

# **RENOVATIONS FOR:** ANN ARBOR VAMC UPGRADE MEDICAL GAS SYSTEM 2215 Fuller Road, Ann Arbor, MI 48105 506-14-103 **ISSUE DATE: 11-17-2014** 100% BID DOCUMENTS

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ARCHITECT/ENGINEERS:	REVISIONS:		VA PROJECT NAME: UPGRADE MEDICAL GAS
ENGINEERS - SURVEYORS - CONSULTANTS - LANDSCAPE ARCHITECTS - LAND PLANNERS			VA PROJECT NUMBER: 506-14-103
638 SOUTH GRAND AVE. FOWLERVILLE, MICHIGAN 48836		ISSUED DATE:     BUILDING NUMBER:     PLOT SCALE:       11-17-2014     BUILDING 1	C2AE PROJECT NUMBER: 14-0017
(OFFICE) 517-223-3512 (FAX) 517-223-9987		PROJECT: UPGRADE MEDICAL GAS SYSTEM	DRAWING NUMBER:

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FREEDOM BUILDING 1E - BASEMENT MEDICAL GAS DEMOLITION PLAN 1/8" = 1'-0"



### FREEDOM BUILDING 1E - BASEMENT MEDICAL GAS PLAN 1/8" = 1'-0"



ARCHITECT/ENGINEERS	S: ENGINEERS - SURVEYORS - CONSULTANTS - LANDSCAPE ARCHITECTS - LAND PLANNERS	REVISIONS:	DRAWING TITLE:	OM BUILDIN AL GAS PLA	IG 1E NS
Ment L	638 SOUTH GRAND AVE. FOWLERVILLE, MICHIGAN 48836		DATE: 11-17-2014	BUILDING NUMBER: 1E	PLOT SC/ As indica
	(OFFICE) 517-223-3512 (FAX) 517-223-9987			MEDICAL GAS SY	STEM

# MEDICAL GAS DEMOLITION NOTES:

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1 REMOVE AND REPLACE THE EXISTING MEDICAL AIR SOURCE COMPRESSOR EQUIPME FILTERS, AND SOURCE ALARM DEVICES.
2 REMOVE EXISTING CARBON MONOXIDE AND DEWPOINT SENSORS FOR BOTH THE ME SUPPLY PIPING AS NEEDED.

- $\langle 3 \rangle$  REMOVE EXISTING MEDICAL AIR DESSICANT AND - DRYERS.
- 4 EXISTING LABORATORY AIR SOURCE COMPRESSOR PACKAGE IS TO REMAIN. CARBON MONOXIDE SENSOR, DEW POINT SENSOR, AND MAIN LINE PRESSURE SENSOR ARE TO BE REPLACED.
- $\langle 5 \rangle$  REMOVE LABORATORY AIR DESICCANT AND REFRIGERANT DRYERS WHICH WERE PREVIOUSLY ABANDONED IN PLACE.
- 6 REMOVE THE EXISTING LABORATORY VACUUM SOURCE EQUIPMENT, INCLUDING THE ASSOCIATED FILTERS AND SOURCE ALARM DEVICES. T DEMOLISH EXISTING ELECTRICAL CONDUIT AND CONDUCTORS BACK TO PANEL CPDB-9. REMOVE EXISTING CIRCUIT BREAKER AND TURN OVER TO OWNER.

# MEDICAL GAS PLAN NOTES:

- 1) INSTALL NEW PACKAGED AND FACTORY ASSEMBLED MEDICAL AIR SYSTEM WITH MULTI-PLEX COMPRESSORS, AIR-COOLED AFTER COOLERS ASME RECEIVER TANK, DUPLEX DESICCANT AIR DRYERS, PRE AND AFTER FILTERS, AND NFPA COMPLIANT CONTROL PANEL WITH OPERATING DISPLAYS AND LOCAL ALARMS. INCLUDE ALL SOURCE ALARM DEVICES. INTEGRATE ALARMS AND SENSORS INTO NEW MASTER ALARM SYSTEM.
- (2) INSTALL NEW CARBON MONOXIDE SENSOR, DEW POINT SENSOR, FOR EXISTING LABORATORY AIR SYSTEM. INTEGRATE ALARMS AND SENSORS INTO NEW MASTER ALARM SYSTEM.
- (3) CONNECT EXISTING FRESH AIR INTAKE TO EXISTING LABORATORY AIR COMPRESSORS. PROVIDE AND INSTALL NEW INTAKE MANIFOLD FOR MULTI-COMPRESSOR PACKAGE.
- 4 INSTALL NEW PACKAGED LABORATORY VACUUM PUMP SYSTEM WITH ASME RECEIVER TANK AND NFPA COMPLIANT CONTROL PANEL WITH OPERATING DISPLAYS AND LOCAL ALARMS. INCLUDE ALL SOURCE ALARM DEVICES. INTEGRATE ALARMS AND SENSORS INTO NEW MASTER ALARM SYSTEM.
- 5 PROVIDE CONNECTION TO EXISTING MEDICAL AIR SUPPLY MAIN FOR USE OF TEMPORARY MEDICAL AIR SOURCE PRIOR TO SHUT-DOWN OF EXISTING SOURCE EQUIPMENT. PROVIDE TEMPORARY SOURCE OF MEDICAL AIR AS NEEDED TO SATISFY THE EXISTING LINE DISTRIBUTION. COORDINATE CHANGE-OVERS WITH COR. TEMPORARY DISRUPTION OF MEDICAL SOURCE AIR SHALL NOT EXCEED 30 MINUTES UNLESS APPROVED BY THE COR.
- (6) TEMPORARY DISRUPTION OF LABORATORY SOURCE AIR OR VACUUM SHALL NOT EXCEED 3 HOURS UNLESS APPROVED BY THE COR.
- (7) PROVIDE (3) #1/0 CU, (1) #6 CU GND, 1-1/2"C FROM CPDB-9 TO 1-MAC. PROVIDE NEW 150A/3P, 65kAIC, ELECTRONIC TRIP BREAKER IN EXISTING SQUARE D I-LINE PANELBOARD.
- 8 PROVIDE (3) #10CU, (1) #10 CU GND, 3/4"C FROM CPDB-9 TO 1-LVS. PROVIDE NEW 25A/3P, 65kAIC BREAKER IN EXISTING SQUARE D I-LINE PANELBOARD.
- (9) RELABEL ALL MEDICAL GAS PIPING AND MASTER ALARM DEVICES AND WIRING PER NFPA 99.



MENT, INCLUDING THE ASSOCIATED DRYERS, DRYER EDICAL AIR AND LAB AIR SYSTEM. REPAIR/REWORK

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VA PROJECT NAME: UPGRADE MEDICAL GAS SYSTEM	OF JIRS
VA PROJECT NUMBER: 506-14-103	AFFA (
C2AE PROJECT NUMBER: 14-0017	PARTN
DRAWING NUMBER: P-110	DE

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# LIBERTY BUILDING 1W - BASEMENT MEDICAL GAS PLAN 1/8" = 1'-0"

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# LIBERTY BUILDING 1W - BASEMENT MEDICAL GAS DEMOLITION PLAN 1/8" = 1'-0"



			KEY	(PLAN	
ARCHITECT/ENGINEERS:	SURVEYORS - CONSULTANTS - ARCHITECTS - LAND PLANNERS	REVISIONS:	DRAWING TITLE: LIBERT MEDIC	Y BUILDING AL GAS PLA	G 1W
638 S	OUTH GRAND AVE. FOWLERVILLE, IICHIGAN 48836		DATE: 11-17-2014	BUILDING NUMBER: 1W	PLOT SC/ As indica
ビート MICHIGAN 48836 (OFFICE) 517-223-3512 (FAX) 517-223-9987			PROJECT: UPGRADE	MEDICAL GAS SY	STEM

- (1) INTEGRATE SOURCE ALARMS AND SENSORS INTO NEW MASTER ALARM SYSTEM.

2 INSTALL NEW MASTER ALARM WIRING AND CONDUIT FROM NEW MASTER ALARM JUCNTION BOX TO SOURCE ALARM DEVICES ON 4TH FLOOR AND SUB-BASEMENT.

(3) RELABEL ALL MEDICAL GAS PIPING AND MASTER ALARM DEVICES AND WIRING PER NFPA 99.

- MEDICAL GAS PLAN NOTES:

- MEDICAL GAS DEMOLITION NOTES: T REMOVE THE EXISTING MEDICAL AIR SOURCE EQUIPMENT, INCLUDING ASSOCIATED DRYERS, FILTERS, AND SOURCE ALARM DEVICES.

4 DEMOLISH EXISTING 1-1/2" MA MAIN IN BASEMENT AND RISER UP TO FOURTH FLOOR AND ALL HANGERS AND SUPPORTS. REFER TO SHEET P-140 FOR CONTINUATION.

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VA PROJECT NAME: UPGRADE MEDICAL GAS SYSTEM	OF MRS
VA PROJECT NUMBER: 506-14-103	AENT S AFFA
C2AE PROJECT NUMBER: 14-0017	PARTN
DRAWING NUMBER: P-111	DE



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![](_page_3_Figure_4.jpeg)

![](_page_3_Figure_5.jpeg)

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CONSULTANTS: 725 Prudden Street Lansing, MI 48906 - 517.371.1200 123 West Main Street, Suite 200 Gaylord, MI 49735 - 989.732.8131 648 Monroe Avenue NW, Suite 210 Grand Rapids, MI 49503 -616.454.9414 1211 Ludington Street Escanaba,MI 49829 - 906.233.9360

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![](_page_3_Picture_8.jpeg)

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![](_page_4_Figure_0.jpeg)

![](_page_4_Picture_4.jpeg)

	ARCHITECT/ENGINEERS:	ENGINEERS - SURVEYORS - CONSULTANTS - LANDSCAPE ARCHITECTS - LAND PLANNERS	REVISIONS:		L GAS DET	AILS
9	ment En	638 SOUTH GRAND AVE. FOWLERVILLE, MICHIGAN 48836		DATE: 11-17-2014	BUILDING NUMBER:	PLOT SCALE: 1/8" = 1'-0"
ment	THOM OUNS	(OFFICE) 517-223-3512 (FAX) 517-223-9987		PROJECT: UPGRADE M	EDICAL GAS SYS	STEM

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PRESS SW #4 NONE			
80-90	55 PSI TO SYSTEM [100 PSI TO SYSTEM] 3" [2"] LOW PRESSURE MASTER ALARM SWITCH (40 PSI) HIGH PRESSURE MASTER ALARM SWITCH (65 PSI)		
	VA PROJECT NAME: UPGRADE MEDICAL GAS SYSTEM VA PROJECT NUMBER: 506-14-103 C2AE PROJECT NUMBER: 14-0017 DRAWING NUMBER: <b>P-500</b>	DEPARTMENT OF VETTERANS AFFAIRS	

![](_page_5_Figure_0.jpeg)

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ARCHITECT/ENGINEERS		REVISIONS:	DRAWING TITLE:			VA PROJECT NAME: UPGRADE MEDICAL GAS SYSTEM
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ment &	638 SOUTH GRAND AVE. FOWLERVILLE, MICHIGAN 48836		DATE: 11-17-2014	BUILDING NUMBER:	PLOT SCALE: As indicated	C2AE PROJECT NUMBER: 14-0017
(OFFICE) 517-223-3512 (OFFICE) 517-223-9987		MEDICAL GAS SY	STEM	DRAWING NUMBER: P-501		

TEMP. SENSOR EXHAUST FLEX CONNE EXHAUST FLEX CONNEC (SHIPPED LOOSE)	C CTOR
EXHAUST DRIP LEG	VACUUM EXHAUST 1 INCH MPT
TEMP. SENSOR EXHAUST FLEX CONNEC (SHIPPED LOOSE)	CTOR
EXHAUST DRIP LEG	VACUUM EXHAUST 1 INCH MPT

![](_page_6_Figure_0.jpeg)

![](_page_6_Figure_4.jpeg)

	ARCHITECT/ENGINEERS:	REVISIONS:				VA PROJECT NAME: UPGRADE MEDICAL GAS SYSTEM	OF
	ENGINEERS - SURVEYORS - CONSULTANTS - LANDSCAPE ARCHITECTS - LAND PLANNERS			AL GAS DE I	AILO	VA PROJECT NUMBER: 506-14-103	IENT AFF2
9	638 SOUTH GRAND AVE. FOWLERVILLE, MICHIGAN 48936		DATE: 11-17-2014	BUILDING NUMBER:	PLOT SCALE: As indicated	C2AE PROJECT NUMBER: 14-0017	MTM
ment	(OFFICE) 517-223-3512 (FAX) 517-223-9987		 PROJECT: UPGRADE I	MEDICAL GAS SYS	STEM	DRAWING NUMBER: P-502	DET

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	ARCHITECT/ENGINEERS:	ENGINEERS - SURVEYORS - CONSULTANTS - LANDSCAPE ARCHITECTS - LAND PLANNERS	REVISIONS:	DRAWING TITLE:	. GAS DETA	\ILS
ement	Selteroo	638 SOUTH GRAND AVE. FOWLERVILLE, MICHIGAN 48836 (OFFICE) 517-223-3512		DATE: 11-17-2014 PROJECT:	BUILDING NUMBER:	PLOT SCALE: As indicated
	<i>₩</i> ⊕, <i>Υ</i>	(FAX) 517-223-9987		UPGRADE ME	DICAL GAS SYST	EM

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DRING. INTEGRATION TO BMS RMS. CONNECTION; COORIDINATE DNTACTS INTO EXISTING RES. PMENT AND CONTROL PANEL.	~
BUILDING 1W MUS EL BUILDING 1W 	m
$\frac{1}{P}$ OR $\frac{1}{P}$ BON OR $\frac{1}{P}$ BUILDING 1W MEDICAL AIR COMPRESSOR "2-MAC" BUILDING #1 4TH FLOOR $\frac{Y}{P}$ BUILDING #1 4TH FLOOR	U
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NNING BUNDLES	ш
ENERGY BLDG. 32	ц.

VA PROJECT NAME: UPGRADE MEDICAL GAS SYSTEM	OF
VA PROJECT NUMBER: 506-14-103	AENT S AFF/
C2AE PROJECT NUMBER: 14-0017	PARTN
DRAWING NUMBER: P-503	DEI

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	ARCHITECT/ENGINEERS: ering Group Engineers - SURVEYORS - CONSULTANTS - LANDSCAPE ARCHITECTS - LAND PLANNERS	REVISIONS:	DRAWING TITLE:	. GAS DET	AILS
e	638 SOUTH GRAND AVE. FOWLERVILLE, MICHIGAN 48836		DATE: 11-17-2014	BUILDING NUMBER:	PLOT SCALE: 1/4" = 1'-0"
ement	(OFFICE) 517-223-3512 (FAX) 517-223-9987		PROJECT: UPGRADE MEI	DICAL GAS SYS	STEM

VA PROJECT NAME: UPGRADE MEDICAL GAS SYSTEM	OF
VA PROJECT NUMBER: 506-14-103	AENT S AFF2
C2AE PROJECT NUMBER: 14-0017	PARTN
DRAWING NUMBER: P-504	DE

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# ELECTRICAL SYMBOL LEGEND

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	SPECIALTY OUTLET- SEE EQUIPMENT AND DRAWINGS FOR REQUIREMENTS	\$	SWITCH: SINGLE POLE, 46" TYPICAL UON.
JJ	JUNCTION BOX	\$ <sup>3</sup>	SWITCH: 3-POLE, 46" TYPICAL UON.
		\$	FUSED SWITCH- POLE AND VOLTAGE AS REQUIRED, DUAL ELEMENT PLU
	NON-FUSED DISCONNECT	\$ <sup>K</sup>	SWITCH: KEYED, 46" TYPICAL UON.
СВ	CIRCUIT BREAKER DISCONNECT	\$ <sup>₽</sup>	SWITCH: PILOT LIGHT, 46" TYPICAL UON.
Ľ	FUSED DISCONNECT	\$ <sup>T</sup>	SWITCH: TIMER, 46" TYPICAL UON.
	MOTOR STARTER		
	SURFACE MOUNTED PANEL		
	RECESSED PANEL		

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NOTE:MONITOR AND COORDINATE ALL LOCATIONS WITH MECHANICAL PLANS.NOT ALL DEVICES IN LEGEND ARE USED.

А	AMP	kVA	KILVOLT AMPERE
AF	AMP FUSE	kW	KILOWATT
AFF	ABOVE FINISHED FLOOR	LRA	LOCKED ROTOR AMPS
ATS	AUTOMATIC TRANSFER SWITCH	LTG	LIGHTING
AUTO	AUTOMATIC	MAX	MAXIMUM
BLDG	BUILDING	MCA	MINIMUM CIRCUIT AMPS
BKR	BREAKER	MDP	MAIN DISTRIBUTION PANEL
BOD	BASIS OF DESIGN	MIN	MINIMUM
BYP	BY PASS	MOCP	MAXIMUM OVERCURRENT PROTECTION
С	CONDUIT	MTD	MOUNTED
СКТ	CIRCUIT	MTG	MOUNTING
CKT BKR	CIRCUIT BREAKER	N	NEUTRAL
CU	COPPER	NTS	NOT TO SCALE
DEMO	DEMOLITION	OC	ON CENTER
DISC	DISCONNECT	Р	POLE
DISTR	DISTRIBUTION	PH	PHASE
EC	ELECTRICAL CONTRACTOR	PNL	PANEL
EG	EQUIPMENT GROUND	PWR	POWER
ENCL	ENCLOSURE	RECEPT	RECEPTACLE
ETR	EXISTING TO REMAIN	RM	ROOM
EXIST	EXISTING	SPEC	SPECIFICATION
FLA	FULL LOAD AMPS	TYP	TYPICAL
GND	GROUND	UON	UNLESS OTHERWISE NOTED
GC	GENERAL CONTRACTOR	V	VOLT
GFCI	GROUND FAULT INTERRUPTER	VA	VOLT AMPERE
HOA	HAND-OFF-AUTOMATIC	VFC	VARIABLE FREQUENCY CONTROLLER
HP	HORSE POWER	VOLT	VOLTAGE
JB	JUNCTION BOX	W	WATT
		XFMR	TRANSFORMER

LOCATION
ENGINEERING CONTROL CENTER (ECC)
-AND-

SECURITY OFFICE

ENGINEERING CONTROL CENTER (ECC)

LOCATION

-AND-

SECURITY OFFICE

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# GENERAL DEMOLITION NOTES:

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- 1. DEMOLITION NOTES ARE BASED UPON FIELD OBSERVATION AND EXISTING RECORD DOCUMENTS. THE ELECTRICAL
- CONTRACTOR SHALL VERIFY EXACT CONDITIONS AT SITE AND REPORT DISCREPANCIES TO THE ARCHITECT/ENGINEER BEFORE DISTURBING THE INSTALLATION.
   THE SCOPE OF REQUIRED DEMOLITION IS NOT LIMITED TO ITEMS OR WORK INDICATED ON THE CONTRACT DOCUMENTS. THE
- ELECTRICAL CONTRACTOR SHALL DETERMINE THE NATURE AND EXTENT OF WORK REQUIRED. THE CONTRACTOR ACCEPTS EXISTING SITE CONDITIONS AT THE START OF DEMOLITION.
- WHERE ELECTRICAL COMPONENT ARE SHOWN TO BE REMOVED, THE ELECTRICAL CONTRACTOR SHALL RECONNECT REMAINING COMPONENTS TO EXISTING CIRCUIT(S).
   WHERE THE DRAWINGS SHOW DEVICES OR EQUIPMENT TO BE PERMANENTLY REMOVED, THE ELECTRICAL CONTRACTOR SHALL

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- REMOVE CONDUCTORS BACK TO SOURCE. TURN BREAKER 'OFF' AND LABEL THE BREAKER AS 'SPARE' ON NEWLY PRINTED PANEL DIRECTORY. 5. THE ELECTRICAL CONTRACTOR SHALL REMOVE ALL ABANDONED CONDUIT. THE ELECTRICAL CONTRACTOR SHALL CUT CONDUIT
- FLUSH WITH WALLS AND FLOORS, UON. PATCH ALL SURFACES AND PROVIDE FIRESTOP WHERE REQUIRED.6. THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF DAMAGE TO ALL ADJACENT CONSTRUCTION AND
- FINISHES. REPAIRS SHALL BE MADE TO RETURN SPACE TO ORIGINAL CONDITION PRIOR TO COMPLETION OF PROJECT.
  EQUIPMENT AND DEVICES SHOWN AS DASHED ON THE DRAWING ARE TO BE REMOVED. LIGHT FIXTURES SHALL BE TURNED OVER TO THE OWNER UNLESS OTHERWISE NOTED OR DECLINE BY OWNER TO RECEIVE THEM.
- 8. THE ELECTRICAL CONTRACTOR SHALL DISCONNECT ALL ELECTRICAL SYSTEMS IN WALLS, FLOORS AND CEILINGS SCHEDULED FOR REMOVAL, INCLUDING SPECIAL SYSTEMS.
- THE ELECTRICAL CONTRACTOR SHALL PROVIDE TEMPORARY WIRING AND CONNECTIONS TO MAINTAIN OPERATION OF EXISTING SYSTEMS DURING CONSTRUCTION. CONDITIONS SHALL BE RETURNED TO NORMAL AT THE CLOSE OF THE PROJECT.
   THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR THE DISPOSAL OF ALL EQUIPMENT AND DEVICES REMOVED THAT ARE NOT
- TO BE TURNED OVER TO THE OWNER. 11. ALL DISRUPTIONS OF SERVICE SHALL BE COORDINATED AND APPROVED BY OWNER.

## GENERAL NOTES:

- ALL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST ACCEPTED EDITION OF THE NATIONAL ELECTRICAL CODE, NEC, AND ALL STATE AND LOCAL CODES.
- COORDINATE THE INSTALLATION OF ALL ELECTRICAL EQUIPMENT AND CONNECTIONS WITH ARCHITECTURAL, STRUCTURAL, MECHANICAL AND EQUIPMENT DRAWINGS.
   ELECTRICAL CONTRACTOR SHALL PROVIDE AND INSTALL ALL POWER, CONDUITS, CABLETRAY, AND OTHER
- COMPONENTS AS SHOWN ON THE EQUIPMENT PROVIDER DRAWINGS FOR INSTALLATION OF SYSTEM.
  ALL CONDUCTORS SHALL BE COPPER. ALUMINUM WIRES SHALL NOT BE USED.
  MINIMUM CONDUIT SIZE SHALL BE 3/4" FOR POWER FEEDS AND 1-1/4" FOR DATA FEEDS.
- MOTOR LOADS WHICH ARE LESS THAN 6.0 AMPS SHALL BE PROTECTED BY A 15 AMP CIRCUIT BREAKER.
   FINAL CONNECTION TO MECHANICAL EQUIPMENT SHALL BE MADE WITH LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT.
- LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT WILL NOT BE APPROVED FOR USE AS A GROUNDING CONDUCTOR. A SEPARATE GREEN EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED.
- 120/208VAC CIRCUIT WIRING FOR ANY ROOM OR AREA MAY BE GROUPED INTO RACEWAYS UNLESS SEPARATE RACEWAYS ARE REQUIRED BY THE NEC. COMPLY WITH NEC REQUIREMENTS FOR CONDUCTOR DERATING.
   PROVIDE EQUIPMENT GROUNDING CONDUCTORS FOR ALL POWER AND LIGHTING CIRCUITS.
- ALL LIGHTING AND POWER CONDUCTORS SHALL BE 12 AWG MINIMUM. ALL CONTROL CONDUCTORS SHALL BE 14 AWG MINIMUM OR AS SPECIFIED BY MANUFACTURER.
   DEDICATED NEUTRAL SHALL BE PROVIDED FOR ALL CIRCUITS. SHARED NEUTRALS ARE NOT ALLOWED.
- 13. CIRCUITS SHOWN FOR EXISTING PANEL ARE FOR GENERAL REFERENCE ONLY. FIELD VERIFY LOCATION IN PANEL AND PROVIDE NEW CIRCUIT BREAKERS IN EXISTING PANELS.

LABORATORY GAS ALARM PANEL SCHEDULE					
	TYPE OF PANEL	GAGES	SERVICE INDICATOR LIGHTS		
	MASTER (SYSTEM) ALARM PANEL	NO	LA AIR DEW POINT HIGH LA AIR CARBON MONOXIDE HIGH LA AIR DESICCANT DRYER MALFUNCTION LA AIR DESICCANT DRYER POST FILTER DIRTY LA AIR COMPRESSOR MALFUNCTION LA DESICCANT DRYER INLET FILTER DIRTY LA MAIN LINE FILTER BANK DIRTY LA PRESSURE HIGH LA PRESSURE HIGH LA VACUUM FILTER BACKPRESSURE LA VACUUM LINE VACUUM LOW LA VACCUUM PUMP MALFUNCTION		

### MEDICAL GAS ALARM PANEL SCHEDULE

TYPE OF PANEL	GAGES	SERVICE INDICATOR LIGHTS
MASTER (SYSTEM) ALARM PANEL	NO	LIQUID OXYGEN LEVEL LOW OXYGEN RESERVE SWITCHOVER OXYGEN RESERVE IN USE OXYGEN RESERVE LOW LIQUID LEVEL OXYGEN RESERVE LOW PRESSURE OXYGEN LINE PRESSURE LOW OXYGEN LINE PRESSURE HIGH NITROUS OXIDE RESERVE SWITCHOVER NITROUS OXIDE RESERVE IN USE NITROUS OXIDE LINE PRESSURE LOW NITROUS OXIDE LINE PRESSURE HIGH NITROGEN RESERVE SWITCHOVER NITROGEN RESERVE SWITCHOVER NITROGEN RESERVE SWITCHOVER NITROGEN RESERVE IN USE NITROGEN LINE PRESSURE HIGH MEDICAL AIR DEWPOINT HIGH MA COMPRESSOR MALFUNCTION MEDICAL AIR PRESSURE HIGH MA SYSTEM CARBON MONOXIDE HIGH DESICCANT DRYER MALFUNCTION DESICCANT DRYER MALFUNCTION DESICCANT DRYER NALFUNCTION MEDICAL VACUUM LINE VACUUM LOW MEDICAL VACUUM LINE VACUUM LOW MEDICAL VACUUM FILTER BACK PRESSURE MEDICAL VACUUM FILTER BACK PRESSURE MEDICAL VACUUM PUMP MALFUNCTION

	MARK	
	1-LAC	
	1-MAC	
	2-MAC	
1. 2. 3. 4.	PACKAGED & PROVIDED WI DUAL DESICC/ REFER TO SPI	FACT TH CA ANT A ECIFI

MARK	
1-LVS	
1-MVS	
2-MVS	
I. PACKAGED & F	AC
2. PROVIDE WITH	HC
	MARK 1-LVS 1-MVS 2-MVS 1. PACKAGED & F 2. PROVIDE WITH

### CONSULTANTS:

725 Prudden Street Lansing, MI 48906 - 517.371.1200 123 West Main Street, Suite 200 Gaylord, MI 49735 - 989.732.8131 648 Monroe Avenue NW, Suite 210 Grand Rapids, MI 49503 -616.454.9414 1211 Ludington Street Escanaba,MI 49829 - 906.233.9360

![](_page_9_Picture_40.jpeg)

		1		DICAL GAS AND VA		& SIGNALS	)		
				SIGNAL					
SYSTEM	ALARM ID	MODEL	ALARM CONDITION	MASTER ALARM	LOCAL ALARM	ALARM DEVICE	DEVICE LOCATION	SET POINT	EXISTING TO REMAIN
	02.1			v		SW/ITCH			×
	02-1			× ×		SWITCH			X
	02-2			X		SWITCH			X
	02-3			X		SWITCH			X
OXYGEN	02-4		RESERVE PRESSURE LOW	X		SWITCH			X
OXYGEN	02-6			X		SWITCH			X
OXYGEN	02-7		LOW LINE PRESSURE	X		SWITCH			X
MEDICAL AIR	MA-1E		DEW POINT HIGH	X		SENSOR			
MEDICAL AIR	MA-2E		CARBON MONOXIDE HIGH	X		SENSOR			
MEDICAL AIR	MA-3E		HIGH LINE PRESSURE	X		SWITCH			Х
MEDICAL AIR	MA-4E		LOW LINE PRESSURE	X		SWITCH			X
MEDICAL AIR	MA-5E		MAIN LINE FILTER DIRTY	X		SWITCH			
MEDICAL AIR	MA-6E		DRYER PREFILTER DIRTY	X		SWITCH			
MEDICAL AIR	MA-7E		DRYER POST FILTER DIRTY	X		SWITCH			
MEDICAL AIR	MA-8E		AIR DRYER MANFUNCTION	X		RELAY			
MEDICAL AIR	MA-9E		COMPRESSOR MANFUNCTION	X		RELAY			
MEDICAL AIR	MA-1W		DEW POINT HIGH	X		SENSOR			
MEDICAL AIR	MA-2W		CARBON MONOXIDE HIGH	X		SENSOR			
MEDICAL AIR	MA-3W		HIGH LINE PRESSURE	X		SWITCH			
MEDICAL AIR	MA-4W		LOW LINE PRESSURE	Х		SWITCH			
MEDICAL AIR	MA-5W		MAIN LINE FILTER DIRTY	Х		SWITCH			
MEDICAL AIR	MA-6W		DRYER PREFILTER DIRTY	X		SWITCH			
MEDICAL AIR	MA-7W		DRYER POST FILTER DIRTY	Х		SWITCH			
MEDICAL AIR	MA-8W		AIR DRYER MANFUNCTION	Х		RELAY			
MEDICAL AIR	MA-9W		COMPRESSOR MANFUNCTION	X		RELAY			
	M\/-1F			X		SWITCH			×
MEDICAL VACUUM	MV-2E			X		RELAY			X
MEDICAL VACUUM	MV-3E		PUMP MALFUNCTION	X		RELAY			X
				X		014/17011			
				X		SWITCH			
	IVIV-2VV			X					
	1010-300			A		RELAT			
NITROGEN	N2-1		LINE PRESSURE HIGH	X		SWITCH			X
NITROGEN	N2-2		LINE PRESSURE LOW	Х		SWITCH			Х
NITROGEN	N2-3		RESERVE CHANGOVER	X		SWITCH			Х
NITROGEN	N2-4		RESERVE IN USE	Х		SWITCH			Х
	N2O-1			X		SWITCH			×
	N20-2			X		SWITCH			X
	N20-3		RESERVE CHANGEOVER	X		SWITCH			X
NITROUS OXIDE	N2O-4		RESERVE IN USE	X		SWITCH			X
LABORATORY AIR	LA-1		DEW POINT HIGH	Х		SENSOR			
LABORATORY AIR	LA-2		CARBON MONOXIDE HIGH	X		SENSOR			
LABORATORY AIR	LA-3		HIGH LINE PRESSURE	X		SWITCH			X
	LA-4		LOW LINE PRESSURE	X		SWITCH			X
	LA-5			X		SWITCH			
	LA-6			X		SWITCH			X
	LA-7			X		SWITCH			X
	LA-8			<u>Х</u> v					Х Х
LADUKATUKTAIK	LA-9		COMPRESSOR MAINFUNCTION	A		RELAY			<b>^</b>
LAB VACUUM	LV-1		LOW LINE PRESSURE	X		SWITCH			X
LAB VACUUM	LV-2		PUMP FILTER DIRTY	X		RELAY			
				V					

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# AIR COMPRESSOR SCHEDULE

						E		OWER [60hz	<u>_]</u>	
LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	TYPE	CAPACTY (SCFM)	SIZE (GAL)	NO. MOTORS	HP EA.	PHASE	VOLTAGE	R
MECH. RM. DB61	FREEDOM BUILDING 1E	LAB. AIR	OIL LESS SCROLL	91	200	6	5	3	460	EX
MECH. RM. DB61	FREEDOM BUILDING 1E	MED. AIR	OIL LESS SCROLL	156	240	6	10	3	460	NE
FOURTH FLOOR	LIBERTY BUILDING 1W	MED. AIR	OIL LESS SCROLL	50	120	4	5	3	460	NE
CTORY ASSEMBLED AND TESTED MEDICAL AIR SYSTEM WITH A SINGLE POINT ELECTRICAL CONNECTION. CARBON MONOXIDE AND DEW POINT MONITORS.										

T AIR DRYERS WITH PRE- AND AFTER FILTERS. FICATIONS FOR ADDITIONAL REQUIREMENTS.

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VACUUM PUMP SCHEDULE									
					ELECTRIC POWER [60hZ]				
LOCATION	AREA AND/OR BLDG SERVED	SYSTEM AND/OR SERVICE	TYPE	CAPACITY (SCFM)	NO. PUMPS	HP EA.	PHASE	VOLTAGE	RI
MECH. RM. DB61	FREEDOM BUILDING 1E	LAB. VAC.	FLOODED OIL ROTARY VANE	52.00	2	5	3	460	NE\
MECH. RM. DB61	FREEDOM BUILDING 1E	MED. VAC.	FLOODED OIL ROTARY VANE	40.80	2	7.5	3	460	EXI
MECH. RM.	LIBERTY BUILDING 1W	MED. VAC.			2				EXI

ACTORY ASSEMBLED AND TESTED VACUUM SYSTEM WITH SINGLE POINT ELECTRICAL CONNECTION. HORIZONTAL 60-GALLON ASME REATED TANK.

3. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

ent $U_{\mu} = U_{\mu} + $	「日日日日本 48836 (OFFICE) 517-223-3512 (FAX) 517-223-9987			MEDICAL GAS SYS	STEM	DRAWING NUMBER:
	638 SOUTH GRAND AVE. FOWLERVILLE,		DATE: 11-17-2014	BUILDING NUMBER:	PLOT SCALE: As indicated	C2AE PROJECT NUMBER: 14-0017
	ENGINEERS - SURVEYORS - CONSULTANTS - LANDSCAPE ARCHITECTS - LAND PLANNERS			AL GAS SCH	EDULES	VA PROJECT NUMBER: 506-14-103
	ARCHITECT/ENGINEERS:	REVISIONS:	DRAWING TITLE:			VA PROJECT NAME: UPGRADE MEDICAL GAS SYSTEM

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