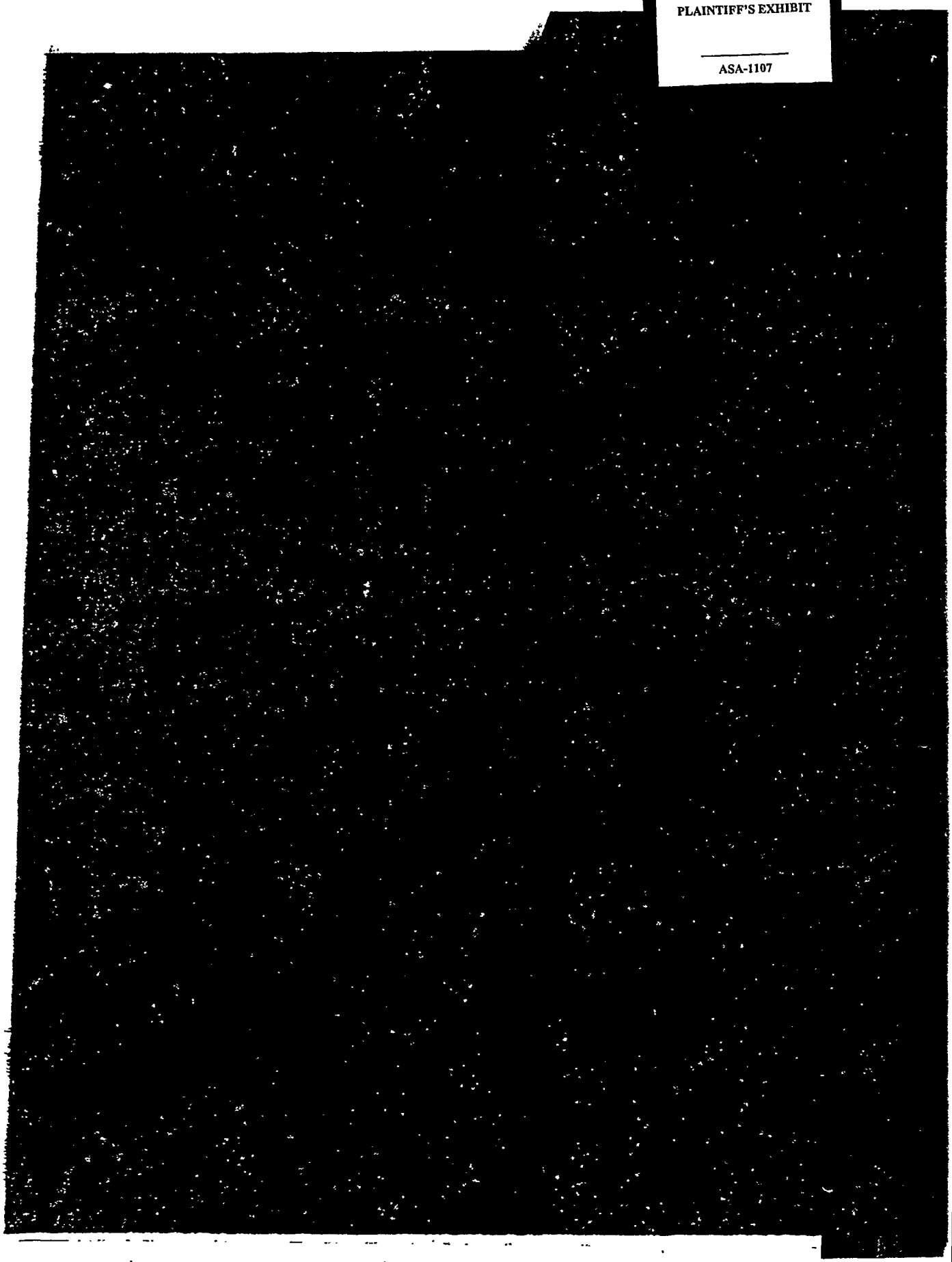
PLAINTIFF'S EXHIBIT

ASA-1107



2. DRAWINGS AND DOCUMENTS

2.1 ASARCO Drawing E-23685 shows the conduit routing and is hereby made a part hereof.

2.2 Manufacturer's drawings of equipment, where applicable, will be made available to the Contractor as an aid to construction.

3. APPLICABLE PUBLICATIONS AND CODES

The publications and codes listed or referred to herein or indicated on drawings are by such listing, reference or indication made a part hereof. The latest edition of the publication or code to the date of this specification shall apply.

AMERICAN NATIONAL STANDARDS INSTITUTE, INC. (ANSI)

NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION (NEMA)

INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)

INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)

UNDERWRITERS LABORATORIES, INC. (UL)

NATIONAL ELECTRICAL CODE (NEC - NFPA NO. 70)

NATIONAL ELECTRICAL SAFETY CODE (NESC)

NATIONAL ELECTRIC CODE (NEC)

4. STANDARD SPECIFICATIONS

The standard specifications listed below and referred to herein are by such reference made a part hereof as far as the provisions thereof are applicable to the work covered by this specification. Where any conflict occurs between the standard specifications and this specification, this specification shall govern.

Specification CE-1-COND, 2/23/72, Electrical Conduit, Steel, Rigid, Zinc-Coated

Specification CE-1-EWI,2/18/72, Electrical Work - Industrial

Specification CE-1-UDC, 2/18/72, Concrete Encasement of Underground Duct or Conduit

5. CONTRACTOR-FURNISHED EQUIPMENT AND MATERIALS

The contractor shall furnish all materials and equipment, except the equipment and material furnished by the Owner, required for complete and operating electrical systems as indicated on the drawings and specified herein. All contractor-furnished material and equipment shall be new, shall be of high quality, and shall be delivered to the jobsite in the manufacturer's original container. Substitution of equipment and materials that are indicated on the drawings shall be permitted only where the words "or equal"

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follow the description. All substitutions shall be approved by the Engi:

6. MATERIAL REQUIREMENTS

All material and equipment specified for installation under this specific shall be suitable for use in the most severe ambient conditions that will exist at the particular location. In wet areas, NEMA 4 enclosures or her ly sealed devices shall be used. These requirements apply unless modifie herein or are indicated otherwise on the drawings.

6.1 CONDUIT - All conduit shall be UL approved for the use intended. Al conduit shall be rigid galvanized steel unless otherwise specified o the drawings. Minimum conduit size shall be 3/4-inch above ground or 1" below ground.

6.1.1 Metallic conduit shall be rigid galvanized steel. Electrical metallic tubing will not be used.

6.1.2 Non-metallic conduit shall be used only where indicated on the drawings and shall be Johns-Manville transite Korduct, or equa All end bells, couplings, spacers and other fittings shall be by the same manufacturer as the conduit itself.

6.1.3 Flexible conduit shall be American Brass "Sealtite", or equal.

6.2 CONDUIT FITTINGS, OUTLET BOXES, JUNCTION BOXES AND PULL BOXES

6.2.1 Cast iron alloy conduit fittings with threaded conduit shall be used unless otherwise indicated on the drawings. Fittings shall be Crouse-Hinds "Condulets", Appleton "Unilets", or approved equal. All fittings for flexible conduit shall be Appleton Type "ST" to insure continuity of conduit system ground. All fittings installed in damp locations shall be of an approved type.

6.2.2 Device Boxes - All flush mounted device boxes shall be code gage pressed steel, galvanized. All surface mounted device boxes shall be cast iron alloy "FS" type with threaded hubs and gasketed cover All device boxes shall be surface mounted unless otherwise noted on the drawings.

6.2.3. Pull Boxes and Junction Boxes - All pull boxes or junction boxes shall be made from sheet steel and shall have gasketed covers. Conduits shall be attached to the boxes with removable threaded conduit hubs, Appleton Unit-Seal "HUB" series, or equal, when boxes are installed outdoors or in wet areas.

6.3 WIRE AND CABLE

6.3.1 General

a. All lighting, power, control and signal conductors shall be stranded copper unless otherwise indicated.

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b. No conductor smaller than No. 12 AWG shall be used lighting and power and none smaller than No. 14 fo: trol, except communication cable and instrumentatic when drawings specifically show an exception.

6.3.2 5 KV CABLES

a. Cable for installation in conduit shall be single c shielded, ungrounded neutral, General Electric Compa SI-58064, or equal.

6.3.3 600 VOLT CABLE

a. Single conductor cable for installation in conduit sl General Electric Company No. SI-58053, or equal. Cal bear the XHHW label.

6.3.4 Ground Wire - all ground wire shall be bare stranded, hard drawn medium hard drawn copper. Size as shown on drawings.

6.3.5 WIRE MARKINGS

a. All wire shall be marked with wire numbers at terminat by the use of adhesive markers.

b. All power feeders shall be marked at termination point with the following colors by means of precolored cloth hesive tape:

Phase A - black	Neutral	white
Phase B - red	D. C. Positive	red
Phase C - blue	D. C. Negative	black

6.4 Ground Connectors - All underground connections to the ground grid system shall be made using exothermic-welded joints. All exposed connections shall be made as follows:

6.4.1 Connections to Ground Rods - All connections to ground rods shall be made with Burndy Type GAR, GD or GK connectors as re quired, or equal. All connections to building columns shall l made with Burndy Type GQA connectors, or equal.

6.4.2 Connections to Motors - All connections to motors shall be mad with Burndy Type KC connectors, or equal, except when motors a grounded through the conduit system.

6.4.3 Connections to Control Panels - All connections to control pan cabinets and similar equipment shall be made with Burndy CIKLUG or equal. All connections to conduit stub-ups shall be made wi grounding bushings. Bushings shall be connected together by means of bonding jumpers.

7 INSTALLATION REQUIREMENTS

7.1 GENERAL

The contractor shall install all work as shown on the drawings

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and specified herein or in other parts of this specificat: All work shall be performed by craftsmen experienced or tr in the installation of the materials and equipment specifi herein. The installation of all equipment and material sh meet or exceed the requirements of the National Electrical National Safety Code, and any enforcing authority at the l. of the installation.

7.2.1 Conduit Expansion Fittings - Conduit expansion fittings sha be installed in each conduit supported by a building or oth structure where the conduit run crosses a building or struc foundation expansion section. This fitting may be omitted : 3/4-inch and 1-inch conduit if the conduit makes a 90 degree bend at the expansion joint and the point of attachment of t conduit to the structure on either side of the bend is 3-fee or more from the bend.

7.2.2 Conduit Sleeves - Conduit sleeves or blockout shall be provid for all penetrations. All penetrations through the walls and ceilings of electrical control rooms and equipment rooms shal be sealed dust tight. All penetrations in exterior or under- ground walls and hanholes shall be watertight.

7.2.3 Underground ducts - Underground ducts shall be installed in accordance with American Smelting and Refining Company Specification CE-1-UDC unless otherwise indicated on the drawings.

7.2.4 Instrumentation, intercommunications and other low level signal circuits shall not be installed in the same conduit or duct, ou let box, junction box or pull box with power or lighting circuit

7.2.5 Conduit shall be attached to control panels having NEMA 12 enclosures and to boxes in outdoor or wet locations with re- movable threaded conduit hubs, Appleton "HUB" series, or equal.

7.2.6 Conduit stub-Ups not attached to the equipment shall be grounded.

7.3 WIRING SYSTEM

7.3.1 Stress Relief Cones - Shall be provided on all 5 KV cables.

7.3.2 Splices or Taps - No splices or taps shall be permitted in either feeders or branch circuits except at outlets or accessible junction boxes.

7.4 GROUNDING SYSTEM

7.4.1 All exposed non-current carrying metal parts of electrical equipment, raceways, building structural steel and neutral con- ductor of the wiring system shall be grounded. The grounding of all equipment requiring a ground connection by the National Electrical Code, but not specifically shown on the drawings, shall be included as part of the work and shall be installed by the contractor.

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FIELD VERIFICATION OF WORK

The drawings which constitute a part of this specification indicate general arrangement of circuits, location of control boards and panels, equipment, conduit, cable and other work. Data presented on these drawings are as accurate as surveys and planning can determine, but accuracy is not guaranteed and field verification of all dimensions is hereby directed. Where dimensions are not given, they shall be developed by the contractor and coordinated with the equipment and other trades. Specifications and drawings are for assistance nd guidance, but exact locations, distances and levels shall be governed y actual field conditions. The contractor shall also review architectural, ivil, structural, piping, ventilating plans and shall adjust his work to nform to all conditions shown thereon. Discrepancies shown on different ans, or between plans and specifications and any installation that olates the requirements of any codes, shall be promptly brought to the ention of the Engineer for a decision.

ITING

switchboards, panel boards and similar equipment furnished with enameled acquered by the manufacturer which are scratched or defaced by the con- or during construction shall be refinished and restored to the original h by the contractor at his cost.

G

10.1 The Engineer will conduct from time to time such tests as may be required to any part of the system or equipment to determine if it is installed in accordance with the specifications. The contractor shall furnish all labor, materials, instruments, tools and make all necessary connections for testing. All tests shall be witnessed by the Owner or his designated representative and three copies of the verified test results shall be given to the Owner promptly upon completion of a test.

2 The contractor shall provide assistance to the various electrical manufacturers' field engineers as required in the testing and adjusting of the electrical power and control equipment. Co-operation of the contractor must be such that a minimum of time is required for testing.

Final inspection and test shall be made in the presence of the Owner or his representatives. The test shall be made with full operating voltage under conditions simulating as nearly as practicable those which will be obtained in subsequent operation and shall exhibit that the requirements of the specifications and the drawings have been fulfilled.

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w York Office
.nelting and Refining
Department

December 8, 1975

JOB 154

Mr. W. R. Kelly
El Paso Plant

Re your letter of December 5th to me, permission is granted to charge an estimated $6000 to operating expenses which covers the moving of the conduit above ground to a tunnel that runs under the railroad tracks.

K. D. Loughridge

cc: RRichter
LCTravis

RECEIVED
DEC 11 1975
W.R. KELLY
P.A. DeSANTIS

As Arranged

Quotations, Specifications, Drawing, Contract And Insurance Forms Attached

This Requisition Is To Record Agreement Entered Into With Callaghan Electric Co., Inc. For Installation Of Pump House Feeders

December 3, 1975

Electric Power - Job 15A - Pump house feeders

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