

**PLAINTIFF'S  
EXHIBIT**

CIV-27

SPECIFICATION NO. EP-278-L

INSTALLATION OF REPLACEMENT

FCC REGENERATED CATALYST

AND SPENT CATALYST U-BENDS

EL PASO REFINERY

CHEVRON OIL COMPANY, WESTERN DIVISION

d/b/a STANDARD OIL COMPANY OF TEXAS

APRIL 20, 1976

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SECTION 1 - GENERAL REQUIREMENTS

1.1 SCOPE OF WORK

- 1.11 This Specification covers the removal and replacement of existing regenerated catalyst and spent catalyst U-bends which are part of the Fluid Catalytic Cracking Unit located at the Standard Oil Company of Texas Refinery, El Paso, Texas.
- 1.12 CONTRACTOR shall perform all labor and furnish all supplies, construction equipment, temporary facilities and all items of a consumable nature (such as listed in Specification Nos. EG-1048-A and EG-1049-C) required for the performance of this work as detailed by this Specification, including the drawings and other attachments, except as otherwise provided in Section 1.21 below.
- a) This work includes but is not limited to:
- 1) Removal of existing and installation of new U-bends.
  - 2) Design, fabrication, installation and removal of all temporary structural supports, clips and anchorages required for the replacement work.
  - 3) Removal, temporary support, alteration and re-installation of all permanent piping attached to U-bends including struts, shock absorbers and hangers.
  - 4) Radiographic inspection of all field welds on U-bends.
  - 5) Postweld heat treatment of field welds involving Chromium-Molybdenum steel.
  - 6) Erection and removal of all staging required.

1.2 WORK, MATERIAL AND UTILITIES BY COMPANY OR OTHERS

- 1.21 The following items of work related to the work defined in Section 1.1 shall be performed by the COMPANY or others.
- a) Refractory and hex-mesh repair or replacement.
  - b) U-bend insulation replacement.
  - c) Repair or replacement of insulation for piping attached to U-bends.
  - d) Removal of catalyst from U-bends.

- e) Disconnect and reinstall instrument connections to U-bends.
- f) Install blinds, unhead and head up vessels.

1.22 Material Furnished by COMPANY

The COMPANY shall provide the following material to be incorporated into the work:

- a) Replacement regenerated catalyst U-bend furnished in 3 sections as detailed on drawing PA-18-22828-2. Material is Chromium-Molybdenum, per ASTM JA-387-D, (2½ Cr.- 1 Mo.)
- b) Replacement spent catalyst U-bend furnished in 3 sections as detailed on drawing PA-18-14561-5. Material is carbon steel per ASTM SA-515 grade 55. or better.
- c) Materials required for replacement or alterations of piping attached to U-bends.
- d) Materials required to make utilities connections.

1.23 Utilities furnished by COMPANY

The following construction utilities shall be furnished by COMPANY at no expense to CONTRACTOR. Connections to required utilities shall be made by CONTRACTOR.

- a) 440V., 3 ph., 200 A. electric power.
- b) 110V., 1 ph. electric power.
- c) Utility air at approximately 100 psig.
- d) Drinking water - in CONTRACTOR'S containers at a location to be designated by COMPANY'S Construction Representative.
- e) Industrial fresh water.

1.3 DRAWINGS, SPECIFICATIONS AND INSTRUCTIONS

The drawings, standard specifications, fabrication specifications and Refinery Instructions attached and listed in the Appendix further detail the work and are part of this Specification.

1.4 INTENT

It is the intent of this Specification that the CONTRACTOR shall provide and complete the work described herein in a complete and finished fashion even though full details may not be specifically noted. CONTRACTOR is expected to perform all work in accordance with safe, accepted, current good industry practices and applicable codes and regulations.

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## SECTION 2 - GENERAL CONDITIONS

### 2.1 PRECEDENCE

In the event of a conflict between any of the following items, they shall take precedence in the order listed:

- a) Contract Facing Sheet.
- b) Terms and Conditions.
- c) Specification No. EP-278-L.
- d) Construction drawings incorporated into Specification No. EP-278-L.
- e) Standard specifications incorporated into Specification No. EP-278-L.
- f) Reference drawings and Refinery Instructions incorporated into Specification No. EP-278-L.
- g) American Society of Testing Materials Specifications or other similar publications referred to in this Specification No. EP-278-L but not attached, if any.

### 2.2 FIELD REPRESENTATIVES

#### 2.21 COMPANY'S Construction Representative

COMPANY shall maintain a Construction Representative in the field at all times who shall act in full charge of CONTRACTOR'S work and maintain field liaison between CONTRACTOR and COMPANY'S Construction Representative.

#### 2.22 CONTRACTOR'S Construction Representative

CONTRACTOR shall maintain a Construction Representative in the field at all times who shall act in full charge of CONTRACTOR'S work and maintain field liaison between CONTRACTOR and COMPANY'S Construction Representative.

### 2.3 OTHER CONTRACTS

COMPANY reserves the right to let other contracts or perform other work or services in connection with CONTRACTOR'S work hereunder. CONTRACTOR shall afford others equitable opportunities for the introduction and storage of their materials and the execution of their work and shall properly coordinate its work with theirs. If any part of CONTRACTOR'S work depends for proper execution upon existing work or work to be performed by others, CONTRACTOR shall measure and visually inspect such other work and promptly report to COMPANY if there are any discrepancies or defects therein which render it unsuitable for proper execution of CONTRACTOR'S work.

2.4 SUBCONTRACTORS

All subcontractors shall be subject to COMPANY approval.

2.5 CHANGES IN THE WORK

As required, COMPANY will issue supplemental instructions to CONTRACTOR on a Field Instruction Form (copy attached in Appendix). COMPANY will classify these instructions as either -

- a) Supplementary instructions, not involving a change in work.
- b) Change in work

In accordance with the Terms and Conditions of the Contract. If a change in the work is involved, COMPANY will further issue an Authorization for Change in the Work (GO-283-GEN) once the terms of reimbursement to CONTRACTOR or rebate to COMPANY have been agreed upon. Any problems or conflicts in this regard shall be negotiated by the CONTRACTOR'S and COMPANY'S Construction Representatives. If the COMPANY elects, the contract price will be adjusted as provided in the "Exhibit - Change in the Work", attached to this contract.

2.6 COST BREAKDOWN

Upon receiving notification of the acceptance of his bid, CONTRACTOR shall provide COMPANY a breakdown of his bid price according to the following items:

- a) Removal and replacement of FCC Regenerated Catalyst U-Bend.
- b) Removal and replacement of FCC Spent Catalyst U-Bend.

CONTRACTOR shall provide revised breakdown of final cost for each item above (initial price plus subsequent contract changes) to COMPANY with CONTRACTOR'S final invoice.

2.7 PLANT REGULATIONS

Prior to commencement of work, CONTRACTOR shall become familiar with the following Refinery regulations and shall be responsible for compliance with these regulations.

- a) Refinery Instruction No. 1404 entitled "General Instructions to Contractor Working within Refinery".
- b) Refinery Instruction No. 1007 entitled "Union Business Agent Visits".

THIS PAGE ENDS SECTION 2.

SECTION 3 - PERFORMANCE OF WORK

3.1 WORK SPACE AND STORAGE AREA

COMPANY shall assign space in the area as designated by COMPANY'S Construction Representative for CONTRACTOR'S office, work space, and storage area.

3.2 TEMPORARY CONSTRUCTION FACILITIES

3.21 CONTRACTOR shall provide and install all temporary facilities required for the performance of the work. All temporary installations shall be subject to approval by COMPANY prior to installation.

3.22 In addition, CONTRACTOR shall provide as required for completion of the work any temporary equipment and material including, but not limited to, bracing, ladders, scaffolding, staging, drop cloths and tarpaulins.

3.23 CONTRACTOR shall maintain all temporary facilities, material, and equipment in a safe and adequate manner and remove them immediately upon completion of the portion of work requiring their presence.

3.3 MATERIALS HANDLING

CONTRACTOR shall be furnished with material listed in Section 1.22 from any one of several storage areas in the refinery. CONTRACTOR will be responsible for movement of such material and the return of all unused material. All material withdrawals from Refinery Storehouse shall be approved by the COMPANY Construction Representative. CONTRACTOR will be responsible for moving existing U-bend sections from the Unit to a storage area designated by COMPANY Construction Representative as soon as practical to minimize congestion in the construction area. All salvaged materials will remain property of the COMPANY.

3.4 DRAWINGS

CONTRACTOR will be furnished at least 3 sets of all construction drawings. One set shall be maintained by CONTRACTOR and he shall indicate on this set of drawings any changes or deviations which have been made during the course of construction. This set shall be returned with changes noted, to the COMPANY upon completion of the job. COMPANY will promptly furnish CONTRACTOR revised issues of drawings as appropriate. CONTRACTOR shall prepare any supplemental or additional drawings he requires to properly execute the work at hand. Any discrepancies found by CONTRACTOR on drawings furnished by COMPANY shall promptly be brought to COMPANY'S attention.

### 3.5 INSPECTION AND TESTING

#### 3.51 General

CONTRACTOR shall be solely responsible for thorough craft inspection during construction and for the quality of the work. COMPANY will make such inspection as COMPANY may desire in order to check the progress and quality of the work, to see that CONTRACTOR'S employees are properly qualified in their respective crafts, that workmanship is of an acceptable grade, and that all requirements of this Specification are being met. Such inspection or any other inspection or testing by COMPANY shall not relieve CONTRACTOR of full responsibility for the work hereunder.

#### 3.52 Welding Inspection and Testing

The following modifications and additions to Standard Specification No. EG-2505-G, entitled "Fabrication of Steel Piping", shall apply for this Contract:

- a) Welding samples for chromium-molybdenum welds may be taken by COMPANY Inspector during fabrication at a frequency of 3 samples per field welded joint on U-bends. (Re: Section 4.3).
- b) Brinell hardness tests will be performed by COMPANY Inspector after post weld heat treatment.
- c) 100 percent Radiography is required for all field welded circumferential joints, both U-bends.
- d) Root passes or other weld passes may be dye checked as elected by COMPANY Inspector.

#### 3.53 Hydrostatic Testing

CONTRACTOR shall perform hydrostatic tests on altered or replacement piping attached to U-bends in accordance with Refinery Instruction No. 1501. No hydrostatic testing is required for U-bends.

### 3.6 BOLTING-UP PRACTICE

Bolting-up of flanged joints shall be in accordance with Engineering Instruction No. R-800-1. In addition, flanges requiring spiral wound gaskets shall be tightened progressively on bolts in a 12:00-6:00 - 9:00-3:00 sequence that will assure uniform and sufficient compression to seat the gasket.

### 3.7 RIGGING PLAN

CONTRACTOR shall submit a detailed Rigging Plan, including supporting calculations, for removal and replacement of U-bends for COMPANY approval three weeks prior to start of work.

3.8 WORK PLAN

CONTRACTOR shall submit a detailed work plan to include a Critical Path Schedule for COMPANY review four weeks prior to start of work.

3.9 CLEANUP

During the course of the work, CONTRACTOR shall keep a reasonable degree of order by disposing of accumulated waste material and at the completion of the work, the site shall be cleared of all debris, tools, equipment and material which may have accumulated in the execution of the work.

THIS PAGE ENDS SECTION 3.

A.1 - DRAWING INDEX

CONSTRUCTION DRAWINGS

|               |                                                  |
|---------------|--------------------------------------------------|
| PA-18-22828-2 | Regenerated Catalyst U-Bend Assembly and Details |
| PA-18-14561-5 | Spent Catalyst U-Bend Assembly and Details       |
| PA-18-14548-6 | D-1802 Regenerator Insulation and Nozzle Details |
| PA-18-14620-2 | Barco Strut and Shock Absorber Details           |

REFERENCE DRAWINGS

|               |                                                                             |
|---------------|-----------------------------------------------------------------------------|
| PA-18-14560-4 | Regenerated Catalyst U-Bend Assembly and Details<br>(Original Installation) |
| PA-18-14561-4 | Spent Catalyst U-Bend Assembly and Details (Original Install)               |
| PB-18-22440-1 | Replacement Section of Regen. Cat. U-Bend (Installed 12/71)                 |

Reactor and Regenerator Structures

|               |                                                   |
|---------------|---------------------------------------------------|
| PA-18-14621-3 | Framing Plan - El. 118'-0-3/4 and El. 114'-11-3/4 |
| PA-18-14622-4 | Framing Plan - El. 131'-7-1/2                     |
| PA-18-14623-3 | Framing Plan - El. 140'-8                         |
| PA-18-14625-3 | Framing Elevations - Col. Lines A-B-C-D           |
| PA-18-14626-2 | Framing Elevations - Col. Lines 1-2-3-4           |

Piping Drawings

|                |                                               |
|----------------|-----------------------------------------------|
| PA-18-14524-15 | Piping Plan - El. 116'-0 to Grade             |
| PA-18-14525-12 | Piping Plan - El. 130'-3 to El. 116'-0        |
| PA-18-14526-7  | Piping Plan - El. 149'-9 to El. 130'-3        |
| PA-18-14530-4  | Piping Sections and Details, Catalyst U-Bends |
| PA-18-14532-15 | Piping Section - El. 169'-9 to Grade          |

THIS PAGE ENDS APPENDIX A.1 - INDEX

A.2 - STANDARD SPECIFICATIONS

|           |                             |
|-----------|-----------------------------|
| EG-2505-G | Fabrication of Steel Piping |
| EG-1048-A | Small Tools and Equipment   |
| EG-1049-C | Supplies                    |
| R-800-1   | Bolting up Practice         |

THIS PAGE ENDS APPENDIX A.2 - INDEX

A.3 - REFINERY INSTRUCTIONS

|      |                                                                 |
|------|-----------------------------------------------------------------|
| 1007 | Union Business Agent Visits                                     |
| 1404 | General Instructions to Contractors Working Within the Refinery |
| 1501 | Hydrostatic Testing of Refinery Equipment                       |

THIS PAGE ENDS APPENDIX A.3 - INDEX