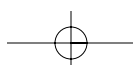
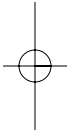
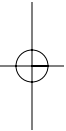
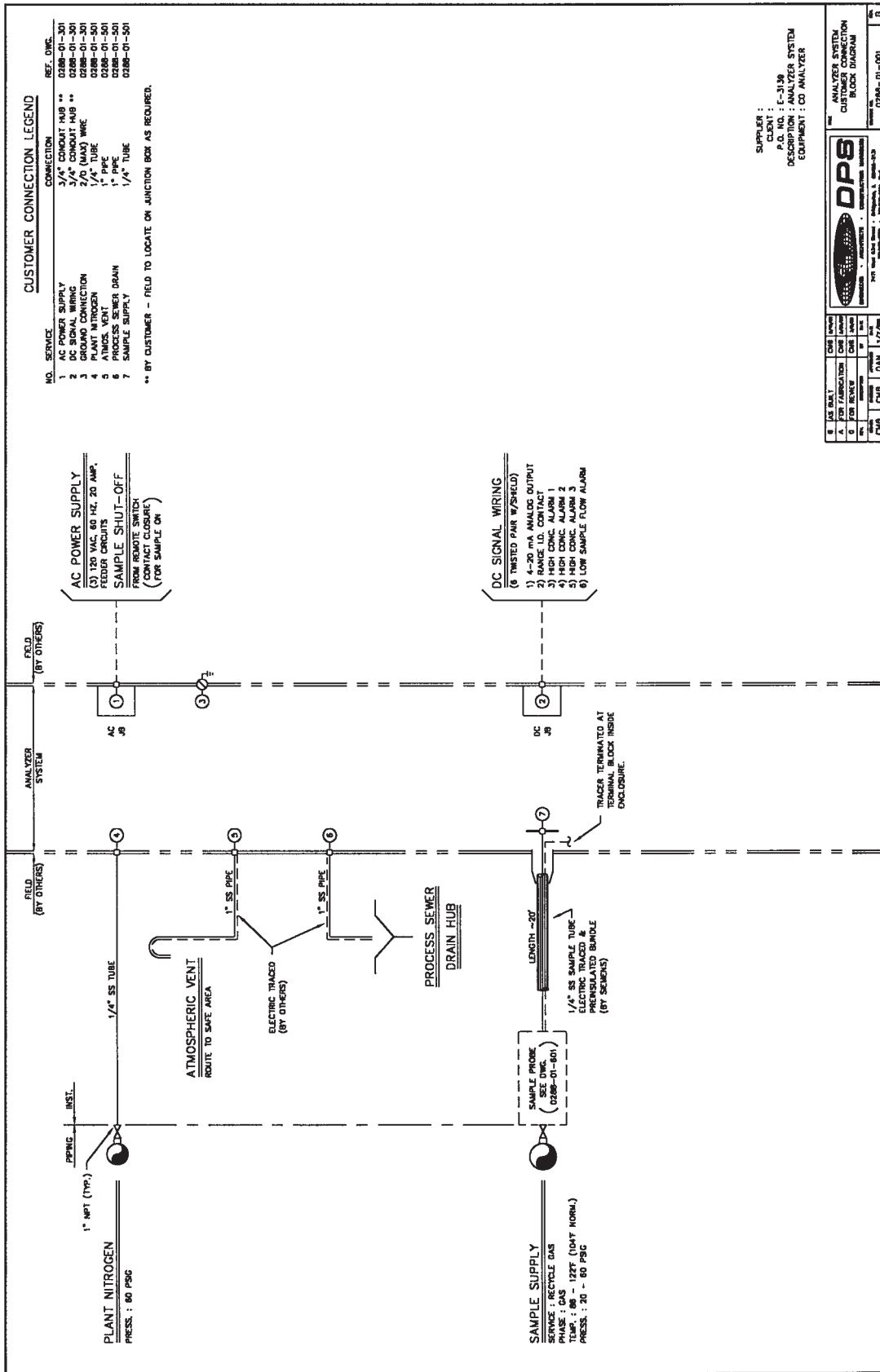


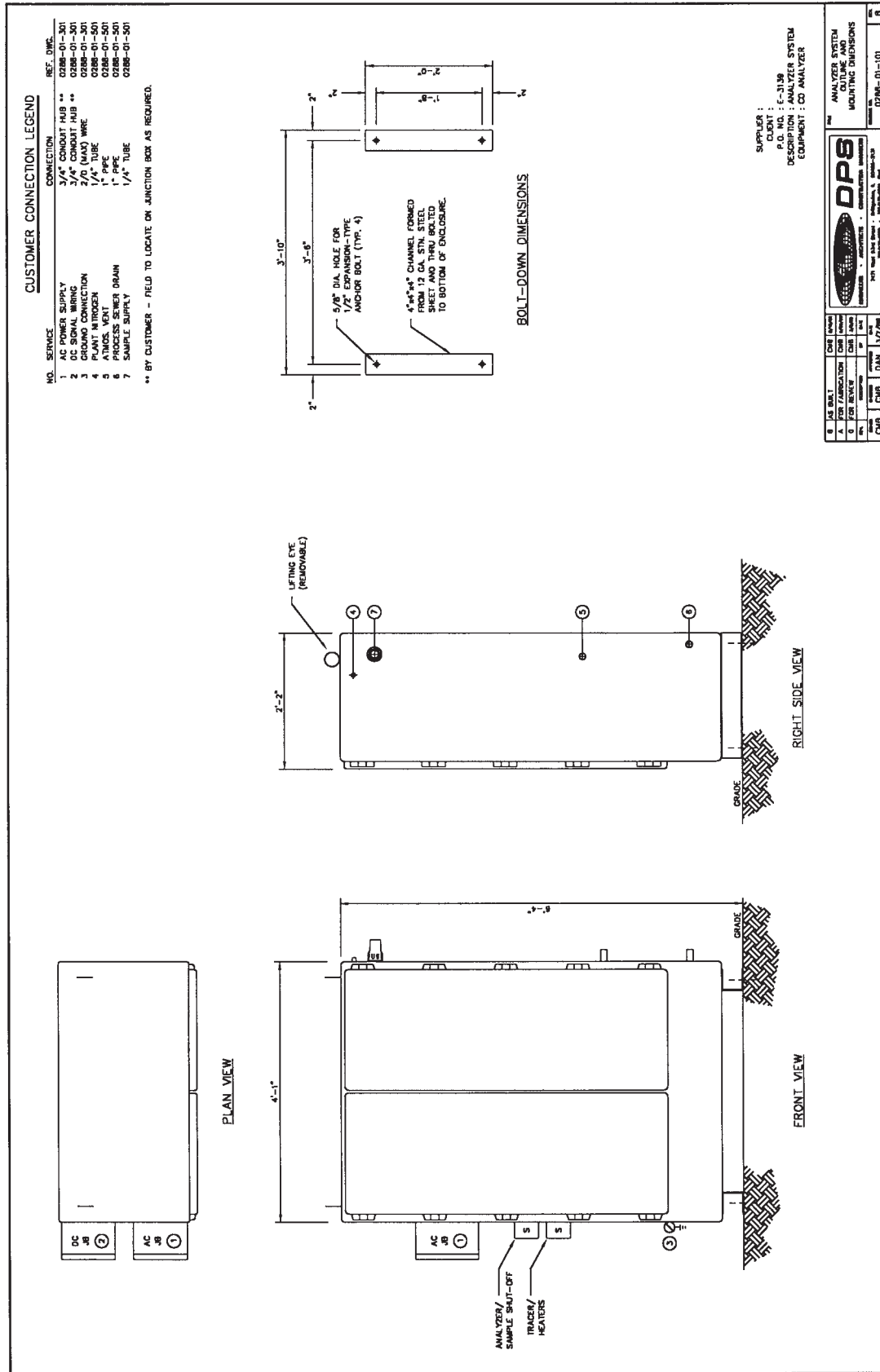
APPENDIX C

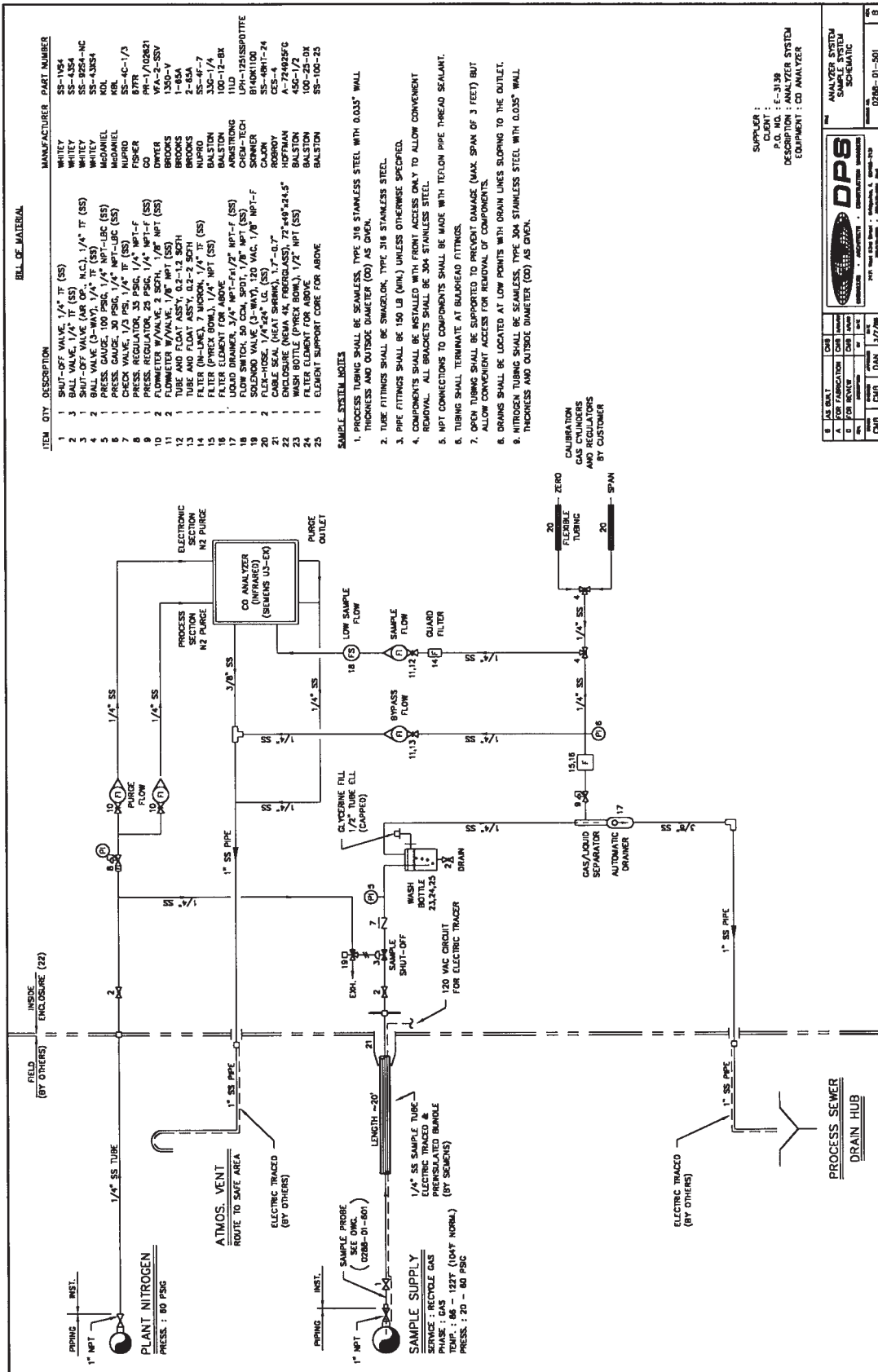
TYPICAL ENCLOSURE AND WALK-IN PROCESS ANALYZER SYSTEM SHELTER DOCUMENTATION DRAWING PACKAGES



502 APPENDIX C







BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER
1	1	SHUT-OFF VALVE, 1/4" TF (SS)	WHITEY	SS-1V64
2	3	BALL VALVE, 1/4" TF (SS)	WHITEY	SS-4354
3	1	VALVE, 1/4" NPT, 1/4" TF (SS)	WHITEY	SS-4354 MC
4	2	BALL VALVE, 1/2" NPT, 1/4" TF (SS)	WHITEY	SS-4354
5	1	PRESS. GAUGE, 100 PSIG, 1/4" NPT-LBC (SS)	MCDANIEL	KBL
6	1	CHECK VALVE, 1/2" PS, 1/4" TF (SS)	HUPRD	SS-4C-1/3
7	1	PRESS. REGULATOR, 35 PSIG, 1/4" NPT-F	FISHER	PPR-1/02821
8	1	FLOWMETER W/VALVE, 2 SCFH, 1/8" NPT (SS)	OWYER	VFA-2-SSV
9	1	FLOWMETER W/VALVE, 1/8" NPT (SS)	BROOKS	1350-V
10	1	TUBE AND FLOAT ASSY, 0.2-2 SCFH	BROOKS	1-65A
11	1	TUBE AND FLOAT ASSY, 0.2-2 SCFH	BROOKS	2-65A
12	1	FLTER (PREP. FROM 1/4" NPT) (SS)	BALSTON	33C-1/4
13	1	FLTER ELEMENT FOR ABOVE	BALSTON	100-12-BX
14	1	LIQUID DRAINER, 3/4" NPT-F, 1/2" NPT-F (SS)	ARMSTRONG	11LD
15	1	SOLENOID VALVE (3-WAY), 125 VAC, 1/8" NPT-F (SS)	CHEM-TECH	BF40K1100
16	1	SOLENOID VALVE (3-WAY), 125 VAC, 1/8" NPT-F (SS)	OWYER	SS-11-24
17	1	CABLE SEAL (HEAT SHRINK), 1/2"-0.7"	ROBROY	CES-4
18	1	ENCLOSURE (NEMA 4X, FIBERGLASS), 7.7" x 9" x 24.5"	HOTFMAN	A-724825FG
19	1	WASH BOTTLE (PREP. BOWL), 1/2" NPT (SS)	BALSTON	45G-1/2
20	1	FLTER ELEMENT FOR ABOVE	BALSTON	100-25-DX
21	1	FLTER ELEMENT FOR ABOVE	BALSTON	SS-100-25

SAMPLE SYSTEM NOTES

1. PROCESS TUBING SHALL BE SEAMLESS, TYPE 316 STAINLESS STEEL WITH 0.035" WALL THICKNESS AND OUTSIDE DIAMETER (OD) AS GIVEN.
2. TUBE FITTINGS SHALL BE SWAGelok, TYPE 316 STAINLESS STEEL.
3. PIPE FITTINGS SHALL BE 150 LB (MIN.) UNLESS OTHERWISE SPECIFIED.
4. COMPONENTS SHALL BE INSTALLED WITH FRONT ACCESS ONLY TO ALLOW CONVENIENT REMOVAL. ALL BRACKETS SHALL BE 304 STAINLESS STEEL.
5. NPT CONNECTIONS TO COMPONENTS SHALL BE MADE WITH TEFLON PIPE THREAD SEALANT.
6. TUBING SHALL TERMINATE AT BALLHEAD FITTINGS.
7. GASKETS SHALL BE SUPPORTED TO PREVENT DAMAGE (MAX. SPAN OF 3 FEET) BUT ALLOW CONVENIENT ACCESS FOR REMOVAL OF COMPONENTS.
8. DRAINS SHALL BE LOCATED AT LOW POINTS WITH DRAIN LINES SLOPING TO THE OUTLET. THROTTLES SHALL BE SEAMLESS, TYPE 304 STAINLESS STEEL WITH 0.035" WALL THICKNESS AND OUTSIDE DIAMETER (OD) AS GIVEN.

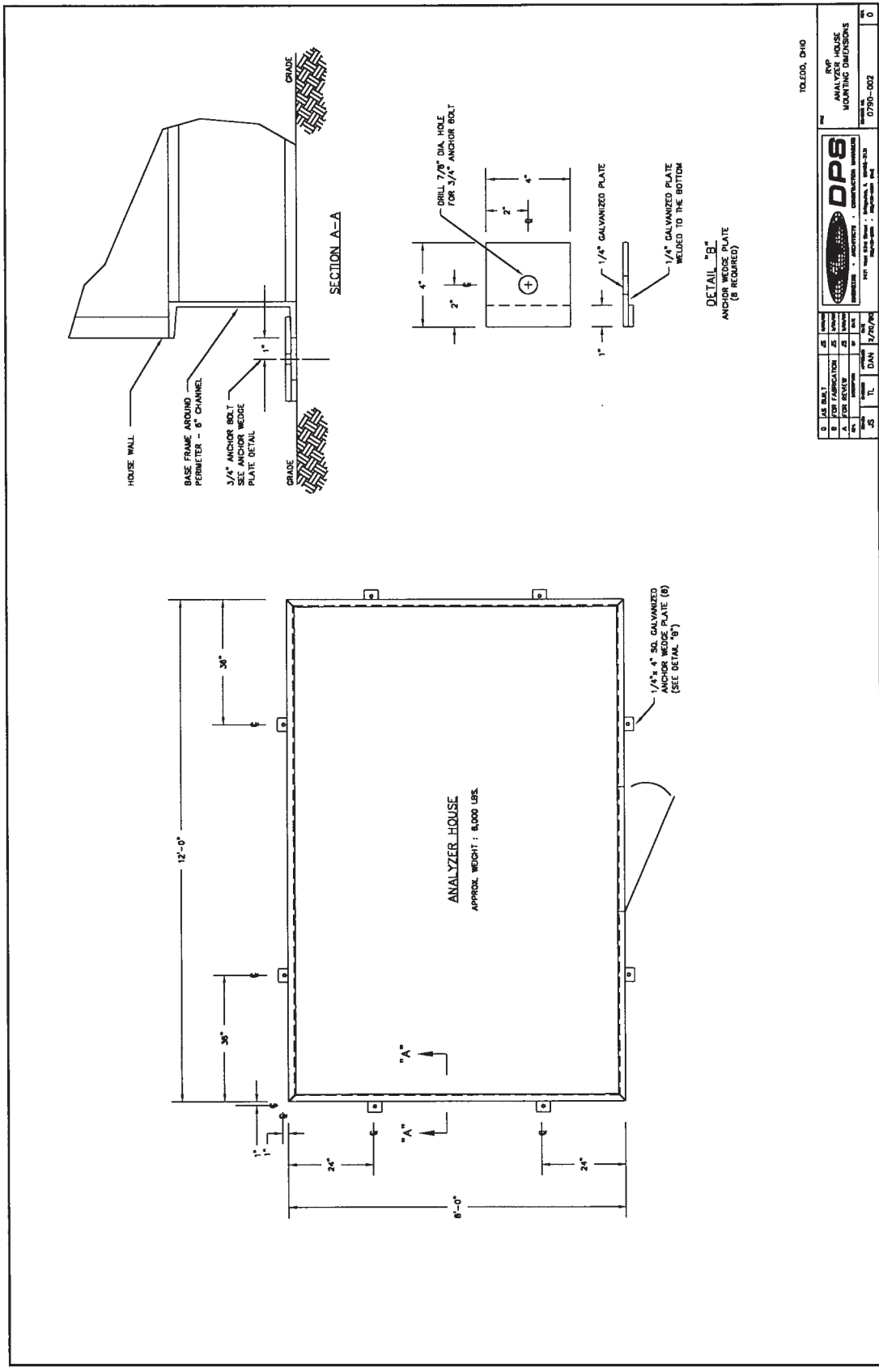
SUPPLIER :
 CLIENT :
 P.O. NO. : E-3138
 DESCRIPTION : ANALYZER SYSTEM
 EQUIPMENT : CO ANALYZER

DATE	BY	CHKD	DATE

ANALYZER SYSTEM
 SAMPLE SYSTEM
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DPS
 ANALYZER SYSTEM
 SCHEMATIC

DATE: 02/06/01
 NO: 501

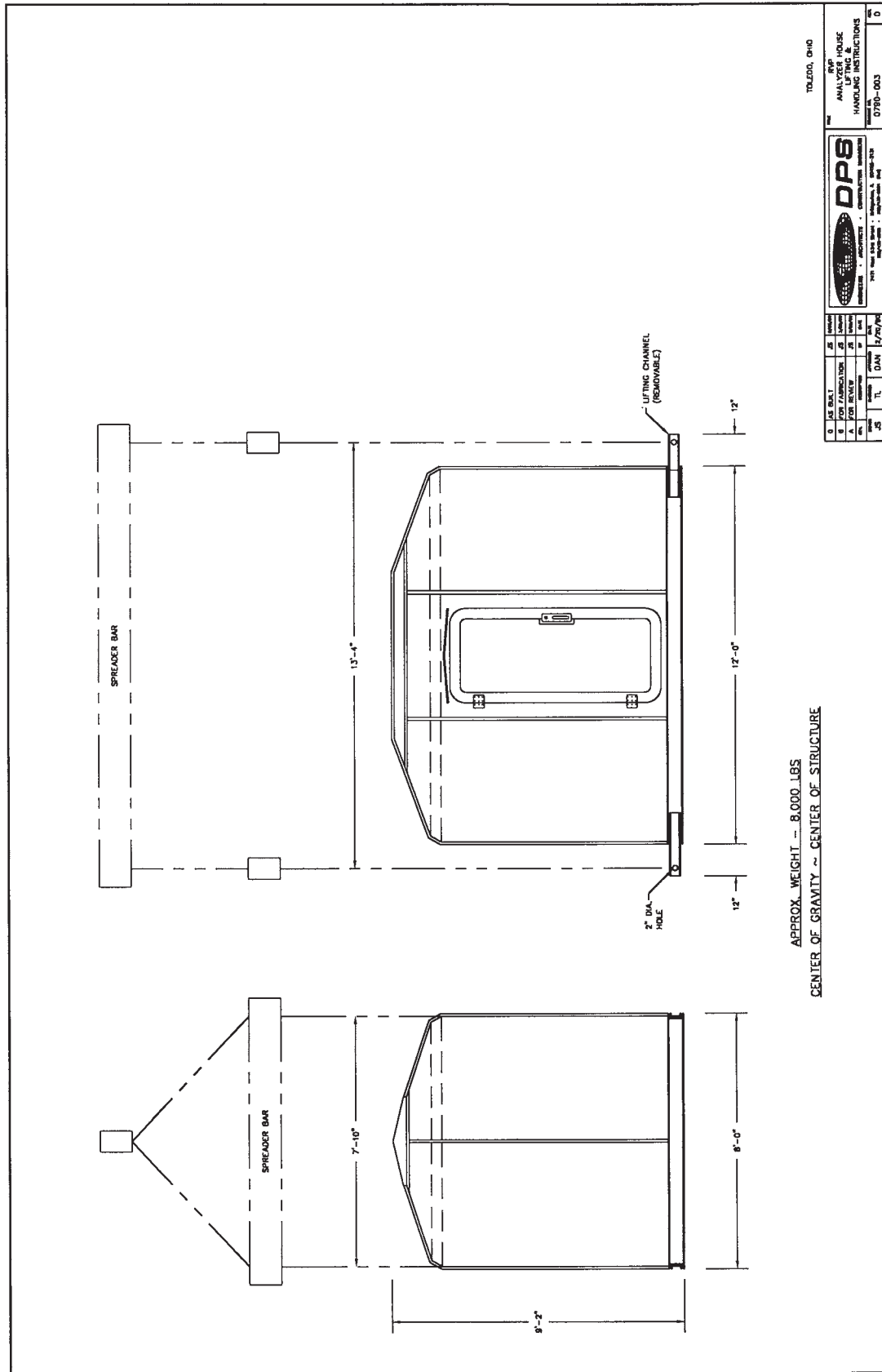


DATE	11/27/04
BY	DAN
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SCALE	AS SHOWN
PROJECT	ANALYZER HOUSE
DRAWING NO.	0730-002
REV.	0

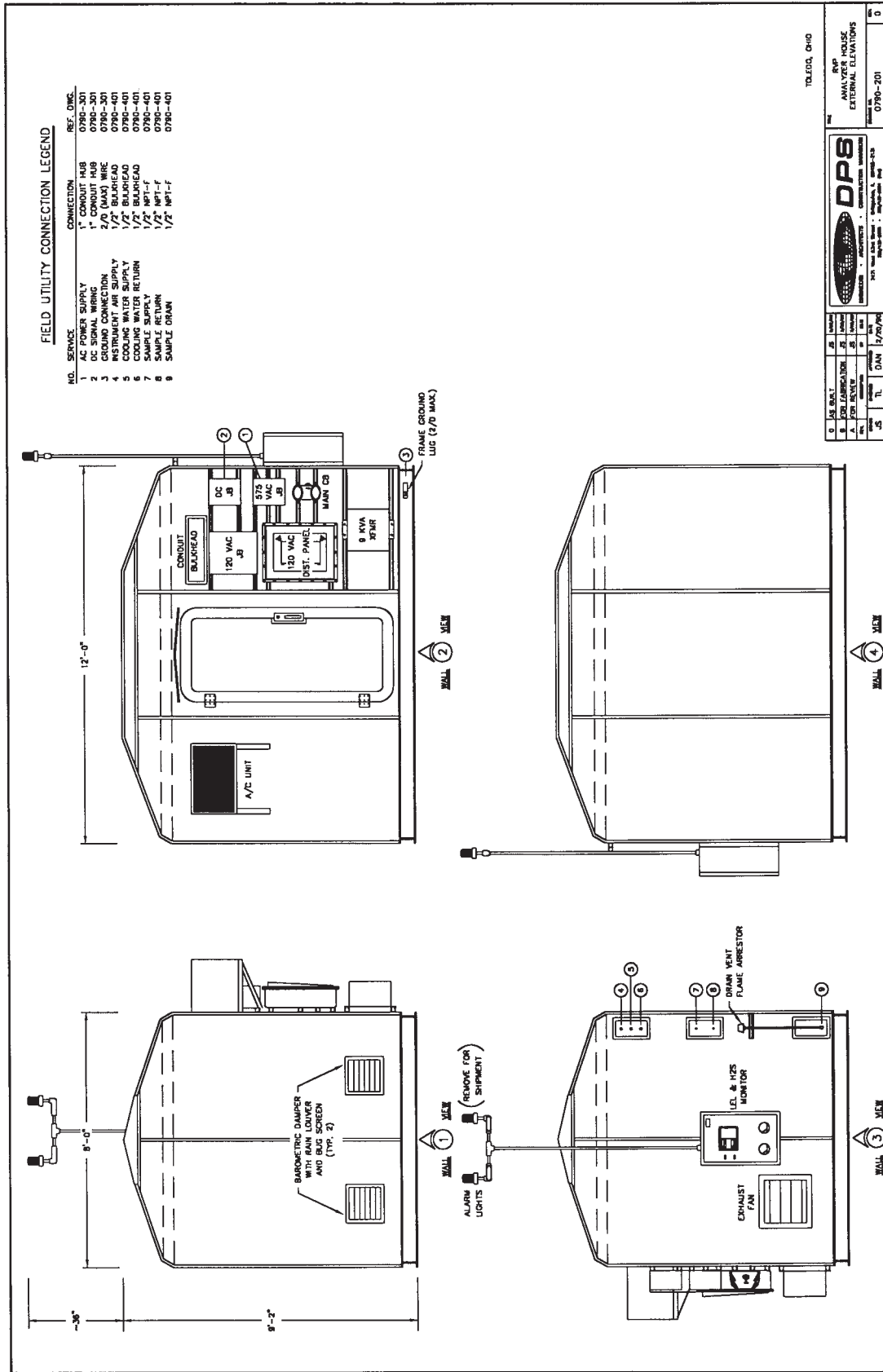
TOLEDO, OHIO

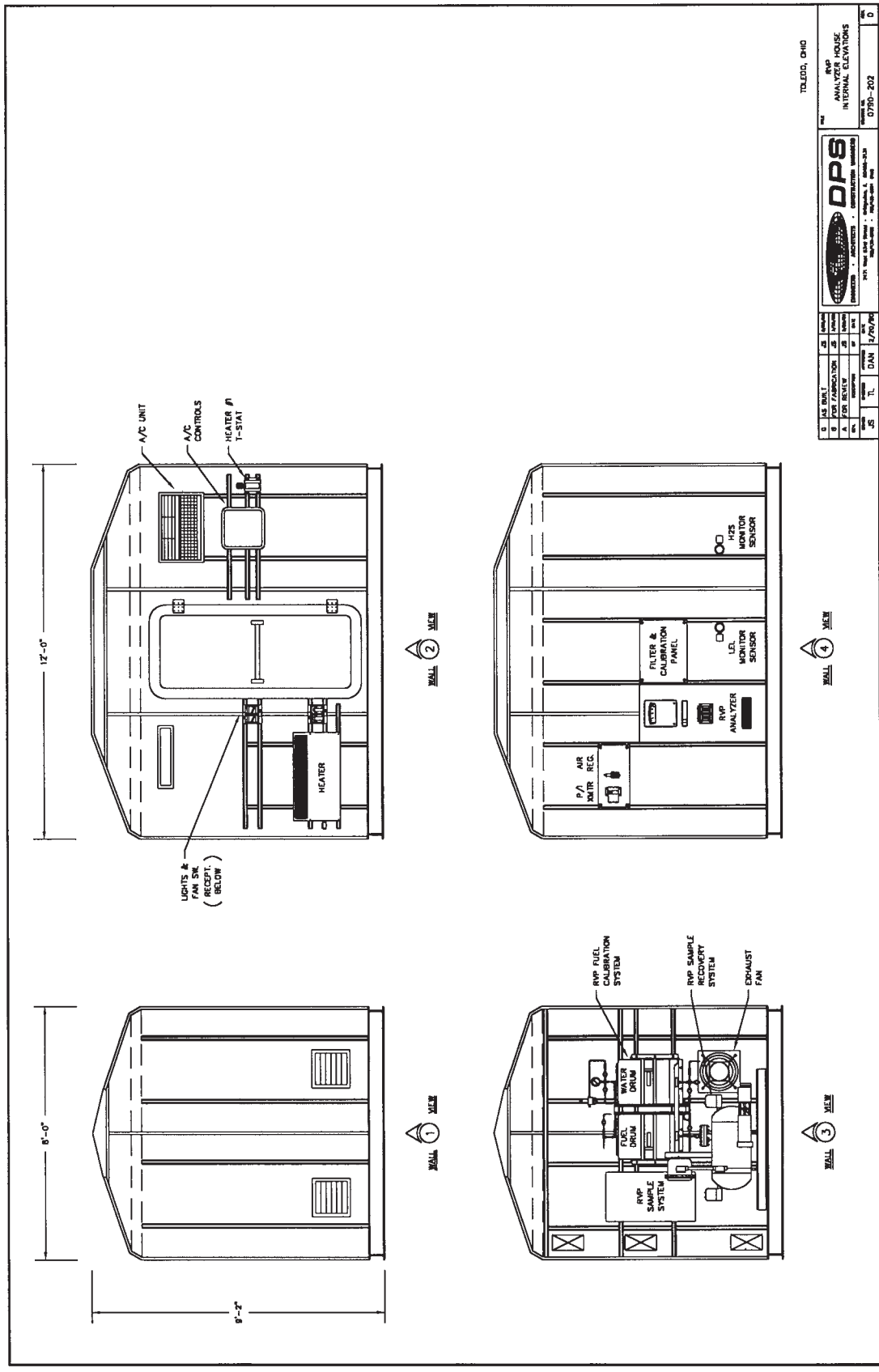
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ANALYZER HOUSE
MOUNTING DIMENSIONS

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512 APPENDIX C



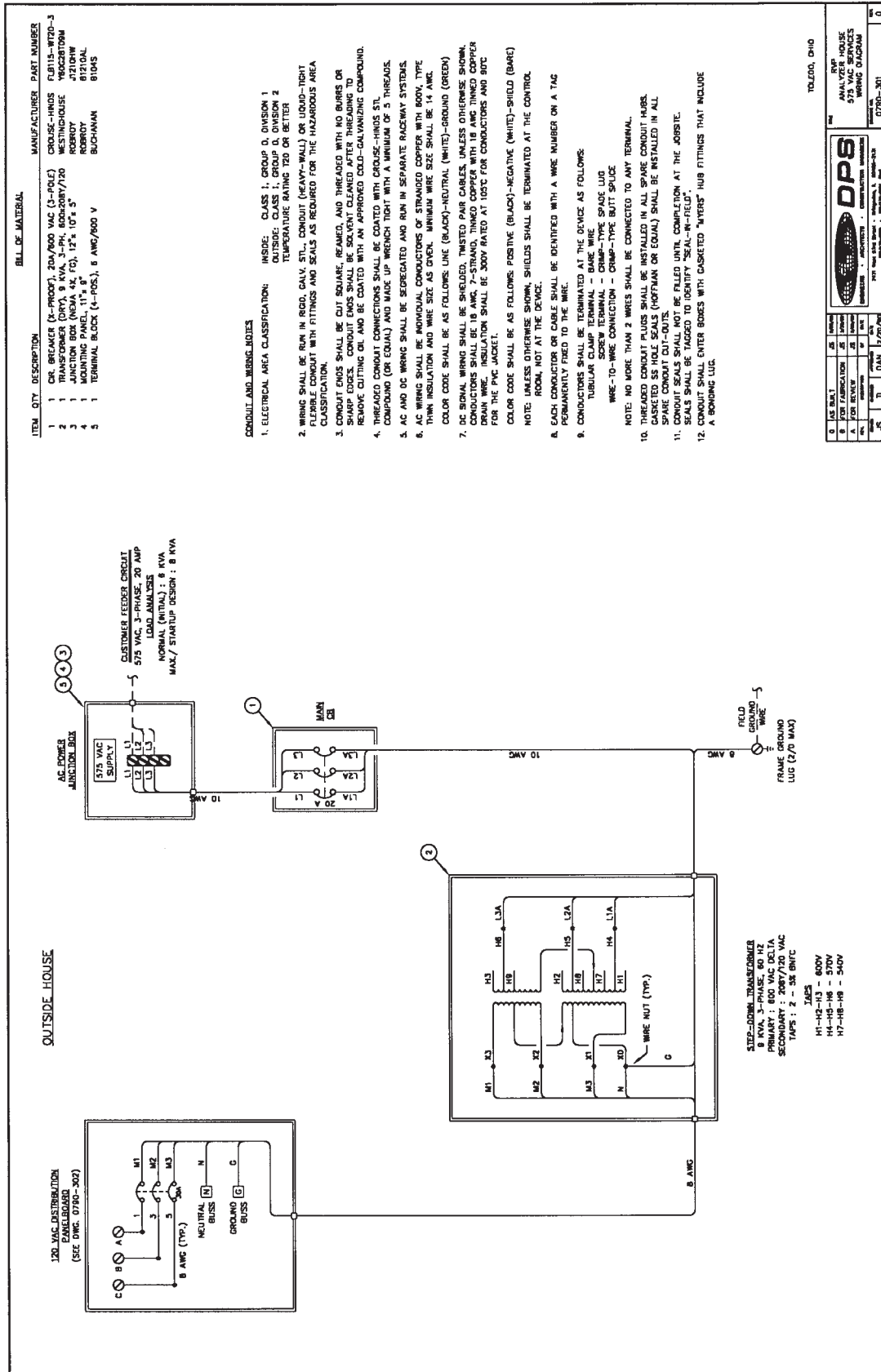


DATE	BY	CHKD	APP'D
07/31/02	JL	DAN	JZ/20/04
REV	DESCRIPTION	DATE	BY
01	ISSUE	07/31/02	JL
02	FOR FABRICATION	08/01/02	DAN
03	FOR CONSTRUCTION	08/01/02	JL
04	FOR CONSTRUCTION	08/01/02	JL
05	FOR CONSTRUCTION	08/01/02	JL

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TOLEDO, OHIO
 RVP ANALYZER HOUSE
 INTERNAL ELEVATIONS
 07310-202

514 APPENDIX C



BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER
1	1	OR BREAKER (X-PROOF), 20A/600 VAC (3-POLE)	CROUSE-HINDS	FL8115-WT20-3
2	1	TRANSFORMER (DVA), 9 KVA, 3-PH, 600-208Y/20	WESTINGHOUSE	780028T09M
3	1	JUNCTION BOX (NEMA 4X, 10), 12" x 10" x 5"	ROBERT	J210HW
4	1	MOUNTING PANEL (11" x 8")	ROBERT	B710AL
5	1	TERMINAL BLOCK (4-POS.), 5 AWG/600 V	BUCHANAN	810S

TOLEDO, OHIO

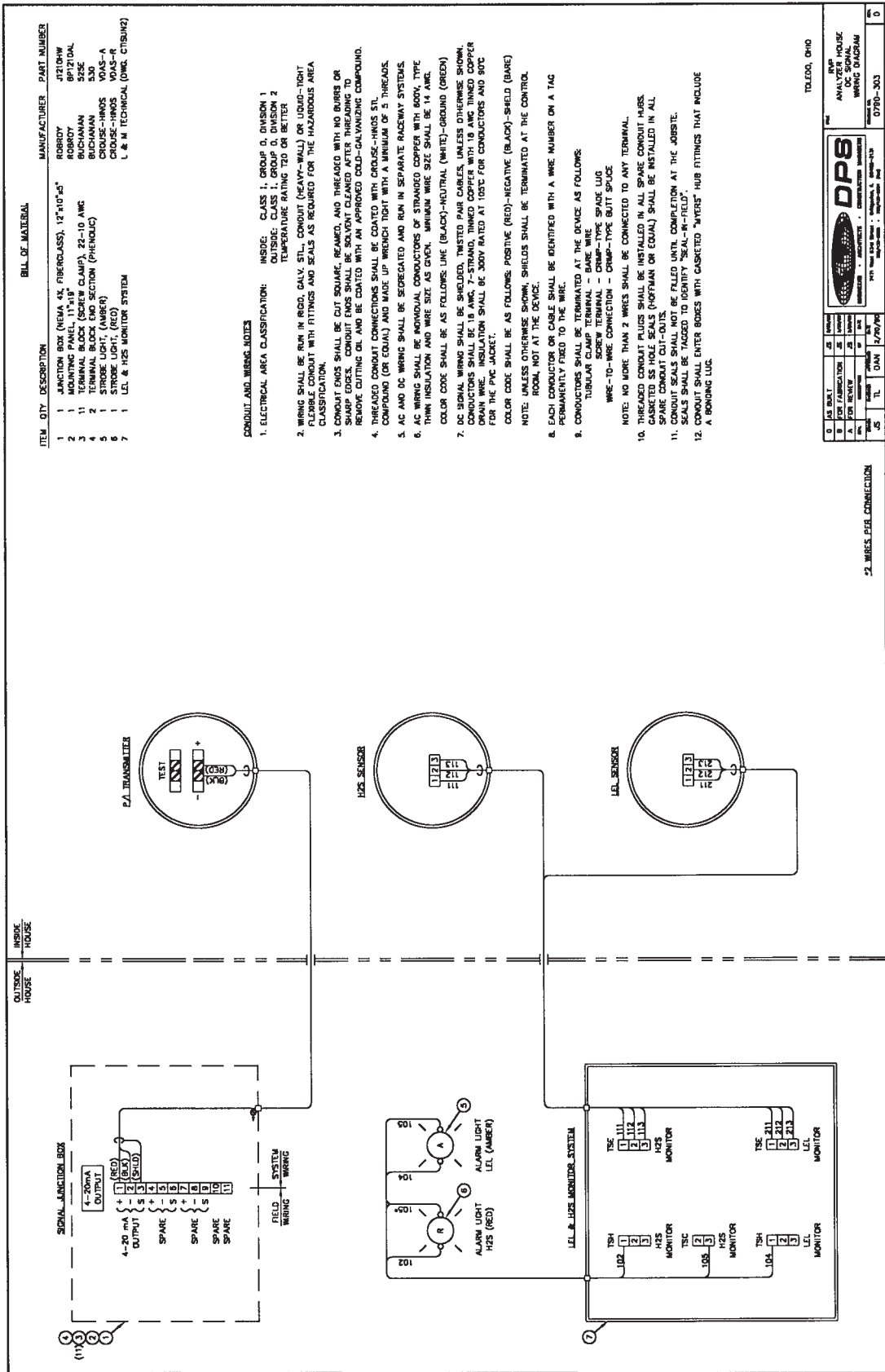
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777 West 24th Street • Toledo, OH 43606-3929
419-243-1111 • Fax 419-243-1112

DATE	BY	CHKD	APP'D
07/20/02	JAN		

516 APPENDIX C



BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER
1	1	JUNCTION BOX (NEHA 42, FIBERGLASS), 12"x10"x5"	ROBBY	J210HW
2	1	MOUNTING PANEL, 17 1/8" CLAMP, 22-10 AWG	ROBBY	972FUAL
3	1	TERMINAL BLOCK, 12 POS	ROBBY	972FUAL
4	2	TERMINAL BLOCK END SECTION (PHENOLIC)	BUCHANAN	530
5	1	STROBE LIGHT, (AMBER)	CRUISE-HNOS	VOAS-A
6	1	STROBE LIGHT, (RED)	CRUISE-HNOS	VOAS-R
7	1	LEL & HPS MONITOR SYSTEM	L & M TECHNICAL (DMC, CTSUNG)	

CONDUIT AND WIRING NOTES

1. ELECTRICAL AREA CLASSIFICATION: INSIDE: CLASS 1, GROUP D, DIVISION 1
OUTSIDE: CLASS 1, GROUP D, DIVISION 2
TEMPERATURE RATING T20 OR BETTER

2. WIRING SHALL BE RUN IN RIGID, GALV. STL. CONDUIT (HEAVY-WALL) OR LIQUID-TIGHT FLEXIBLE CONDUIT WITH FITTINGS AND SEALS AS REQUIRED FOR THE HAZARDOUS AREA CLASSIFICATION.

3. CONDUIT ENDS SHALL BE CUT SQUARE, REAMED, AND THREADED WITH NO BURRS OR SHARP EDGES. CONDUIT ENDS SHALL BE SOLVENT CLEANED AFTER THREADED TO REMOVE CUTTING OIL AND BE COATED WITH AN APPROVED COOL-GALVANIZING COMPOUND.

4. THREADED CONDUIT CONNECTIONS SHALL BE COATED WITH CRUISE-HNOS STL. COMPOUND (OR EQUAL) AND MADE UP WRENCH TIGHT WITH A MINIMUM OF 5 THREADS.

5. AC AND DC WIRING SHALL BE SEGREGATED AND RUN IN SEPARATE RACEWAY SYSTEMS.

6. AC WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED COPPER WITH 600V, TYPE THIN INSULATION AND WIRE SIZE AS GIVEN. MINIMUM WIRE SIZE SHALL BE 14 AWG. COLOR CODE SHALL BE AS FOLLOWS: LINE (BLACK)-INDUCTUAL (WHITE)-GROUND (GREEN)

7. DC SIGNAL WIRING SHALL BE SHIELDED, TAPPED PEAR CABLES, UNLESS OTHERWISE SHOWN. CONDUCTORS SHALL BE 18 AWG, 7-STRAND, THINNED COPPER WITH 18 AWG THINNED COPPER DRAIN WIRE. INSULATION SHALL BE 300V RATED AT 105°C FOR CONDUCTORS AND 80°C FOR THE PVC JACKET.

8. COLOR CODE SHALL BE AS FOLLOWS: POSITIVE (RED)-NEGATIVE (BLACK)-SHIELD (BAKE)

NOTE: UNLESS OTHERWISE SHOWN, SHIELDS SHALL BE TERMINATED AT THE CONTROL ROOM, NOT AT THE DEVICE.

9. EACH CONDUCTOR OR CABLE SHALL BE IDENTIFIED WITH A WIRE NUMBER ON A TAG PERMANENTLY ATTACHED TO THE WIRE.

10. CONDUCTORS SHALL BE TERMINATED AT THE DEVICE AS FOLLOWS:
TUBULAR CLAMP TERMINAL - BARE WIRE
SCREW TERMINAL - CRIMP-TYPE BUTT SPLICE
WIRE-TO-WIRE CONNECTION - CRIMP-TYPE BUTT SPLICE

NOTE: NO MORE THAN 2 WIRES SHALL BE CONNECTED TO ANY TERMINAL.

11. THREADED CONDUIT PLUGS SHALL BE INSTALLED IN ALL SPARE CONDUIT HUBS. GASKETED SS HOLE SEALS (NOFFMAN OR EQUAL) SHALL BE INSTALLED IN ALL SPARE CONDUIT OUT-GOINGS.

12. CONDUIT SEALS SHALL NOT BE FALLO UNTIL COMPLETION AT THE JOBSITE. SEALS SHALL BE TAGGED TO IDENTIFY "SEAL-IN-FIELD".

13. CONDUIT SHALL ENTER BODIES WITH GASKETED "MAYERS" HUB FITTINGS THAT INCLUDE A BONDING LUG.

TOLEDO, OHIO

DPS

ANALOG HOUSE
DC SIGNAL
WIRING DIAGRAM

DATE: 07/30/02

BY: [Signature]

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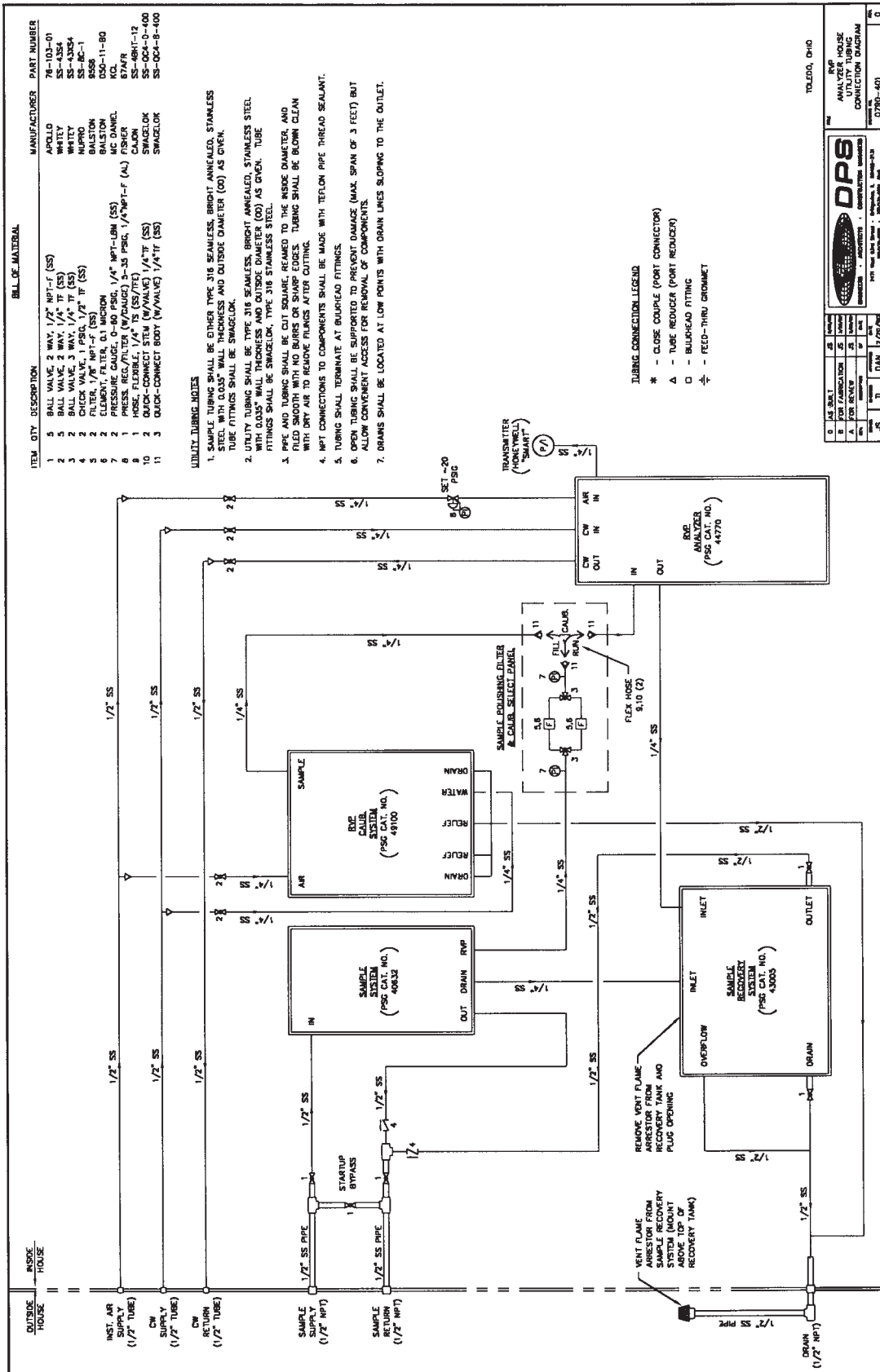
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2. WIRES FIRE CONNECTION



TOLEDO, OHIO

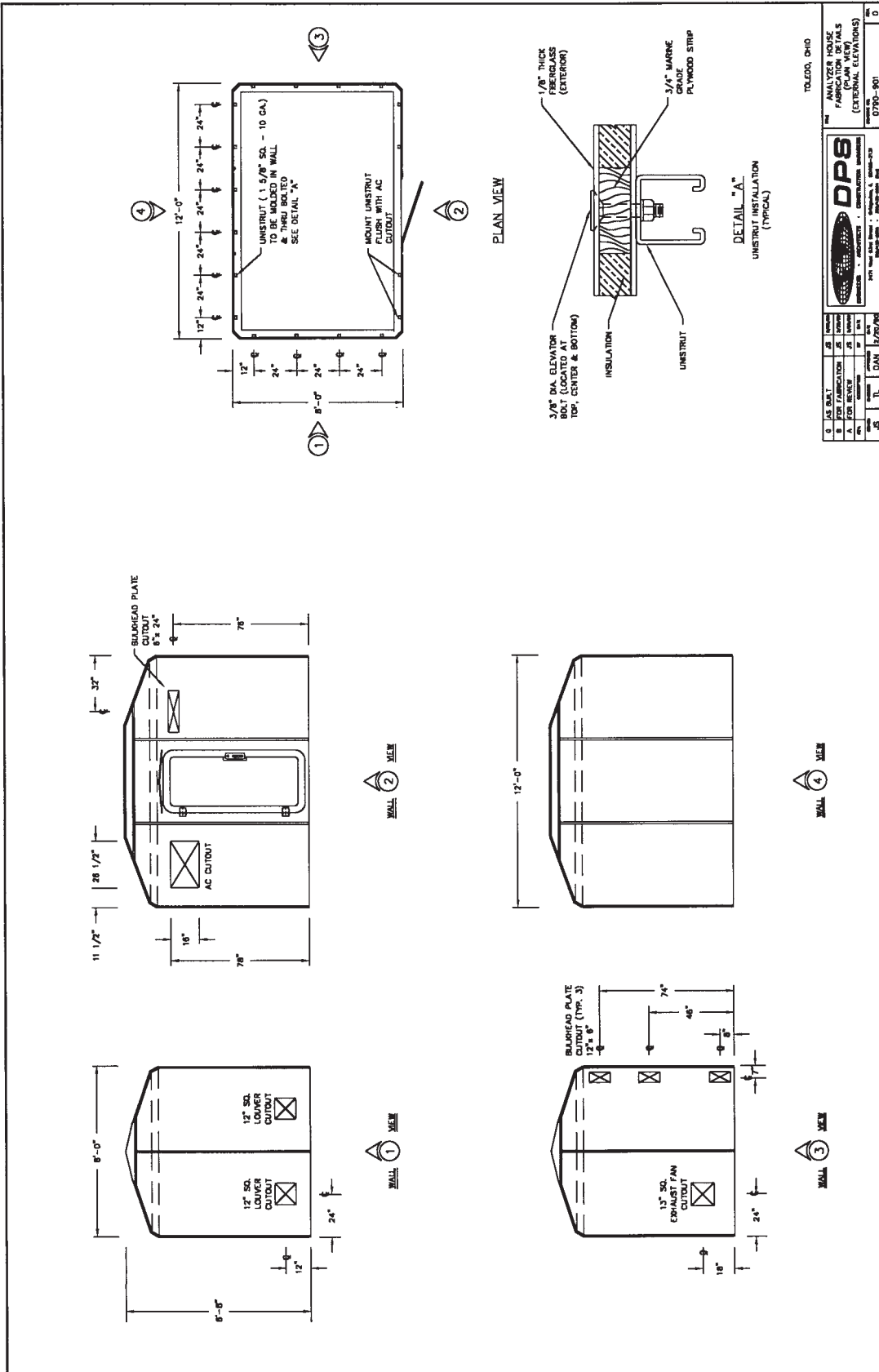
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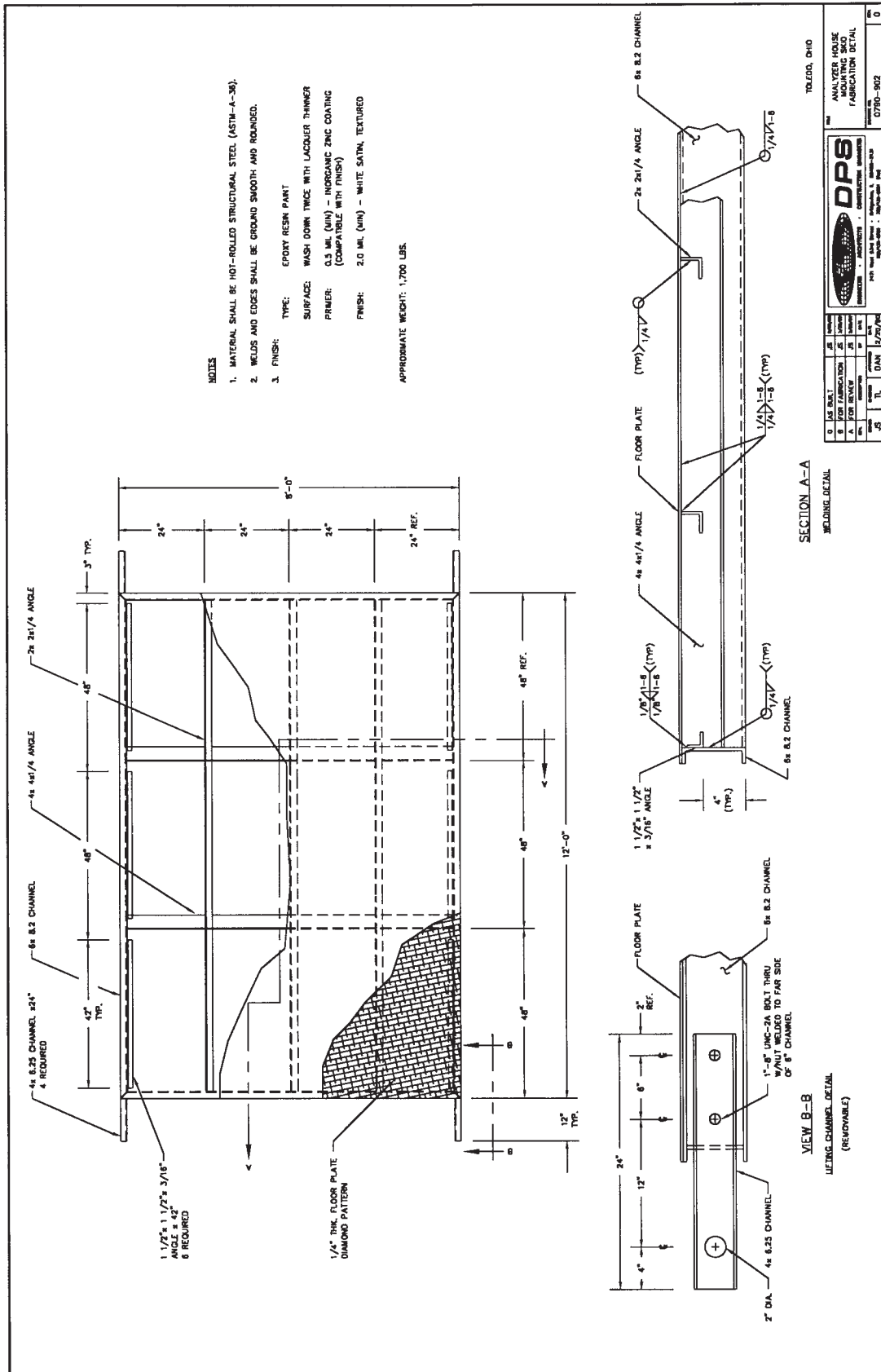
10000 E. 14th Street • Toledo, OH 43623-1000

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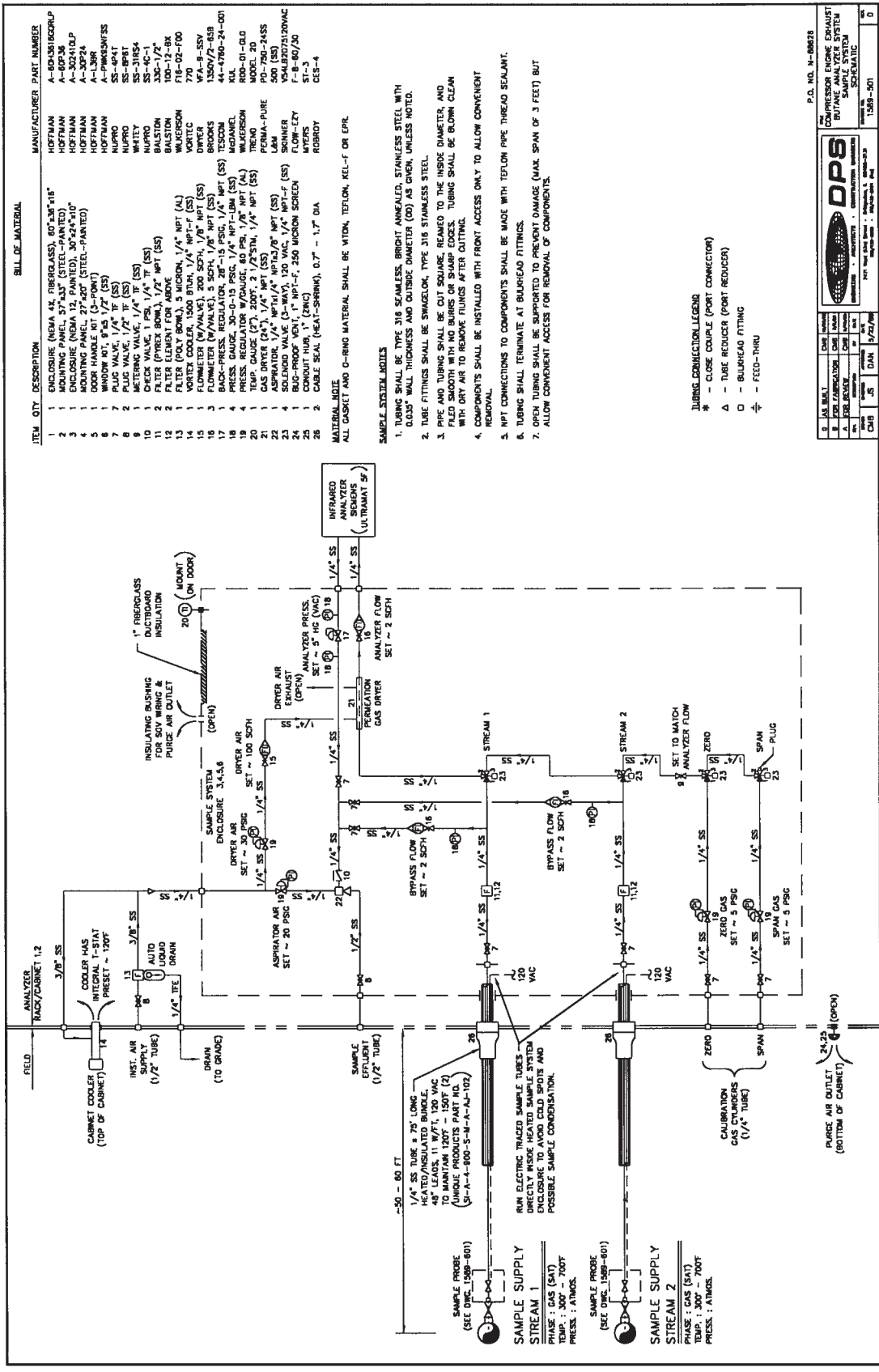
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TOLEDO, OHIO	
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(EXTERNAL ELEVATIONS)	
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520 APPENDIX C



BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER
1	1	ENCLOSURE (NEHA 4K, FIBERGLASS), 60" x 36" x 18"	HOFFMAN	A-60458160GRP
2	1	MOUNTING PANEL, 57" x 33" (STEEL-PANDED)	HOFFMAN	A-60P-36
3	1	ENCLOSURE (NEHA 12, PAINTED), 30" x 24" x 10"	HOFFMAN	A-302410LP
4	1	MOUNTING PANEL, 27" x 20" (STEEL-PANDED)	HOFFMAN	A-30P-24
5	1	ENCLOSURE (NEHA 12, PAINTED), 30" x 24" x 10"	HOFFMAN	A-302410LP
6	1	WINDUP KIT, 9/16" x 1/2" (SS)	HOFFMAN	A-PWKSLSWSS
7	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-494T
8	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-494T
9	1	METERING VALVE, 1/4" T (SS)	NUPRO	SS-31854
10	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
11	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
12	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
13	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
14	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
15	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
16	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
17	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
18	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
19	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
20	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
21	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
22	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
23	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
24	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
25	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854
26	1	PLUG VALVE, 1/4" T (SS)	NUPRO	SS-31854

- SAMPLE MATERIAL**
- ALL GASKET AND O-RING MATERIAL SHALL BE MTN, TEFON, KEL-F OR EPR.
- SAMPLE SPECIAL NOTES**
- TUBING SHALL BE TYPE 316 SEAMLESS, BRIGHT ANNEALED, STAINLESS STEEL WITH 0.035" WALL THICKNESS AND OUTSIDE DIAMETER (OD) AS GIVEN, UNLESS NOTED.
 - TUBE FITTINGS SHALL BE SWAGELON, TYPE 316 STAINLESS STEEL.
 - PIPE AND TUBING SHALL BE CUT SQUARE, REAMED TO THE INSIDE DIAMETER, AND FILED SMOOTH WITH NO BURRS OR SHARP COCKS. TUBING SHALL BE BLOWN CLEAN WITH DRY AIR TO REMOVE FLUITS AFTER CUTTING.
 - COMPONENTS SHALL BE INSTALLED WITH FRONT ACCESS ONLY TO ALLOW CONVENIENT REMOVAL.
 - NPT CONNECTIONS TO COMPONETS SHALL BE MADE WITH TEFON PIPE THREAD SEALANT.
 - TUBING SHALL TERMINATE AT BULKHEAD FITTINGS.
 - OPEN TUBING SHALL BE SUPPORTED TO PREVENT DAMAGE (MAX SPAN OF 3 FEET) BUT ALLOW COMPONENT ACCESS FOR REMOVAL OF COMPONENTS.

TUBING CONNECTION LEGEND

- * - CLOSE COUPLE (PORT CONNECTOR)
- Δ - TUBE REDUCER (PORT REDUCER)
- - BULKHEAD FITTING
- ⇄ - FEED-THRU

P.O. NO. N-88878

COMPRESSOR ENGINE EXHAUST BUTANE ANALYZER SYSTEM

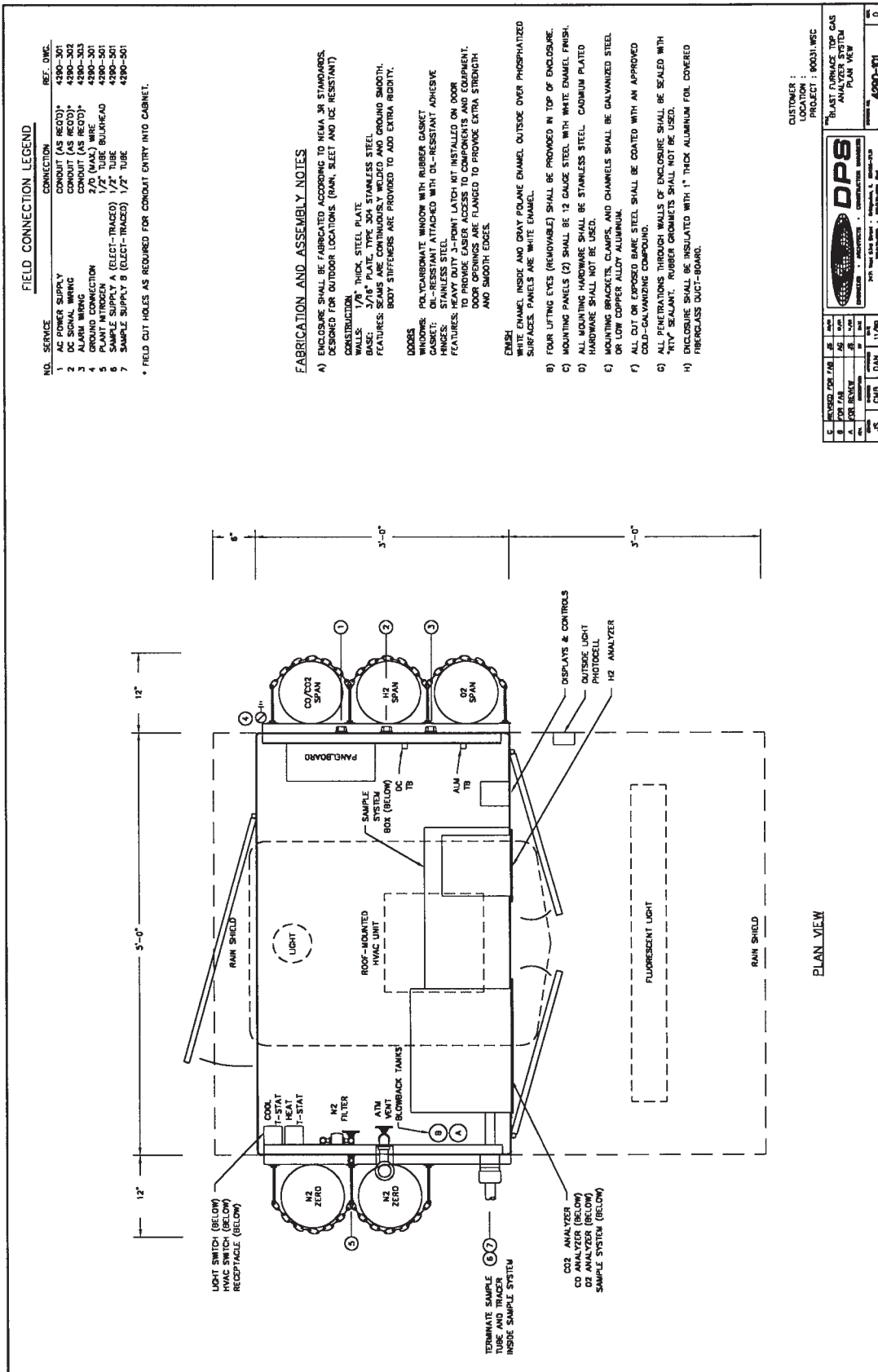
DATE: 1/27/84

BY: [Signature]

SCALE: 1/2" = 1'-0"

1/288-501

W D



FIELD CONNECTION LEGEND

NO.	SERVICE	CONNECTION	REF. DIM.
1	AC POWER SUPPLY	CONDUIT (AS REQ'D)	4290-301
2	DC SIGNAL WIRING	CONDUIT (AS REQ'D)	4290-302
3	GROUND CONNECTION	2/0 (MAX) WIRE	4290-303
4	PLANT M TROKEN	1/2" TUBE BULKHEAD	4290-501
5	SAMPLE SUPPLY A (ELECT-TRACED)	1/2" TUBE	4290-501
6	SAMPLE SUPPLY B (ELECT-TRACED)	1/2" TUBE	4290-501

* FIELD CUT HOLES AS REQUIRED FOR CONDUIT ENTRY INTO CABINET.

FABRICATION AND ASSEMBLY NOTES

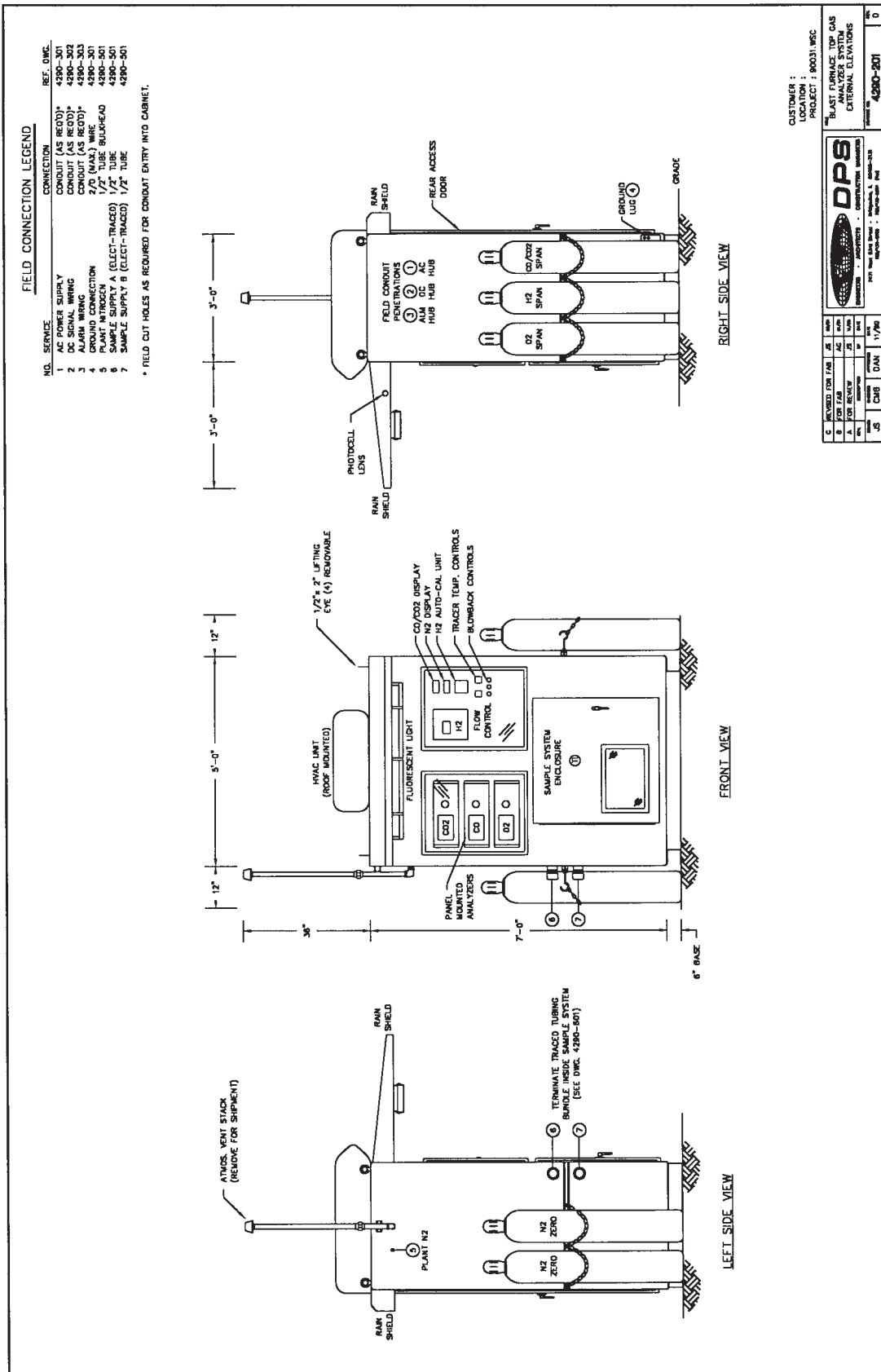
- A) ENCLOSURE SHALL BE FABRICATED ACCORDING TO NEMA 3R STANDARDS, DESIGNED FOR OUTDOOR LOCATIONS (RAIN, SLEET AND ICE RESISTANT) CONSTRUCTION.
 - WALLS: 1/8" THICK, STEEL PLATE
 - DOORS: 1/2" THICK, STAINLESS STEEL
 - FEATURES: SEAMS ARE CONTINUOUSLY WELDED AND GROUND SMOOTH. BODY STIFFENERS ARE PROVIDED TO ADD EXTRA RIGIDITY.
- B) DOORS: POLYURETHANE W/SHOWN WITH RUBBER GASKET
- C) HINGES: POLYURETHANE ATTACHED WITH DC-RESISTANT ADHESIVE
- D) LATCHES: STAINLESS STEEL
- E) FEATURES: HEAVY DUTY J-PIN LATCH NOT INSTALLED ON DOOR TO PROVIDE EASIER ACCESS TO COMPONENTS AND EQUIPMENT. DOOR OPENINGS ARE FLANGED TO PROVIDE EXTRA STRENGTH AND SMOOTH EDGES.
- F) FINISH: WHITE ENAMEL INSIDE AND GRAY POLYME ENAMEL OUTSIDE OVER PHOSPHATIZED SURFACES. PANELS ARE WHITE ENAMEL.
- G) FOUR LIFTING EYES (REMOVABLE) SHALL BE PROVIDED IN TOP OF ENCLOSURE.
- H) MOUNTING PANELS (2) SHALL BE 12 GAUGE STEEL WITH WHITE ENAMEL FINISH. ALL MOUNTING HARDWARE SHALL BE STAINLESS STEEL. CHROMIUM PLATED HARDWARE SHALL NOT BE USED.
- I) MOUNTING BRACKETS, CLAMPS, AND CHANNELS SHALL BE GALVANIZED STEEL OR LOW COPPER ALLOY ALUMINUM.
- J) ALL CUT OR EXPOSED BARE STEEL SHALL BE COATED WITH AN APPROVED GOLD-GALVANIZING COMPOUND.
- K) ALL PENETRATIONS THROUGH WALLS OF ENCLOSURE SHALL BE SEALED WITH "RTV" SEALANT. RUBBER GROMMETS SHALL NOT BE USED.
- L) ENCLOSURE SHALL BE INSULATED WITH 1" THICK ALUMINUM FOL COVERED FIBERGLASS DUCT-BOARD.

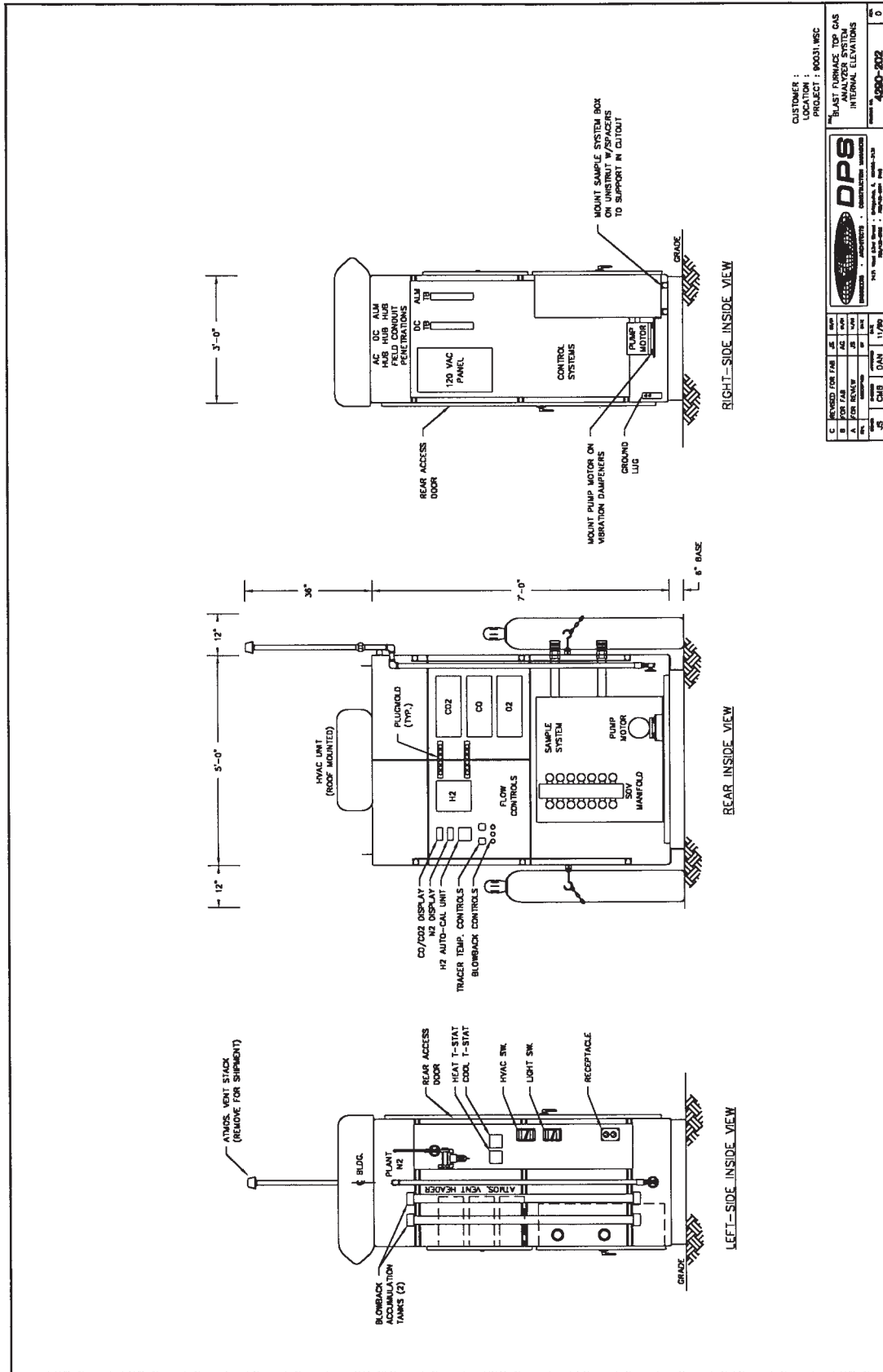
CUSTOMER :
 LOCATION :
 PROJECT : 80031.WEC

DPS
 DESIGN • MANUFACTURE • CONSTRUCTION SERVICES
 2475 West 43rd Street • Englewood, CO 80152-3733
 Telephone: 303-750-8000 • Fax: 303-750-8001

REV	DATE	BY	CHKD	DATE
1				

BLAST FURNACE TOP GAS ANALYZER SYSTEM FOUR YEAR WARRANTY PERFORM TO 42900-801



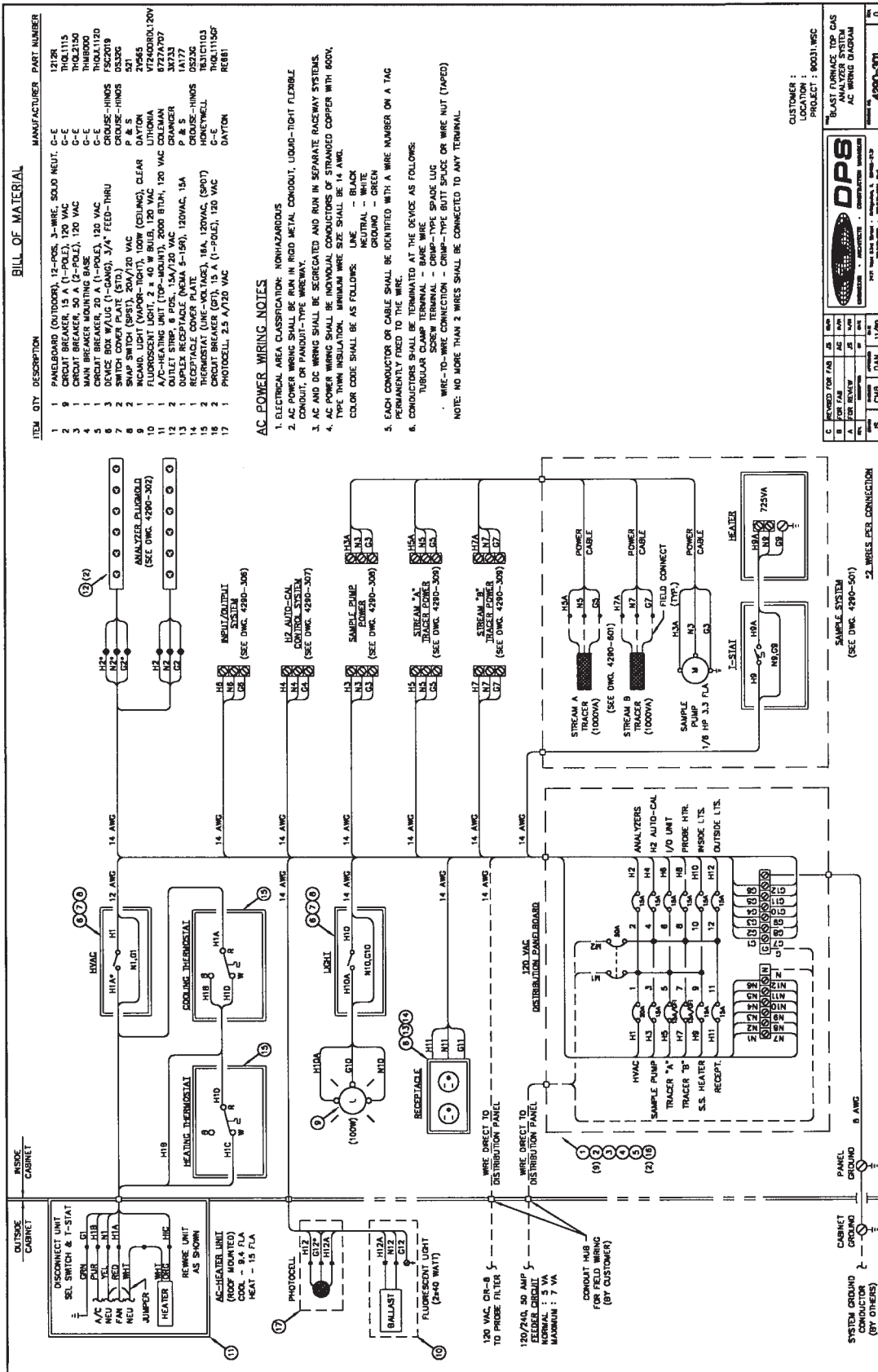


CUSTOMER :
 LOCATION :
 PROJECT : 90031.HCC

DPS
 DESIGN PROJECTS
 1471 The Lakes Drive • Memphis, TN 38117
 (901) 670-1100 • FAX (901) 670-1101
 www.dpsdesign.com

REVISED FOR FAB	DATE	BY	CHKD
FOR ASSEMBLY	DATE	BY	CHKD
FOR SHIPMENT	DATE	BY	CHKD
DATE	DATE	DATE	DATE

BLAST FURNACE TOP GAS ANALYZER SYSTEM
 INTERIOR ELEVATIONS
 DRAWING NO. 4280-202
 0



BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER
1	1	PANELBOARD (OUTDOOR), 12-POLE, 3-WIRE, SOLID NEUT	C-E	1212R
2	9	CIRCUIT BREAKER, 15 A (1-POLE), 120 VAC	C-E	THQ1115
3	1	MAIN BREAKER, 50 A (2-POLE), 120 VAC	C-E	THQ2150
4	1	CIRCUIT BREAKER, 20 A (1-POLE), 120 VAC	C-E	THR000
5	1	CIRCUIT BREAKER, 20 A (1-POLE), 120 VAC	C-E	THR0120
6	1	SWITCH COVER PLATE (STD), 3/4 FEED-THRU	CHOUSE-HINOS	OS20
7	2	SWITCH COVER PLATE (STD), 3/4 FEED-THRU	CHOUSE-HINOS	OS20
8	2	SWAP SWITCH (SPST), 20A/120 VAC	P & S	521
9	1	INCANDE. LIGHT (VAPOR-TIGHT), 100W (CDLING), CLEAR	DAYTON	2V965
10	1	FLUORESCENT LIGHT, 2 x 40 W BULB, 120 VAC	LITHONIA	VT400RDL20V
11	1	FLUORESCENT LIGHT, 2 x 40 W BULB, 120 VAC	LITHONIA	VT400RDL20V
12	2	RECEPTACLE COVER PLATE (NEMA 5-15R), 120VAC, 15A	CHOUSE-HINOS	OS23C
13	1	RECEPTACLE COVER PLATE (NEMA 5-15R), 120VAC, 15A	CHOUSE-HINOS	OS23C
14	2	THERMOSTAT (LINE-VOLTAGE), 16A, 120VAC (SPDT)	HONEYWELL	TR81C103
15	2	THERMOSTAT (LINE-VOLTAGE), 16A, 120VAC (SPDT)	HONEYWELL	TR81C103
16	1	PHOTOCELL, 2.5 A/120 VAC	DAYTON	PHD115SP
17	1	PHOTOCELL, 2.5 A/120 VAC	DAYTON	PHD115SP

AC POWER WIRING NOTES

- ELECTRICAL AREA CLASSIFICATION: NONHAZARDOUS
- AC POWER WIRING SHALL BE MINIMUM #10 MD METAL CONDUIT, LIQUID-TIGHT FLEXIBLE CONDUIT OR RIGID PVC CONDUIT.
- AC AND DC WIRING SHALL BE SEGREGATED AND RUN IN SEPARATE RACEWAY SYSTEMS.
- AC POWER WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED COPPER WITH 600V, TYPE THHN INSULATION. MINIMUM WIRE SIZE SHALL BE 14 AWG. COLOR CODE SHALL BE AS FOLLOWS: LINE - BLACK, NEUTRAL - WHITE, GROUND - GREEN.
- EACH CONDUCTOR OR CABLE SHALL BE IDENTIFIED WITH A WIRE NUMBER ON A TAG PERMANENTLY FIXED TO THE WIRE.
- CONDUCTORS SHALL BE TERMINATED AT THE DEVICE AS FOLLOWS:
 TERMINAL - BRASS-TYPE SPARE LUG
 WIRE-TO-WIRE CONNECTION - CRIMP-TYPE BUTT SPICE OR WIRE NUT (TAPED)
 NOTE: NO MORE THAN 2 WIRES SHALL BE CONNECTED TO ANY TERMINAL.

CUSTOMER :
 LOCATION :
 PROJECT : 90031.WSC



REV	DATE	BY	CHKD	DESCRIPTION
1	07/31/02			ISSUE FOR CONSTRUCTION

RECEIVED FOR FAB
 DATE: 08/01/02
 BY: [Signature]
 CHECKED BY: [Signature]
 DATE: 08/01/02

120 VAC CIRCUIT TO PROBE FILTER
 120/240, 50 AMP
 3-POLE CIRCUIT
 NORMAL : 5 VA
 MAXIMUM : 7 VA

CONDUIT HUB FOR FIELD WIRING (BY CUSTOMER)

SYSTEM GROUNDING CONDUIT (BY OTHERS)

120 VAC DISTRIBUTION PANEL

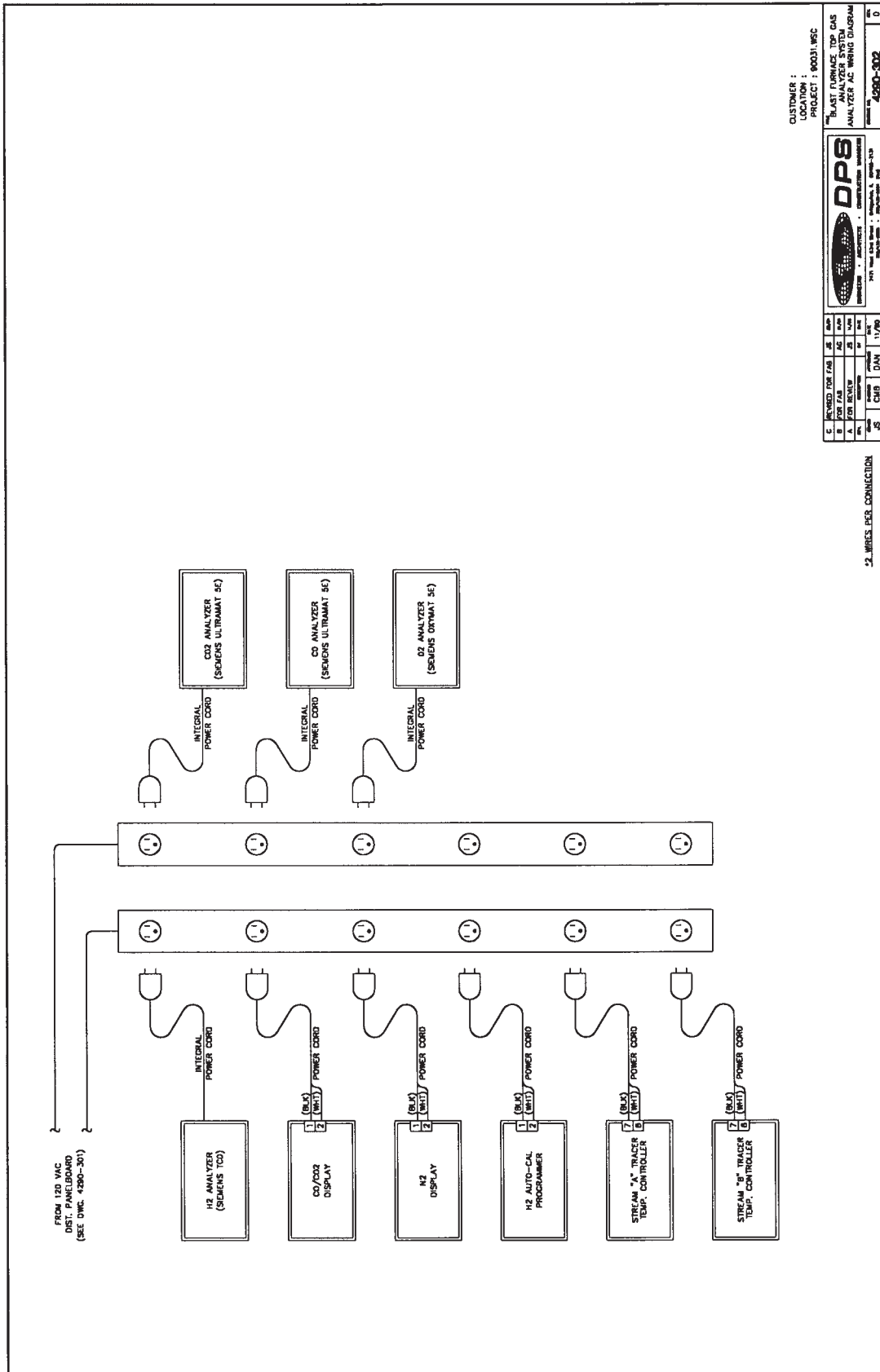
120 VAC DISTRIBUTION PANELBOARD

ANALYZERS
 H2 AUTO-CAL / 10 UNIT
 PHOBE HTL
 INSIDE LITS.
 OUTSIDE LITS.

HEATER
 H8A
 H8B
 H8C
 H8D
 H8E
 H8F
 H8G
 H8H
 H8I
 H8J
 H8K
 H8L
 H8M
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 H8P
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 H8U
 H8V
 H8W
 H8X
 H8Y
 H8Z

120 VAC DISTRIBUTION PANEL

120 VAC DISTRIBUTION PANEL



CUSTOMER :
LOCATION :
PROJECT : 90031.WEC

BLAST FURNACE TOP GAS
ANALYZER AC WIRING DIAGRAM

DATE: 7/31/02

BY: [Signature]

FOR: [Signature]

NO. OF SHEETS: 1

SHEET NO.: 1

REV. NO.: 0

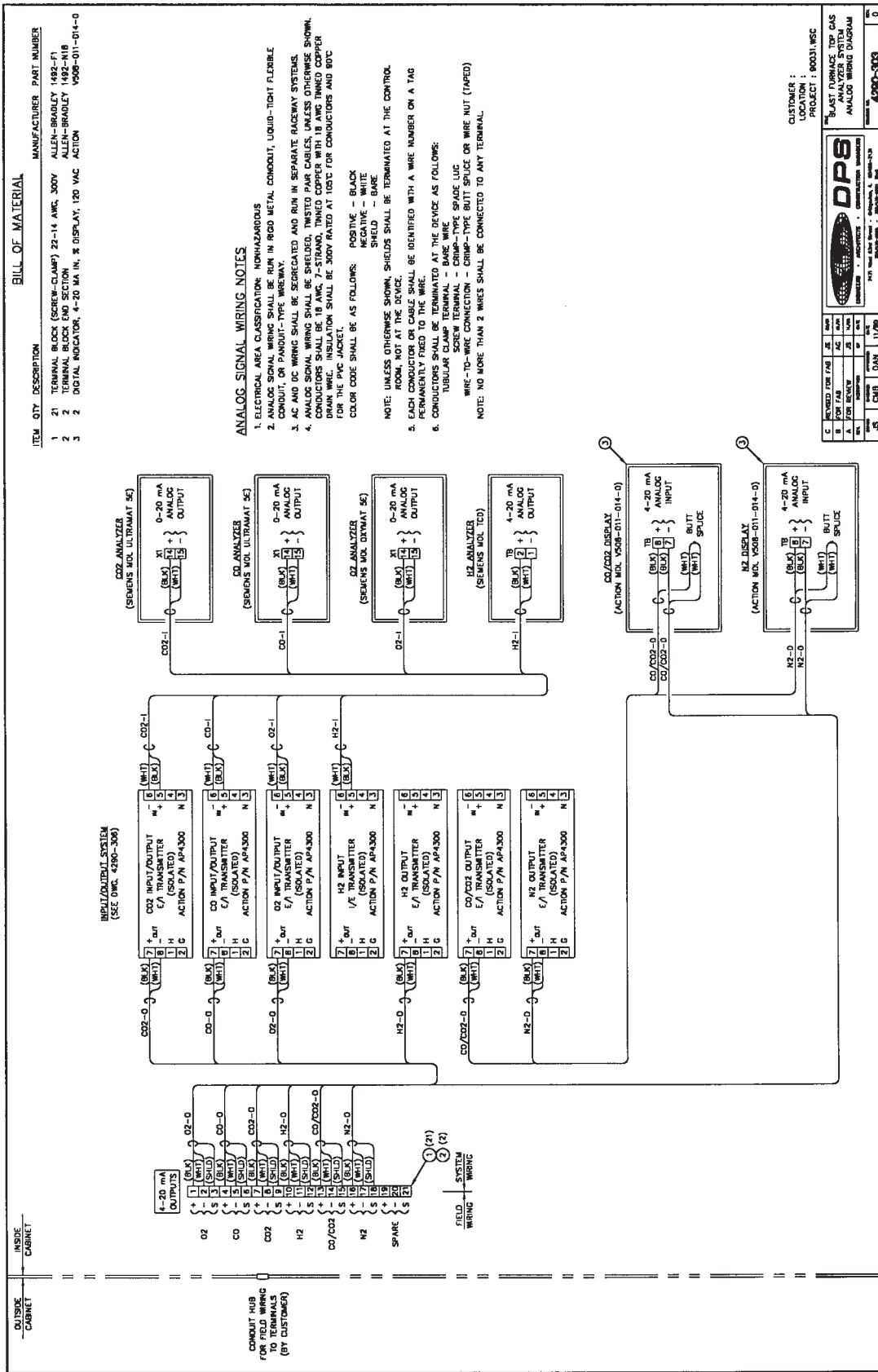
REV. DATE: 7/31/02

REV. BY: [Signature]

REV. DESCRIPTION: [Signature]

24 WIRES PER CONNECTION

DPS
1975 The Ohio State University
Columbus, Ohio 43210-1272
TELEPHONE: 614/292-2200
FAX: 614/292-2201



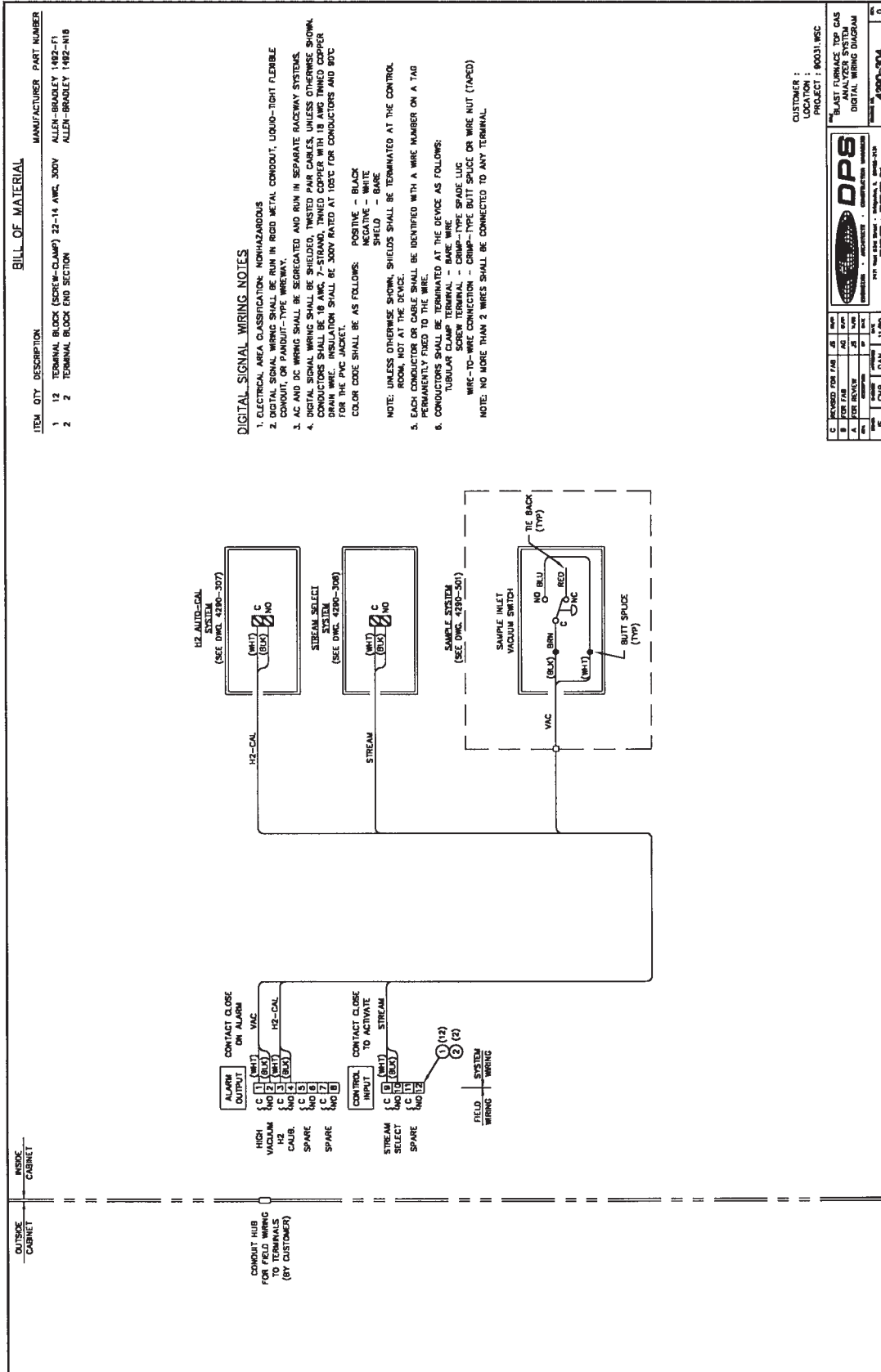
REV	DATE	BY	CHK	APP	DESCRIPTION
1					
2					
3					
4					
5					

CUSTOMER :
LOCATION :
PROJECT : 90031.WSC

BLAST FURNACE TOP GAS ANALYZER SYSTEM ANALOG WIRING DIAGRAM

DPS
DESIGNER : ARCHITECTS • CONSULTING ENGINEERS
1475 The Lakes Drive • Raleigh, N.C. 27605-7418
919-876-7000 • FAX 919-876-7001

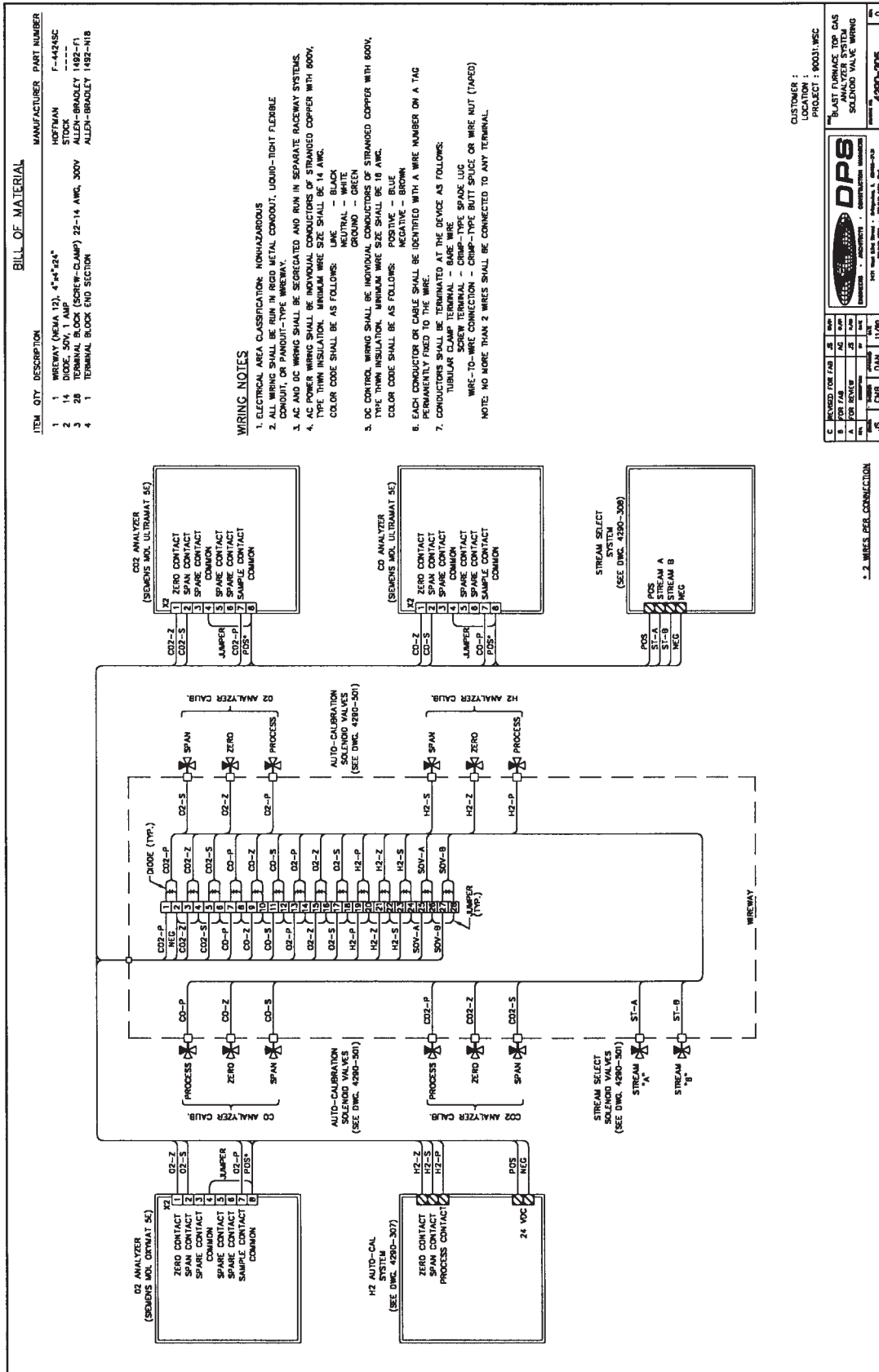
DRAWING NO. 4280-303



REV	DATE	BY	CHKD	APP'D	DESC

DPS	PROJECT : 60031.WSC LOCATION : CUSTOMER : BLAST FURNACE TOP GAS ANALYZER SYSTEM DIGITAL WIRING DIAGRAM DRAWING NO. : 4290-304 SHEET NO. : 0
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530 APPENDIX C



CUSTOMER :
LOCATION :
PROJECT : 60031.WSC

BLAST FURNACE TOP GAS ANALYZER SYSTEM SOLENOID VALVE WIRING

DATE: 11/28/01

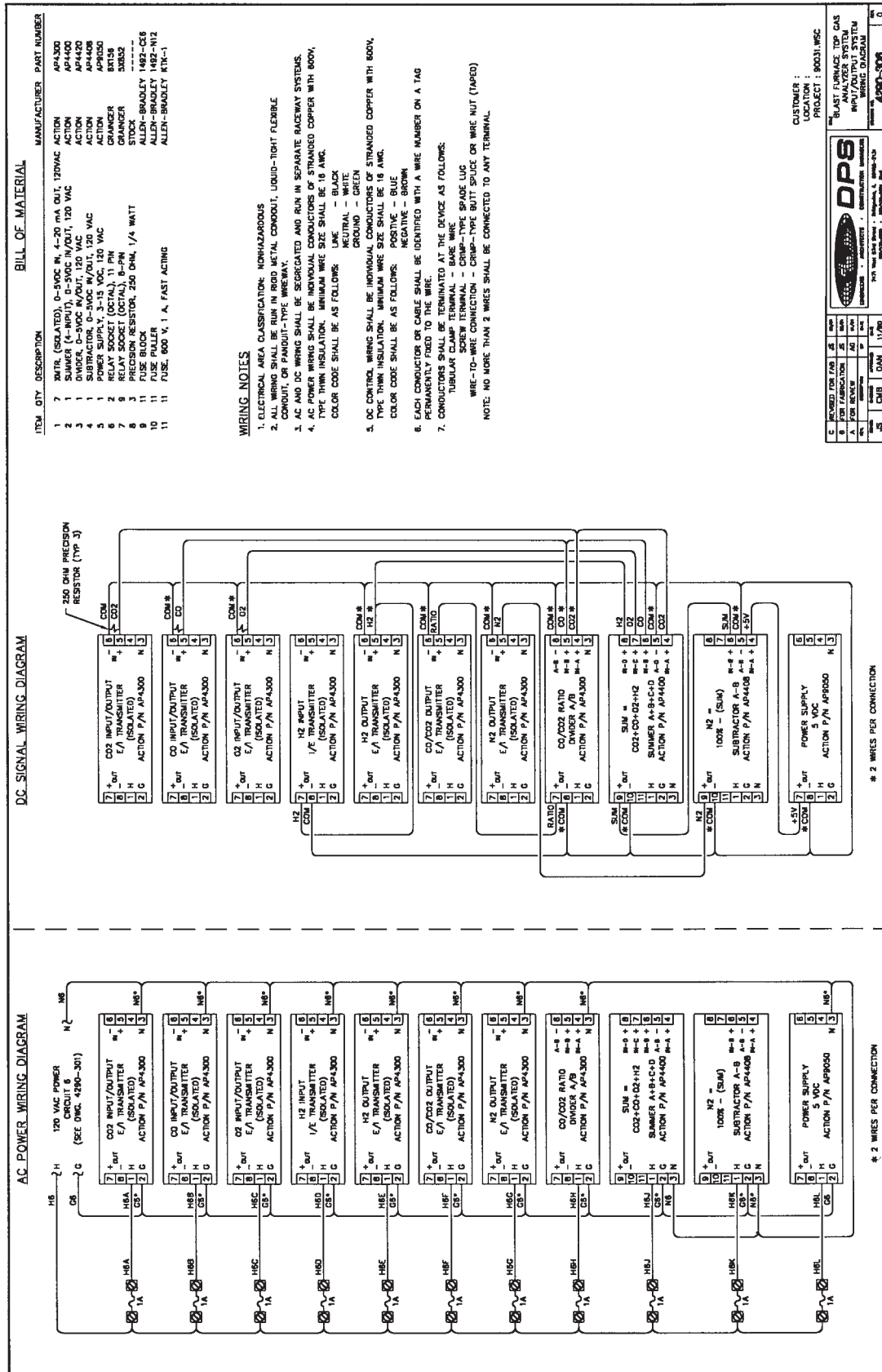
BY: [Signature]

APPROVED: [Signature]

REVISIONS:

NO.	DATE	DESCRIPTION
1	11/28/01	ISSUE FOR CONSTRUCTION

• 2 WIRES PER CONNECTION



BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER
1	7	WIRE (ISOLATED), 0-300 M, 4-20 mA OUT, 20VDC	AP4300	ACTION
2	7	WIRE (ISOLATED), 0-300 M, 4-20 mA OUT, 120 VAC	AP4420	ACTION
3	1	DIODE, 0-300 M, 120 VAC	AP4420	ACTION
4	1	SUBTRACTOR, 0-300 M, 120 VAC	AP4408	ACTION
5	2	RELAY SOCKET (OPT), 11 PIN	BR158	STOCK
6	5	PRECISION RESISTOR, 250 OHM, 1/4 WATT	AP4300	ACTION
7	11	FUSE BLOCK	ALLEN-BRADLEY 1482-C66	
8	11	FUSE, 600 V, 1 A, FAST ACTING	ALLEN-BRADLEY 1482-N12	
9	11	FUSE, 600 V, 1 A, FAST ACTING	ALLEN-BRADLEY 1482-N12	
10	11	FUSE, 600 V, 1 A, FAST ACTING	ALLEN-BRADLEY 1482-N12	
11	11	FUSE, 600 V, 1 A, FAST ACTING	ALLEN-BRADLEY 1482-N12	

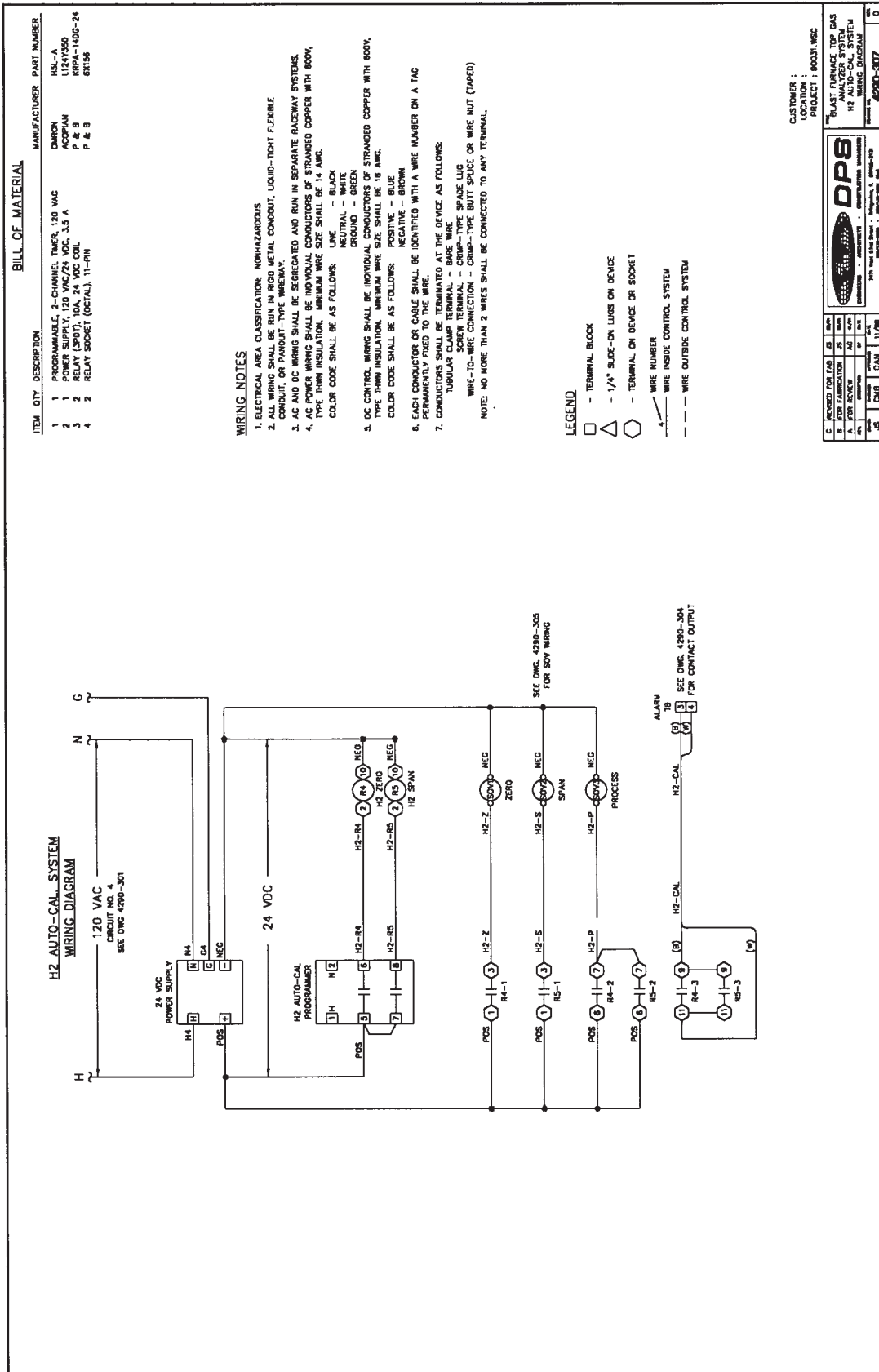
WIRING NOTES

- ELECTRICAL AREA CLASSIFICATION: NONHAZARDOUS
- ALL WIRING SHALL BE RUN IN RIGID METAL CONDUIT, LIQUID-TIGHT FLEXIBLE CONDUIT, OR PANDUIT-TYPE WIREWAY.
- AC AND DC WIRING SHALL BE SEGREGATED AND RUN IN SEPARATE RACEWAY SYSTEMS.
- AC POWER WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED COPPER WITH 600V, TYPE THIN INSULATION. MINIMUM WIRE SIZE SHALL BE 18 AWG. COLOR CODE SHALL BE AS FOLLOWS:
LINE - BLACK
NEUTRAL - WHITE
GROUND - GREEN
- DC CONTROL WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED COPPER WITH 600V, TYPE THIN INSULATION. MINIMUM WIRE SIZE SHALL BE 18 AWG. COLOR CODE SHALL BE AS FOLLOWS:
POSITIVE - BLUE
NEGATIVE - BROWN
- EACH CONDUCTOR OR CABLE SHALL BE IDENTIFIED WITH A WIRE NUMBER ON A TAG PERMANENTLY FIRED TO THE WIRE.
- CONDUCTORS SHALL BE TERMINATED AT THE DEVICE AS FOLLOWS:
TUBULAR CLAMP TERMINAL - BARE WIRE
WIRE-TO-WIRE CONNECTIONS - CRIMP-TYPE BUTT WIRE OR WIRE NUT (TAPED)
NOTE: NO MORE THAN 2 WIRES SHALL BE CONNECTED TO ANY TERMINAL.

CUSTOMER: **90031 WSC**
 LOCATION: **BLAST FURNACE TOP GAS ANALYZER SYSTEM IMPULSION SYSTEM**
 PROJECT: **4280-308**

DPS
 270 New York Ave., Pittsburgh, PA 15222-3129
 Tel: 412-781-1000 Fax: 412-781-1001
 E-mail: sales@dps.com

REV	DATE	DESCRIPTION
1	07/31/02	ISSUE FOR CONSTRUCTION



BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER
1	1	PROGRAMMABLE, 3-CHANNEL TIMER, 120 VAC	HUL-A	
2	1	POWER SUPPLY, 120 VAC/24 VDC, 3.5 A	U1241250	
3	2	RELAY (3PDT), 10A, 24 VDC COIL	ACOPHAN	
4	2	RELAY SOCKET (DCTAL), 11-PIN	PRPA-140G-24	
			P & B	
			P & B	
			6RT56	

WIRING NOTES

- ELECTRICAL AREA CLASSIFICATION: NONHAZARDOUS
 - ALL WIRING SHALL BE RUN IN RIGID METAL CONDUIT, LIQUID-TIGHT FLEXIBLE CONDUIT, OR PARADISE-TYPE WIREWAY.
 - AC AND DC WIRING SHALL BE SEGREGATED AND RUN IN SEPARATE RACEWAY SYSTEMS.
 - AC POWER WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED COPPER WITH 600V, TYPE THHN INSULATION. MINIMUM WIRE SIZE SHALL BE 14 AWG. COLOR CODE SHALL BE AS FOLLOWS:
LINE - BLACK
NEUTRAL - GREEN
GROUND - GREEN
 - DC CONTROL WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED COPPER WITH 600V, TYPE THHN INSULATION. MINIMUM WIRE SIZE SHALL BE 18 AWG. COLOR CODE SHALL BE AS FOLLOWS:
POSITIVE - BLUE
NEGATIVE - BROWN
 - EACH CONDUCTOR OR CABLE SHALL BE IDENTIFIED WITH A WIRE NUMBER ON A TAG PERMANENTLY FIXED TO THE WIRE.
 - CONDUCTORS SHALL BE TERMINATED AT THE DEVICE AS FOLLOWS:
TUBULAR COMP TERMINAL - BARE WIRE
SLIP-ON TERMINAL - BARE WIRE
SLIP-ON TERMINAL - BARE WIRE
WIRE-TO-WIRE CONNECTION - CRIMP-TYPE BUTT SPLICE OR WIRE NUT (TAPED)
- NOTE: NO MORE THAN 2 WIRES SHALL BE CONNECTED TO ANY TERMINAL.

LEGEND

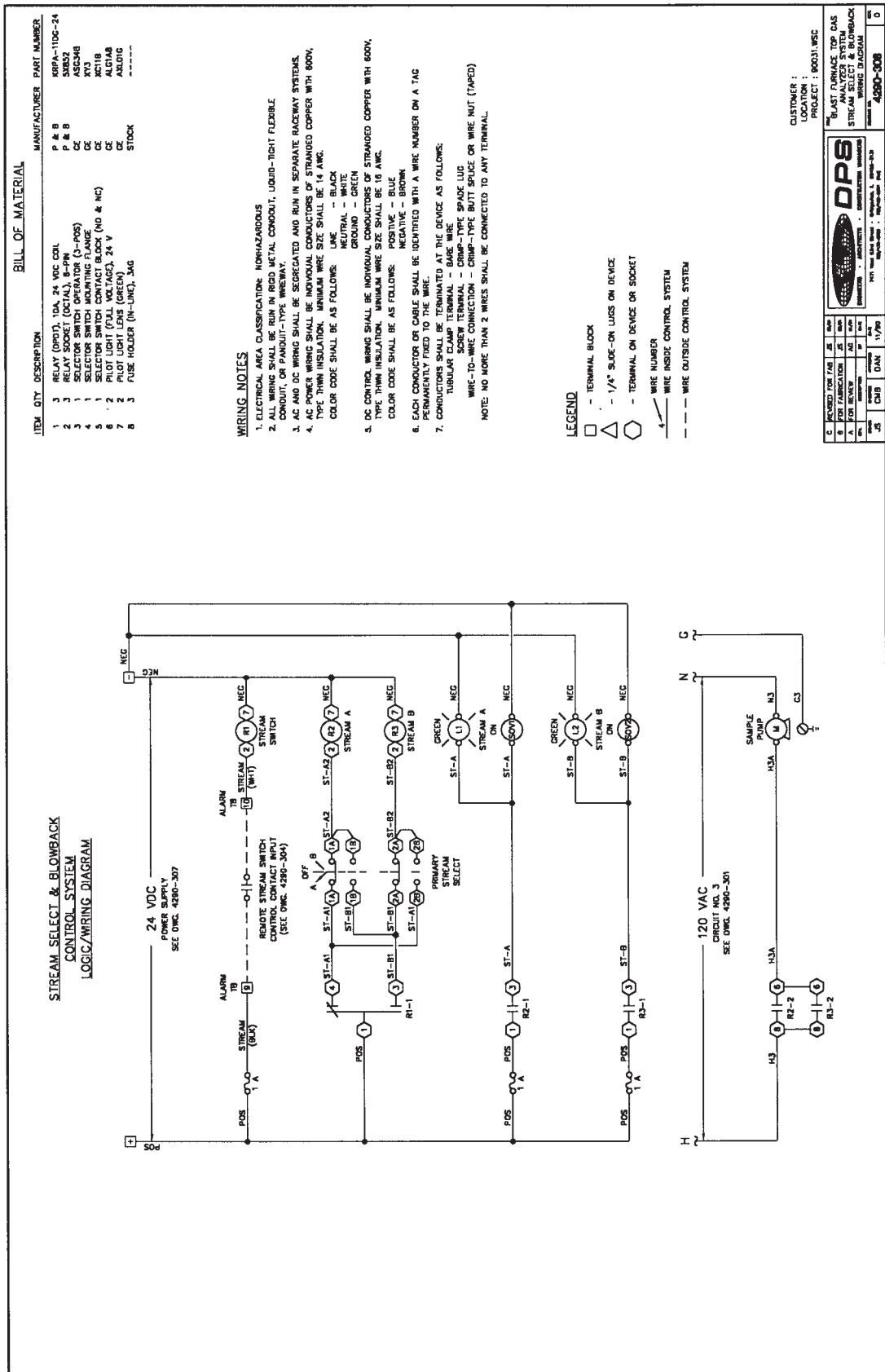
- - TERMINAL BLOCK
- △ - 1/4" SLIDE-ON LUGS ON DEVICE
- - TERMINAL ON DEVICE OR SOCKET
- WIRE NUMBER
- WIRE INSIDE CONTROL SYSTEM
- - - WIRE OUTSIDE CONTROL SYSTEM

CUSTOMER :
LOCATION :
PROJECT : 80031-NBC

BLAST FURNACE TOP GAS ANALYSIS SYSTEM
H2 AUTO-CAL SYSTEM
WIRING DIAGRAM

DATE: 01/11/02
DRAWN: [Signature]
CHECKED: [Signature]
APPROVED: [Signature]

PROJECT NO: 4290-307



BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER
1	3	RELAY (SPDT), 10A, 24 VDC COIL	P & B	898A-110C-24
2	1	RELAY SOCKET (ACTUAL), B-PIN	P & B	53R52
3	1	SELECTOR SWITCH OPERATOR (3-POS)	CE	ASC348
4	1	SELECTOR SWITCH MOUNTING FLANGE	CE	XV3
5	1	SELECTOR SWITCH CONTACT BLOCK (NO & NC)	CE	ACT18
6	2	PILOT LIGHT (PUSH TO MAKE), 24 V	CE	ALD18
7	1	PILOT LIGHT (PUSH TO MAKE), 24 V	CE	ALD18
8	3	FUSE HOLDER (IN-LINE), 3AG	STOCK	-----

WIRING NOTES

- ELECTRICAL AREA CLASSIFICATION: NONHAZARDOUS
 - ALL WIRING SHALL BE RUN IN RIGID METAL CONDUIT, LIQUID-TIGHT FLEXIBLE CONDUIT, OR PANOUT-TYPE WIREWAY.
 - AC AND DC WIRING SHALL BE SEGREGATED AND RUN IN SEPARATE RACEWAY SYSTEMS.
 - AC POWER WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED COPPER WITH 900V, TYPE THIN INSULATION. MINIMUM WIRE SIZE SHALL BE 14 AWG. COLOR CODE SHALL BE AS FOLLOWS:
LINE - BLACK
NEUTRAL - WHITE
GROUND - GREEN
 - DC CONTROL WIRING SHALL BE INDIVIDUAL CONDUCTORS OF STRANDED COPPER WITH 600V, TYPE THIN INSULATION. MINIMUM WIRE SIZE SHALL BE 18 AWG. COLOR CODE SHALL BE AS FOLLOWS:
POSITIVE - BLUE
NEGATIVE - BROWN
 - EACH CONDUCTOR OR CABLE SHALL BE IDENTIFIED WITH A WIRE NUMBER ON A TAG PERMANENTLY FIRED TO THE WIRE.
 - CONDUCTORS SHALL BE TERMINATED AT THE DEVICE AS FOLLOWS:
TUBULAR CLAMP TERMINAL - BASE WIRE SHALL BE 18 AWG. USE 1/4" SLIDE-ON LUGS.
WIRE-TO-WIRE CONNECTION - CRIMP-TYPE BUTT SOLDS OR WIRE NUT (TAPED)
- NOTE: NO MORE THAN 2 WIRES SHALL BE CONNECTED TO ANY TERMINAL.

CUSTOMER :
LOCATION :
PROJECT : 00031.WSC

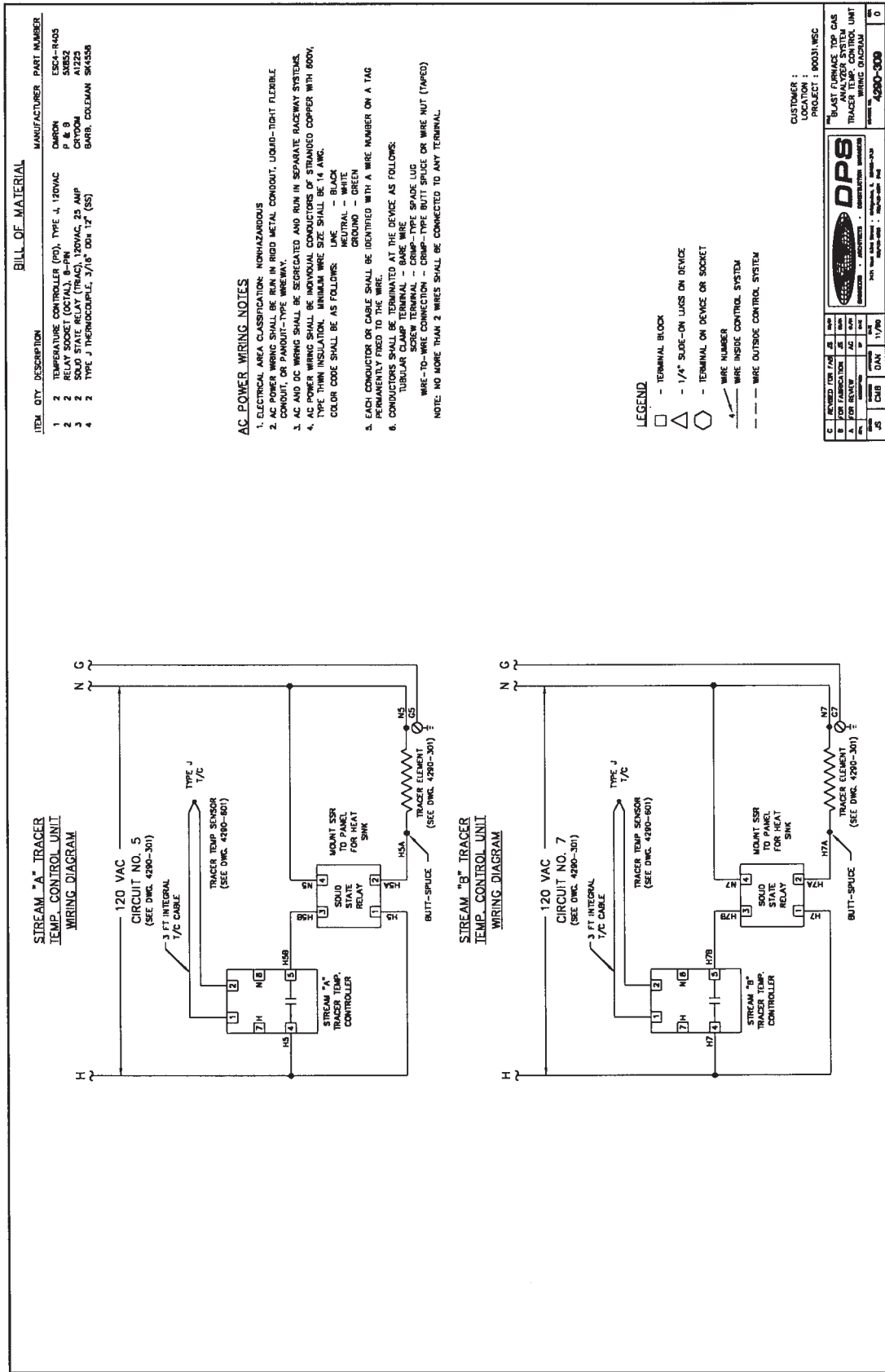
DPS
DESIGN - CONSTRUCTION - INSTALLATION - MAINTENANCE - REPAIR

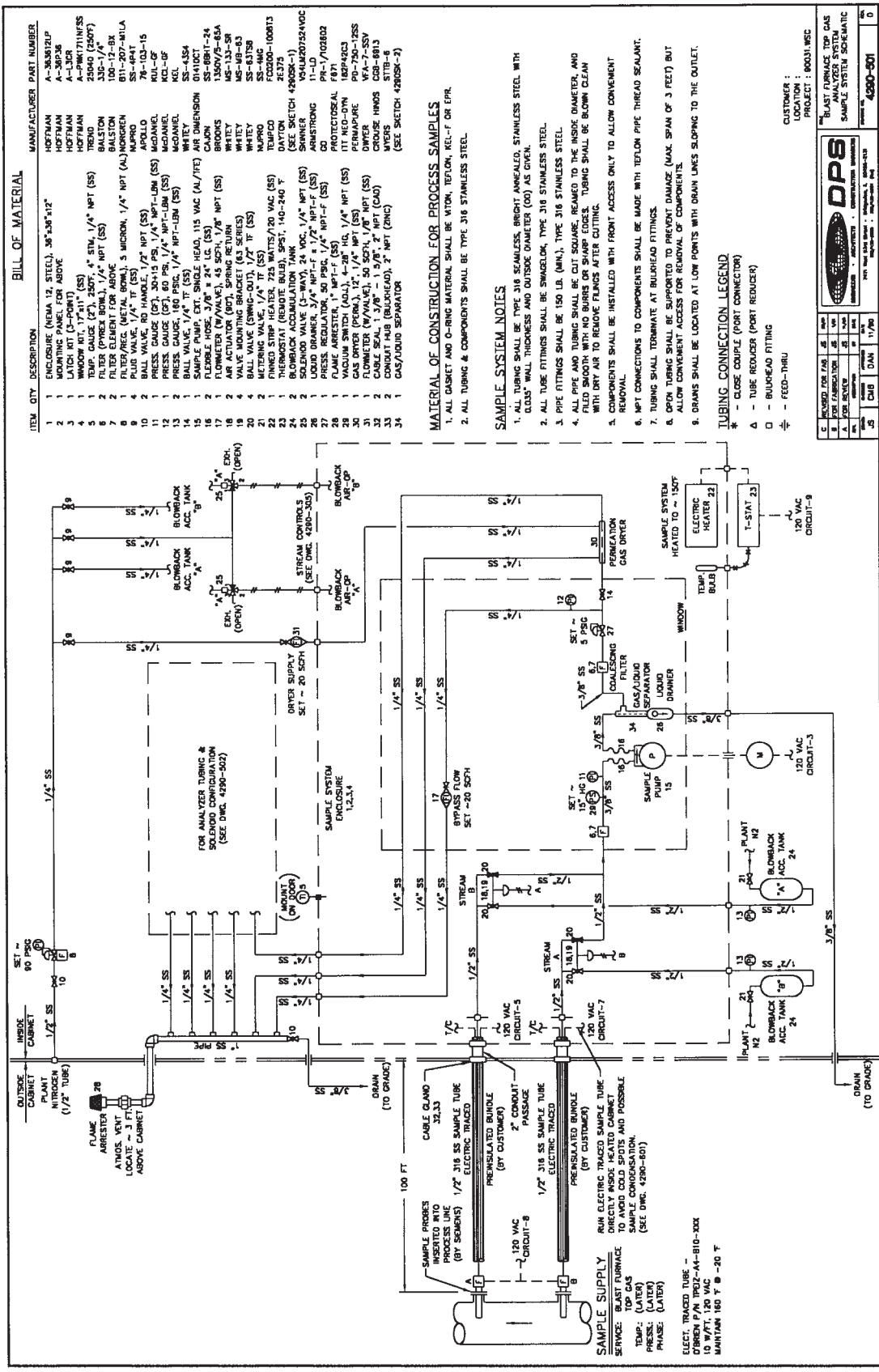
BLAST FURNACE TOP GAS ANALYZER SYSTEM BLOWBACK STREAM SELECT & BLOWBACK WIRING DIAGRAM

REV. NO. DATE BY

REV. NO.	DATE	BY
01	07/31/02	WJ

4290-308





BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER
1	1	ENCLOSURE (NEMA 12, STEEL), 36"X36"X12"	HOFFMAN	A-363R21P
2	1	MOUNTING PANEL FOR ABOVE	HOFFMAN	A-36P36
3	1	LATCH KIT (3-PART) (SS)	HOFFMAN	A-36P36
4	1	TEMP GAUGE (27), 250°F, 4" DIA, 1/4" NPT (SS)	TREND	25040 (2500F)
5	1	TEMP GAUGE (27), 250°F, 4" DIA, 1/4" NPT (SS)	TREND	25040 (2500F)
6	2	FILTER (PHEA BOWL), 1/2" NPT (SS)	BALSTON	335-1/A
7	1	FILTER ELEMENT FOR ABOVE	BALSTON	100-12-BK
8	1	FILTER/PREC. (METAL BOWL), 3 MICRON, 1/4" NPT (AL)	HORGREN	811-207-MILA
9	1	FILTER/PREC. (METAL BOWL), 3 MICRON, 1/4" NPT (AL)	HORGREN	811-207-MILA
10	2	BALL VALVE (90 HANDLE), 1/2" NPT (SS)	APOLLO	78-103-15
11	1	PRESS GAUGE (27), 30+15 PSI, 1/4" NPT-LWM (SS)	MOHANEL	KUL-0F
12	1	PRESS GAUGE (27), 30+15 PSI, 1/4" NPT-LWM (SS)	MOHANEL	KUL-0F
13	2	PRESS GAUGE, 180 PSIG, 1/4" NPT-LWM (SS)	MOHANEL	KUL-0F
14	1	SHALL VALVE, 1/2" NPT (SS)	MOHANEL	KUL-0F
15	1	SHALL VALVE, 1/2" NPT (SS)	MOHANEL	KUL-0F
16	2	FLEXIBLE HOSE, 3/8" X 24" L.S. (SS)	CAJON	SS-8811-24
17	1	FLOWMETER (W/VALVE), 45 SCFH, 1/2" NPT (SS)	BROOKS	1350V/2-65A
18	2	AIR ACTUATOR (8PT), SPRING RETURN	WHITNEY	MS-133-SR
19	4	VALVE MOUNTING BRACKET (43 SERIES)	WHITNEY	MS-49-83
20	1	METERING VALVE, 1/4" NPT (SS)	WHITNEY	MS-49-83
21	1	METERING VALVE, 1/4" NPT (SS)	WHITNEY	MS-49-83
22	1	FINNED STRIP HEATER, 725 WATTS/20 VAC (SS)	TEMPCO	FC0200-100813
23	2	THERMOSTAT (REMOTE BULB), SPST, 140-240 °F	DAYTON	2E375
24	2	BLOWBACK ACCUMULATION TANK VAC, 1/4" NPT (SS)	DAYTON	FC0200-100813
25	2	BLOWBACK ACCUMULATION TANK VAC, 1/4" NPT (SS)	DAYTON	FC0200-100813
26	1	SOLVED VALVE (1/2" NPT), 2" NPT (SS)	AMSTERDAM	11-1/102802
27	1	PRESS REGULATOR, 50 PSIG, 1/4" NPT-F (SS)	PROTECTOSEAL	FB71
28	1	FLAME ARRESTER, 1" NPT-F (SS)	ITT HED-DYN	18P42C3
29	1	VACUUM SWITCH (AUL), 4-28" HIG, 1/4" NPT (SS)	PERMAPURE	9D-7502SS
30	1	GAS ORDER (FORM), 12" X 1/2" NPT (SS)	PERMAPURE	9D-7502SS
31	1	GAS ORDER (FORM), 12" X 1/2" NPT (SS)	PERMAPURE	9D-7502SS
32	2	CABLE SEAL, 1/2" X 1/4" X 1/8" (ZINC)	CRUIZE HMOSS	CSB-8813
33	2	CONDUIT HUB (BULKHEAD), 2" NPT (ZINC)	MYERS	ST1B-6
34	1	GAS/LIQUID SEPARATOR	(SEE SKETCH 4280SK-2)	

MATERIAL OF CONSTRUCTION FOR PROCESS SAMPLES

1. ALL GASKET AND O-RING MATERIAL SHALL BE VITON, TEFLO, KEL-F OR EPDM.
 2. ALL TUBING & COMPONENTS SHALL BE TYPE 316 STAINLESS STEEL.

SAMPLE SYSTEM NOTES

1. ALL TUBING SHALL BE TYPE 316 SEAMLESS, BRIGHT ANNEALED, STAINLESS STEEL WITH CLOSEST WALL THICKNESS AND OUTSIDE DIAMETER (OD) AS GIVEN.
 2. ALL TUBE FITTINGS SHALL BE SWAGelok, TYPE 316 STAINLESS STEEL.
 3. PIPE FITTINGS SHALL BE 150 LB. (MIN.), TYPE 316 STAINLESS STEEL.
 4. ALL PIPE AND TUBING SHALL BE CUT SQUARE, REAMED TO THE INSIDE DIAMETER, AND DEBURRED TO REMOVE ALL BURRS AND SHARP EDGES. TUBING SHALL BE BURN CLEAN WITH DRY AIR TO REMOVE FLAMES AFTER CUTTING.
 5. COMPONENTS SHALL BE INSTALLED WITH FRONT ACCESS ONLY TO ALLOW CONVENIENT REMOVAL.
 6. NPT CONNECTIONS TO COMPONENTS SHALL BE MADE WITH TEFLO PIPE THREAD SEALANT.
 7. TUBING SHALL TERMINATE AT BULKHEAD FITTINGS.
 8. OPEN TUBING SHALL BE SUPPORTED TO PREVENT DAMAGE (MAX. SPAN OF 3 FEET) BUT ALLOW CONVENIENT ACCESS FOR REMOVAL OF COMPONENTS.
 9. DRAINS SHALL BE LOCATED AT LOW POINTS WITH DRAIN LINES SLOPING TO THE OUTLET.

TUBING CONNECTION LEGEND

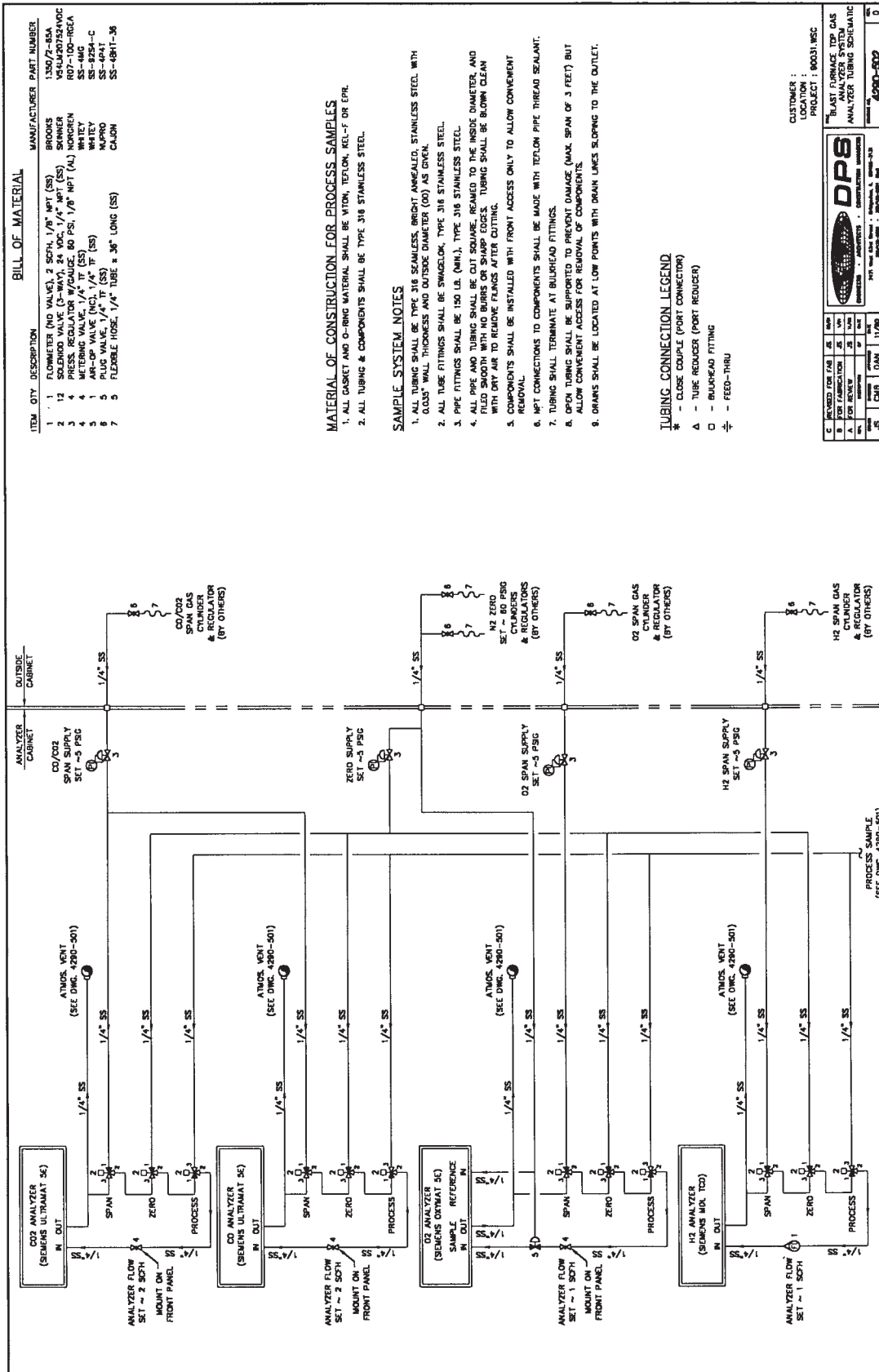
* - CLOSE COUPLE (PORT CONNECTOR)
 A - TUBE REDUCER (PORT REDUCER)
 □ - BULKHEAD FITTING
 ⊕ - FEED-THRU

C	REQUIRED FOR FAB	ISS	DATE	UNIT	1/7/88
A	FOR FABRICATION	ISS			
B	FOR CHECKING	ISS			
D	FOR DELIVERY	ISS			
E	FOR ERECTION	ISS			
F	FOR FIELD USE	ISS			
G	FOR GENERAL INFORMATION	ISS			
H	FOR HOLDING	ISS			
I	FOR INVENTORY	ISS			
J	FOR JOURNAL	ISS			
K	FOR KITCHEN	ISS			
L	FOR LABORATORY	ISS			
M	FOR MATERIALS	ISS			
N	FOR NUTRITION	ISS			
O	FOR OFFICE	ISS			
P	FOR PLANT	ISS			
Q	FOR QUANTITY	ISS			
R	FOR RECORDS	ISS			
S	FOR SUPPLY	ISS			
T	FOR TECHNICAL	ISS			
U	FOR TRAINING	ISS			
V	FOR VENTILATION	ISS			
W	FOR WAREHOUSE	ISS			
X	FOR WORKSHOP	ISS			
Y	FOR YARD	ISS			
Z	FOR ZONE	ISS			

CUSTOMER :
LOCATION :
PROJECT : 80031-REC

DPS
DESIGN • FABRICATION • INSTALLATION • MAINTENANCE

ANALYZER TOP GAS
SAMPLE SYSTEM SCHEMATIC
PROJECT NO. 4280-801



BILL OF MATERIAL

ITEM	QTY	DESCRIPTION	MANUFACTURER	PART NUMBER
1	1	FLOWMETER (NO VALVE), 2 SCFH, 1/8" NPT (SS)	BROOKS	135072-BSA
2	12	SOLenoid VALVE (3-WAY), 24 VDC, 1/4" NPT (SS)	SKINNER	V5-4UJ07524VDC
3	4	PRESS. REGULATOR W/GAUGE, 80 PSIG, 1/8" NPT (AL)	NORGEN	SR7-100-REGA
4	1	1/4" NPT VALVE (INCL. 1/4" TP) (SS)	WHITNEY	SS-8254-C
5	1	1/4" NPT VALVE (INCL. 1/4" TP) (SS)	WHITNEY	SS-8254-C
6	5	PLUG VALVE, 1/4" TP (SS)	MARPO	SS-4P4T
7	5	FLEXIBLE HOSE, 1/4" TUBE x 36" LONG (SS)	CAJON	SS-48H1-36

MATERIAL OF CONSTRUCTION FOR PROCESS SAMPLES

1. ALL GASKET AND O-RING MATERIAL SHALL BE VITON, TEFLO, KEL-F OR EPDM.
2. ALL TUBING & COMPONENTS SHALL BE TYPE 316 STAINLESS STEEL.

SAMPLE SYSTEM NOTES

1. ALL TUBING SHALL BE TYPE 316 SEAMLESS, BRIGHT ANNEALED, STAINLESS STEEL, WITH 0.005" WALL THICKNESS AND OUTSIDE DIAMETER (OD) AS GIVEN.
2. ALL TUBE FITTINGS SHALL BE SWAGelok, TYPE 316 STAINLESS STEEL.
3. PIPE FITTINGS SHALL BE 150 LB. (MIN.), TYPE 316 STAINLESS STEEL.
4. ALL PIPE AND TUBING SHALL BE CUT SQUARE, REAMED TO THE INSIDE DIAMETER, AND FILED SMOOTH WITH NO BURRS OR SHARP EDGES. TUBING SHALL BE BLOWN CLEAN WITH DRY AIR TO REMOVE FLANGS AFTER CUTTING.
5. COMPONENTS SHALL BE INSTALLED WITH FRONT ACCESS ONLY TO ALLOW CONVENIENT REMOVAL.
6. NPT CONNECTIONS TO COMPONENTS SHALL BE MADE WITH TEFLO PIPE THREAD SEALANT.
7. TUBING SHALL TERMINATE AT BULBHEAD FITTINGS.
8. OPEN TUBING SHALL BE SUPPORTED TO PREVENT DAMAGE (MAX. SPAN OF 3 FEET) BUT ALLOW CONVENIENT ACCESS FOR REMOVAL OF COMPONENTS.
9. DRAINS SHALL BE LOCATED AT LOW POINTS WITH DRAIN LINES SLOPING TO THE OUTLET.

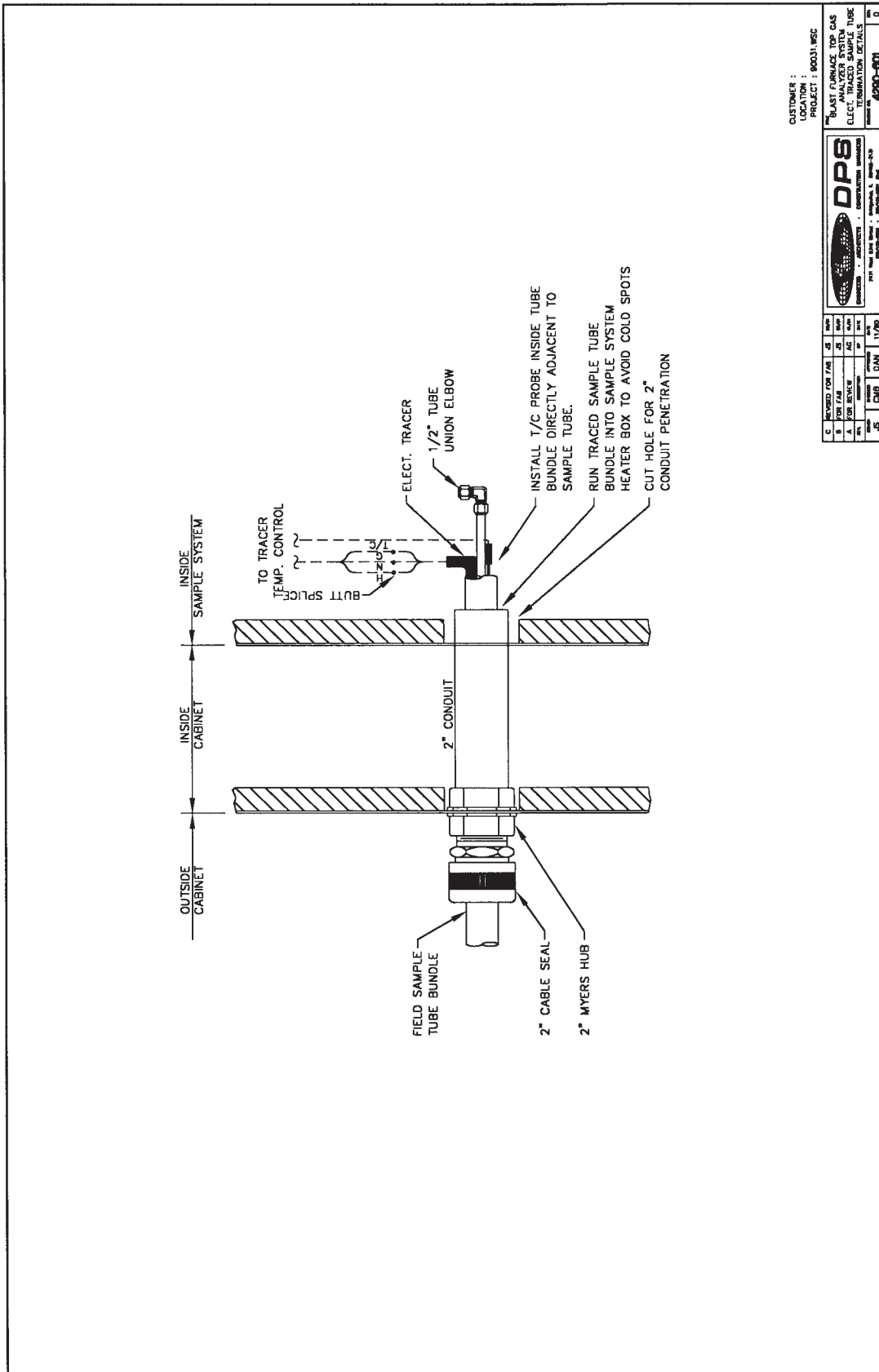
TUBING CONNECTION LEGEND

- * - CLOSE COUPLE (PORT CONNECTOR)
- Δ - TUBE REDUCER (PORT REDUCER)
- - BULBHEAD FITTING
- ⊥ - FEED-THRU

CUSTOMER : PROJECT : 40031.WSC
 LOCATION :
 ANALYZER TUBING SCHEMATIC
 4200-502

REV	DATE	BY	CHKD	APP'D	DESCRIPTION
1					

DPS
 ANALYZER TUBING SCHEMATIC
 4200-502



CUSTOMER :
LOCATION :
PROJECT : 90031.WEC

DPS
DESIGN • PROJECTS • CONSTRUCTION SERVICES
1975 The City Centre • Memphis, TN 38102
901-525-8800

REV	DATE	BY	CHK	APP	DESCRIPTION
1	07/31/02

BLAST FURNACE TOP GAS
ANALYSIS SAMPLE TUBE
ELECT. TRACED SAMPLE TUBE
TERMINATION DETAILS
PAGE NO. 4290-001