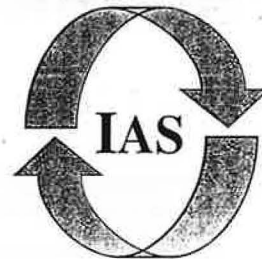


INDUSTRIAL AIR SYSTEMS, INC.

17739 - 15TH AVENUE N.E. • SHORELINE, WA 98155 • (206) 367-5115 • FAX (206) 363-0653

Custom Air Handling Units - Cabinet Heaters - Coils - Gas Fired Air Handling Units - Energy Recovery Systems -
Evaporative Cooling Systems - Computer Room Air Conditioning Units - Commercial and Industrial Silencers - Auto and
Weld Exhaust Systems - Paint and Blast Booths - Dust Collection Systems - Kitchen Exhaust Systems - Infra-Red Heaters



September 26, 2000

RE-SUBMITTAL

Project: Whatcom Transit Maintenance
Architect: Zervus Group
Engineer: Berona Engineers, Inc.
Contractor: Diamond "B"

Equipment: Make-up Air Handler
Section: 15855
Page: 2
Paragraph: 2.1

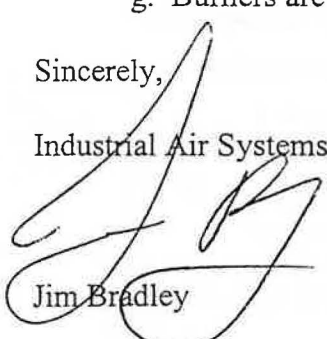
"ICE" MAH-1, 2, 3

Response to submittal review comments No. 27

- D. 3. MAH-1, 2, & 3
- a. Heat recovery performance sheets attached.
 - b. Tamco damper literature attached.
 - c. See attached specification.
 - d. Roof curb for MAH-3 deleted.
 - e. See attached specification.
 - f. See data sheets attached.
 - g. Burners are 40:1 turndown.

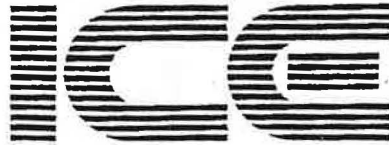
Sincerely,

Industrial Air Systems, Inc.



Jim Bradley

JB/ak
Enclosure



INDUSTRIAL
COMMERCIAL
EQUIPMENT
MANUFACTURING LTD.

51 AIKINS STREET WINNIPEG, MANITOBA R2W 4E3 PE: (204) 586-8565 FAX: (204) 589-7682	INDIRECT FIRED INDUSTRIAL HEATERS UNIT SPECIFICATIONS	JOB NUMBER 25781A
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JOB NAME	WHATCOM TRANSIT FACILITY	AGENT	IAS WA
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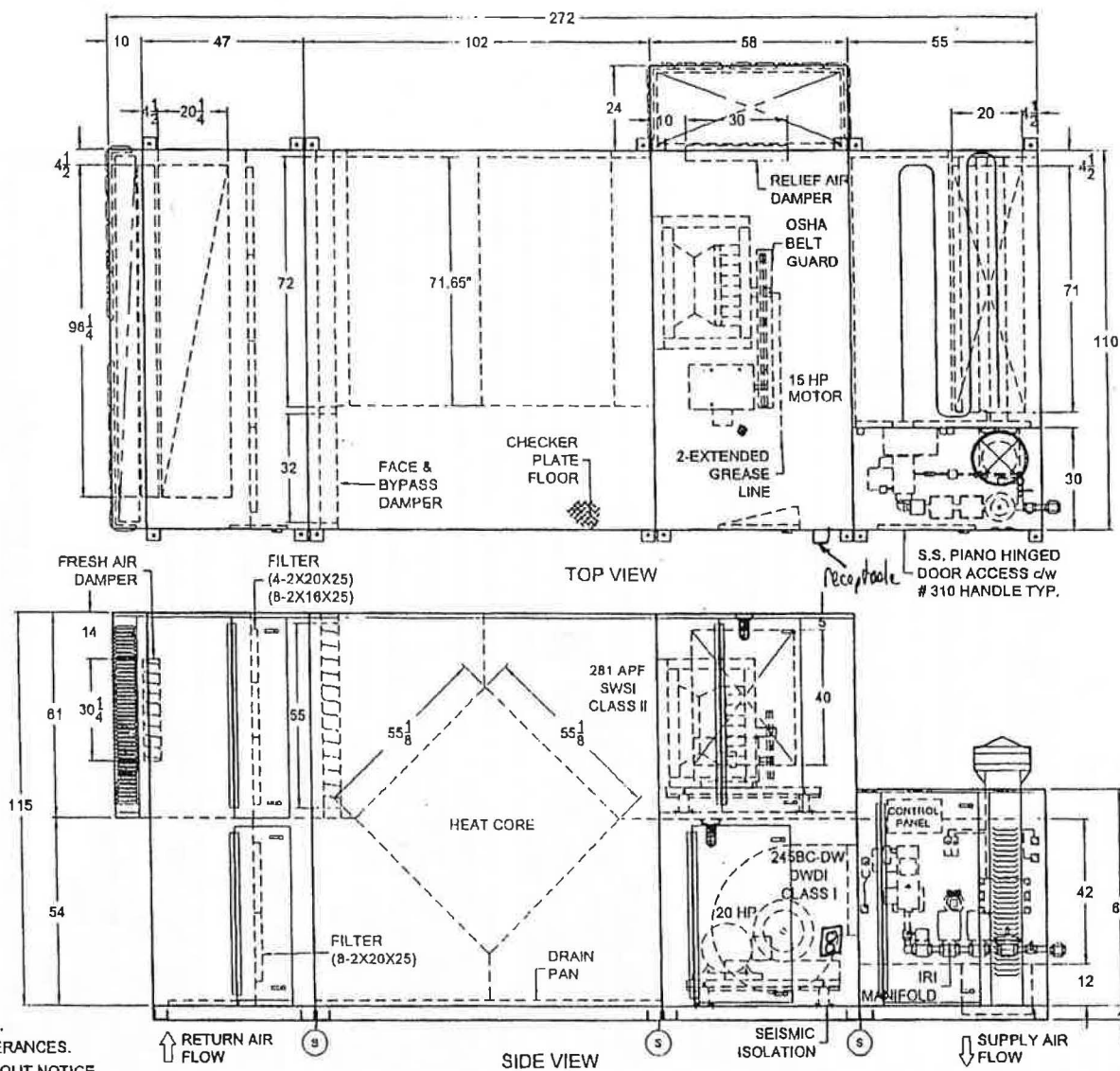
MODEL NUMBER	GIDM 75	TAG(S)	MAH-1
NO. OF UNITS	01	MOUNTING	Horizontal
APPROX. WT.	10,200 lbs	DISCHARGE	Bottom

AIR VOLUME	14,000 cfm Supply 14,000 cfm Return	BLOWER	1-245BC-DW DWDI Class I 1-281APF-SWSI Class II (Plenum Fan)
ESP	1" W.C. Supply 3/4" W.C. Return	TEMPERATURE RISE	50°F
BLOWER MOTOR	20 hp Supply 15 hp Return	MOTOR TYPE	ODP ODP
RPM	1,387 Supply 1,447 Return	BHP	11.83 9.49
BURNER MOTOR	0.33 hp	MOTOR TYPE	ODP
ID FAN MOTOR	N/A	MOTOR TYPE	N/A

GAS TYPE	Natural	INLET PRESSURE	7-14" W.C.
MANIFOLD TYPE	Modulation	GAS INLET SIZE	1"
BURNER TYPE	Gorden Piatt	MAX. INPUT (MBH)	937.5
BURNER CONTROL	4-20mA/0-10Vdc Signal By Others	MAX. OUTPUT (MBH)	750.0

POWER SUPPLY	460/3/60	MOTOR FLA	25.8 Supply 20.2 Return
FEEDER AMPS	48	MIN. AMPACITY	54
MAX. FUSE	90	MAX. BREAKER	70
MIN. CONDUCTOR	#6 AWG	CONTROLS CONDUCTOR	#16 AWG

FILTER TYPE	Farr 30/30	FILTER QUANTITY Supply Air	4-20x25x2 8-16x25x2 36 ft ² 389 sfpm = 20' sp
		Return Air	8-20x25x2 28 ft ² 500 sfpm = 30' sp



NOTES:

SEE ROOF CURG DWG. 60-15652

⑤ SPLIT FOR SHIPMENT

1. 1 1/2 INLET AND DISCHARGE FLANGES

2. SERVICE ACCESS PANELS MUST NOT BE OBSTRUCTED RECOMMENDED CLEARANCE 24 INCHES.

3. DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.

FOR REFERENCE USE ONLY, SUBJECT TO CHANGE WITHOUT NOTICE

ICE
GIDMH
SERIES

TITLE
MAH-1
GIDMH 75HR HORIZONTAL CONFIG. OUTDOOR UNIT
GRAVITY VENTED c/w FLAT FILTER, HEAT CORE
RETURN BLOWER AND LOUVERED INLET

DRAWN BY
JV

ISSUED BY
JV

SCALE
1:50

DRW. NO.
60-15651

CHK. BY
30

DATE
JUL 13/2000

JOB NO.
25781A

REV
A

A JV
Rev Qy

Changed heat core size from 74" X 74" X 72" to 55.12" X 55.12" X 71.85"

9/19/00
Date

FEATURES

♦ Fresh Air Damper (Low Leakage)
♦ Face & By-Pass Air (Low Leakage)
♦ Relief Air Damper (Low Leakage)
♦ Modulating Damper Actuator (x1)
♦ Mix Air Controller (x1)
♦ Stainless Steel Primary & Secondary Heat Exchanger
♦ Flat Filter Section (x2)
♦ High cfm
♦ ETL Label
♦ IRI Style
♦ Internal Spring Vibration Isolation (Seismic x2)
♦ Roof Curb
♦ 2"/1.5 lb Insulation
♦ Inlet Plenum (x2)
♦ Hinged Access Throughout Unit w/#140 Handle & Stainless Piano Hinges
♦ Louvered Inlet
♦ Louvered Relief Hood
♦ 12 Gauge Checker Floor
♦ 16 Gauge Construction Throughout Unit
♦ Perforated Internal Liner Throughout Unit
♦ Butyl Tape Throughout Unit
♦ Weatherhousing
♦ Weatherproof Fused Disconnect
♦ 10 Year Heat Exchanger Warranty
♦ Dirty Filter Switch w/Dry Contacts (x2)
♦ Extended Grease Lines (x2)
♦ Heat Recovery Plenum
♦ Heat Recovery Core
♦ Heat Recovery Drain Pan
♦ Dry Contacts For Blower On/Off, Burner Enable, Flame Failure,
♦ CO Contacts
♦ Dwyer Magnahelic (x2) For Filters
♦ Osha Belt Guards (x2)
♦ 4-20mA/0-10Vdc Gas Modulating Interface
♦ Service Receptacle (x1)
♦ Marine Lights (x2)
♦ Weatherproof Unfused Disconnect (For Lights & Receptacle)
♦ Right Hand Unit

American Energy Exchange, Inc.

5737 E. Cork St., Kalamazoo, Michigan 49001

Air-to-Air Heat Exchanger Performance Data

Date: 9/19/00

Project Name: #2 MAH-1

Cold Air SCFM = 14,000

Cold Air Mass Flow = 61,691

Cold Air Inlet Temp = 10.

Cold Air Inlet RH = 100%

Cold Air Outlet Temp = 57.63

Cold Air Temp Rise = 47.63

Cold Air Pressure Drop = .92

Cold Air Outlet RH = 14.69%

Efficiency = 76.82%

Condensate Qty = 182.96 Lbs/Hr

Altitude = 500 Feet above Sea Level

MBH Transferred = 707.85

Warm Air SCFM = 14,000

Warm Air Mass Flow = 61,691

Warm Air Inlet Temp = 72.

Warm Air Inlet RH = 50%

Warm Air Outlet Temp = 37.85

Warm Air Temp Drop = 34.15

Warm Air Pressure Drop = 1.17

Warm Air Outlet RH = 100.0%

Heat Exchanger Selection
NG140/-X182

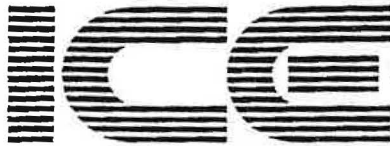
Height = 55.12"

Width = 55.12"

Length = 71.65"

Weight = 550 Lbs

DRAWN BY H.T.	ISSUED BY HT	REV -	SCALE N/A	DRW. NO. 25781A-1
CHK. BY [Signature]	DATE July, 25/00			JOB NO. 25781A



INDUSTRIAL
COMMERCIAL
EQUIPMENT
MANUFACTURING LTD.

51 AIKINS STREET WINNIPEG, MANITOBA R2W 4E3 PH: (204) 586-8565 FAX: (204) 589-7682	INDIRECT FIRED INDUSTRIAL HEATERS UNIT SPECIFICATIONS	JOB NUMBER 25781B
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JOB NAME	WHATCOM TRANSIT FACILITY	AGENT	IAS WA
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MODEL NUMBER	GIDM 75	TAG(S)	MAH-2
NO. OF UNITS	01	MOUNTING	Horizontal
APPROX. WT.	10,500 lbs	DISCHARGE	Bottom

AIR VOLUME	18,000 cfm Supply 18,000 cfm Return	BLOWER	1-245BC-DW DWDI Class I 1-321APF-SWSI Class II (Plenum Fan)
ESP	1" W.C. Supply 3/4" W.C. Return	TEMPERATURE RISE	39°F
BLOWER MOTOR	25 hp Supply 15 hp Return	MOTOR TYPE	ODP ODP
RPM	1,605 Supply 1,319 Return	BHP	19.13 13.27
BURNER MOTOR	0.33 hp	MOTOR TYPE	ODP
ID FAN MOTOR	N/A	MOTOR TYPE	N/A

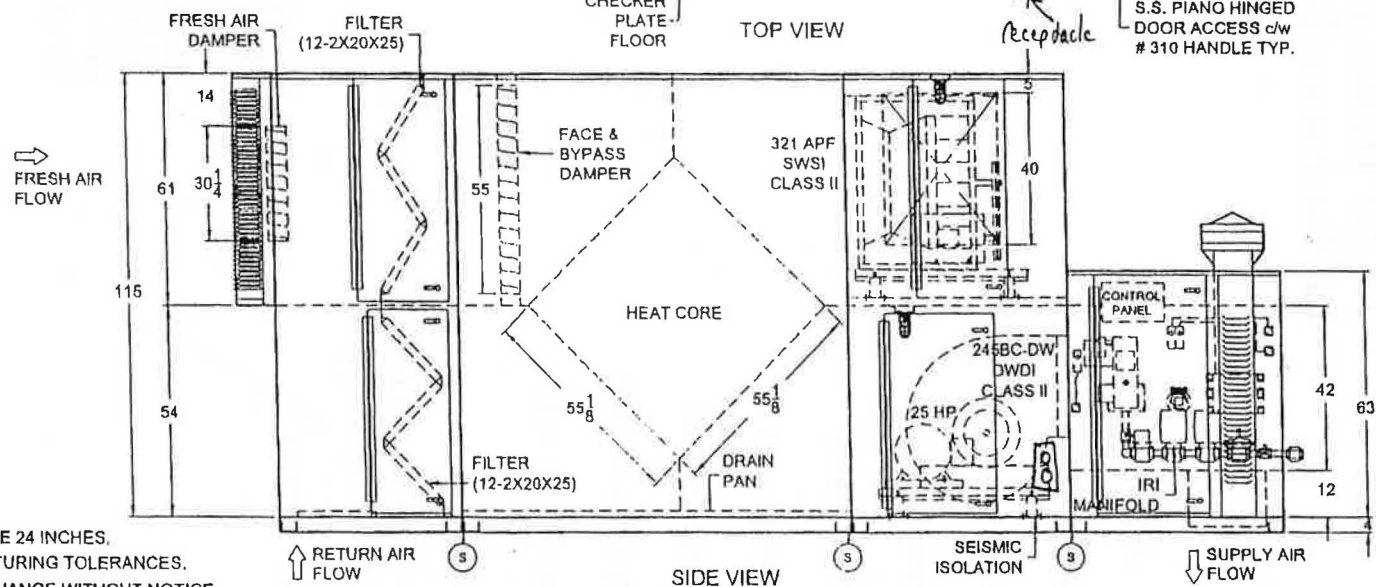
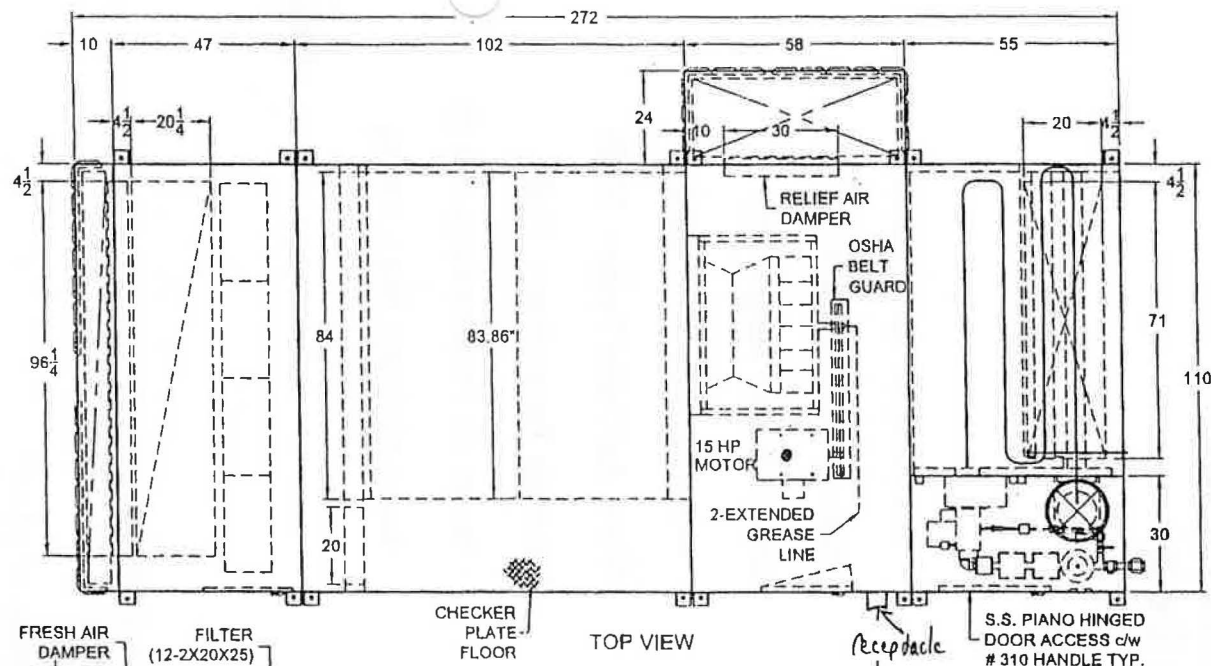
GAS TYPE	Natural	INLET PRESSURE	7-14" W.C.
MANIFOLD TYPE	Modulation	GAS INLET SIZE	1"
BURNER TYPE	Gorden Platt	MAX. INPUT (MBH)	937.5
BURNER CONTROL	4-20mA/0-10Vdc Signal By Others	MAX. OUTPUT (MBH)	750.0

POWER SUPPLY	460/3/60	MOTOR FLA	32.3 Supply 20.2 Return
FEEDER AMPS	74	MIN. AMPACITY	82
MAX. FUSE	125	MAX. BREAKER	125
MIN. CONDUCTOR	#4 AWG	CONTROLS CONDUCTOR	#16 AWG

FILTER TYPE	Farr 30/30	FILTER QUANTITY	12-20x25x2 41.7 sf ² 431.7 sfpm = .25" sp
		Supply Air	
		Return Air	12-20x25x2 41.6 sf ² 431.7 sfpm = .25" sp

FEATURES

♦ Fresh Air Damper (Low Leakage)
♦ Face & By-Pass Air (Low Leakage)
♦ Relief Air Damper (Low Leakage)
♦ Modulating Damper Actuator (x1)
♦ Mix Air Controller (x1)
♦ Stainless Steel Primary & Secondary Heat Exchanger
♦ Flat Filter Section (x2)
♦ High cfm
♦ ETL Label
♦ IRI Style
♦ Internal Spring Vibration Isolation (Seismic x2)
♦ Roof Curb
♦ 2"/1.5 lb Insulation
♦ Inlet Plenum (x2)
♦ Hinged Access Throughout Unit w/#140 Handle & Stainless Piano Hinges
♦ Louvered Inlet
♦ Louvered Relief Hood
♦ 12 Gauge Checker Floor
♦ 16 Gauge Construction Throughout Unit
♦ Perforated Internal Liner Throughout Unit
♦ Butyl Tape Throughout Unit
♦ Weatherhousing
♦ Weatherproof Fused Disconnect
♦ 10 Year Heat Exchanger Warranty
♦ Dirty Filter Switch w/Dry Contacts (x2)
♦ Extended Grease Lines (x2)
♦ Heat Recovery Plenum
♦ Heat Recovery Core
♦ Heat Recovery Drain Pan
♦ Dry Contacts For Blower On/Off, Burner Enable, Flame Failure;
♦ CO Contacts
♦ ABB VFD For 15 hp Exhaust Fan (By Others) w/By-Pass
♦ Dwyer Magnahelic (x2) For Filters
♦ Osha Belt Guards (x2)
♦ 4-20mA/0-10Vdc Gas Modulating Interface
♦ Service Receptacle (x1)
♦ Marine Lights (x2)
♦ Weatherproof Unfused Disconnect (For Lights & Receptacle)
♦ Right Hand Unit



NOTES:

SEE ROOF CURG DWG. 60-15650

⑨ SPLIT FOR SHIPMENT

- 1 1/2 INLET AND DISCHARGE FLANGES
 - SERVICE ACCESS PANELS MUST NOT BE OBSTRUCTED RECOMMENDED CLEARANCE 24 INCHES.
 - DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
- FOR REFERENCE USE ONLY, SUBJECT TO CHANGE WITHOUT NOTICE

ICE
GIDMH
SERIES

TITLE
MAH-2
GIDMH 75HR HORIZONTAL CONFIG. OUTDOOR UNIT
GRAVITY VENTED c/w V-BANK FILTER, HEAT CORE
RETURN BLOWER AND LOUVERED INLET

DRAWN BY JV	ISSUED BY JV	SCALE 1:50	DRW. NO. 60-15649
CHK BY [Signature]	DATE JUL 13/2000	JOB NO. 25781B	REV A

A	JV	Changed flat to v-bank filter and heat core size to 56.12"x55.12"x83.86" from 74"x74"x84"	9/19/00
Rev	By	Revision Description	Date

Sep-19-00 01:32P

P. 04

American Energy Exchange, Inc.
5737 E. Cork St., Kalamazoo, Michigan 49001

**Air-to-Air Heat Exchanger
Performance Data**

Date: 9/19/00

Project Name: #3 MAH-2

Cold Air SCFM = 18,000

Cold Air Mass Flow = 79,317

Cold Air Inlet Temp = 10.

Cold Air Inlet RH = 100%

Cold Air Outlet Temp = 57.48

Cold Air Temp Rise = 47.48

Cold Air Pressure Drop = 1.08

Cold Air Outlet RH = 14.76%

Efficiency = 76.58%

Condensate Qty = 233.99 Lbs/Hr

Altitude = 500 Feet above Sea Level

MBH Transferred = 907.21

Warm Air SCFM = 18,000

Warm Air Mass Flow = 79,317

Warm Air Inlet Temp = 72.

Warm Air Inlet RH = 50%

Warm Air Outlet Temp = 37.93

Warm Air Temp Drop = 34.07

Warm Air Pressure Drop = 1.38

Warm Air Outlet RH = 100.0%

Heat Exchanger Selection
NG140/-X213

Height = 55.12"

Width = 55.12"

Length = 83.86"

Weight = 628 Lbs

DRAWN BY H.T.	ISSUED BY <i>HT</i>	REV -	SCALE N/A	DRW. NO. 257818-1
CHK. BY <i>HT</i>	DATE July, 26/00			JOB NO. 257818



INDUSTRIAL
COMMERCIAL
EQUIPMENT
MANUFACTURING LTD.

51 AIRKINS STREET WINNIPEG, MANITOBA R2W 4E3 PH: (204) 586-8565 FAX: (204) 589-7682	INDIRECT FIRED INDUSTRIAL HEATERS UNIT SPECIFICATIONS	JOB NUMBER 25781C
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JOB NAME	WHATCOM TRANSIT FACILITY	AGENT	IAS WA
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MODEL NUMBER	GIDM 25	TAG(S)	MAH-3
NO. OF UNITS	01	MOUNTING	Horizontal
APPROX. WT.	5,270 lbs	DISCHARGE	Horizontal

AIR VOLUME	3,200 cfm Supply 3,200 cfm Return	BLOWER	1-222BC-DW DWDI Class I 1-141APF-SWSI Class II (Plenum Fan)
ESP	1/2" W.C. Supply 1/2" W.C. Return	TEMPERATURE RISE	73°F
BLOWER MOTOR	5 hp Supply 5 hp Return	MOTOR TYPE	ODP ODP
RPM	2,406 Supply 2,850 Return	BHP	1.88 1.80
BURNER MOTOR	1/6 hp	MOTOR TYPE	ODP
ID FAN MOTOR	N/A	MOTOR TYPE	N/A

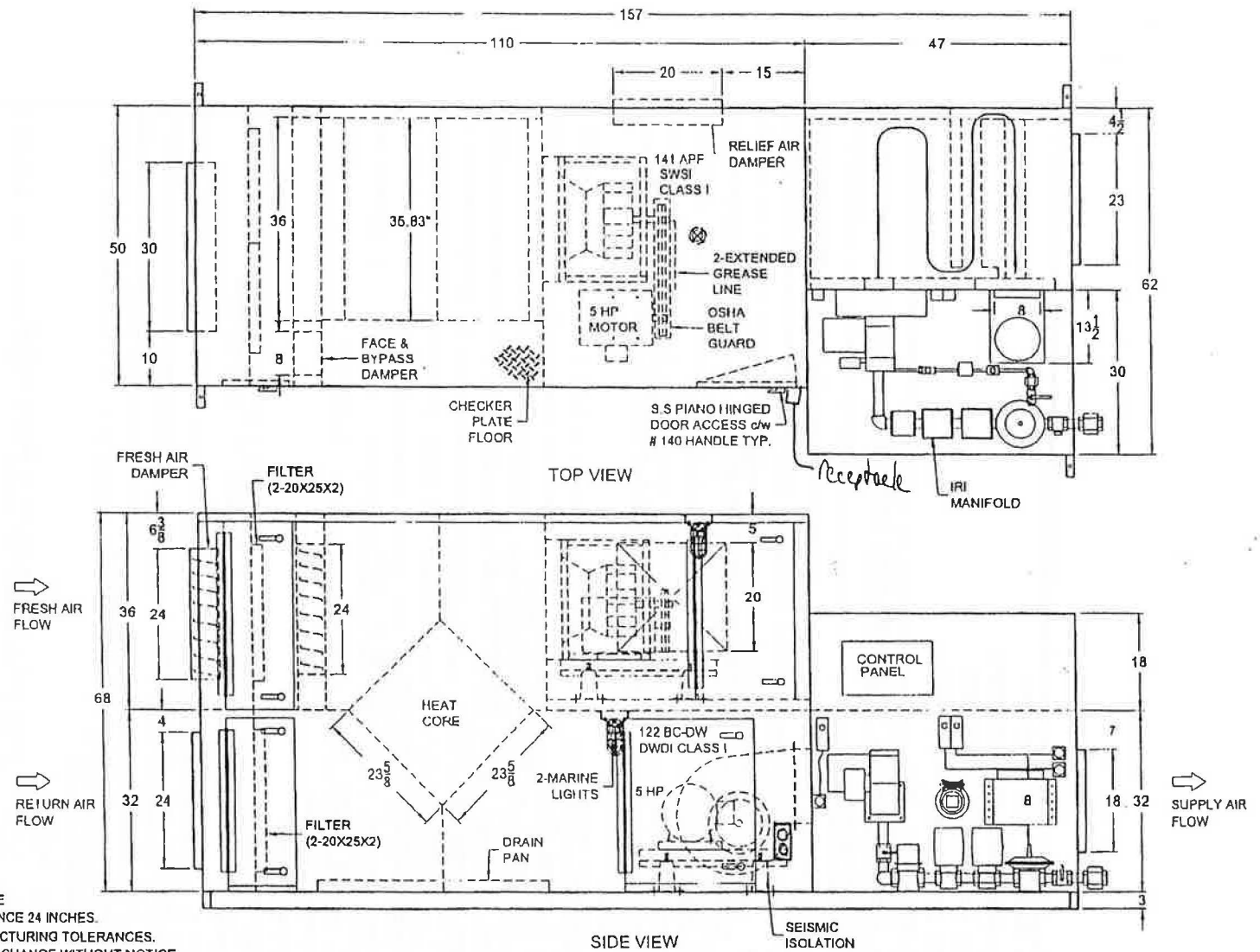
GAS TYPE	Natural	INLET PRESSURE	7-14" W.C.
MANIFOLD TYPE	Modulation	GAS INLET SIZE	1"
BURNER TYPE	Gorden Piatt	MAX. INPUT (MBH)	312.5
BURNER CONTROL	4-20mA/0-10Vdc Signal By Others	MAX. OUTPUT (MBH)	250

POWER SUPPLY	460/3/60	MOTOR FLA	6.6 Supply 6.6 Return
FEEDER AMPS	15	MIN. AMPACITY	16
MAX. FUSE	35	MAX. BREAKER	30
MIN. CONDUCTOR	#12 AWG	CONTROLS CONDUCTOR	#16 AWG

FILTER TYPE	Farr 30/30	FILTER QUANTITY	2-20x25x2 7 ft ² 457 sfpm = .27" ΔP
		Supply Air	
		Return Air	2-20x25x2 7 ft ² 457 sfpm = .27" ΔP

FEATURES

♦ Fresh Air Damper (Low Leakage)
♦ Face & By-Pass Air (Low Leakage)
♦ Relief Air Damper (Low Leakage)
♦ Modulating Damper Actuator (x1)
♦ Mix Air Controller (x1)
♦ Stainless Steel Primary & Secondary Heat Exchanger
♦ Flat Filter Section (x2)
♦ High cfm
♦ ETL Label
♦ IRI Style
♦ Internal Spring Vibration Isolation (Seismic x2)
♦ 2"/1.5 lb Insulation
♦ Inlet Plenum (x2)
♦ Hinged Access Throughout Unit w/#140 Handle & Stainless Piano Hinges
♦ Louvered Inlet
♦ Louvered Relief Hood
♦ 12 Gauge Checker Floor
♦ 16 Gauge Construction Throughout Unit
♦ Perforated Internal Liner Throughout Unit
♦ Butyl Tape Throughout Unit
♦ Weatherproof Fused Disconnect
♦ 10 Year Heat Exchanger Warranty
♦ Dirty Filter Switch w/Dry Contacts (x2)
♦ Extended Grease Lines (x2)
♦ Heat Recovery Plenum
♦ Heat Recovery Core
♦ Heat Recovery Drain Pan
♦ Dry Contacts For Blower On/Off, Burner Enable, Flame Failure,
♦ CO Contacts
♦ Dwyer Magnahelic (x2) For Filters
♦ Osha Belt Guards (x2)
♦ 4-20mA/0-10Vdc Gas Modulating Interface
♦ Service Receptacle (x1)
♦ Marine Lights (x2)
♦ Weatherproof Unfused Disconnect (For Lights & Receptacle)
♦ Right Hand Unit



NOTES:

- 1 1/2 INLET AND DISCHARGE FLANGES.
- SERVICE ACCESS PANELS MUST NOT BE OBSTRUCTED. RECOMMENDED CLEARANCE 24 INCHES.
- DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES. FOR REFERENCE USE ONLY, SUBJECT TO CHANGE WITHOUT NOTICE.

ICE
GIDM
SERIES

TITLE
MAH-3
GIDM-25HR HORIZONTAL CONFIG. INDOOR UNIT GRAVITY
VENTED c/w FLAT FILTER, RETURN BLOWER
HEAT CORE AND FACE AND BYPASS DAMPER

DRAWN BY JV	ISSUED BY JV	SCALE 1:28	DRW. NO. 60-15644
DATE JUL 13/2000	JOB NO. 25781C	REV A	

A	JV	Changed heat core size from 25" X 25" X 36" to 23.62" X 23.62" X 35.83"	9/19/00
Rev	By	Revision Description	Date

Sep 19-00 12:49P

P.04

American Energy Exchange, Inc.
5737 E. Cork St., Kalamazoo, Michigan 49001

**Air-to-Air Heat Exchanger
Performance Data**

Date: 9/18/00

Project Name: Standard MAH-3

Cold Air SCFM = 3,200

Warm Air SCFM = 3,200

Cold Air Mass Flow = 14,101

Warm Air Mass Flow = 14,101

Cold Air Inlet Temp = 10.

Warm Air Inlet Temp = 72.

Cold Air Inlet RH = 100%

Warm Air Inlet RH = 50%

Cold Air Outlet Temp = 53.27

Warm Air Outlet Temp = 40.15

Cold Air Temp Rise = 43.27

Warm Air Temp Drop = 31.85

Cold Air Pressure Drop = .84

Warm Air Pressure Drop = 1.13

Cold Air Outlet RH = 17.11%

Warm Air Outlet RH = 100.0%

Efficiency = 69.79%

Condensate Qty = 35.35 Lbs/Hr

Altitude = 500 Feet above Sea Level

MBH Transferred = 147.

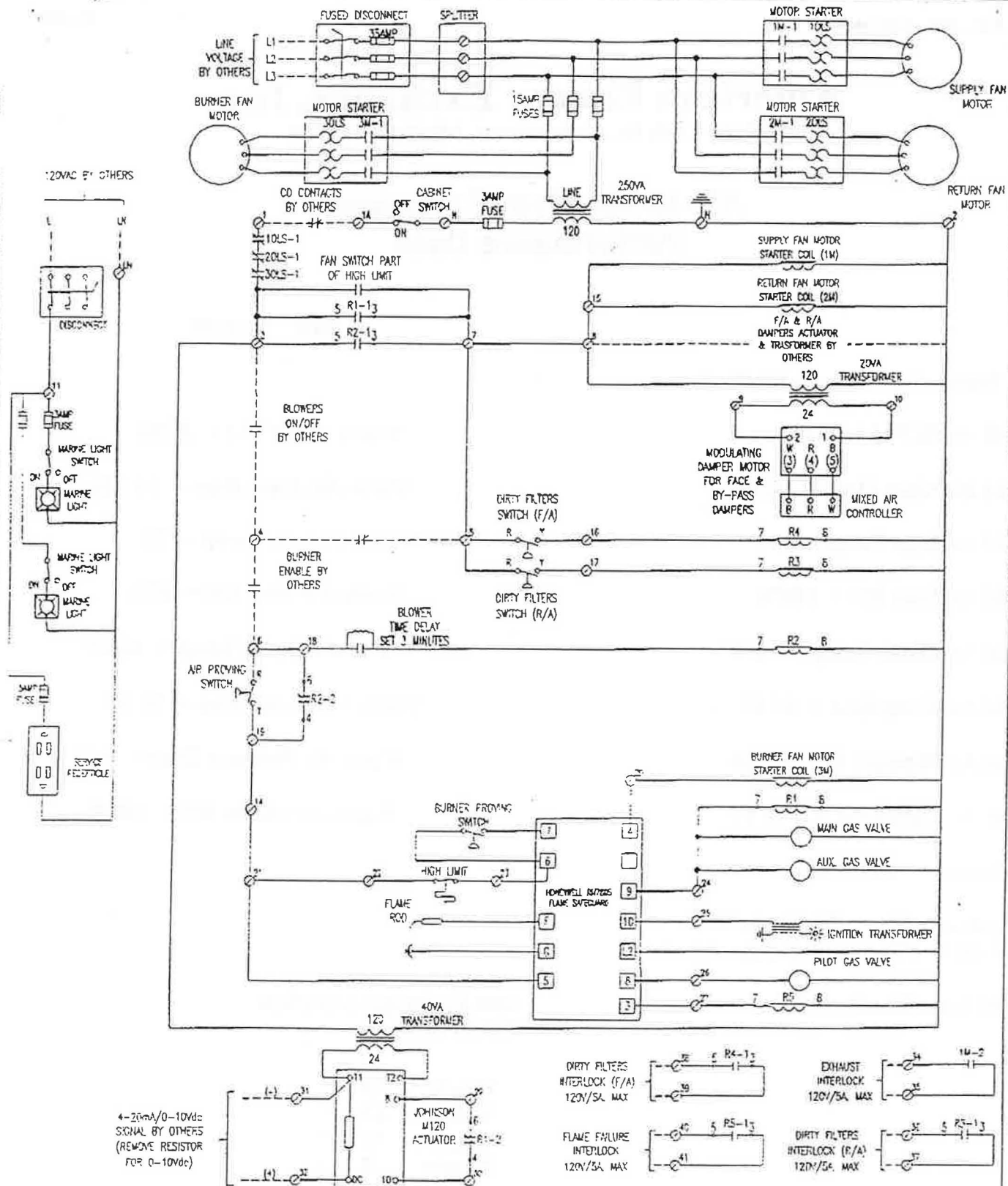
Heat Exchanger Selection
NG60/-R91

Height = 23.62"

Width = 23.62"

Length = 35.83"

Weight = 97 Lbs



ICE

**GIDM
SERIES**

TITLE
GIDM Control Wiring, Modulation Control,
4-20mA/0-10Vdc Signal By Others.

DRAWN BY H.T.	ISSUED BY J.W.	REV -	SCALE N/A	DRW. NO. 25781C-1
CHK. BY J.W.	DATE July, 26/00			JOB NO. 25781A