working pressure of 0.0" H_2O and temperature of 126°F.

3.4 Area 2-15

3.4.1 Flues and jug dampers will be handling moist cleaning plant gases containing 3 to 5% SO_2 at a working pressure of (-) 20" H_2O and temperature of 90°F.

4.0 TANK SERVICES

4.1 All tanks will contain water saturated with SO_2 that contains about 1.5% sulfuric acid, 46 mg/l of fluorides, 214 mg/l of chlorides and about 2000 mg/l of

precipitated fumes and mechanical solids scrubbed from gases that have been through a venturi scrubber or an electrostatic precipitator. Specific gravity of liquid is 1.15. Maximum temperature 140°F.

4.2 Specific Designs

4.2.1 Sinter Machine Venturi Scrubber Blowdown

Tank. Equipment No. 90319. Area 2-03.

Number required 1

Capacity 1700 Gal.

Temperature 132°F.

Drawing No. EP-241111-903-M, MK-241111-A

4.2.2 Roaster Venturi Scrubber Blowdown Tank.

Equipment No. 90339. Area 2-07.

Number required 1

Capacity 1700 Gal.

Temperature 134°F.

Drawing No. EP-241111-903-M, MK-241111-A

4.2.3 Scrubber Blowdown Tank.

Equipment No. 90370. Area 2-13.

Number required 1

Capacity 1700 Gal.

Temperature 90°F.

Drawing No. EP-241111-903-M, MK-241111-A

4.2.4 Stripping Tower Pump Tank.

Equipment No. 90605. Area 2-07.

Number required 1

Capacity 1100 Gal.

Temperature 100°F.

Drawing No. EP-24133-208-M, MK-24133-C

4.2.5 Neutralizing Tanks.

Equipment No's. 20804 and 20805. Area 2-14.

Number required 2

Capacity 470 Gal.

Temperature 82°F.

Drawing No. EP-24135-208-M, MK-24135-A&B

4.2.6 Surge Tank.

Equipment No. 20801. Area 2-14.

Number required 1

Capacity 30,000 Gal.

Temperature 95°F.

Drawing No. EP-24131-208-M, MK-24131-A

4.2.7 Neutralized Solution Tank.

Equipment No. 20802. Area 2-14.

Number required 1

Capacity 30,000 Gal.

Temperature 80°F.

Drawing No. EP-24131-208-M, MK-24131-B

4.2.8 Surge Tank Pump Tank.

Equipment No. 20803. Area 2-14.

Number required 1

Capacity 50,000 Gal.

Temperature 90°F.

Drawing No. EP-24132-208-M, MK-24132-A

4.2.9 Cottrell Plant Neutralized Solution Tank.

Equipment No. 20806. Area 2-14.

Number required 1

Capacity 1,000 Gal.

Temperature 90°F.

Drawing No. EP-24134-208-M, MK-24134-A

5.0 CONSTRUCTION

5.1 Flues, jug dampers, and tanks to be fabricated as shown on Asarco's drawings. This to include all tank supports, support rings, flanges and associated pieces. Any deviation from these details must be approved by Asarco before fabrication.

5.2 Flue construction may be contact molded or hand lay-up filament wound type. Construction shall require prior approval by Asarco with submittal of fabrication details, etc.

5.3 Field joint construction, shipping length, etc., shall be the responsibility of the Contractor. He

shall verify Asarco's designs for service noted in specified areas relative to stiffener rings, wall thickness, saddle designs, etc.

6.0 DRAWING LIST

The general arrangement drawings and detail drawings on Appendix "A" give the scope of the flue system to be provided as well as tank details.

Nordel is a Dupont product available from West American Rubber Company, 750 North Main St., Orange, California 92668.

APPENDIX "A"

DRAWING LIST

Area 2-04

Sinter Machine Flue to Gas Cleaning.

<u>Drawing No.</u>	<u>Description</u>
EP-23592-907-G	Gen. Arrg't. Plan & Elevation.
EP-23613-907-M	76" FRP Flue Assembly from Towers F.S.-5 to F.S.-9.
EP-23614-907-M	76" FRP Flue Assembly from Towers F.S.-9 to F.S.-13.
EP-23615-907-M	76" FRP Flue Assembly from Towers F.S.-13 to F.S.-17.
EP-23616-907-M	76" FRP Flue Assembly from Towers F.S.-17 to F.S.-20.
EP-23617-907-M	76" FRP Flue Assembly from Towers F.S.-20 to F.S.-23.
EP-23618-907-M	76" FRP Flue Assembly from Towers F.S.-23 to F.S.-27.
EP-23619-907-M	76" FRP Flue Assembly from Towers F.S.-27 to F.S.-31.
EP-23620-907-M	76" FRP Flue Assembly from Towers F.S.-31 to F.S.-35.
EP-23621-907-M	76" FRP Flue Assembly from Towers F.S.-35 to F.S.-36.
EP-23622-907-M	96" dia. and 76" dia. FRP Flue Assembly from Towers F.S.-36 to F.S.-37.
EP-23623-907-M	96" dia. FRP Flue Assembly from Towers F.S.-37 to F.S.-38.

Appendix "A"

2.

<u>Drawing No.</u>	<u>Description</u>
EP-23624-907-M	96" I.D. FRP Flue Details.
EP-23625-907-M	76" I.D. FRP Flue Assembly Tower.
EP-23626-907-M	76" I.D. FRP Flue Assembly Tower F.S.-1 & 50.
EP-23627-907-M	76" I.D. FRP Flue Details.
EP-23628-907-M	76" FRP Elbow Detail.
EP-23629-907-M	76" FRP Tabulated Flue Details.
EP-23631-907-M	76" I.D. FRP Flue Details.

Area 2-07 Roaster Cottrell Venturi Scrubber System

<u>Drawing No.</u>	<u>Description</u>
EP-23675-904-G	Gen. Arrgt., Plan & Elevation.
EP-23685-907-M	65" FRP Flue Assembly.
EP-23686-904-G	General Arrangement, Elevations.

Area 2-09 Converter Gas Handling Changes

<u>Drawing No.</u>	<u>Description</u>
EP-23724-907-G	Converter Gas Bypass Flue, Gen. Arrgt., Plan.
EP-23725-907-G	Conv. Gas Bypass Flue, Gen. Arrgt., Elevation.
EP-23744-907-M	Conv. Gas Bypass Flue Assy. Supports 5 to flue end.
EP-23745-907-M	Conv. Gas Bypass Flue Assy. F.S.-47 & F.S.-48.
EP-23746-907-M	Conv. Gas Bypass Flue Assy. F.S.-46 to F.S.-47.

Appendix "A"

3.

<u>Drawing No.</u>	<u>Description</u>
EP-23747-907-M	Conv. Gas Bypass Flue Assy. F.S.-46.
EP-23748-907-M	Conv. Gas Bypass Flue Assy. F.S.-45 to F.S.-46.
EP-23749-907-M	Conv. Gas Bypass Flue Details.
EP-23750-907-M	Conv. Gas Bypass Flue Details.
EP-23752-907-M	72" Venturi Details.

Area 2-10 Flue System to Gas Cleaning Plant

<u>Drawing No.</u>	<u>Description</u>
EP-23755-907-G	Gen. Arrgt. Plan & Elevation.
EP-23761-907-M	Flue to Packed Scrubber Assembly Towers F.S.-38 to F.S.-39.
EP-23762-907-M	Flue to Packed Scrubber Assembly Towers F.S.-39 to F.S.-42.
EP-23763-907-M	96" Venturi Details.
EP-23764-907-M	Flue to Packed Scrubber Details.

Area 2-12 Gas Cleaning Plant Mist Precipitators

<u>Drawing No.</u>	<u>Description</u>
EP-23781-905-G	General Arrangement, Plan.
EP-23782-905-G	General Arrangement Elevation.
EP-24149-905-M	Mist Precipitator, Flues, Dampers, Etc., Assembly.

Appendix "A"

4.

Area 2-14

Water Treatment System

Drawing No.

Description

EP-24111-903-M	Blowdown Pump Tank.
EP-24131-208-M	Surge & Neutralized Solution Tanks.
EP-24132-208-M	10' dia. Pump Tank.
EP-24133-208-M	Stripping Tower Pump Tank.
EP-24134-208-M	Neutralized Solution Tank.
EP-24135-208-M	Neutralizing Tanks.

Area 2-15

Gas Cleaning Plant- Flues, Dampers, Etc.

Drawing No.

Description

EP-24151-907-M	Mist Precip. Flues - Details.
EP-24152-907-M	Mist Precip. Flue Details.
EP-24153-907-M	Mist Precip. Header Assembly.
EP-24154-907-M	Mist Precip. Header Details.
EP-24155-907-M	Jug Damper Assembly.
EP-24156-907-M	100" Flue to Acid Plant Assembly.
EP-24157-907-M	100" Flue to Acid Plant Details.
EP-24158-907-M	Flue Hangers Assembly & Details.

EXHIBIT "B"
Fiberglass Structural Engineering

486 W. Lake Samish Drive / Bellingham, WA 98225 / Telephone (206) 734-7040

April 21, 1981

Mr. W. A. Bennis, V.P. Purchasing
ASARCO Incorporated
120 Broadway
New York, New York 10271

Gentlemen:

FRP Flue Structural Analysis
El Paso Plant
ASARCO Job EA-26-EP

We appreciate this opportunity to submit our proposal for work to be performed in determining the condition of the existing FRP flue systems at your El Paso plant.

We will provide engineering services to accomplish the Scope of Work as outlined in your inquiry of April 3. However, it is questionable at this time as to whether or not tests are available to determine the items noted in section 2.3. The extent of testing generally will be determined by the data requirements needed to complete the analysis.

Involvement by Fiberglass Structural Engineering, Inc. would be divided into three phases, as follows:

- I) A preliminary design review would include project familiarization, study of construction details and laminates, and a preliminary structural analysis. The purpose of this preliminary review would be to determine potential problem areas in the system and establish a plan for data acquisition in the field.
- II) An inspection visit to the El Paso Plant would be required to obtain detailed information regarding the FRP construction. Data would be taken as required for further analysis in the form of samples, photography, notes and measurements in each specific area of interest. A general overview of all FRP equipment would also be accomplished to discover any unanticipated problem areas.
- III) The final phase of involvement would be a detailed analysis of the system as it exists. Our report would discuss each area of concern, and identify calculated safety factors for each.
 - Recommendations would describe the general nature of repair suggested for each area, if any, but would not give a detailed estimate or specification of the repair.

Since the extent of problems requiring analysis cannot be anticipated at this time, we propose to provide the work on a time and expenses basis, to be charged at the following rates.

Consultant
Project Engineer

\$60/hour
42/hour

April 21, 1981

Inspector	\$42/hour
Test Engineer	42/hour
Design Engineer	38/hour
Engineering Aide	28/hour
AE Equipment	80/hour

Expenses (including day coach air travel, car rental, motel, etc.) are billed at cost with meals being billed at a per diem rate.

We have estimated our involvement for the work described in the three phases for purposes of budgeting at this time. These are target figures which we are reasonably confident will be sufficient to complete the analysis.

Phase I - Preliminary Design Review:

Five days for Design Engineer, plus one day for
Consultant, or approximately. \$2000.

Phase II - Field Investigation:

Three field days plus travel time and expenses
for Consultant and either Design Engineer or
Inspector, or approximately. \$7000.

Phase III - Analysis and Final Report:

14 days Design Engineer or Project Engineer,
plus 5 days Consultant, or approximately \$7000.

Total Phases I, II, and III \$16,000.

It appears at this time that our work could begin on this project by the week of May 4, 1981, but schedules are subject to prior commitment. For planning purposes, the following durations may be used:

Phase I - 1 to 2 weeks
Phase II - 1 week
Phase III - 3 to 4 weeks

If necessary, we would be willing to set forth a more detailed schedule at the time of contract agreement.

We hope this proposal is responsive to your needs at this time. Please contact the undersigned if you require further information.

Regards,

FIBERGLASS STRUCTURAL ENGINEERING, INC.



Kyle W. Schmidt
Project Manager

KWS:bb

cc: Mr. W. T. Sweat, V.P. Engineering
Mr. A. O. Marsh, Jr., Chief Design Engineer
Mr. W. R. Kelly, Manager

COPY

Certificate of Insurance

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES LISTED BELOW.

NAME AND ADDRESS OF INSURED

Winston J. Renoud, P. E. dba:
Fiberglass Structural Engineering
486 West Lake Samish Drive
Bellingham, WA 98225

COMPANIES AFFORDING COVERAGES

COMPANY LETTER **A**

COMPANY LETTER **B**

COMPANY LETTER **C**

COMPANY LETTER **D**

COMPANY LETTER **E**

This is to certify that policies of insurance listed below have been issued to the insured named above and are in force at this time.

COMPANY LETTER	TYPE OF INSURANCE	POLICY NUMBER	POLICY EXPIRATION DATE	Limits of Liability in Thousands (000)		
					EACH OCCURRENCE	AGGREGATE
A	GENERAL LIABILITY			BODILY INJURY	\$	\$
	☒ COMPREHENSIVE FORM			PROPERTY DAMAGE	\$	\$
	☐ PREMISES—OPERATIONS					
	☐ EXPLOSION AND COLLAPSE HAZARD					
	☒ UNDERGROUND HAZARD					
A	☒ PRODUCTS/COMPLETED OPERATIONS HAZARD			BODILY INJURY AND PROPERTY DAMAGE COMBINED	\$	\$
	☐ CONTRACTUAL INSURANCE					
	☐ BROAD FORM PROPERTY DAMAGE					
	☐ INDEPENDENT CONTRACTORS					
	☐ PERSONAL INJURY					
A	AUTOMOBILE LIABILITY			PERSONAL INJURY	\$	\$
	☐ COMPREHENSIVE FORM			BODILY INJURY (EACH PERSON)	\$	\$
	☐ OWNED			BODILY INJURY (EACH ACCIDENT)	\$	\$
	☒ HIRED			PROPERTY DAMAGE	\$	\$
	☒ NON-OWNED			BODILY INJURY AND PROPERTY DAMAGE COMBINED	\$	\$
	EXCESS LIABILITY			BODILY INJURY AND PROPERTY DAMAGE COMBINED	\$	\$
	☐ UMBRELLA FORM					
	☐ OTHER THAN UMBRELLA FORM					
	WORKERS' COMPENSATION and EMPLOYERS' LIABILITY			STATUTORY	\$	\$
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES

Cancellation: Should any of the above described policies be cancelled before the expiration date thereof, the issuing company will endeavor to mail 10 days written notice to the below named certificate holder, but failure to mail such notice shall impose no obligation or liability of any kind upon the company.

Certificate of Insurance

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER.
THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES LISTED BELOW.

A M E N D E D

COMPANIES AFFORDING COVERAGES

- COMPANY LETTER **A**
- COMPANY LETTER **B**
- COMPANY LETTER **C**
- COMPANY LETTER **D**
- COMPANY LETTER **E**

NAME AND ADDRESS OF INSURED

Winston J. Renoud, P. E. dba:
Fiberglass Structural Engineering
486 West Lake Samish Drive
Bellingham, WA 98225

This is to certify that policies of insurance listed below have been issued to the insured named above and are in force at this time.

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	☒ COMPREHENSIVE FORM			PROPERTY DAMAGE	\$	\$
	☒ PREMISES—OPERATIONS					
	☐ EXPLOSION AND COLLAPSE HAZARD					
	☐ UNDERGROUND HAZARD					
	☒ PRODUCTS COMPLETED OPERATIONS HAZARD			BODILY INJURY AND PROPERTY DAMAGE COMBINED		
	☒ CONTRACTUAL INSURANCE					
	☐ BROAD FORM PROPERTY DAMAGE					
	☐					
	☒			PERSONAL INJURY		\$
A	AUTOMOBILE LIABILITY			BODILY INJURY (EACH PERSON)	\$	
	☐ COMPREHENSIVE FORM			BODILY INJURY (EACH ACCIDENT)	\$	
	☐ OWNED			PROPERTY DAMAGE	\$	
	☒ HIRED			BODILY INJURY AND PROPERTY DAMAGE COMBINED		
	☒ NON-OWNED					
	EXCESS LIABILITY			BODILY INJURY AND PROPERTY DAMAGE COMBINED	\$	\$
	☐ UMBRELLA FORM					
	☐ OTHER THAN UMBRELLA FORM					
	WORKERS' COMPENSATION and EMPLOYERS' LIABILITY¹			STATUTORY		
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES

Cancellation: Should any of the above described policies be cancelled before the expiration date thereof, the issuing company will endeavor to mail 10 days written notice to the below named certificate holder, but failure to mail such notice shall impose no obligation or liability of any kind upon the company.

NAME AND ADDRESS OF CERTIFICATE HOLDER:

DATE ISSUED: May 12, 1981

ASARCO, Incorporated REQUIREMENTS FOR CONTRACTORS AND SUBCONTRACTORS

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE DESCRIBED BELOW HAVE BEEN ISSUED TO _____

THESE POLICIES ARE NOW IN FORCE, COVERING WORK BY THE ASSURED FOR ASARCO, Incorporated
 ON CONTRACT _____
 AT _____

IF THESE POLICIES ARE CANCELLED OR CHANGED IN ANY WAY THAT WILL AFFECT THIS CERTIFICATE, TEN DAYS' PRIOR WRITTEN NOTICE WILL BE GIVEN BY THIS COMPANY TO ASARCO, Incorporated.
 ATTN: _____ PLANT MANAGER

KIND OF INSURANCE	DESCRIPTION OF POLICY			REQUIRED MINIMUM
	NUMBER	EXPIRES	LIMITS OF LIABILITY	
CONTRACTOR'S PUBLIC LIABILITY (COMPREHENSIVE INCLUDING CONTRACTUAL)*				
BODILY-INJURY				
PROPERTY-DAMAGE				
CONTRACTOR'S PROTECTIVE LIABILITY				
BODILY-INJURY				
PROPERTY-DAMAGE				
AUTOMOBILE				
BODILY-INJURY				
PROPERTY-DAMAGE				
WORKMEN'S COMPENSATION AND EMPLOYER'S LIABILITY				

DATE _____

INSURANCE COMPANY _____

CITY _____

STATE _____

AUTHORIZED REPRESENTATIVE _____

*The Contractor shall save harmless and indemnify the Owner from and against any expense, loss or damage on account of any claim, demand or suit made by any person whatsoever, including any employee of the Owner, which is in any way caused by or connected with, or grows out of the execution and performance of this contract by the Contractor or any Subcontractor; provided, however, that the Contractor shall not be required to indemnify the Owner against any loss caused solely by negligence or willful fault of the Owner or its employees. The Contractor accepts all risk of injury or damage and all responsibility for any claims for damages whatsoever resulting from the use, misuse, or failure of any hoist, rigging, derrick, scaffolding, or other lift or unlift equipment used by the Contractor or any Subcontractor, even though such equipment be furnished or loaned to the Contractor or any such Subcontractor by the Owner and shall indemnify the Owner against all such claims.