City of Portland, Maine - Building or Use Permit Application
389 Congress Street, 04101 Tel: (207) 874-8703, Fax: (207) 874-8716

Permit No:	Issue Date:	CBL:
09-1055		041 A001001

Location of Construction:	Owner Name:	Owner Address:	Phone:
1 Portland Fish Pier	City Of Portland	389 Congress St	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
City of Portland, Fish Pier	Air Temp	11 Wallace Ave South Portland	2077742300
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	**Zone:**
		HVAC	WCZ

Past Use:	Proposed Use:	Permit Fee:	Cost of Work:	CEO District:
Commercial	Commercial / Portland Fish Pier; Installing roof top indirect fired gas heating unit.	$1,010.00	$98,600.00	1

FIRE DEPT: ☑ Approved ☐ Denied
* See Conditions
Signature: KG

INSPECTION:
Use Group: U Type: HVAC
Signature:

PEDESTRIAN ACTIVITIES DISTRICT (P.A.D.)
Action: ☐ Approved ☐ Approved w/Conditions ☐ Denied
Signature: Date:

Proposed Project Description:
Portland Fish Pier / Installing roof top indirect fired gas heating unit.

Permit Taken By:	Date Applied For:
gg	09/23/2009

1. This permit application does not preclude the Applicant(s) from meeting applicable State and Federal Rules.
2. Building permits do not include plumbing, septic or electrical work.
3. Building permits are void if work is not started within six (6) months of the date of issuance. False information may invalidate a building permit and stop all work..

Zoning Approval

Special Zone or Reviews	Zoning Appeal	Historic Preservation
☐ Shoreland	☐ Variance	☑ Not in District or Landmark
☐ Wetland	☐ Miscellaneous	☐ Does Not Require Review
☐ Flood Zone	☐ Conditional Use	☐ Requires Review
☐ Subdivision	☐ Interpretation	☐ Approved
☐ Site Plan	☐ Approved	☐ Approved w/Conditions
Maj ☐ Minor ☐ MM ☐	☐ Denied	☐ Denied
Date: 9/25/09	Date:	Date:

PERMIT ISSUED

CERTIFICATION

I hereby certify that I am the owner of record of the named property, or that the proposed work is authorized by the owner of record and that I have been authorized by the owner to make this application as his authorized agent and I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in the application is issued, I certify that the code official's authorized representative shall have the authority to enter all areas covered by such permit at any reasonable hour to enforce the provisions of the code(s) applicable to such permit.

OCT 26 2009
City of Portland

SIGNATURE OF APPLICANT ADDRESS DATE PHONE

RESPONSIBLE PERSON IN CHARGE OF WORK, TITLE DATE PHONE

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09-1055	09/23/2009	041 A001001

Location of Construction:	Owner Name:	Owner Address:	Phone:
1 Portland Fish Pier	City Of Portland	389 Congress St	
Business Name:	**Contractor Name:**	**Contractor Address:**	**Phone**
City of Portland, Fish Pier	Air Temp	11 Wallace Ave South Portland	(207) 774-2300
Lessee/Buyer's Name	**Phone:**	**Permit Type:**	
		HVAC	

Proposed Use:	Proposed Project Description:
Commercial / Portland Fish Pier; Installing roof top indirect fired gas heating unit.	Portland Fish Pier / Installing roof top indirect fired gas heating unit.

Dept: Zoning **Status:** Approved **Reviewer:** Marge Schmuckal **Approval Date:** 09/25/2009

Note: **Ok to Issue:** ☑

Dept: Building **Status:** Approved with Conditions **Reviewer:** Tammy Munson **Approval Date:** 10/20/2009

Note: **Ok to Issue:** ☑

1) An inspection of the installation of the steel and concrete and structural bracing shall be conducted by a licensed engineer and his/her certification shall be submitted to this office stating compliance with the approved plans.
2) Separate permits are required for any electrical, plumbing, sprinkler, fire alarm or HVAC or exhaust systems. Separate plans may need to be submitted for approval as a part of this process.

Dept: Fire **Status:** Approved with Conditions **Reviewer:** Capt Keith Gautreau **Approval Date:** 10/08/2009

Note: **Ok to Issue:** ☑

1) Install shall comply with all manufacture's specifications.
2) Install shall comply with NFPA 54.
   A compliance letter is required
3) Install shall comply with NFPA 58
   A compliance letter is required.

Comments:

9/24/2009-gg: cost of work $98,600.00, permit fee ($1010.00) is waived. /gg

PERMIT ISSUED

OCT 2 6 2009

City of Portland

FILL IN AND SIGN WITH INK

PERMIT ISSUED
OCT 2 F

APPLICATION FOR PERMIT
HEATING OR POWER EQUIPMENT

City of Portland

041 A ~~009~~ 001

To the INSPECTOR OF BUILDINGS, PORTLAND, ME.

The undersigned hereby applies for a permit to install the following heating, cooking or power equipment in accordance with the Laws of Maine, the Building Code of the City of Portland, and the following specifications:

Location / CBL 1 & Portland Fish Pier Use of Building Fish Processing Date 9/25/09

Name and address of owner of appliance Cozy Harbor/City of Portland, Fish Pier

Installer's name and address A:-temp

11 Wallace ave, S. Portland ME 04106 Telephone (207) 774-7300

Location of appliance:

- ☐ Basement
- ☐ Floor
- ☐ Attic
- ☑ Roof

Type of Fuel:

- ☑ Gas
- ☐ Oil
- ☐ Solid

Appliance Name: Trane

U.L. Approved ☐ Yes ☐ No

Will appliance be installed in accordance with the manufacture's installation instructions? ☑ Yes ☐ No

IF NO Explain:

The Type of License of Installer:

- ☐ Master Plumber #
- ☐ Solid Fuel #
- ☐ Oil #
- ☑ Gas # PNT 1199
- ☐ Other

Type of Chimney: Removed

- ☐ Masonry Lined
  Factory built
- ☐ Metal
  Factory Built U.L. Listing # 774-2300 x Call Geo & Gergler
- ☐ Direct Vent
  Type SI#

RECEIVED
SEP 23 2009
Dept. of Building Inspections
City of Portland Maine

Type of Fuel Tank

- ☐ Oil
- ☑ Gas

Size of Tank Pipe

Number of Tanks —

Distance from Tank to Center of Flame — **feet.**

Cost of Work: $ [redacted]98,600

Permit Fee: $ 0

Approved

Fire:

Ele.:

Bldg.:

Approved with Conditions

☐ See attached letter or requirement

Inspector's Signature

Date Approved

Signature of Installer

White - Inspection Yellow - File Pink - Applicant's Gold - Assessor's Copy

BUILDING PERMIT INSPECTION PROCEDURES

Please call 874-8703 or 874-8693 (ONLY)

to schedule your inspections as agreed upon

Permits expire in 6 months, if the project is not started or ceases for 6 months.

The Owner or their designee is required to notify the inspections office for the following inspections and provide adequate notice. Notice must be called in 48-72 hours in advance in order to schedule an inspection:

By initializing at each inspection time, you are agreeing that you understand the inspection procedure and additional fees from a "Stop Work Order" and "Stop Work Order Release" will be incurred if the procedure is not followed as stated below.

A Pre-construction Meeting will take place upon receipt of your building permit.

__X__ **Framing/Rough Plumbing/Electrical: Prior to Any Insulating or drywalling**

__X__ **Final inspection required at completion of work.**

Certificate of Occupancy is not required for certain projects. Your inspector can advise you if your project requires a Certificate of Occupancy. All projects DO require a final inspection.

If any of the inspections do not occur, the project cannot go on to the next phase, REGARDLESS OF THE NOTICE OR CIRCUMSTANCES.

CERIFICATE OF OCCUPANICES MUST BE ISSUED AND PAID FOR, BEFORE THE SPACE MAY BE OCCUPIED.

_____ _____

Signature of Applicant/Designee Date

_____ _____

Signature of Inspections Official Date

PERMIT ISSUED

OCT 2 6 2009

City of Portland

CBL: 041 A001001 **Building Permit #:** 09-1055

Submittal

Trane U.S. Inc.

Engineer: Allied Engineering Inc

Date: September 03, 2009

Prepared For:
Airtemp Incorporated
11 Wallace Avenue
South Portland, ME 04106
Customer P.O. Number: 89495
Customer Project Number:

Job Name:
Portland Fish Exchange

Job Number: A2-21430

Trane is pleased to provide the enclosed submittal for your review and approval.

Qty	***Description***	***Tag(s)***
	Rooftop Indirect Fired Gas Heating Unit	
1	Trane Model GRAA50 Rooftop Indirect Fired Gas Heating Unit	

- 460v/3ph/60hz
- 500 MBH input
- Standard temperature rise furnace 20° - 60°F per furnace - left hand connection
- Power venting
- Electronic modulating gas control with external 4-20mA input (all furnaces)
- Natural gas
- 409 stainless steel heat exchanger package (all furnace sections)
- Rooftop arrangement J - High cfm blower with downflow supply plenum
- 5hp single speed high efficiency ODP supply fan motor with magnetic starter
- Outside and return air openings with an outside air hood w/ moisture eliminators
- OA/RA modulating low leak dampers with 0-10VDC or 4-20mA analog input - spring return
- Freezestat with time delay
- Supply air firestat
- 409 Stainless steel furnace drip pan
- High/low gas pressure limit switches
- 2" pleated media filter
- 10 year heat exchanger warranty (parts only)

Weight Page 8 and 10
Noise level minimal, No compressor.

Dan Broderick
Trane
30 Thomas Drive
Westbrook, ME 04092-3824
Phone: (207) 828-1777
Fax: (207) 828-1511
E-Mail: djbroderick@trane.com

The attached information describes the equipment we propose to furnish for this project, and is submitted for your approval.

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Mechanical Specifications - GRAA50 Rooftop Indirect Fired Gas Heating Unit
Qty: 1

General
Units are completely factory assembled, piped, wired and test fired. All units contain duct furnaces that are A.G.A and C.G.A. certified and conform with the latest ANSI Standards for safe and efficient performance. Units are mounted on metal rails with lifting and anchor holes and are suitable for slab or curb mounting. Units are available for operation on either natural or LP (propane) gas. The firing rate of each furnace will not exceed 400 MBh and contains its own heat exchanger, flue collector, venting, burners, safety and ignition controls. All units are ETL and CSA certified for electrical safety in compliance with UL 1995 safety standard for heating, ventilating and cooling equipment. All units are in compliance with FM (Factory Mutual) requirements. Standard control relays socket mounted with terminal block connections.

All control wiring terminates at terminal strips (single point connection) and include an identifying marker corresponding to the wiring diagram. Motor and control wiring is harnessed with terminal block connections. Casings are die formed, 18 gauge galvanized steel and finished in air dry enamel. Service and access panels are provided through easily removable side access panels with captive fasteners. Fan sections and supply plenums (when provided) are insulated with fire resistant, odorless, matte faced 1" glass fiber material. Outside air hoods, when provided, ship with a wire mesh inlet screen. Standard heat exchanger construction consists of 20 gauge aluminized steel tubes and 18 gauge aluminized steel headers. Standard drip pan construction is corrosion resistant aluminized steel.

Standard flue collector construction is corrosion resistant aluminized steel. Burners are die formed, corrosion resistant aluminized steel, with stamped porting and stainless steel port protectors. Port protectors prevent foreign matter from obstructing the burner ports. Burners are individually removable for ease of inspection and servicing. The entire burner assembly is easily removed with its slide out drawer design. The pilot is accessible through an access plate without removing the burner drawer assembly.

Filter rack is constructed of galvanized steel with access through the side service panel. Electrical cabinet is isolated from the air stream with a non removable access panel interior to the outer service panel. There is provision in this cabinet for component mounting, wire routing and high voltage isolation. Motor and control wiring is harnessed with terminal block connections. Standard units are provided with 24 volt combination single stage automatic gas valves, including main operating valve and pilot safety shutoff, pressure regulator, manual main and pilot shutoff valve, and adjustable pilot valve. Gas valves are suitable for NEC Class 2 use for a maximum inlet gas pressure of 0.5 psi (14" W.C.) [3.4 kPa] on natural gas. All rooftop units are provided with a low voltage circuit breaker rated for 150% of the units normal 24 volt operating load.

Each duct furnace is provided with a 24 volt high temperature limit switch, a (redundant) combination gas valve and a fan time delay relay. The fan time delay relay delays the fan start until the heat exchanger reaches a predetermined temperature. It also allows the fan to operate after burner shutdown, removing residual heat from the heat exchanger. Double and triple furnace units contain a reverse airflow interlock switch. The normally closed switch, when activated, causes the gas valves to close and continue blower operation. All units provided with a solid state ignition control system which ignites the intermittent pilot by spark during each cycle of operation. When pilot flame is proven, main burner valve opens to allow gas flow to the burners. Pilot and burners are extinguished during the off cycle.

Standard Temperature Rise Furnace
Each duct furnace shall have a lower pressure drop across the heat exchanger, allowing higher air flow capacities and an 80% efficiency rating with delta T of 20-60F per furnace.

Air Handling Fans
Centrifugal fan is belt driven, forward curved with double inlet, statically and dynamically balanced. The blower wheel is fixed on a keyed shaft, supported with rubber grommet on bearing only, and ball bearing secured. 7-1/2 through 15 hp motors do not have the rubber grommets and are equipped with a pillow block bearing assembly on the drive side. An access interlock switch is installed in the blower compartment and will disengage the blower upon removing the service panel. An override is incorporated into the access interlock switch for serviceability.

Power vent
Power vent units are provided with a vent fan. Outside air for combustion and products of combustion have individual air inlet and discharge grilles located in the upper section of the furnace service panel. An air proving switch is installed and disengages gas flow if for any reason the drafter has failed to operate. (Power venting and 100% shutoff ignition systems are required for compliance with IRI (Industrial Risk Insurers).

Electronic Modulating 4 - 20 mA / 0 - 10 VDC Gas Control
Provides modulated heat output. Ignition is at full fire (100% input), and modulates the gas input from 100% to 40% rated input. The

modulating gas valve shall operate in response to a 4 - 20 mA or a 0 - 10 VDC input from an external DDC control. When "furnace one only" is specified on double and triple furnaces, additional furnace sections will have single stage on/off control.

Type 409 Stainless Steel Heat Exchanger
Heat exchanger tubes and headers shall be 20 gauge [1.0 mm] type 409 stainless steel. Burners and flue collector shall be 409 Stainless Steel. 409 stainless steel is recommended where outside air is used for make up air in areas where outside temperatures are 40 F [4 C] or below.

Motor
All motors are ball bearing type with resilient base mount. Windings are Class "B", with service factors of 1/2 to 3/4 hp = 1.25 and 1 to 15 hp = 1.15.

Dampers-General
Dampers are of the opposed blade type, constructed of galvanized steel with neoprene nylon bushings, blades to be mechanically interlocked.

Low Leak Dampers
Optional low leak dampers are of the opposed blade type, construction of galvanized steel with neoprene nylon bushings and vinyl blade edge seals, blades to be mechanically interlocked.

Modulating motor interlocked with outside and return air dampers is provided. The motor modulates the position of the outside and return air dampers in response to a 4-10 mA or 0-10 VDC signal supplied by an external DDC controller. Spring return feature drives the outside air damper full closed and the return air damper full open when the unit is shut down.

Supply Air Firestat
If temperature reaches the set point, the unit will close all gas valves, return the dampers to their normal position and shut down the blower. Manual reset. Supply air mounted firestat (set point typically 150 degrees F [54 C].

Freezestat
Rooftop unit is provided with a freezestat (0 F to 100 F [-17 C to 38 C]) with the sensing bulb located in the discharge air stream. Wired as an interlock to prevent cold air discharge.

Drip Pan
409 stainless steel furnace drip pan replaces the standard aluminized steel furnace drip pan.

Moisture Eliminators
Moisture Eliminators provided in place of an inlet screen on the outside air hood. Includes a pressure switch.

Gas Limit Switches
A high pressure and a low pressure interlock switch and shutoff valve are provided for each furnace section. High/low gas pressure limits disengage heating upon detecting either low line pressure or high manifold pressure.

Performance Data - GRAA50 Rooftop Indirect Fired Gas Heating Unit
Qty: 1

Table PD-8 (Continued) — Rooftop Gas Heating Units Accessory Pressure Loss Data — Rooftop Arrangement G,J,K,L

		Pressure Loss (Inches of Water)								
		Rainhood With		Filters					Supply Air	Return or Outside Air
				Throwaway	Washable		Pleated			
Capacity	CFM	Screen	Mstr.Elim.	2"	1"	2"	1"	2"	Plenum	Damper
40	3,300	.03	.04	.03	<.01	<.01	.03	.02	.03	.05
	3,500	.03	.05	.03	<.01	<.01	.03	.02	.03	.05
	4,000	.04	.06	.04	<.01	<.01	.04	.02	.04	.07
	4,500	.05	.08	.05	<.01	<.01	.05	.03	.05	.08
	5,000	.07	.10	.05	<.01	.01	.06	.03	.06	.10
	6,000	.10	.14	.07	.01	.02	.08	.04	.08	.15
	8,000	.17	.24	.10	.02	.03	.13	.07	.15	.26
	10,000	.27	.38	.13	.03	.05	.19	.11	.23	.41
	12,000	.39	.55	.17	.05	.07	.26	.16	.34	.59
	14,000	.53	.75	.07	.09	.33	.21	.46	.80	
50	3,100	.06	.08	.06	.01	.02	.08	.04	.06	.09
	4,000	.09	.13	.09	.02	.03	.12	.07	.09	.15
	5,000	.15	.20	.12	.03	.04	.17	.10	.14	.23
	6,000	.21	.29	.16	.04	.06	.23	.14	.21	.33
	7000	.29	.40	.19	.06	.08	.30	.18	.28	.45
	7,500	.33	.46		.07	.09	.34	.21	.32	.52
60	3,700	.05	.07	.04	<.01	<.01	.05	.02	.05	.07
	4,000	.05	.08	.05	<.01	.01	.05	.03	.06	.08
	6,000	.12	.17	.08	.02	.02	.10	.06	.13	.19
	8,000	.22	.31	.12	.03	.04	.17	.10	.24	.33
	10,000	.34	.48	.16	.04	.06	.24	.14	.37	.52
	11,000	.41	.58	.18	.05	.08	.28	.17	.45	.63
70	4,500	.07	.10	.05	<.01	.01	.06	.03	.06	.11
	6,000	.12	.17	.08	.02	.02	.10	.06	.11	.19
	8,000	.22	.31	.12	.03	.04	.17	.10	.19	.33
	10,000	.34	.48	.16	.04	.06	.24	.14	.30	.52
	12,000	.49	.69		.06	.09	.33	.20	.43	.75
	13,000	.58	.81		.07	.11	.38	.23	.51	.88
80	5,000	.07	.10	.05	<.01	.01	.06	.03	.06	.10
	6,000	.10	.14	.07	.01	.02	.08	.04	.08	.15
	8,000	.17	.24	.10	.02	.03	.13	.07	.15	.26
	10,000	.27	.38	.13	.03	.05	.19	.11	.23	.41
	12,000	.39	.55	.17	.05	.07	.26	.16	.34	.59
	13,500	.49	.70		.06	.09	.31	.19	.43	.75
12	7,400	.15	.21	.09	.02	.03	.11	.06	.13	.22
	8,000	.17	.24	.10	.02	.03	.13	.07	.15	.26
	10,000	.27	.38	.13	.03	.05	.19	.11	.23	.41
	12,000	.39	.55	.17	.05	.07	.26	.16	.34	.59
	13,000	.46	.65	.19	.06	.08	.30	.18	.40	.69

Note: Refer toTable for Cooling Coil and Chilled Water Coil Pressure Losses. (Rooftop Arrangements K,L). Include the coil pressure loss with the above data.

At 5,500cfm:

ESP	0.75"
Hood w/ eliminator	0.25"
2"pleated filters	0.12"
SA Plenum	0.18"
OA.RA Damper	0.28
Total Static Pressure	1.58" (~1.6")

Performance Data - GRAA50 Rooftop Indirect Fired Gas Heating Unit

Qty: 1

Table PD-5 — Rooftop Gas Heating Units Performance Data - Furnace Type (A,B) - Standard Temperature Rise - Rooftop Arrangement G,J

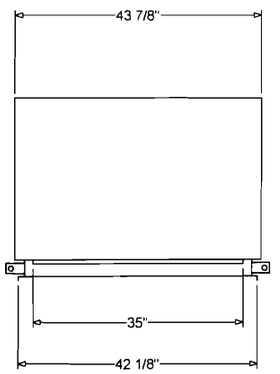
Capacity					TOTAL EXTERNAL STATIC PRESSURE (INCHES OF WATER)																			
Furnace	TR		Input	Output	0.2		0.4		0.6		0.8		1		1.2		1.4		1.6		1.8		2	
Type	(F)	CFM	BTU/H	BTU/H	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	59	2,500	200,000	160,000	425	.36	495	.46	565	.55	635	.67	700	.80	760	.93	820	1.07	875	1.21	925	1.35	975	1.50
	49	3,000			490	.59	540	.68	600	.80	660	.92	720	1.05	775	1.19	830	1.35	885	1.51	930	1.67	980	1.84
	37	4,000			630	1.30	660	1.41	700	1.54	740	1.68	785	1.84	830	2.00	875	2.16	920	2.32	965	2.49	1005	2.68
20-A,B	29	5,000			770	2.46	795	2.59	825	2.73	850	2.88	880	3.05	915	3.24	950	3.43	990	3.63	1025	3.83	1065	4.02
	25	6,000			915	4.18	940	4.34	960	4.50	980	4.66	1000	4.84	1025	5.02	1050	5.23	1080	5.44	1110	5.67	1140	5.90
	23	6,500			990	5.27	1010	5.45	1030	5.62	1050	5.80	1070	5.98	1090	6.17	1110	6.37	1135	6.59	1160	6.82	1185	7.06
	21	7,000			1060	6.55	1080	6.74	1100	6.93	1115	7.12	1135	7.31	1155	7.50	1175	7.71	1195	7.93	1215	8.16	1240	8.41
	20	7,400			1120	7.71	1140	7.92	1155	8.12	1175	8.31	1190	8.51	1205	8.71	1225	8.92	1245	9.15	1265	9.38	1285	9.62
	59	3,100	250,000	200,000	495	.62	540	.72	595	.83	655	.95	715	1.08	770	1.22	820	1.37	875	1.54	925	1.71	970	1.87
	46	4,000			620	1.26	650	1.37	685	1.49	725	1.63	770	1.79	815	1.95	860	2.10	905	2.26	950	2.43	990	2.61
25-A,B	37	5,000			755	2.39	785	2.52	810	2.66	835	2.80	865	2.96	895	3.13	930	3.32	970	3.52	1005	3.72	1045	3.92
	31	6,000			895	4.05	920	4.21	945	4.37	965	4.53	985	4.70	1010	4.88	1030	5.07	1060	5.27	1085	5.49	1115	5.72
	26	7,000			1040	6.35	1060	6.55	1080	6.74	1100	6.92	1115	7.11	1135	7.30	1155	7.50	1170	7.70	1195	7.92	1215	8.15
	25	7,500			1110	7.77	1130	7.99	1150	8.19	1165	8.39	1185	8.59	1200	8.79	1215	9.00	1235	9.21	1250	9.43	1270	9.66
	60	3,700	300,000	240,000	415	.47	505	.65	590	.86	665	1.08	740	1.33	815	1.60	885	1.89	950	2.19	1010	2.51	1065	2.82
	55	4,000			430	.56	520	.76	600	.97	675	1.20	745	1.45	815	1.72	880	2.02	945	2.33	1005	2.65	1065	2.99
30-A,B	37	6,000			560	1.51	630	1.79	690	2.08	750	2.38	805	2.69	860	3.01	910	3.34	960	3.68	1010	4.03	1055	4.40
	28	8,000			710	3.29	760	3.64	810	4.01	860	4.40	905	4.79	950	5.19	995	6.00	1035	5.99	1075	6.41	1115	6.83
	22	10,000			860	6.18	900	6.59	945	7.03	985	7.48	1025	7.95	1065	8.44	1100	8.93	1140	9.42	1175	9.92	1210	10.42
	20	11,000			940	8.12	975	8.57	1015	9.04	1050	9.52	1085	10.03	1125	10.55	1160	11.08	1195	11.61	1230	12.16	1260	12.70
	57	4,500	350,000	280,000	405	.58	490	.76	565	.96	640	1.19	705	1.43	765	1.68	825	1.93	880	2.19	930	2.46	975	2.74
	43	6,000			500	1.22	555	1.43	615	1.66	675	1.90	735	2.16	790	2.46	845	2.78	895	3.10	945	3.43	990	3.75
35-A,B	32	8,000			645	2.70	675	2.93	715	3.20	760	3.51	805	3.83	850	4.14	895	4.45	940	4.79	985	5.15	1025	5.55
	26	10,000			790	5.10	815	5.37	840	5.67	870	5.99	905	6.35	940	6.74	980	7.14	1015	7.53	1050	7.92	1085	8.31
	22	12,000			935	8.66	960	8.98	980	9.31	1000	9.66	1025	10.04	1050	10.44	1080	10.87	1110	11.32	1140	11.79	1170	12.27
	20	13,000			1010	10.95	1030	11.29	1050	11.64	1070	12.01	1090	12.39	1115	12.80	1140	13.24	1165	13.71	1190	14.19	1215	14.69
	59	5,000	400,000	320,000	430	.73	500	.92	570	1.12	640	1.35	705	1.61	765	1.88	820	2.15	875	2.43	925	2.71	975	3.00
	49	6,000			495	1.18	545	1.38	605	1.62	665	1.85	725	2.11	780	2.40	835	2.72	885	3.04	935	3.36	985	3.69
40-A,B	37	8,000			630	2.62	665	2.85	700	3.10	745	3.40	790	3.72	835	4.03	880	4.34	925	4.67	970	5.02	1010	5.41
	29	10,000			775	4.96	800	5.23	825	5.51	855	5.82	885	6.16	920	6.54	960	6.93	995	7.33	1030	7.72	1070	8.11
	25	12,000			920	8.42	945	8.74	965	9.07	985	9.40	1010	9.75	1030	10.14	1060	10.55	1085	10.98	1115	11.44	1145	11.92
	21	14,000			1065	13.22	1085	13.60	1105	13.97	1120	14.35	1140	14.73										
	119	3,100	500,000	400,000	515	.66	565	.76	625	.89	680	1.01	740	1.14	790	1.29	845	1.45	895	1.61	945	1.78	990	1.95
	92	4,000			640	1.34	675	1.45	715	1.59	755	1.74	805	1.90	850	2.06	895	2.21	935	2.38	980	2.56	1020	2.76
50-A,B	74	5,000			785	2.54	810	2.67	840	2.82	870	2.98	900	3.16	935	3.35	975	3.55	1010	3.74	1045	3.94	1085	4.13
	61	6,000			935	4.30	955	4.46	975	4.63	1000	4.80	1020	4.98	1045	5.18	1075	5.40	1105	5.62	1135	5.86	1165	6.10
	53	7,000			1080	6.76	1100	6.94	1120	7.13	1135	7.32	1155	7.52	1175	7.73	1195	7.95	1215	8.18	1240	8.42	1265	8.68
	49	7,500			1155	8.28	1175	8.48	1190	8.68	1205	8.88	1225	9.08	1240	9.30	1260	9.52	1280	9.76				
	120	3,700	600,000	480,000	455	.55	545	.74	625	.95	700	1.19	775	1.45	845	1.73	915	2.02	975	2.33	1035	2.65	1090	2.97
	111	4,000			480	.66	560	.86	640	1.09	710	1.33	780	1.59	850	1.87	915	2.18	975	2.50	1035	2.83	1090	3.16
60-A,B	74	6,000			640	1.83	700	2.12	755	2.42	810	2.73	865	3.05	915	3.38	965	3.72	1015	4.08	1065	4.45	1110	4.83
	55	8,000			810	4.00	855	4.38	905	4.78	950	5.17	990	5.57	1035	5.98	1075	6.39	1115	6.81	1155	7.24	1195	7.68
	44	10,000			985	7.49	1025	7.96	1065	8.45	1100	8.94	1140	9.43	1175	9.92	1210	10.42	1245	10.93	1280	11.43	1310	11.95
	40	11,000			1075	9.83	1110	10.35	1145	10.87	1180	11.41	1215	11.95	1250	12.49	1280	13.04	1315	13.58	1345	14.14	1375	14.69

At 5,500cfm and 1.6" TSP:

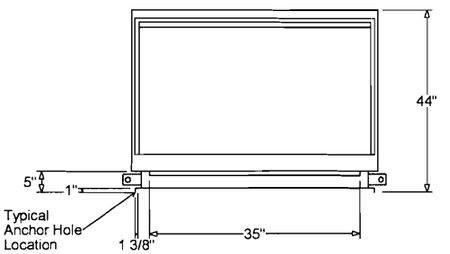
Temperature rise	67.5°F
RPM	1058
BHP	4.68

1. Refer to Accessory Pressure Loss table.
2. Values are based on the "Basic Packaged Unit" which includes pressure drop of the duct furnace(s) and "system effect" of the blower module.
3. Brake horsepower (BHP) includes drive losses.
4. Unit leaving air temperature is limited to 150 F (66 C) and is equal to: Entering Air Temperature + Duct Furnace(s) Temperature Rise.
5. "Total External Pressure" is the sum of the unit's "Internal" accessory pressure loss(es) plus the external static pressure.
6. Ratings shown are for elevations between 0 and 2000 ft. (610 m). For unit installation in the U.S.A. above 2000 ft. (610 m), the unit input must be derated 4% for each 1000 ft. (305 m) above sea level; refer to local codes, or in absence of local codes, refer to the National Fuel Gas Code, ANSI Standard Z223.1-1992 (N.F.P.A. No. 54), or the latest edition.
   For installation in Canada, any references to deration at altitudes in excess of 2000 ft. (610 m) are to be ignored. At altitudes of 2000 to 4500 ft. (610 to 1372 m), the unit must be derated to 90% of the normal rating, and be so marked in accordance with the C.G.A. certification.

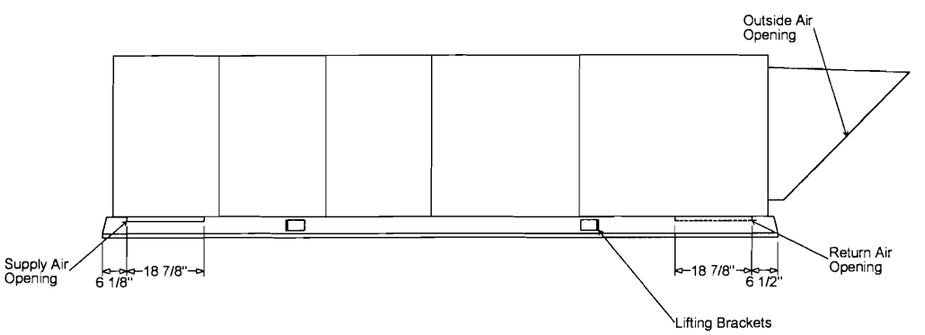
Unit Dimensions - GRAA50 Rooftop Indirect Fired Gas Heating Unit
Qty: 1



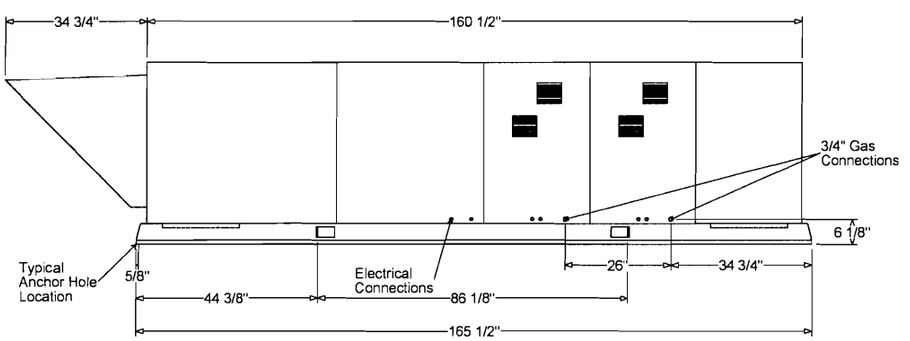
FRONT VIEW



BACK VIEW



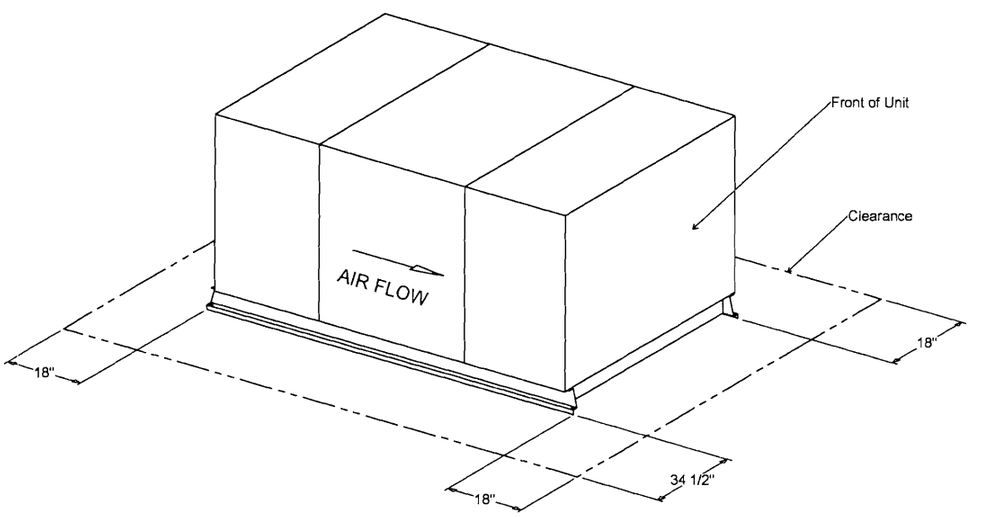
RIGHT VIEW



LEFT VIEW

Weight, Clearance & Rigging Diagram - GRAA50 Rooftop Indirect Fired Gas Heating Unit

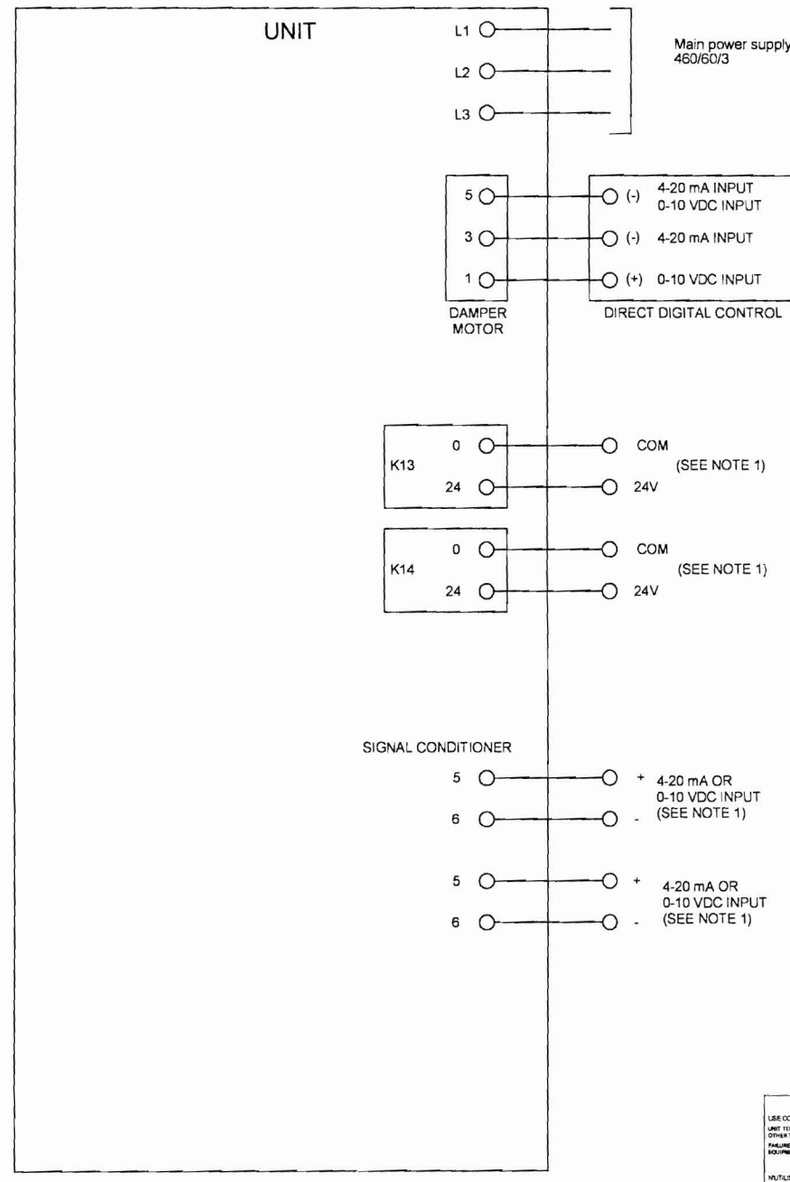
Qty: 1



WEIGHTS
Unit = 1329 lbs [603 k] net/1519 lbs [689 kg] ship
Motor = 100 ibs [45 kg]
Outside air hood = 51 lbs [23 kg]

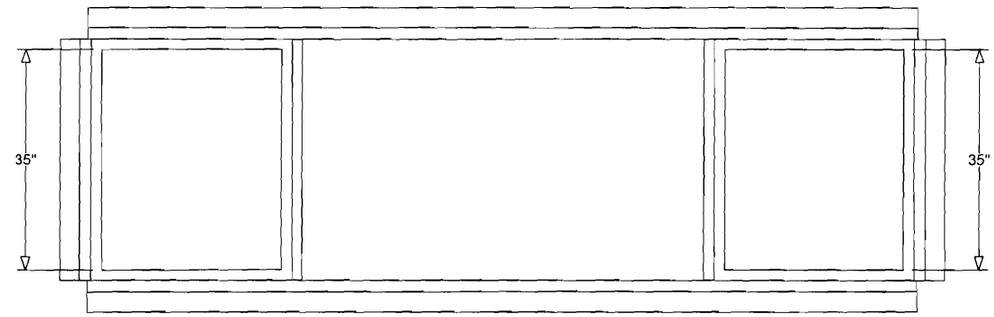
Field Wiring - GRAA50 Rooftop Indirect Fired Gas Heating Unit

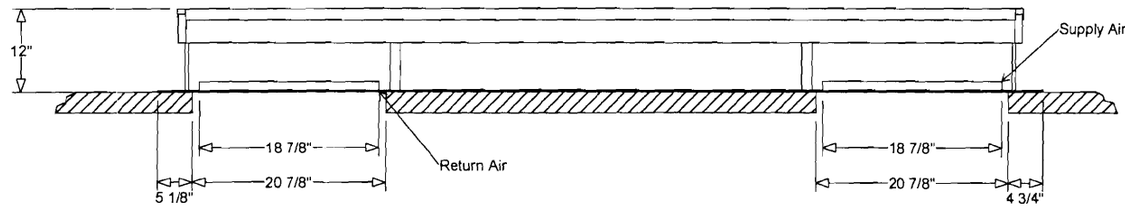
Qty: 1

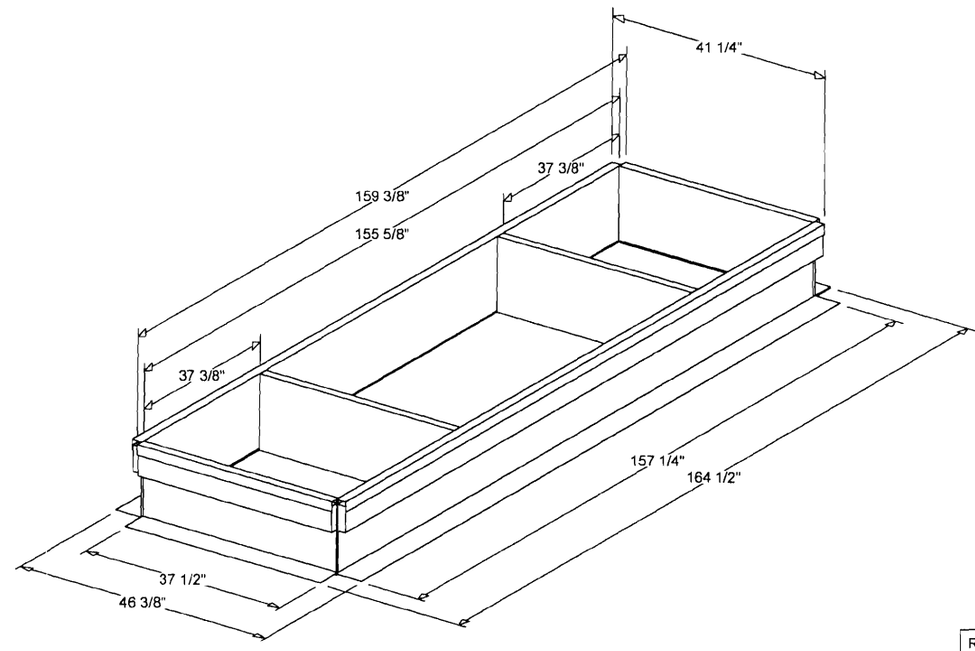


Accessory - Indirect Fired Gas Heating Units (Outdoor)
Roof curb arran B - L
Item: A1 Qty: 1

Roof curb ships knocked down for full assembly.

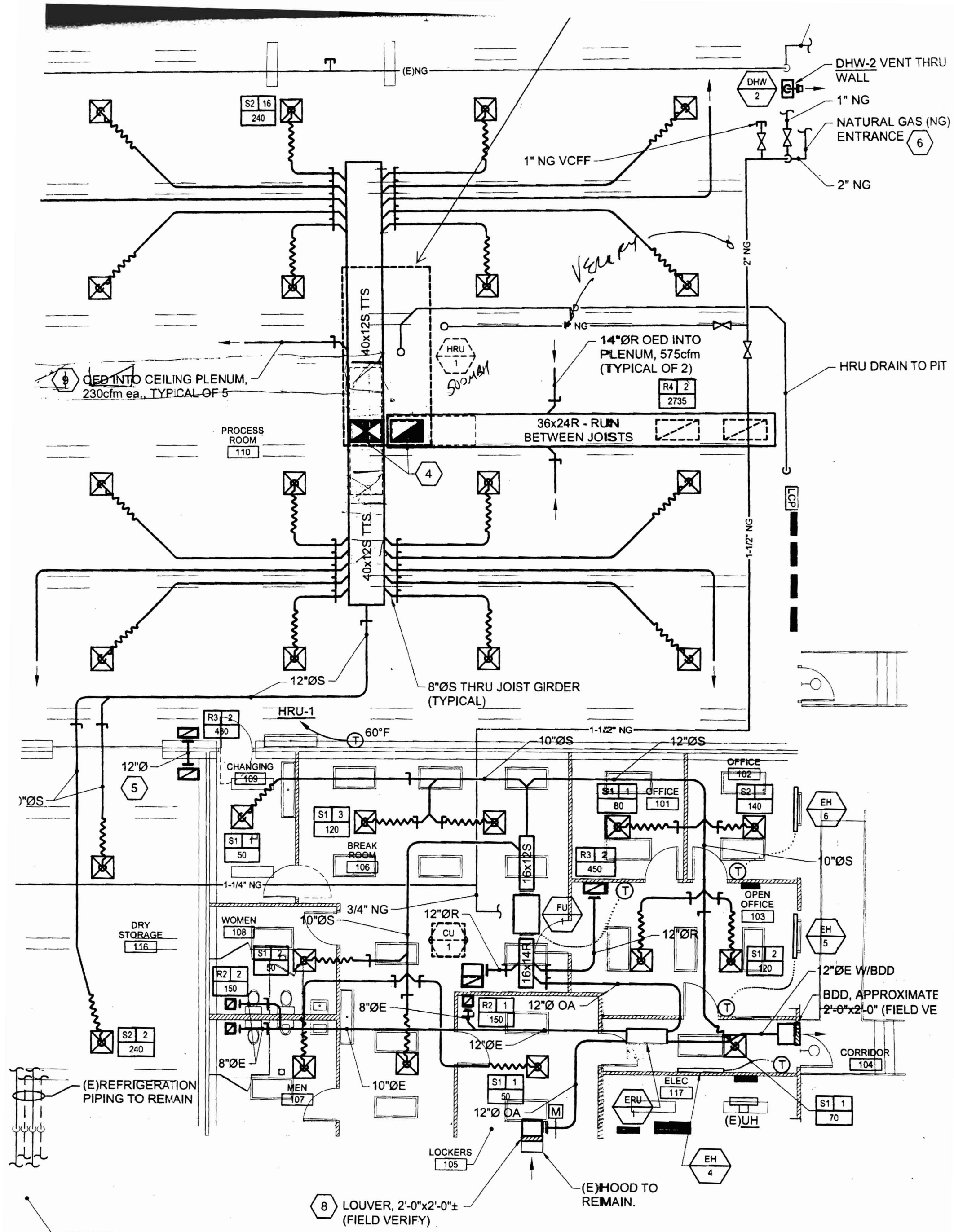






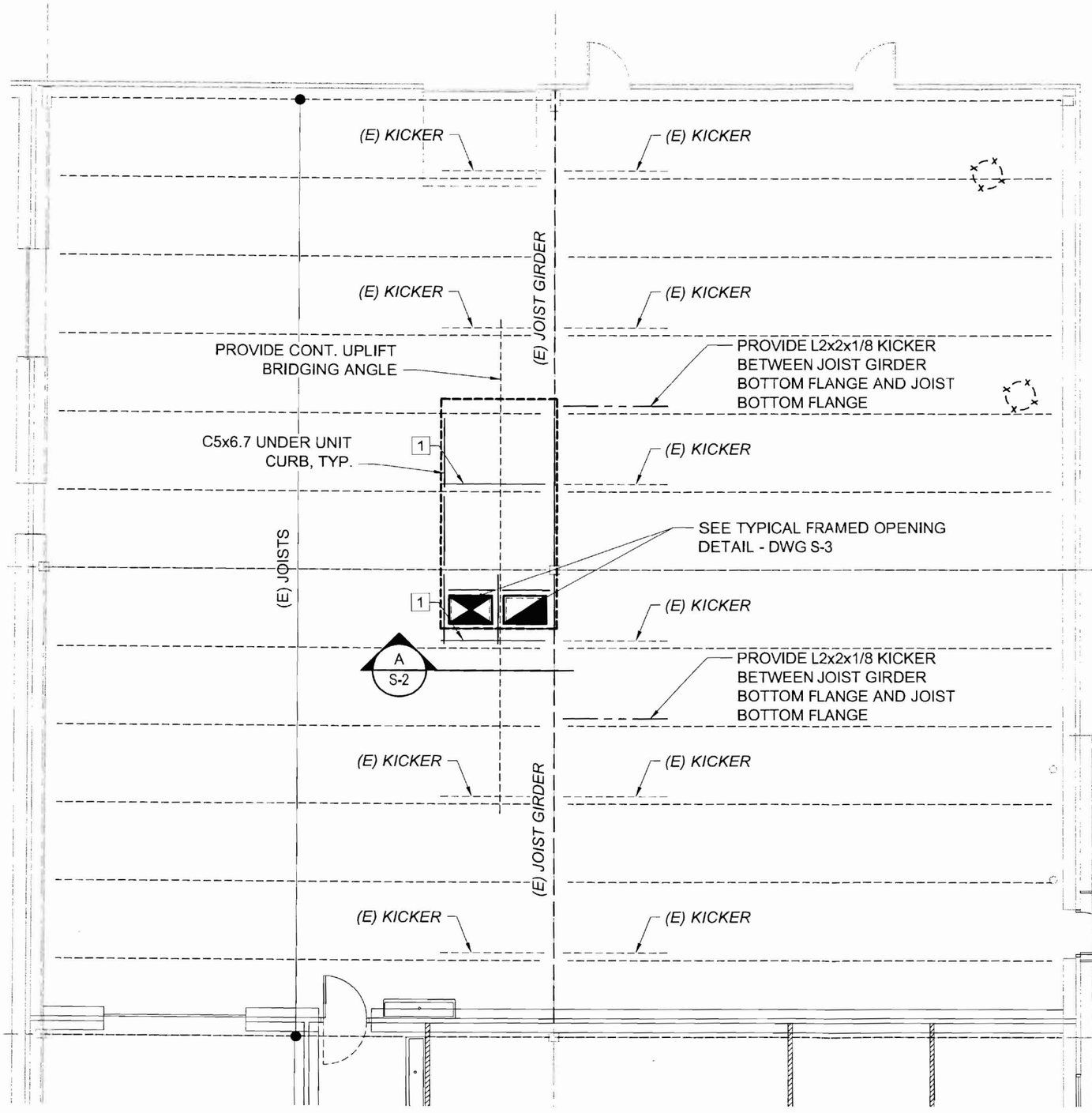
ROOF CURB WEIGHT
338 lb

NOTE: CURB DATA FOR SIZE AND CONFIGURATION NFO ONLY. SINCE THE ROOF IS A STANDING SEAM PITCHED TYPE, THIS CURB WILL NO BE SUITABLE. CURB TO BE FURNISHED BY OTHERS!



KEYED NOTES:

1. CONNECT TO EXISTING (CTE) TERMINAL OUTLETS. PROVIDE TRANSITION AS REQUIRED.
2. WIRE EXHAUST FAN TO LIGHT SWITCH.
3. RELOCATED TOTE WASHER EXHAUST FAN; MOUNT HIGH ON WALL. OFFSET DUCTS TO AVOID EXISTING CONDITIONS.
4. 36x24S & R DUCTS UP, TRANSITION TO HRU OPENINGS AS REQUIRED. PROVIDE LINED DUCT FOR FIRST 10'-0" FROM



1 REMOVE KICKER. DO SO ONLY AFTER OPPOSITE HAND KICKERS ARE INSTALLED AND CONNECTED

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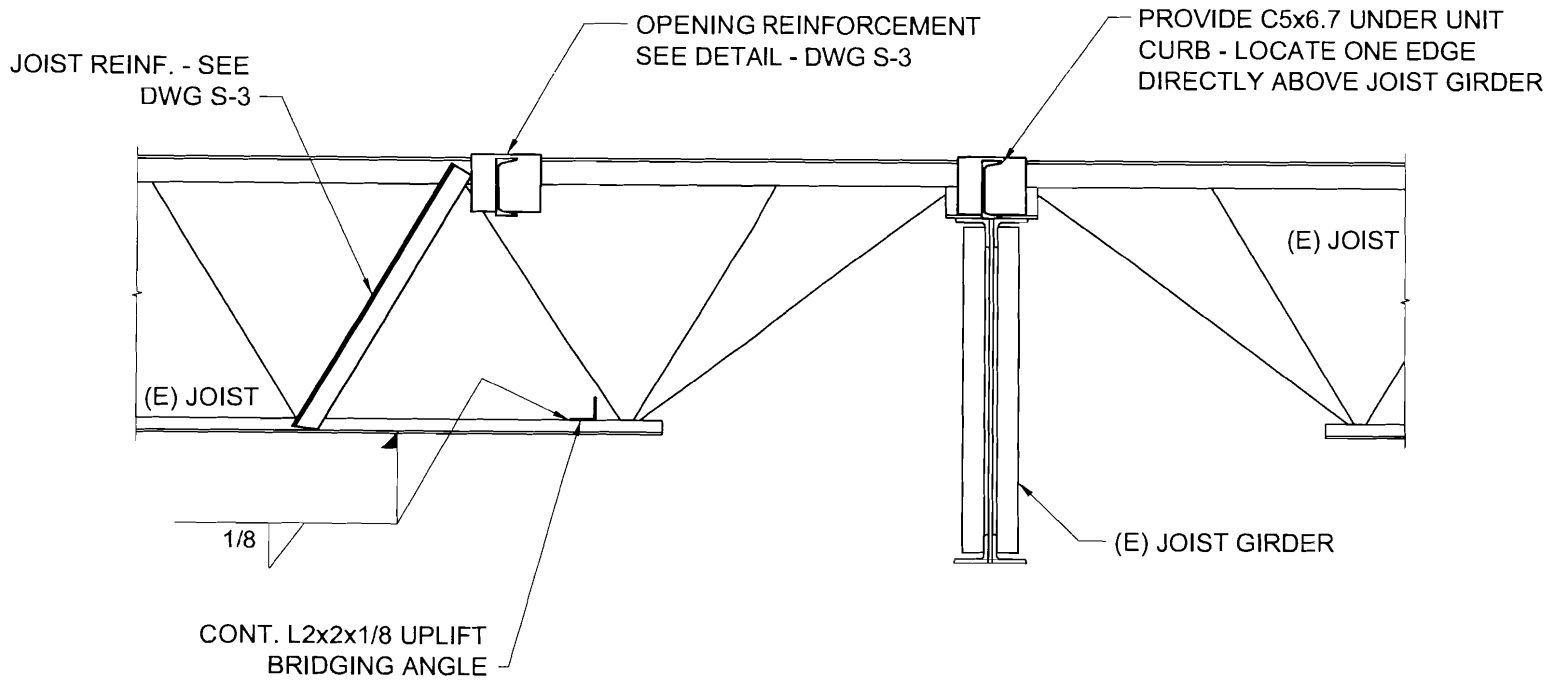
ROOF FRAMING PART PLAN

PORTLAND FISH EXCHANGE
CITY OF PORTLAND - DEPT. OF PORTS AND TRANSPORTATION
PORTLAND, MAINE

Scale: 1/8" = 1'-0" | Date: 09-15-2009 | Project No: 09065 | Cad File: 09065S.dwg

S-1



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DETAIL - A/S-2

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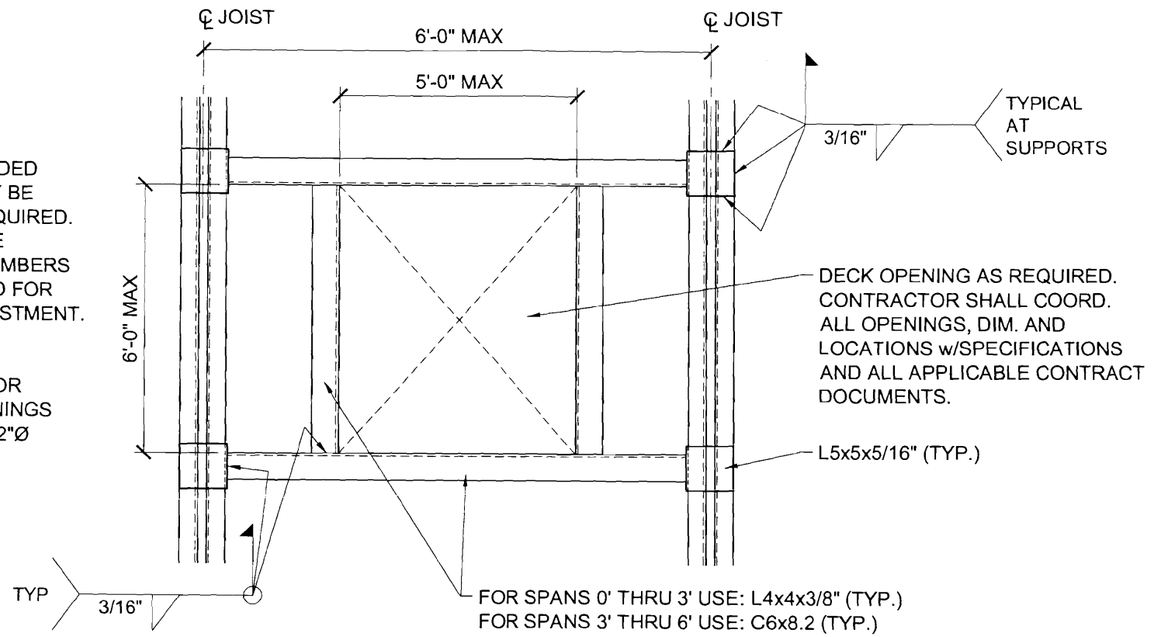
NOTES:

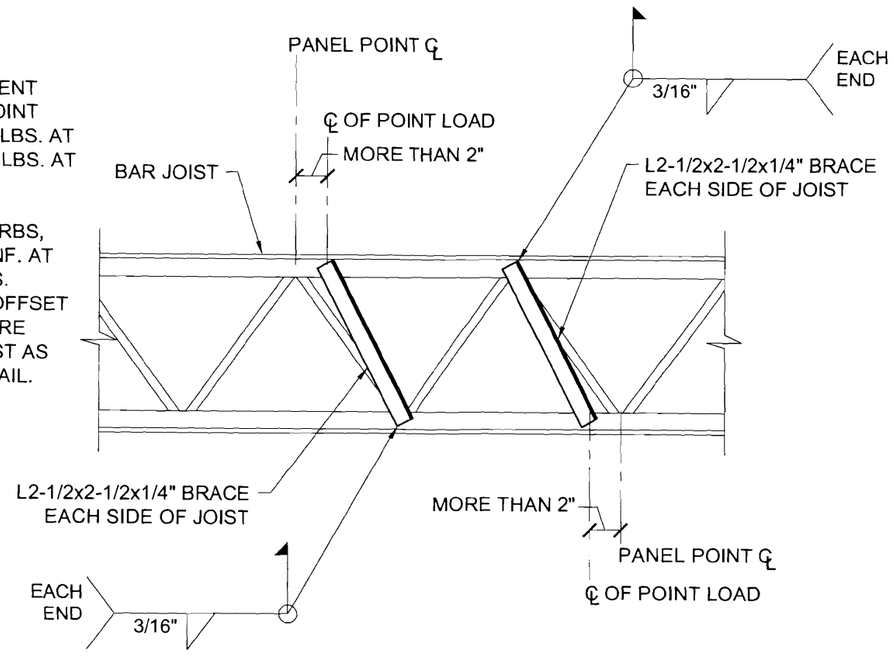
1. 1,2,3, OR 4 SIDED FRAMES MAY BE USED AS REQUIRED. ALSO, LOOSE INTERIOR MEMBERS MAY BE USED FOR ADDED ADJUSTMENT.
2. FRAME NOT REQUIRED FOR ROUND OPENINGS LESS THAN 12"Ø



TYPICAL FRAMED OPENING IN ROOF DECK U.N.O.

NOTES:

1. JOIST REINFORCEMENT REQUIRED WHEN POINT LOAD EXCEEDS 150 LBS. AT TOP CHORD AND 50 LBS. AT BOTTOM CHORD
2. BENEATH MECH. CURBS, PROVIDE JOIST REINF. AT JOIST PANEL JOINTS. WHEN CURBS ARE OFFSET FROM PANEL BY MORE THAN 2", REINF. JOIST AS SHOWN IN THIS DETAIL.



TRUSS FIELD MODIFICATION FOR POINT LOAD > 200 #

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ROOF DETAILS

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