Ohio | Public Utilities Commission

Application to Commit Energy Efficiency/Peak Demand Reduction Programs (Mercantile Customers Only)

Case No.: 13-0076-EL-EEC

Mercantile Customer:	Giant Eagle # 229 Brunswick
Electric Utility:	Ohio Edison Company
Program Title or Description:	Project 1 - Anti-Sweat Heater Control System Installation Project 2 - High-efficiency Refrigerated Cases

Rule 4901:1-39-05(F), Ohio Administrative Code (O.A.C.), permits a mercantile customer to file, either individually or jointly with an electric utility, an application to commit the customer's existing demand reduction, demand response, and energy efficiency programs for integration with the electric utility's programs. The following application form is to be used by mercantile customers, either individually or jointly with their electric utility, to apply for commitment of such programs in accordance with the Commission's pilot program established in Case No. 10-834-EL-POR

Completed applications requesting the cash rebate reasonable arrangement option (Option 1) in lieu of an exemption from the electric utility's energy efficiency and demand reduction (EEDR) rider will be automatically approved on the sixty-first calendar day after filing, unless the Commission, or an attorney examiner, suspends or denies the application prior to that time. Completed applications requesting the exemption from the EEDR rider (Option 2) will also qualify for the 60-day automatic approval so long as the exemption period does not exceed 24 months. Rider exemptions for periods of more than 24 months will be reviewed by the Commission Staff and are only approved up the issuance of a Commission order.

Complete a separate application for each customer program. Projects undertaken by a customer as a single program at a single location or at various locations within the same service territory should be submitted together as a single program filing, when possible. Check all boxes that are applicable to your program. For each box checked, be sure to complete all subparts of the question, and provide all requested additional information. Submittal of incomplete applications may result in a suspension of the automatic approval process or denial of the application.

Any confidential or trade secret information may be submitted to Staff on disc or via email at ee-pdr@puc.state.oh.us.

Section 1: Mercantile Customer Information

Name: Giant Eagle, Inc. #229 Brunswick

Principal address: 101 Kappa Drive , Pittsburgh, PA 15238

Address of facility for which this energy efficiency program applies: 3440 Center Road Brunswick, Ohio 44212-3689

Name and telephone number for responses to questions:Antoinette Lichty, 412-967-3649

Electricity use by the customer (check the box(es) that apply):

☒ The customer uses more than seven hundred thousand kilowatt hours per year at the above facility. (Please attach documentation.)

☐ The customer is part of a national account involving multiple facilities in one or more states. (Please attach documentation.)

Section 2: Application Information

A) The customer is filing this application (choose which applies):

☐ Individually, without electric utility participation.

☒ Jointly with the electric utility.

B) The electric utility is: Ohio Edison Company

C) The customer is offering to commit (check any that apply):

☐ Energy savings from the customer's energy efficiency program. (Complete Sections 3, 5, 6, and 7.)

☐ Capacity savings from the customer's demand response/demand reduction program. (Complete Sections 4, 5, 6, and 7.)

☒ Both the energy savings and the capacity savings from the customer's energy efficiency program. (Complete all sections of the Application.)

Section 3: Energy Efficiency Programs

A) The customer's energy efficiency program involves (check those that apply):

☒ Early replacement of fully functioning equipment with new equipment. (Provide the date on which the customer replaced fully functioning equipment, and the date on which the customer would have replaced such equipment if it had not been replaced early. Please include a brief explanation for how the customer determined this future replacement date (or, if not known, please explain why this is not known)). **If Checked, Please see Exhibit 1 and Exhibit 2**

☐ Installation of new equipment to replace equipment that needed to be replaced The customer installed new equipment on the following date(s): _____.

☐ Installation of new equipment for new construction or facility expansion. The customer installed new equipment on the following date(s):

_____.

☒ Behavioral or operational improvement.

B) Energy savings achieved/to be achieved by the energy efficiency program:

1) If you checked the box indicating that the project involves the early replacement of fully functioning equipment replaced with new equipment, then calculate the annual savings [(kWh used by the original equipment) – (kWh used by new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: 60,141 kWh

2) If you checked the box indicating that the customer installed new equipment to replace equipment that needed to be replaced, then calculate the annual savings [(kWh used by less efficient new equipment) – (kWh used by the higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: _____ kWh

Please describe any less efficient new equipment that was rejected in favor of the more efficient new equipment. **Please see Exhibit 1 if applicable**

3) If you checked the box indicating that the project involves equipment for new construction or facility expansion, then calculate the annual savings [(kWh used by less efficient new equipment) – (kWh used by higher efficiency new equipment) = (kWh per year saved)]. Please attach your calculations and record the results below:

Annual savings: _____ kWh

Please describe the less efficient new equipment that was rejected in favor of the more efficient new equipment. **Please see Exhibit 1 if applicable**

4) If you checked the box indicating that the project involves behavioral or operational improvements, provide a description of how the annual savings were determined.

Behavioral Savings: 91,980 kWh - The energy savings was based on store size as several MSRM2 antisweat controllers have been installed at other Giant Eagle locations with energy monitoring equipment already in operation. Typically the pre and post measurements reveal a reduction in energy use from 30 to 50% depending on the store size and previous method of control. Based on this location's store size and previous control methods, an energy savings of 30% was used to predict the annual energy use after the controls were installed.

Section 4: Demand Reduction/Demand Response Programs

A) The customer's program involves (check the one that applies):

☒ Coincident peak-demand savings from the customer's energy efficiency program.

☐ Actual peak-demand reduction. (Attach a description and documentation of the peak-demand reduction.)

☐ Potential peak-demand reduction (check the one that applies):

☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a tariff of a regional transmission organization (RTO) approved by the Federal Energy Regulatory Commission.

☐ The customer's peak-demand reduction program meets the requirements to be counted as a capacity resource under a program that is equivalent to an RTO program, which has been approved by the Public Utilities Commission of Ohio.

B) On what date did the customer initiate its demand reduction program?

12/16/2012 - See Exhibit 2A

C) What is the peak demand reduction achieved or capable of being achieved (show calculations through which this was determined):

See Exhibit 2A - 7 kW

Section 5: Request for Cash Rebate Reasonable Arrangement (Option 1) or Exemption from Rider (Option 2)

Under this section, check the box that applies and fill in all blanks relating to that choice.

Note: If Option 2 is selected, the application will not qualify for the 60-day automatic approval. All applications, however, will be considered on a timely basis by the Commission.

A) The customer is applying for:

☒ Option 1: A cash rebate reasonable arrangement.

OR

☐ Option 2: An exemption from the energy efficiency cost recovery mechanism implemented by the electric utility.

OR

☐ Commitment payment

B) The value of the option that the customer is seeking is:

Option 1: A cash rebate reasonable arrangement, which is the lesser of (show both amounts):

☒ A cash rebate of $9,127.00. (Rebate shall not exceed 50% project cost. Attach documentation showing the methodology used to determine the cash rebate value and calculations showing how this payment amount was determined.)

Option 2: An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider.

☐ An exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for _____ months (not to exceed 24 months). (Attach calculations showing how this time period was determined.)

OR

☐ A commitment payment valued at no more than $_____. (Attach documentation and calculations showing how this payment amount was determined.)

OR

☐ Ongoing exemption from payment of the electric utility's energy efficiency/peak demand reduction rider for an initial period of 24 months because this program is part of the customer's ongoing efficiency program. (Attach documentation that establishes the ongoing nature of the program.) In order to continue the exemption beyond the initial 24 month period, the customer will need to provide a future application establishing additional energy savings and the continuance of the organization's energy efficiency program.)

Section 6: Cost Effectiveness

The program is cost effective because it has a benefit/cost ratio greater than 1 using the (choose which applies):

☐ Total Resource Cost (TRC) Test. The calculated TRC value is: _____(Continue to Subsection 1, then skip Subsection 2)

☒ Utility Cost Test (UCT) . The calculated UCT value is: **See Exhibit 3** (Skip to Subsection 2.)

Subsection 1: TRC Test Used (please fill in all blanks).

The TRC value of the program is calculated by dividing the value of our avoided supply costs (generation capacity, energy, and any transmission or distribution) by the sum of our program overhead and installation costs and any incremental measure costs paid by either the customer or the electric utility.

The electric utility's avoided supply costs were _____.

Our program costs were _____.

The incremental measure costs were _____.

Subsection 2: UCT Used (please fill in all blanks).

We calculated the UCT value of our program by dividing the value of our avoided supply costs (capacity and energy) by the costs to our electric utility (including administrative costs and incentives paid or rider exemption costs) to obtain our commitment.

Our avoided supply costs were **See Exhibit 3**

The utility's program costs were **See Exhibit 3**

The utility's incentive costs/rebate costs were **See Exhibit 3**

Section 7: Additional Information

Please attach the following supporting documentation to this application:

- Narrative description of the program including, but not limited to, make, model, and year of any installed and replaced equipment.
- A copy of the formal declaration or agreement that commits the program or measure to the electric utility, including:
  1) any confidentiality requirements associated with the agreement;
  2) a description of any consequences of noncompliance with the terms of the commitment;
  3) a description of coordination requirements between the customer and the electric utility with regard to peak demand reduction;
  4) permission by the customer to the electric utility and Commission staff and consultants to measure and verify energy savings and/or peak-demand reductions resulting from your program; and,
  5) a commitment by the customer to provide an annual report on your energy savings and electric utility peak-demand reductions achieved.
- A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results. Additionally, identify and explain all deviations from any program measurement and verification guidelines that may be published by the Commission.

Ohio | Public Utilities Commission

Application to Commit Energy Efficiency/Peak Demand Reduction Programs (Mercantile Customers Only)

Case No.: 13 - 0076 **-EL-EEC**

State of Ohio :

Kristen May

, Affiant, being duly sworn according to law, deposes and says that:

1. I am the duly authorized representative of:

Giant Eagle, Inc.

[insert customer or EDU company name and any applicable name(s) doing business as]

2. I have personally examined all the information contained in the foregoing application, including any exhibits and attachments. Based upon my examination and inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate and complete.

Signature of Affiant & Title

Vice President Sourcing

Sworn and subscribed before me this 10th day of August, 2012 Month/Year

Signature of official administering oath

Denice P. Bollinger, Notary

Print Name and Title

My commission expires on July 13th 2013

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Denice P. Bollinger, Notary Public
O'Hara Twp., Allegheny County
My Commission Expires July 13, 2013
Member, Pennsylvania Association of Notaries

Exhibit 1

Customer Legal Entity Name: GIANT EAGLE, INC

Site Address: Giant Eagle #229 - Brunswick
Principal Address: 3440 Center Road

Project No.	Project Name	Narrative description of your program including, but not limited to, make, model, and year of any installed and replaced equipment:	Description of methodologies, protocols and practices used in measuring and verifying project results	What date would you have replaced your equipment if you had not replaced it early? Also, please explain briefly how you determined this future replacement date.	Please describe the less efficient new equipment that you rejected in favor of the more efficient new equipment.
1	Anti-Sweat Heater Control System Installation	The anti-sweat heater control system installation was completed as a means to reduce energy usage in the store. The existing anti-sweat heaters ran constantly, regardless of the humidity and temperaure in the store. A Parasense MSRM2 controller and an Energy Monitoring System (ERM2), are able to turn on the anti-sweat heaters when the conditions for condensation to occur are met. Sensors that measure indoor/outdoor temperatures and humidity allow the controller to operate the anti-sweat heaters based on actual store conditions. Please see attached "GE 229_P1_Energy Savings.pdf" and "GE 229_P1_Energy Savings Calculations.pdf' for extrapolated savings as calculated by Parasense Inc. and Fazio Mechanical.	See attached annual extrapolated energy savings sheet 'GE 229_P1_Energy Savings.pdf' and 'GE 229_P1_Energy Savings Calculations.pdf'.	N/A	N/A
2	High-Efficiency Refrigerated Cases	46 High-efficiency refrigerated cases with electrically commutated motors and LED lighting were installed to replace 46 cases with shaded-pole motors and fluorescent lighting. A total of 46 new refrigerated cases were installed, including: (1) ORZH 4 Door, (1) ONIZ 8', (6) ON5DM8', (2) ON3UM 12', (1) ON5DM 8', (1) OWIZ 12', (1) ONRZH 6 Door, (1) OWIZ 8', (1) ON5DM 8', (4) OHPH 6', (3) OHPH 8', (2) OHPH 12', (5) ON5DMH 8', (1) ON5DMH 12', (1) 6DMLH 6', (4) 6DMLH 8', (5) 6DMLH 12', (1) ORZH 3 Door, (2) O5DRH 8', (3) O5DRH 12'.	See attached calculations 'GE 229_P3_Refrigerated Case Calculations.pdf'.	Approximately 2 to 3 years. The decision to upgrade the cases was made to reduce energy use and to decrease maintenance costs.	N/A

Exhibit 2

Customer Legal Entity Name: GIANT EAGLE, INC
Site Address: Giant Eagle #229 - Brunswick
Principal Address: 3440 Center Road

	Unadjusted Usage, kwh (A)	Weather Adjusted Usage, kwh (B)	Weather Adjusted Usage with Energy Efficiency Addbacks, kwh (c) *Note 1*
2010	3,587,840	3,587,840	3,587,840
2009	3,536,480	3,536,480	3,536,480
2008	3,549,360	3,549,360	3,549,360
Average	**3,557,893**	**3,557,893**	**3,557,893**

Project Number	Project Name	In-Service Date	Project Cost $	50% of Project Cost $	KWh Saved/Year (D) counting towards utility compliance	KWh Saved/Year (E) eligible for incentive	Utility Peak Demand Reduction Contribution, KW (F)	Prescriptive Rebate Amount (G) $	Eligible Rebate Amount (H) $ *Note 2*	Commitment Payment $
1	Anti-Sweat Heater Control System Installation	09/21/2011	$12,400	$6,200	91,980	91,980	-	$7,358	$5,519	
2	High-Efficiency Refrigerated Cases	12/16/2012	$263,003	$131,502	60,141	60,141	7	$4,811	$3,608	
					-	-	-			
					-	-	-			
					-	-	-			
					-	-	-			
					-	-	-			
		Total	**$275,403**		**152,121**	**152,121**	**7**	**$12,169**	**$9,127**	**$0**

Docket No. 13-0076
Site: 3440 Center Road

Notes
(1) Customer's usage is adjusted to account for the effects of the energy efficiency programs included in this application. When applicable, such adjustments are prorated to the in-service date to account for partial year savings.

(2) The eligible rebate amount is based upon 75% of the rebates offered by the FirstEnergy Commercial and Industrial Energy Efficiency programs or 75% of $0.08/kWh for custom programs for all energy savings eligible for a cash rebate as defined in the PUCO order in Case NO.10-834-EL-EEC dated 9/15/2010, not to exceed the lesser of 50% of the project cost or $250,000 per project. The rebate also cannot exceed $500,000 per customer per year, per utility service territory.

Exhibit 3 Utility Cost Test

UCT = Utility Avoided Costs / Utility Costs

Project	Total Annual Savings, MWh (A)	Utility Avoided Cost $/MWh (B)	Utility Avoided Cost $ (C)	Utility Cost $ (D)	Cash Rebate $ (E)	Administrator Variable Fee $ (F)	Total Utility Cost $ (G)	UCT (H)
1	92	$ 308	$ 28,356	$ 1,773	$5,519	$920	$ 8,212	**3.5**
2	60	$ 308	$ 18,540	$ 1,773	$3,608	$601	$ 5,983	**3.10**
Total	**152**	**$ 308**	**46,896**	**3,546**	**$9,127**	**$1,521**	**14,194**	**3.3**

Notes

(A) From Exhibit 2, = kWh saved / 1000

(B) This value represents avoided energy costs (wholesale energy prices) from the Department of Energy, Energy Information Administration's 2009 Annual Energy Outlook (AEO) low oil prices case. The AEO represents a national average energy price, so for a better representation of the energy price that Ohio customers would see, a Cinergy Hub equivalent price was derived by applying a ratio based on three years of historic national average and Cinergy Hub prices.This value is consistent with avoided cost assumptions used in EE&PDR Program Portfolio and Initial Benchmark Report, filed Dec 15, 2009 (See Section 8.1, paragraph a).

(C) = (A) * (B)

(D) Represents the utility's costs incurred for self-directed mercantile applications for applications filed and applications in progress. Includes incremental costs of legal fees, fixed administrative expenses, etc.

(E) This is the amount of the cash rebate paid to the customer for this project.

(F) Based on approximate Administrator's variable compensation for purposes of calculating the UCT, actual compensation may be less.

(G) = (D) + (E) + (F)

(H) =(C) / (G)

GIANT EAGLE, INC ~ Giant Eagle #229 - Brunswick
Docket No. 13-0076

Site: 3440 Center Road

PROJECT DESCRIPTION: ANTI-SWEAT HEATER CONTROLS FOR GLASS DOOR REFRIGERATORS

Store: 229 Brunswick, OH **Sq. Ft. 80,310** **SUPPLY ONLY**

Glass door refrigerators used for display and sale of frozen food employ a frame and door heater to prevent condensation in times of high humidity. In most cases these heaters, which can be up to 500 watts / door, operate continuously or are crudely switched off in extreme periods of low humidity. The project involves controlling the energy provided to the door heaters when it is required using a pulse width modulating control utilizing the humidity measurement within the control strategy. This cycles the heater to give energy consumption proportional to the store humidity thereby saving energy. Typically the savings are in the region of 30% to 50% of the installed heater load, with the savings per store dependent on the amount of refrigeration and size of the store. The following table has been used to calculate the projected savings based on the store size.

Anti-Sweat Heater Savings Calculation

Store Size	Anti-Sweat Heater Load (kW)	Annual Usage (kWhrs)	Savings Due to Control (kWhrs) (30%)
70 to 90,000ft2	35	306,600	91,980

Store Size	Projected Savings			Supply Only Cost $	Cost Justification
	kWhrs	Tonnes CO2e	$@0.87/kWhr		ROI without Rebate
70 to 90,000ft2	91,980	63.46	8,002	5,458	0.68

FAZIO MECHANICAL SERVICES

REFRIGERATION · HEATING · AIR CONDITIONING *Sales, Service & Installation*

Miscellaneous Items Energy Survey

Date:	5/5/2011	**Site:**	GE 229 Brunswick, OH	**Panel:**	AS

Anti-Sweats Existing

Phase	**A**	**B**	**C**
Volts	120	120	120
Amps	108	109	108
pf	0.9	0.9	0.9
Run %	100%	100%	100%
kW	11.7	11.7	11.6
Hours/day	24	24	24

Anti-Sweats Proposed

Phase	**A**	**B**	**C**
Volts	120	120	120
Amps	108	109	108
pf	0.9	0.9	0.9
Run %	70%	70%	70%
kW	11.7	11.7	11.6
Hours/day	24	24	24

Existing Usage		**Proposed Usage**		**Annual Savings**	
kWh/day	840	**kWh/day**	588	**Existing kWh**	306,601
Days	365	**Days**	365	**Proposed kWh**	214,621
kWh/year	306,601	**kWh/year**	214,621	**Total kWh savings**	91,980

Proposed Controls	Parasense Anti-Sweat Controller	**Number of Circuits**	35
MOCP for Panel	286	**Size of Circuit Breakers**	20
Voltage	120 volts AC		

Scope of Work

1. Install Parasense ERM2 and MSRM2 anti-sweat controls in compressor room to intersept electric to heaters.
2. Install indoor/outdoor temp sensors and dew point sensor on the sales floor to report store conditions.
3. Set controls to regulate electricity for dew point at 55 degrees Fahrenheit

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Mercantile Customer Program - Custom Project Rebate Calculator

Project Name and Number:	Project 1 - Anti-Sweat Htr Control Sys
Site Name:	**Giant Eagle #229 Brunswick**
Completed by (Name):	**Aetos Construction Co.**
Date completed:	**9/21/2011**

Energy Conservation Measure	Annual Energy Savings kWh	Eligible Prescriptive Rebate Amount kWh * $0.08
Anti-Sweat Heater Control System	**91,980**	**7358.40**
Total Project Energy Savings kWh	**91,980**	
Total Custom Prescriptive Rebate Amount $		**$ 7,358.40**

Notes about this rebate calculation:
The anti-sweat heater control system installation was completed as a means to reduce energy usage in the store. The project included the installation of a Parasense Resistance Heater Controller (MSRM2). The MSRM2, along with the Energy Monitoring System (ERM2), controls the anti-sweat heaters so that only the energy needed to keep freezer case doors from building up condensation is used. Sensors that measure indoor/outdoor temperature and humidity allow the controller to conserve energy by only activating the anti-sweat heaters when the conditions for condensation are met. The energy use of the anti-sweat heaters was monitored 60 days before and 60 days after the installation of the MSRM2 and ERM2 systems at a other Giant Eagle locations of similar size. For an 80,000 sq. ft. store the energy use is typically reduced by 30%. Please see attached 'GE 229_Anti-Sweat Energy Savings.pdf' for extrapolated savings as calculated by Parasense Inc.

High Efficiency Refrigerated Cases - GE #229 Brunswick							Hours of Op.	8760				
Case Code	Invoice #	Invoice Amount	Cut Sheet #	Efficiency Measure	Fan Quantity	Standard Fan Usage (W)	High Efficiency Fan Usage (W)	Energy Savings (kWh)	Lamp Quantity	Standard Lighting (W)	LED Lighting (W)	Lighting Energy Savings (kWh)
ORZH 4 DR BAKERY	0656448	$5,098.09	Cut Sheet 1	LED/ECM Fans	4	30	9.25	727	5	60	12.8	2067
ONIZ 8' CAKE COFFIN	0656448	$3,948.66	Cut Sheet 2	ECM Fans	3	17	11	158				0
ON5DM 8' DELI (6x8') CHEESE/DELI	0648423	$27,867.54	Cut Sheet 3	LED/ECM Fans	24	30	14	3364	24	28	11.9	3385
ON3UM 12' (2x12') PREPARED FOODS	0647812	$21,779.94	Cut Sheet 4	LED/ECM Fans	8	30	9.2	1458	12	28	11.9	1692
ON5DM 8' CONVIENCE	0637875	$4,758.70	Cut Sheet 3	LED/ECM Fans	4	30	14	561	4	28	11.9	564
OWIZ 12' MEAT	0645469	$15,123.40	Cut Sheet 5	LED/ECM Fans	4	17	11	210	6	28	11.9	846
ONRZH 6 DR SEAFOOD	0645578	$6,804.68	Cut Sheet 6	LED/ECM Fans	6	30	9.17	1095	7	60	13.71	2839
OWIZ 8' SEAFOOD	0645578	$14,404.05	Cut Sheet 7	LED/ECM Fans	4	17	11	210	4	28	11.9	564
ON5DM 8' SEAFOOD	0645578	$5,089.44	Cut Sheet 8	LED/ECM Fans	4	30	14	561	4	28	11.9	564
OHPH 6' PRODUCE	0637874	$3,936.40	Cut Sheet 9	LED/ECM Fans	3	30	14	420	4	22	8.3	480
OHPH 32' PRODUCE (2x6', 1x8', 1x12')	0637874	$16,506.40	Cut Sheet 10	LED/ECM Fans	15	30	14	2102	18	28	11.9	2539
ON5DMH 20' PRODUCE (1x8', 1x12')	0637874	$10,585.98	Cut Sheet 11	LED/ECM Fans	9	30	14	1261	10	28	11.9	1410
OHPH 34' PRODUCE (1x6', 2x8', 1x12')	0637874	$18,092.40	Cut Sheet 10	LED/ECM Fans	16	30	14	2243	18	22	8.3	2160
ON5DMH 32' PRODUCE (4x8')	0637874	$17,753.24	Cut Sheet 12	LED/ECM Fans	16	30	14	2243	16	28	11.9	2257
6DMLH 98' BEER (1x6', 4x8', 5x12')	0640904	$60,767.02	Cut Sheet 13	LED/ECM Fans	49	38	21.7	6997	50	28	11.9	7052
ORZH 3 DR FROZEN FOOD	0631340	$4,321.36	Cut Sheet 14	LED/ECM Fans	3	30	9.33	543	4	60	12	1682
O5DRH 52' DAIRY (2x8', 3x12)	0631341	$26,166.14	Cut Sheet 15	LED/ECM Fans	26	53.3	35.5	4054	13	28	11.9	1833
							Pre (kW)	12.75		Pre (kWh)	111,661.97	
		Total Cost	$263,003.44				Post (kW)	5.88		Post (kWh)	51,520.89	
							Total Savings (kWH)	60,141.08				

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Mercantile Customer Program - Custom Project Rebate Calculator

Project Name and Number:	Proj. 1 - High-efficiency refrigerated cases
Site Name:	**Giant Eagle #229 Brunswick**
Completed by (Name):	**Aetos Construction Co.**
Date completed:	**2/6/2012**

Energy Conservation Measure	Annual Energy Savings kWh	Eligible Prescriptive Rebate Amount kWh * $0.08
High-efficiency refrigerated cases	**60,141**	**4811.28**
Total Project Energy Savings kWh	**60,141**	
Total Custom Prescriptive Rebate Amount $		**$ 4,811.28**

Notes about this rebate calculation:
Standard refrigerated cases with shaded pole motors and fluorescent lighting were used as the baseline for the energy calculations. High efficiency options such as ECM motors and LED lighting were chosen for the new cases. The energy savings is calculated by comparing standard cases with high-efficiency cases. See the attached document 'GE 229_P3_Refrigerated Case Calculations.pdf'.

ORZH High Reach-In Glass Door Merchandiser

2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)

Electrical Data

Doors	Fans Per Case	Standard Fans 120 Volts Amps	Standard Fans 120 Volts Watts	High Efficiency Fans 120 Volts Amps	High Efficiency Fans 120 Volts Watts	Defrost Heaters (1-Phase) 208 Volts Amps	Defrost Heaters (1-Phase) 208 Volts Watts	Defrost Heaters (1-Phase) 240 Volts Amps	Defrost Heaters (1-Phase) 240 Volts Watts	Defrost Heaters[1] (3-Phase) 208 Volts Amps[2]	Defrost Heaters[1] (3-Phase) 208 Volts Watts	Defrost Heaters[1] (3-Phase) 240 Volts Amps[2]	Defrost Heaters[1] (3-Phase) 240 Volts Watts
2-door	2	1.00	60	0.31	18	10.99	2286	12.66	3038	7.61	2286	8.76	3038
3-door	3	1.50	90	0.46	28	12.40	2580	14.27	3425	8.59	2580	9.88	3425
4-door	4	2.00	120	0.611	37	16.29	3388	18.89	4533	11.28	3388	13.08	4533
5-door	5	2.50	150	0.77	46	19.89	4138	22.93	5503	13.78	4138	15.88	5503
6-door	6	3.00	180	0.92	55	23.09	4803	26.65	6395	16.28	4803	18.46	6395

Lighting Data

Doors	Fluorescent Lighting Standard (60w) 120 Volts Amps	Fluorescent Lighting Standard (60w) 120 Volts Watts	LED Lighting Optimax Pro[3] 120 Volts Amps	LED Lighting Optimax Pro[3] 120 Volts Watts	LED Lighting Optimax Pro[3] BTUH Credit Per Door	LED Lighting GE IMMERSION 120 Volts Amps	LED Lighting GE IMMERSION 120 Volts Watts	LED Lighting GE IMMERSION BTUH Credit Per Door	LED Lighting Crossfire/Polaris[3] 120 Volts Amps	LED Lighting Crossfire/Polaris[3] 120 Volts Watts	LED Lighting Crossfire/Polaris[3] BTUH Credit Per Door
2-door	1.50	180	0.33	39	145	0.27	32	152	0.25	30	154
3-door	2.00	240	0.48	58	144	0.40	48	152	0.38	45	154
4-door	2.50	300	0.64	77	135	0.53	64	143	0.50	60	146
5-door	3.00	360	0.80	96	131	0.67	80	138	0.63	75	141
6-door	3.50	420	0.96	115	127	0.80	96	135	0.75	90	138

Anti-Condensate Heater Data

Doors	Anthony 101 120 Volts Amps	Anthony 101 120 Volts Watts	Anthony Eliminaator[4] 120 Volts Amps	Anthony Eliminaator[4] 120 Volts Watts	Anthony Eliminaator 2[4] 120 Volts Amps	Anthony Eliminaator 2[4] 120 Volts Watts	Gemtron Polar 120 Volts Amps	Gemtron Polar 120 Volts Watts	Gemtron Polar LE 120 Volts Amps	Gemtron Polar LE 120 Volts Watts	Gemtron Polar EF 120 Volts Amps	Gemtron Polar EF 120 Volts Watts
2-door	4.10	492	1.79	214	1.24	149	2.39	287	1.67	201	1.19	143
3-door	5.89	707	2.63	315	1.81	217	3.58	430	2.50	301	1.78	214
4-door	7.77	932	3.46	415	2.37	284	4.77	573	3.33	401	2.37	285
5-door	9.61	1154	4.35	522	2.98	358	6.00	720	4.20	505	3.00	360
6-door	11.23	1347	5.20	624	3.56	427	7.14	857	4.98	599	3.54	425

Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

All measurements are taken per ASHRAE - 72 - 2005 specifications.

ORZH High Reach-In Glass Door Merchandiser
2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)

Guidelines & Control Settings

Application	Door	[5]BTUH/door		Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Discharge[6] Air Velocity (FPM)
		Conventional	Parallel				
Frozen	Standard	1286	1249	-11	3 - 5	-3	405
	Eliminaator/Polar LE	1127	1095	-11	3 - 5	-3	405
Ice Cream	Standard	1347	1309	-17	3 - 5	-8	405
	Eliminaator/Polar LE	1166	1133	-17	3 - 5	-8	405

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
1	13 - 15	46	73[7]	- - -[8]	- - -	24	73[9]	- - -	- - -

1 3-phase load is unbalanced.

2 Figure given is maximum line amperage per phase.

3 Low-power lights. High-power option available.

4 Values provided are for doors with no heat on the glass.

5 Standard fans increase refrigeration load by 96 BTUH/fan.

6 Average discharge air velocity at peak of defrost.

7 The recommended location is in the center of the coil on the second pass. If using a discharge air temperature to terminate defrost, utilize a 55ºF termination temp.

8 NOTE: "- - -" indicates that feature is not an option on this case model.

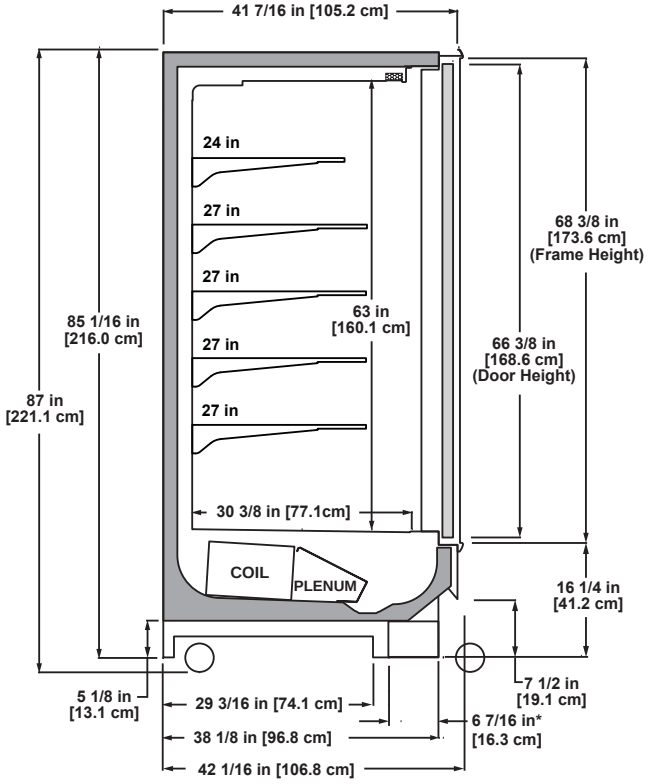
9 The recommended location is on the dump line. If using a discharge air temperature to terminate defrost, utilize a 55ºF termination temp.

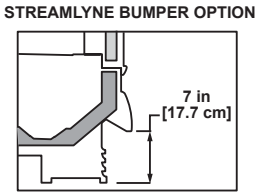
Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

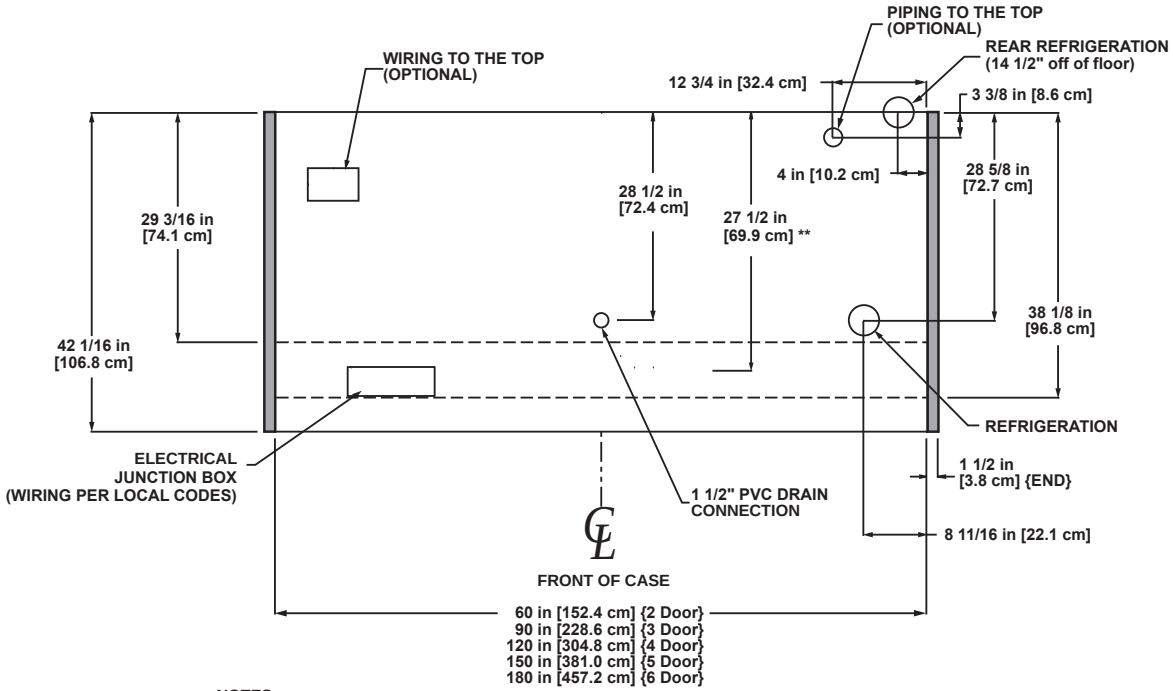
All measurements are taken per ASHRAE - 72 - 2005 specifications.

ORZH High Reach-In Glass Door Merchandiser

2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)







NOTES:

* STUB-UP AREA
** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

- ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT
- WIRING-TO-THE-TOP- ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT
- A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL
- SUCTION LINE (2DR & 3DR) 5/8", SUCTION LINE (4DR, 5DR & 6DR) 7/8"
- LIQUID LINE (ALL LENGTHS) - 3/8", LIQUID LINE w/ HOT GAS DEFROST (ALL LENGTHS) - 1/2"
- AVAILABLE SHELF SIZES: WIRE SHELVES 16", 18", 20", 22" & 23 1/2"; SOLID SHELVES 18", 20", 22", 24" & 27"
- TOP SHELF MUST BE 24" OR SHORTER WHEN USING 27" SHELVES
- RECOMMENDED CONFIGURATION IS 1 - 24" SHELF AND 4 - 27" SHELVES BELOW TOP SHELF
- DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE

OHPH High Multi-Deck Merchandiser
6', 8' & 12' (Produce)

Electrical Data

Case Length	Fans Per Case	Standard Fans		High-Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
6'	3	1.50	90	0.70	42	- - -[1]	- - -	2.88	600	3.33	798
8'	4	2.00	120	0.93	56	- - -	- - -	3.85	800	4.44	1065
12'	5	2.50	150	1.17	70	- - -	- - -	5.77	1200	6.67	1600

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row)		Clearvoyant LED Lighting (Per Light Row)			
					Standard Power (Cornice or Shelf)		High Power (Cornice)	
			120 Volts		120 Volts		120 Volts	
			Amps	Watts	Amps	Watts	Amps	Watts
6'	2	3'	0.37	44	0.14	16.6	0.30	35.8
8'	2	4'	0.47	56	0.20	23.8	0.44	52.4
12'	3	4'	0.70	84	0.30	35.7	0.66	78.6

2 rows of lamps per

Guidelines & Control Settings

Model	[2]BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge[3] Air Velocity (FPM)
	Conventional	Parallel				
Cut Produce	1445	1340	6 - 8	26	30	330
Bulk Produce	1181	1095	6 - 8	29	31	230

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
3	6 - 8	35	47	45	47	26	45	50	45

1 NOTE: "- - -" indicates that feature is not an option on this case model.

2 BTUH/ft notes:

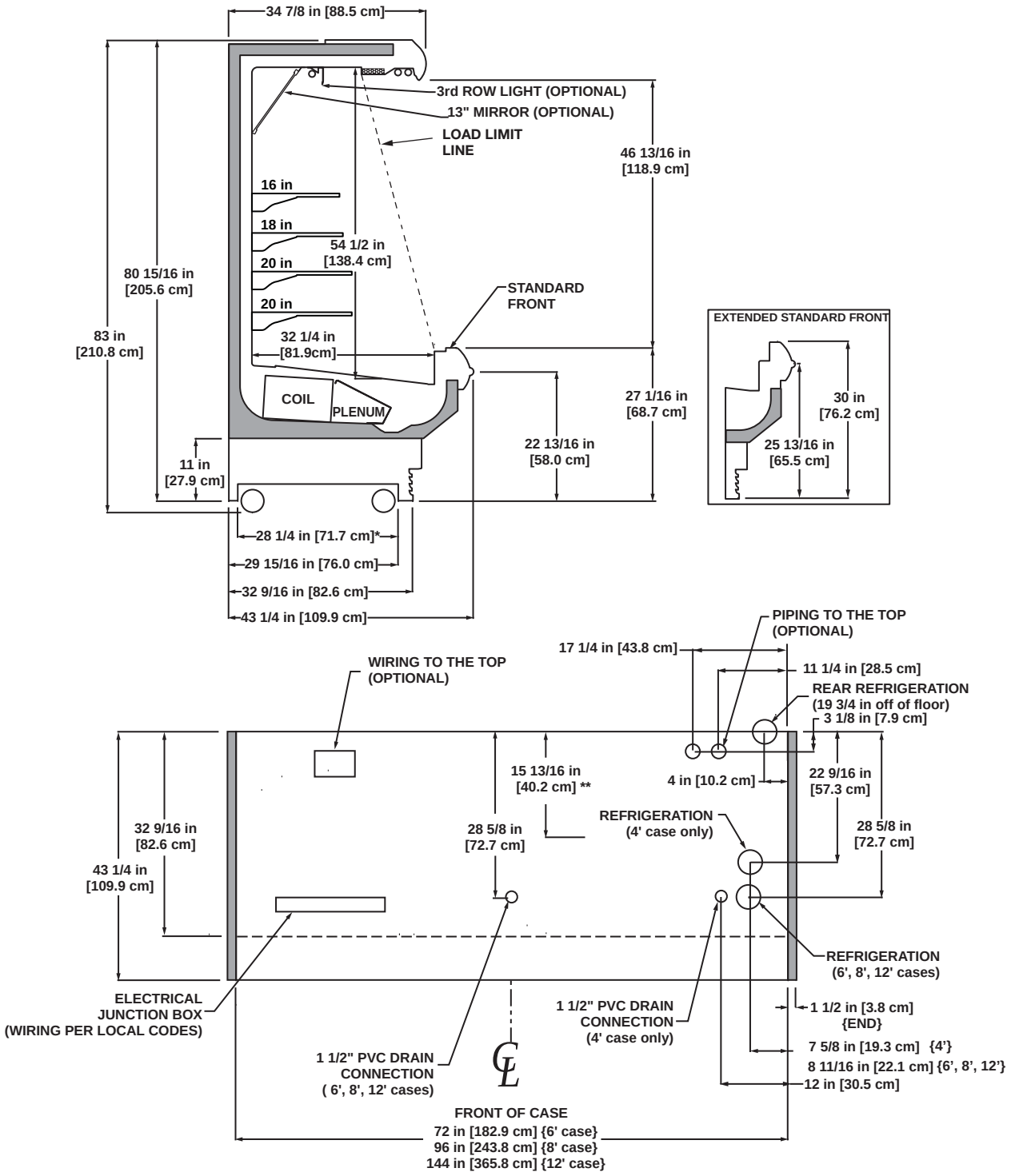
- Listed BTUH/ft indicate unlighted shelves. For T8 lighted shelves and 3rd row lighting, add 80 BTUH per 4' lighted shelf and 60 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Standard fans increase refrigeration load by 96 BTUH/fan.

3 Average discharge air velocity at peak of defrost.

Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

All measurements are taken per ASHRAE - 72 - 2005 specifications.

OHPH High Multi-Deck Merchandiser
6', 8' & 12' (Produce)



NOTES:

*** STUB-UP AREA**
**** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS**
- **FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARY WITH BASEFRAME HEIGHT**
- **ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT**
- **WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT**
- **A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL**
- **AVAILABLE SHELF SIZES: 10", 12", 14", 16", 18" & 20**
- **DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE**

ON5DMH Narrow Multi-Deck Merchandiser

4', 6', 8' & 12' (Beverage / Dairy / Produce)

Electrical Data

Case Length	Fans Per Case	Standard Fans 120 Volts Amps	Standard Fans 120 Volts Watts	High-Efficiency Fans 120 Volts Amps	High-Efficiency Fans 120 Volts Watts	Anti-Condensate Heaters 120 Volts Amps	Anti-Condensate Heaters 120 Volts Watts	Defrost Heaters 208 Volts Amps	Defrost Heaters 208 Volts Watts	Defrost Heaters 240 Volts Amps	Defrost Heaters 240 Volts Watts
4'	2	1.00	60	0.47	28	- - -[1]	- - -	1.92	400	2.22	532
6'	3	1.50	90	0.70	42	- - -	- - -	2.88	600	3.33	798
8'	4	2.00	120	0.93	56	- - -	- - -	3.85	800	4.44	1065
12'	5	2.50	150	1.17	70	- - -	- - -	5.77	1200	6.67	1600

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row) 120 Volts Amps	Fluorescent Lighting (Per Light Row) 120 Volts Watts	Clearvoyant LED Lighting (Per Light Row) Standard Power (Cornice or Shelf) 120 Volts Amps	Clearvoyant LED Lighting (Per Light Row) Standard Power (Cornice or Shelf) 120 Volts Watts	Clearvoyant LED Lighting (Per Light Row) High Power (Cornice) 120 Volts Amps	Clearvoyant LED Lighting (Per Light Row) High Power (Cornice) 120 Volts Watts
4'	1	4'	0.23	28	0.10	11.9	0.22	26.2
6'	2	3'	0.37	44	0.14	16.6	0.30	35.8
8'	2	4'	0.47	56	0.20	23.8	0.44	52.4
12'	3	4'	0.70	84	0.30	35.7	0.66	78.6

2 rows of lights per

Guidelines & Control Settings

Application	Front Sill Heights	[2]BTUH/ft Bulk Produce	[2]BTUH/ft Parallel	Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge[3] Air Velocity (FPM)
Dairy Cut Produce	Std. Dairy	1856	1691	6 - 8	22	32	215
	2.5" Ext.	1807	1646	6 - 8	22	31	215
	5" Ext.	1777	1619	6 - 8	22	31	215
	7.5" Ext.	1713	1561	6 - 8	22	31	215
Beverage Bulk Produce	Std. Dairy	1701	1550	6 - 8	29	37	215
	2.5" Ext.	1655	1508	6 - 8	29	36	215
	5" Ext.	1598	1456	6 - 8	29	36	215
	7.5" Ext.	1570	1430	6 - 8	29	36	215

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost Fail-Safe (min)	Electric Defrost Termination Temp (°F)	Timed-Off Defrost Fail-Safe (min)	Timed-Off Defrost Termination Temp (°F)	Hot Gas Defrost Fail-Safe (min)	Hot Gas Defrost Termination Temp (°F)	Reverse Air Defrost Fail-Safe (min)	Reverse Air Defrost Termination Temp (°F)
4	6 - 8	32	47	42	47	26	45	42	45

1 NOTE: "- - -" indicates that feature is not an option on this case model.

2 BTUH/ft notes:

- Listed BTUH/ft indicate unlighted shelves. For T8 lighted shelves and 3rd row lighting, add 80 BTUH per 4' lighted shelf and 60 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Standard fans increase refrigeration load by 96 BTUH/fan.

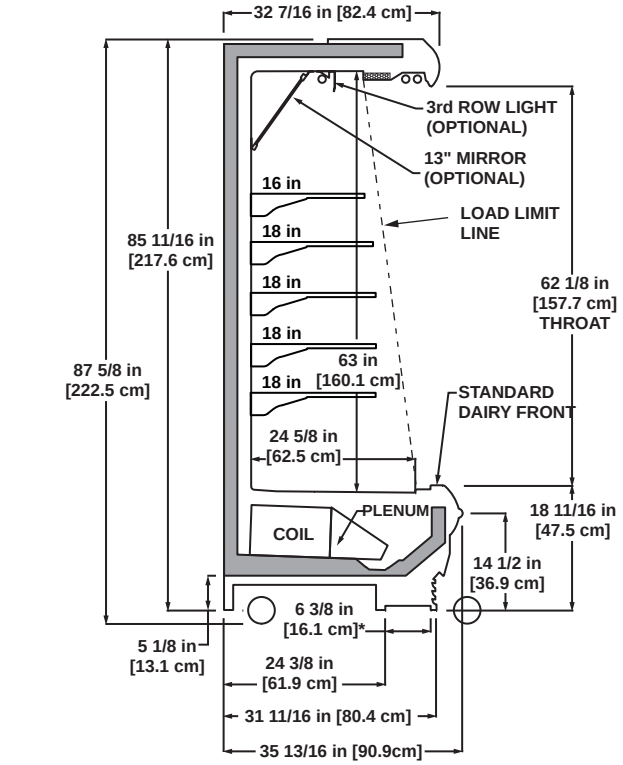
3 Average discharge air velocity at peak of defrost.

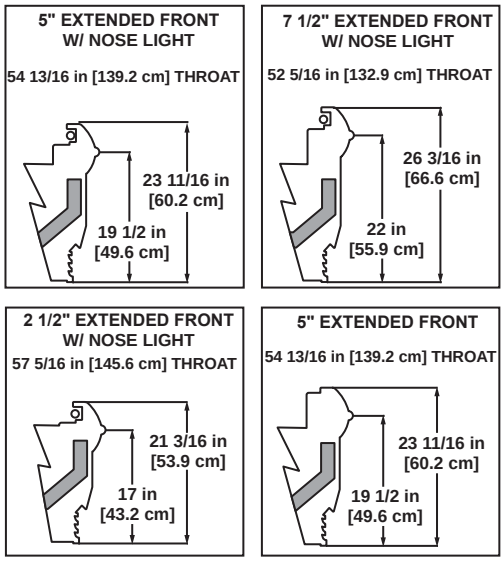
Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

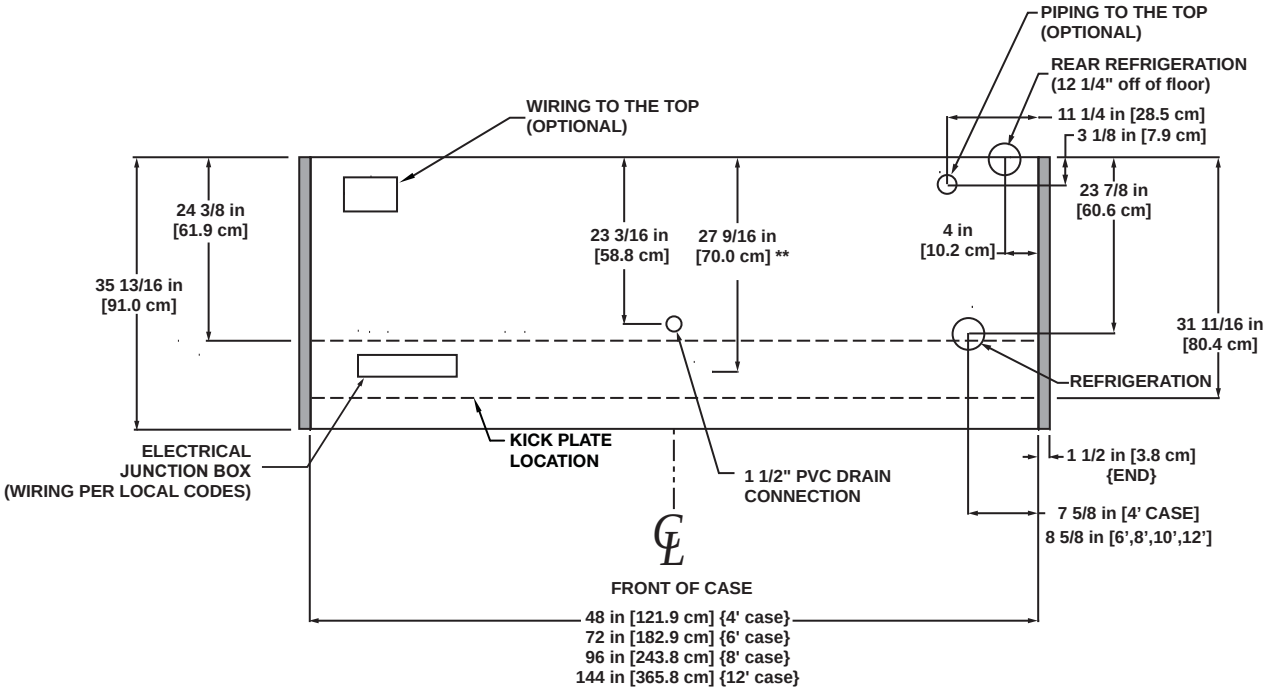
All measurements are taken per ASHRAE - 72 - 2005 specifications.

ON5DMH Narrow Multi-Deck Merchandiser

4', 6', 8' & 12' (Beverage / Dairy / Produce)







NOTES:

*** STUB-UP AREA**
**** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS**

- **FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARY WITH BASEFRAME HEIGHT**
- **ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT**
- **WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT**
- **A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL**
- **AVAILABLE SHELF SIZES: 10", 12", 14", 16" & 18" TOP SHELF MUST BE 16" OR SHORTER.**
- **RECOMMENDED CONFIGURATION IS 16" SHELF AND 3 OR 4 18" SHELVES BELOW TOP SHELF)**
- **DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE**

ON5DMH Narrow Multi-Deck Merchandiser

4', 6', 8' & 12' (Beverage / Dairy / Produce)

Electrical Data

Case Length	Fans Per Case	Standard Fans		High-Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
4'	2	1.00	60	0.47	28	- - -[1]	- - -	1.92	400	2.22	532
6'	3	1.50	90	0.70	42	- - -	- - -	2.88	600	3.33	798
8'	4	2.00	120	0.93	56	- - -	- - -	3.85	800	4.44	1065
12'	5	2.50	150	1.17	70	- - -	- - -	5.77	1200	6.67	1600

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row)		Clearvoyant LED Lighting (Per Light Row)			
					Standard Power (Cornice or Shelf)		High Power (Cornice)	
			120 Volts		120 Volts		120 Volts	
			Amps	Watts	Amps	Watts	Amps	Watts
4'	1	4'	0.23	28	0.10	11.9	0.22	26.2
6'	2	3'	0.37	44	0.14	16.6	0.30	35.8
8'	2	4'	0.47	56	0.20	23.8	0.44	52.4
12'	3	4'	0.70	84	0.30	35.7	0.66	78.6

2 rows of lights per

Guidelines & Control Settings

Application	Front Sill Heights	[2]BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge[3] Air Velocity (FPM)
		Bulk Produce	Parallel				
Dairy Cut Produce	Std. Dairy	1856	1691	6 - 8	22	32	215
	2.5" Ext.	1807	1646	6 - 8	22	31	215
	5" Ext.	1777	1619	6 - 8	22	31	215
	7.5" Ext.	1713	1561	6 - 8	22	31	215
Beverage Bulk Produce	Std. Dairy	1701	1550	6 - 8	29	37	215
	2.5" Ext.	1655	1508	6 - 8	29	36	215
	5" Ext.	1598	1456	6 - 8	29	36	215
	7.5" Ext.	1570	1430	6 - 8	29	36	215

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
4	6 - 8	32	47	42	47	26	45	42	45

1 NOTE: "- - -" indicates that feature is not an option on this case model.

2 BTUH/ft notes:

- Listed BTUH/ft indicate unlighted shelves. For T8 lighted shelves and 3rd row lighting, add 80 BTUH per 4' lighted shelf and 60 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Standard fans increase refrigeration load by 96 BTUH/fan.

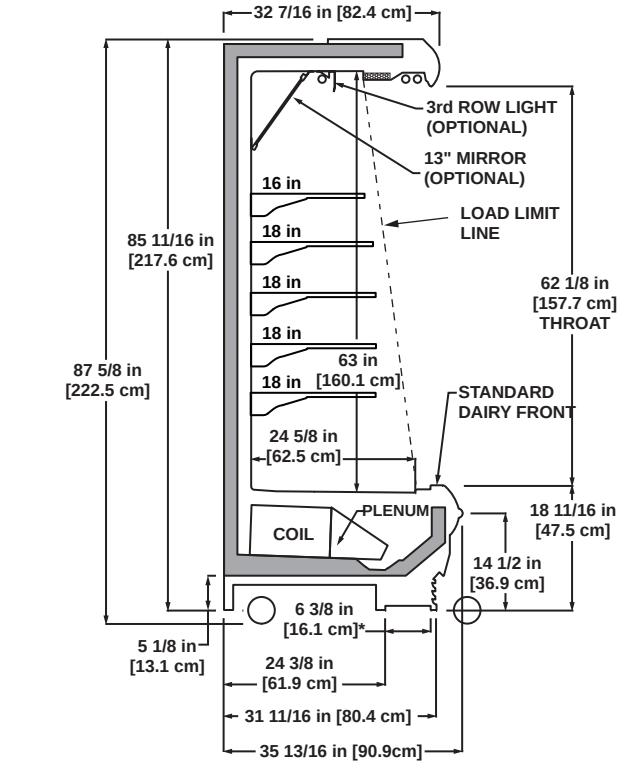
3 Average discharge air velocity at peak of defrost.

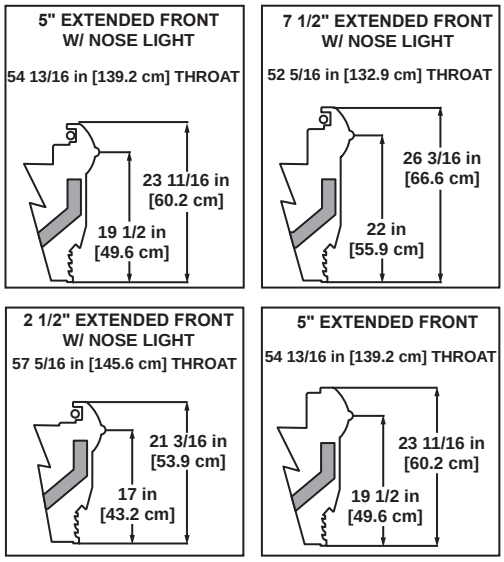
Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

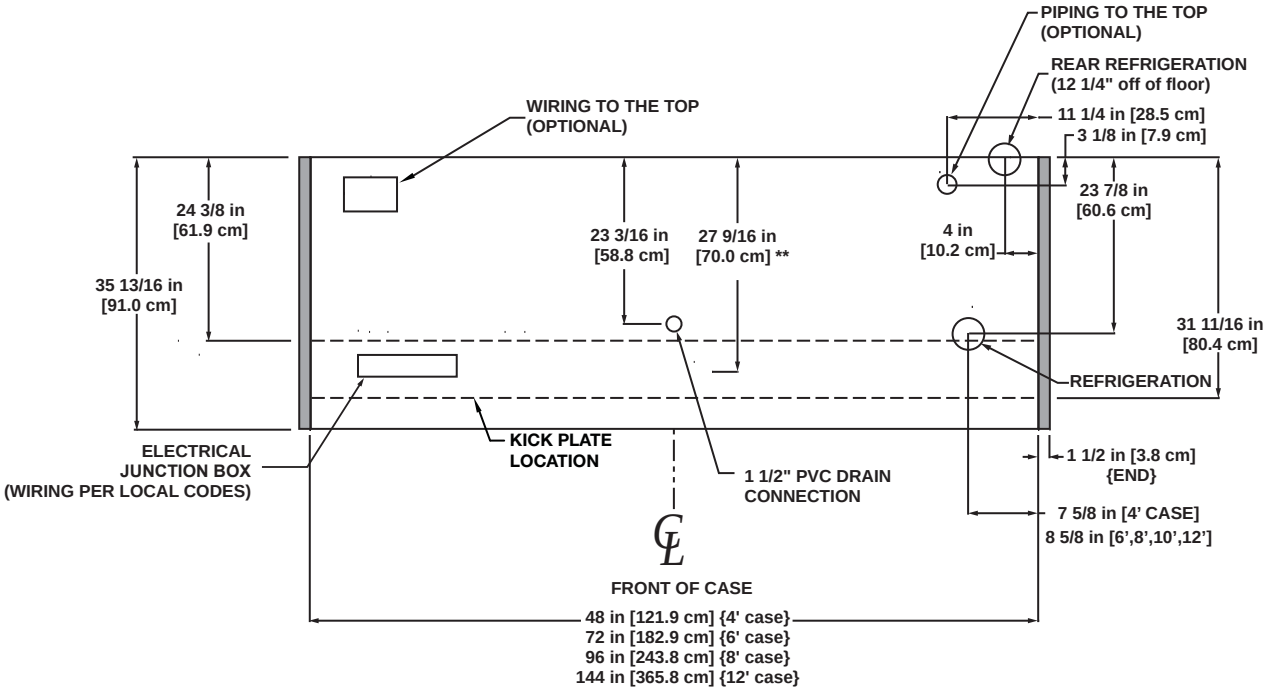
All measurements are taken per ASHRAE - 72 - 2005 specifications.

ON5DMH Narrow Multi-Deck Merchandiser

4', 6', 8' & 12' (Beverage / Dairy / Produce)







NOTES:

*** STUB-UP AREA**
**** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS**

- **FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARY WITH BASEFRAME HEIGHT**
- **ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT**
- **WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT**
- **A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL**
- **AVAILABLE SHELF SIZES: 10", 12", 14", 16" & 18" TOP SHELF MUST BE 16" OR SHORTER.**
- **RECOMMENDED CONFIGURATION IS 16" SHELF AND 3 OR 4 18" SHELVES BELOW TOP SHELF)**
- **DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE**

6DMLH-NRG

Multi-Deck Merchandiser with Synerg-E™

4', 6', 8' & 12' (Dairy / Deli)

Electrical Data

Case Length	Fans Per Case	High Efficiency Fans 120 Volts Amps	High Efficiency Fans 120 Volts Watts	Anti-Condensate Heaters 120 Volts Amps	Anti-Condensate Heaters 120 Volts Watts
4'	2	0.38	43	- - -[1]	- - -
6'	3	0.57	65	- - -	- - -
8'	4	0.76	87	- - -	- - -
12'	6	1.14	130	- - -	- - -

38 watt standard case

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row) 120 Volts Amps	Fluorescent Lighting (Per Light Row) 120 Volts Watts	Clearvoyant LED Lighting (Per Light Row) Standard Power (Cornice or Shelf) 120 Volts Amps	Clearvoyant LED Lighting (Per Light Row) Standard Power (Cornice or Shelf) 120 Volts Watts	Clearvoyant LED Lighting (Per Light Row) High Power (Cornice) 120 Volts Amps	Clearvoyant LED Lighting (Per Light Row) High Power (Cornice) 120 Volts Watts
4'	1	4'	0.23	28	0.10	11.9	0.22	26.2
6'	2	3'	0.37	44	0.14	16.6	0.30	35.8
8'	2	4'	0.47	56	0.20	23.8	0.44	52.4
12'	3	4'	0.70	84	0.30	35.7	0.66	78.6

2 rows of lamps per

Guidelines & Control Settings

[2]BTUH/ft Conventional	[2]BTUH/ft Parallel	Superheat Set Point @ Bulb (°F)	Evaporator[3] (°F)	Discharge[4] Air (°F)	Discharge[5] Air Velocity (FPM)
1698	1450	6 - 8	28	34	200

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost Fail-Safe (min)	Electric Defrost Termination Temp (°F)	Timed-Off Defrost Fail-Safe (min)	Timed-Off Defrost Termination Temp (°F)	Hot Gas Defrost Fail-Safe (min)	Hot Gas Defrost Termination Temp (°F)	Reverse Air Defrost Fail-Safe (min)	Reverse Air Defrost Termination Temp (°F)
6	6 - 8	- - -	- - -	45	47	- - -	- - -	- - -	- - -

1 NOTE: "- - -" indicates that feature is not an option on this case model.

2 BTUH/ft notes:

- Listed BTUH/ft indicate unlighted shelves. For T8 lighted shelves and 3rd row lighting, add 92 BTUH per 4' lighted shelf and 69 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Add 132 BTUH/ft when aftermarket merchandising accessories are utilized to determine the total BTUH load.

3 Listed evaporator temperature indicates unlighted shelves. For lighted shelves and/or aftermarket merchandising accessories, reduce the listed evaporator temperature by **2°F**.

4 Conventional Discharge Air Control – Recommended Settings: Cut-In Temp = Discharge Air + 2°F; Cut-Out Temp = Discharge Air - 2°F

5 Average discharge air velocity at peak of defrost.

Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

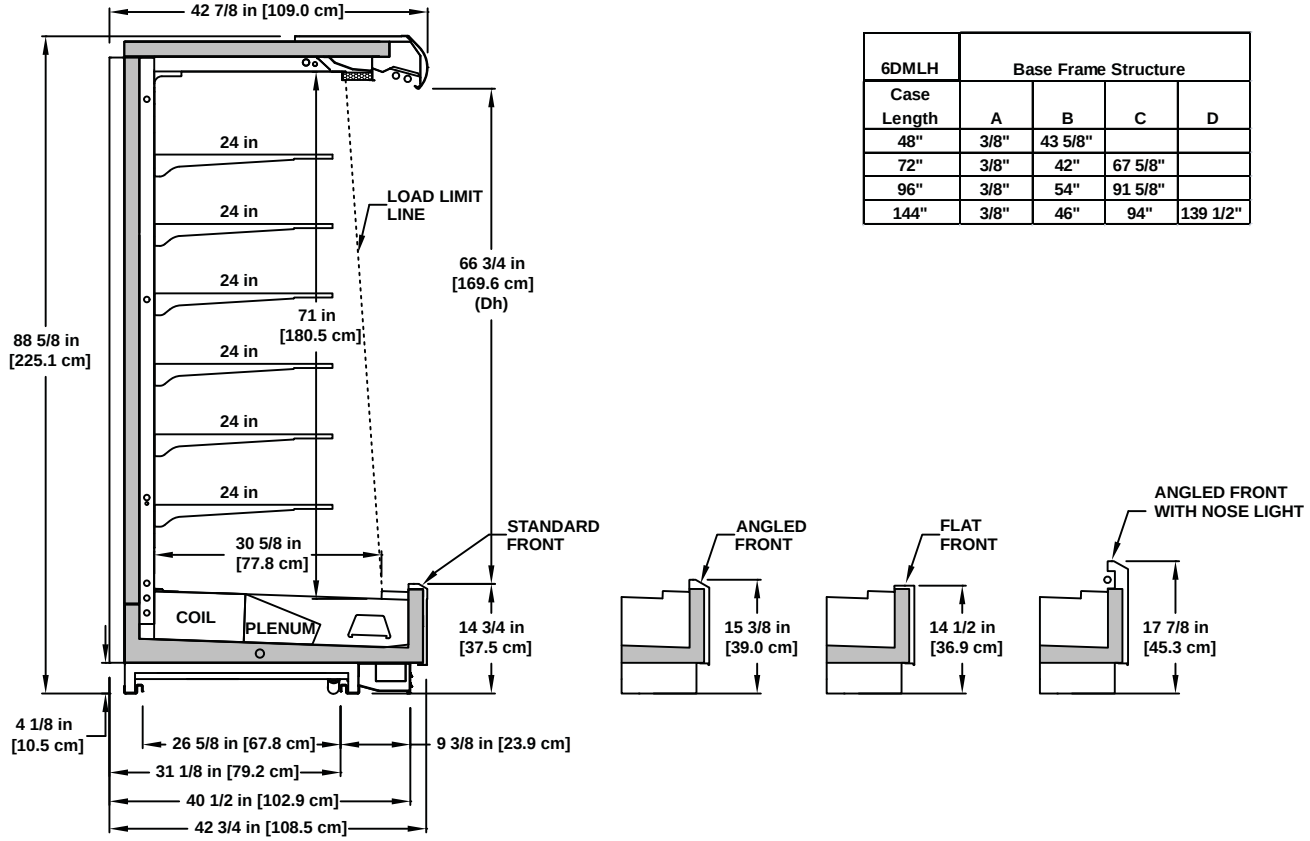
Hill PHOENIX EXCELLENCE A DOVER COMPANY

NSF COMPONENT cULus

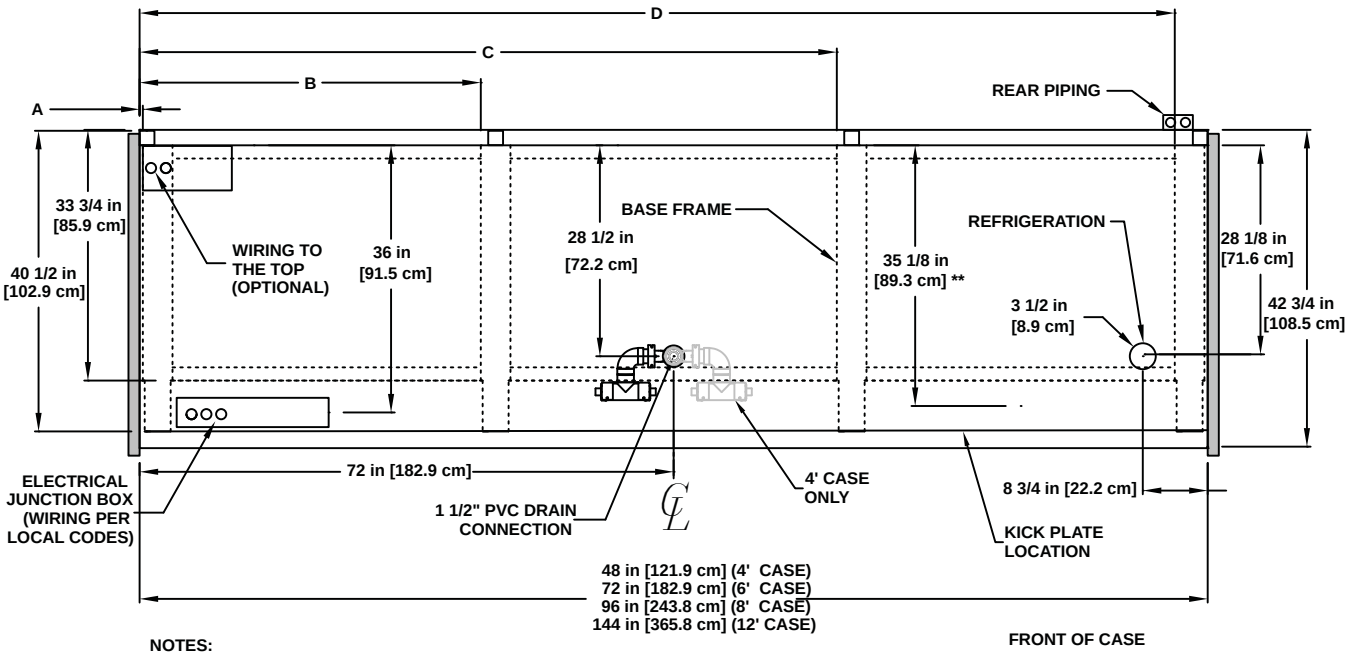
All measurements are taken per ASHRAE - 72 - 2005 specifications.

6DMLH-NRG Multi-Deck Merchandiser with Synerg-E™

4', 6', 8' & 12' (Dairy / Deli)



6DMLH	Base Frame Structure			
Case Length	A	B	C	D
48"	3/8"	43 5/8"		
72"	3/8"	42"	67 5/8"	
96"	3/8"	54"	91 5/8"	
144"	3/8"	46"	94"	139 1/2"



NOTES:

* : STUB-UP AREA

** : RECOMMENDED STUP-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT

WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT

A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL

BACK PANELS ADD APPROXIMATELY 1" TO THE REAR OF THE CASE

SUCTION LINE 7/8",

LIQUID LINE WITH HOT GAS DEFROST 1/2"

AVAILABLE SHELF SIZES: 10", 12", 14", 16", 18", 20", 22" & 24"

DASHED LINES SIGNIFY AREA INSIDE THE BASE RAIL BEHIND KICK PLATE

ORZH High Reach-In Glass Door Merchandiser

2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)

Electrical Data

Doors	Fans Per Case	Standard Fans 120 Volts Amps	Standard Fans 120 Volts Watts	High Efficiency Fans 120 Volts Amps	High Efficiency Fans 120 Volts Watts	Defrost Heaters (1-Phase) 208 Volts Amps	Defrost Heaters (1-Phase) 208 Volts Watts	Defrost Heaters (1-Phase) 240 Volts Amps	Defrost Heaters (1-Phase) 240 Volts Watts	Defrost Heaters[1] (3-Phase) 208 Volts Amps[2]	Defrost Heaters[1] (3-Phase) 208 Volts Watts	Defrost Heaters[1] (3-Phase) 240 Volts Amps[2]	Defrost Heaters[1] (3-Phase) 240 Volts Watts
2-door	2	1.00	60	0.31	18	10.99	2286	12.66	3038	7.61	2286	8.76	3038
3-door	3	1.50	90	0.46	28	12.40	2580	14.27	3425	8.59	2580	9.88	3425
4-door	4	2.00	120	0.611	37	16.29	3388	18.89	4533	11.28	3388	13.08	4533
5-door	5	2.50	150	0.77	46	19.89	4138	22.93	5503	13.78	4138	15.88	5503
6-door	6	3.00	180	0.92	55	23.09	4803	26.65	6395	16.28	4803	18.46	6395

Lighting Data

Doors	Fluorescent Lighting Standard (60w) 120 Volts Amps	Fluorescent Lighting Standard (60w) 120 Volts Watts	LED Lighting Optimax Pro[3] 120 Volts Amps	LED Lighting Optimax Pro[3] 120 Volts Watts	LED Lighting Optimax Pro[3] BTUH Credit Per Door	LED Lighting GE IMMERSION 120 Volts Amps	LED Lighting GE IMMERSION 120 Volts Watts	LED Lighting GE IMMERSION BTUH Credit Per Door	LED Lighting Crossfire/Polaris[3] 120 Volts Amps	LED Lighting Crossfire/Polaris[3] 120 Volts Watts	LED Lighting Crossfire/Polaris[3] BTUH Credit Per Door
2-door	1.50	180	0.33	39	145	0.27	32	152	0.25	30	154
3-door	2.00	240	0.48	58	144	0.40	48	152	0.38	45	154
4-door	2.50	300	0.64	77	135	0.53	64	143	0.50	60	146
5-door	3.00	360	0.80	96	131	0.67	80	138	0.63	75	141
6-door	3.50	420	0.96	115	127	0.80	96	135	0.75	90	138

Anti-Condensate Heater Data

Doors	Anthony 101 120 Volts Amps	Anthony 101 120 Volts Watts	Anthony Eliminaator[4] 120 Volts Amps	Anthony Eliminaator[4] 120 Volts Watts	Anthony Eliminaator 2[4] 120 Volts Amps	Anthony Eliminaator 2[4] 120 Volts Watts	Gemtron Polar 120 Volts Amps	Gemtron Polar 120 Volts Watts	Gemtron Polar LE 120 Volts Amps	Gemtron Polar LE 120 Volts Watts	Gemtron Polar EF 120 Volts Amps	Gemtron Polar EF 120 Volts Watts
2-door	4.10	492	1.79	214	1.24	149	2.39	287	1.67	201	1.19	143
3-door	5.89	707	2.63	315	1.81	217	3.58	430	2.50	301	1.78	214
4-door	7.77	932	3.46	415	2.37	284	4.77	573	3.33	401	2.37	285
5-door	9.61	1154	4.35	522	2.98	358	6.00	720	4.20	505	3.00	360
6-door	11.23	1347	5.20	624	3.56	427	7.14	857	4.98	599	3.54	425

Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

All measurements are taken per ASHRAE - 72 - 2005 specifications.

ORZH High Reach-In Glass Door Merchandiser
2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)

Guidelines & Control Settings

Application	Door	[5]BTUH/door		Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Discharge[6] Air Velocity (FPM)
		Conventional	Parallel				
Frozen	Standard	1286	1249	-11	3 - 5	-3	405
	Eliminaator/Polar LE	1127	1095	-11	3 - 5	-3	405
Ice Cream	Standard	1347	1309	-17	3 - 5	-8	405
	Eliminaator/Polar LE	1166	1133	-17	3 - 5	-8	405

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
1	13 - 15	46	73[7]	- - -[8]	- - -	24	73[9]	- - -	- - -

1 3-phase load is unbalanced.

2 Figure given is maximum line amperage per phase.

3 Low-power lights. High-power option available.

4 Values provided are for doors with no heat on the glass.

5 Standard fans increase refrigeration load by 96 BTUH/fan.

6 Average discharge air velocity at peak of defrost.

7 The recommended location is in the center of the coil on the second pass. If using a discharge air temperature to terminate defrost, utilize a 55ºF termination temp.

8 NOTE: "- - -" indicates that feature is not an option on this case model.

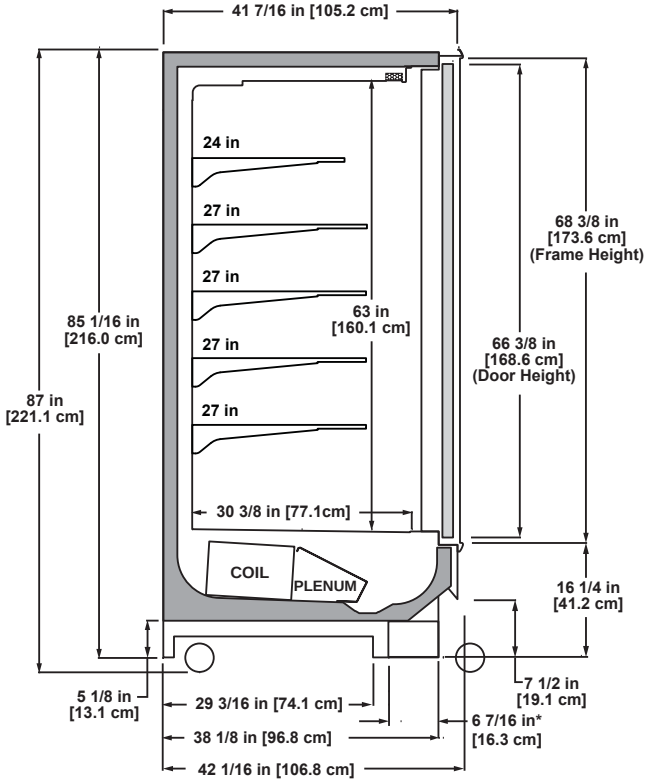
9 The recommended location is on the dump line. If using a discharge air temperature to terminate defrost, utilize a 55ºF termination temp.

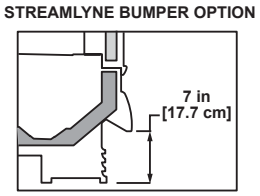
Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

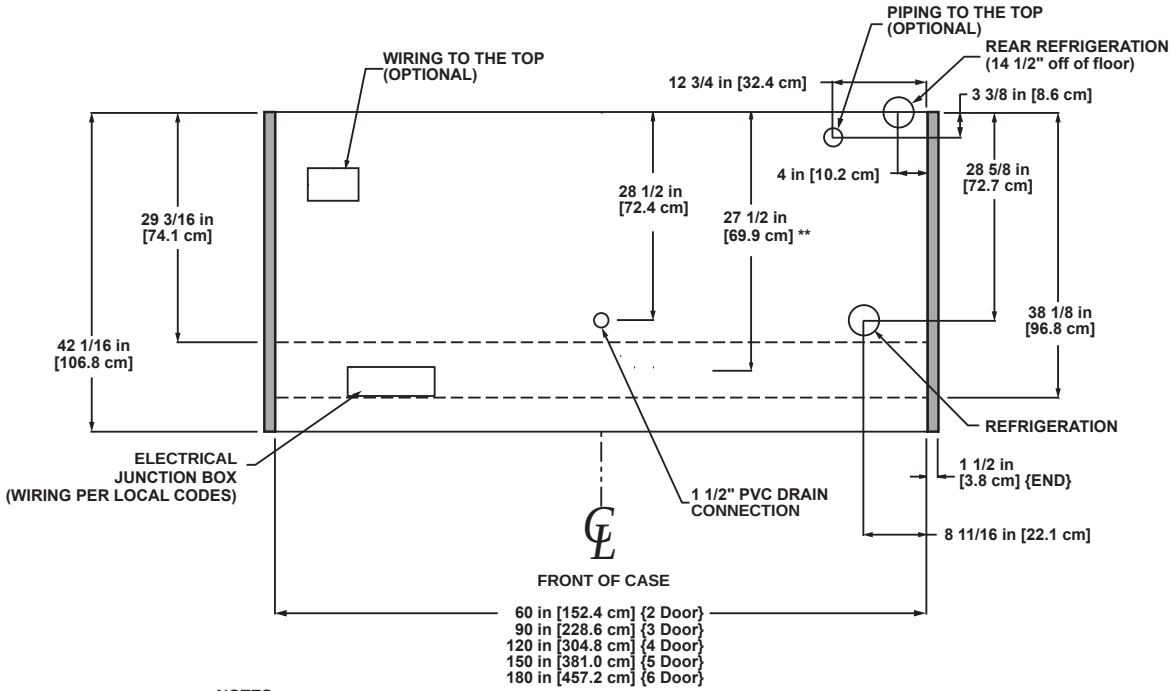
All measurements are taken per ASHRAE - 72 - 2005 specifications.

ORZH High Reach-In Glass Door Merchandiser

2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)







NOTES:

* STUB-UP AREA
** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

- ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT
- WIRING-TO-THE-TOP- ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT
- A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL
- SUCTION LINE (2DR & 3DR) 5/8", SUCTION LINE (4DR, 5DR & 6DR) 7/8"
- LIQUID LINE (ALL LENGTHS) - 3/8", LIQUID LINE w/ HOT GAS DEFROST (ALL LENGTHS) - 1/2"
- AVAILABLE SHELF SIZES: WIRE SHELVES 16", 18", 20", 22" & 23 1/2"; SOLID SHELVES 18", 20", 22", 24" & 27"
- TOP SHELF MUST BE 24" OR SHORTER WHEN USING 27" SHELVES
- RECOMMENDED CONFIGURATION IS 1 - 24" SHELF AND 4 - 27" SHELVES BELOW TOP SHELF
- DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE

O5DRH High Rear Load Multi-Deck Merchandiser

8' & 12' (Beverage / Dairy)

Electrical Data

Case Length	Fans Per Case	Standard Fans		High-Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
8'	4	3.20	2113	1.44	142	- - -[1]	- - -	3.85	800	4.44	1065
12'	6	4.80	320	2.16	213	- - -	- - -	5.78	1200	6.67	1600

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row)		Clearvoyant LED Lighting (Per Light Row)			
					Standard Power (Cornice or Shelf)		High Power (Cornice)	
			120 Volts		120 Volts		120 Volts	
			Amps	Watts	Amps	Watts	Amps	Watts
8'	2	4'	0.47	56	0.20	23.8	0.44	52.4
12'	3	4'	0.70	84	0.30	35.7	0.66	78.6

2 rows of lamps per case.

Guidelines & Control Settings

Model	Front Sill Heights	[2]BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge[3] Air Velocity (FPM)
		Conventional	Parallel				
Dairy	Std. Dairy	1576	1423	6 - 8	22	32	275
	2.5" Ext.	1549	1398	6 - 8	22	32	275
	5" Ext.	1521	1373	6 - 8	22	32	275
	7.5" Ext.	1489	1344	6 - 8	22	32	275
Beverage	2.5" Ext.	1485	1341	6 - 8	26	35	275
	5" Ext.	1448	1307	6 - 8	26	35	275

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
4	6 - 8	32	47	45	47	26	45	42	45

1 NOTE: "- - -" indicates that feature is not an option on this case model.

2 BTUH/ft notes:

- Listed BTUH/ft indicate unlighted shelves. For T8 lighted shelves and 3rd row lighting, add 80 BTUH per 4' lighted shelf and 60 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Standard fans increase refrigeration load by 96 BTUH/fan.

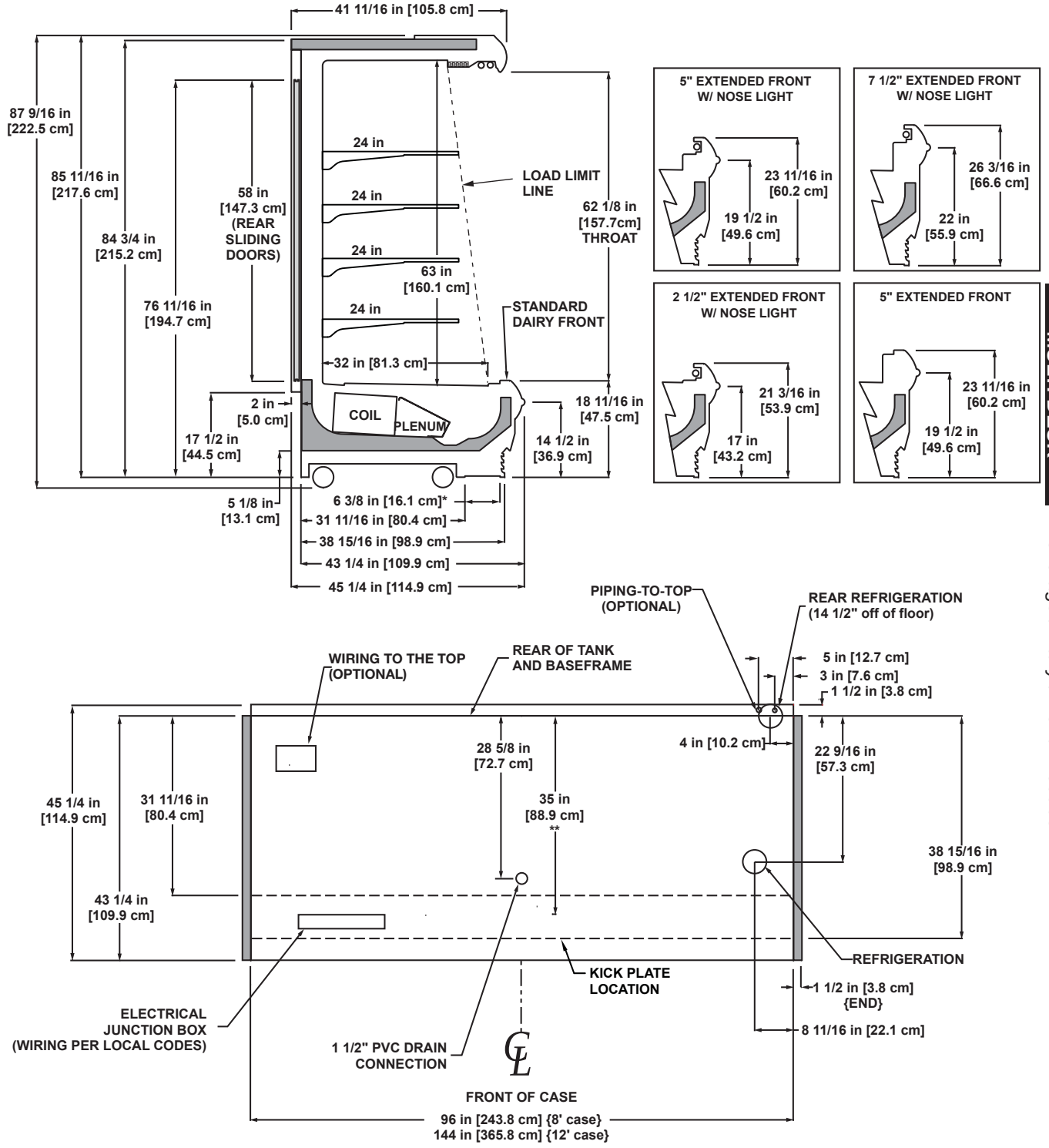
3 Average discharge air velocity at peak of defrost.

Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

All measurements are taken per ASHRAE - 72 - 2005 specifications.

O5DRH High Rear Load Multi-Deck Merchandiser

8' & 12' (Beverage / Dairy / Deli / Produce)



NOTES:

* STUB-UP AREA
** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

- FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARY WITH BASEFRAME HEIGHT
- ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT
- WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT
- COOLER OPENING SHOULD BE 82" X CASE LENGTH
- AVAILABLE SHELF SIZES: 10", 12", 14", 16", 18", 20", 22" & 24"
- DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE

ONIZ Narrow Single-Deck Island Merchandiser

6', 8', 10' & 12' (Frozen Food / Ice Cream)

Electrical Data

Case[1] Length	Fans Per Case	Standard Fans		High Efficiency Fans		Drain Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
F-6'	2	0.68	34	0.30	22	0.13	15	5.77	1200	6.66	1598
F-8'	3	1.02	51	0.45	33	0.13	15	7.69	1600	8.88	2130
F-10'	3	1.02	51	0.45	33	0.13	15	9.62	200	11.10	2663
F-12'	4	1.36	68	0.60	44	0.13	15	11.54	2400	13.31	3195
C-6'	2	0.68	34	0.30	22	0.13	15	11.54	2400	13.32	3196
C-8'	3	1.02	51	0.45	33	0.13	15	15.38	3200	17.75	4260
C-10'	3	1.02	51	0.45	33	0.13	15	16.13	3355	18.65	4476
C-12'	4	1.36	68	0.60	44	0.13	15	23.08	4800	26.63	6390

Anti-Condensate Heater Data

Case Length	Solid Front		Solid Front[2] Glass Cap		Solid Wrap[3] End		Glass Front		Glass Front[2] Glass Cap		Glass Wrap[3] End	
	120 Volts		120 Volts		120 Volts		120 Volts		120 Volts		120 Volts	
	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
6'	0.91	109	0.42	50	0.26	31	1.69	203	0.37	44	0.57	68
8'	0.86	103	0.90	108	0.26	31	1.66	199	0.42	50	0.57	68
10'	1.00	120	1.20	144	0.26	31	1.95	234	0.62	74	0.57	68
12'	1.27	152	1.42	170	0.26	31	2.35	282	0.74	89	0.57	68

Guidelines & Control Settings

Application	[4]BTUH/ft		Superheat Set Point @ Bulb (ºF)	Evaporator (ºF)	Discharge Air (ºF)	Discharge[5] Air Velocity (FPM)
	Conventional	Parallel				
Frozen Food	426	408	3-5	-12	-2	350
Ice Cream	488	468	3-5	-22	-13	350
Medium Temp.	325	310	6-8	17	27	350

Defrost Controls

Application	Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
			Fail-Safe (min)	Termination Temp (ºF)	Fail-Safe (min)	Termination Temp (ºF)	Fail-Safe (min)	Termination Temp (ºF)	Fail-Safe (min)	Termination Temp (ºF)
Frozen Food / Ice Cream	2	13 - 15	35	47	- - -[6]	- - -	20	60	- - -	- - -
Medium Temp.	1	13 - 15	35	49	45	47	20	60	- - -	- - -

1 "F" = frozen food application; "C" = ice cream application.

2 Glass cap heater for stainless steel glass cap option only.

3 Data given for one glass wrap-around end.

4 Standard fans increase refrigeration load by 96 BTUH/fan.

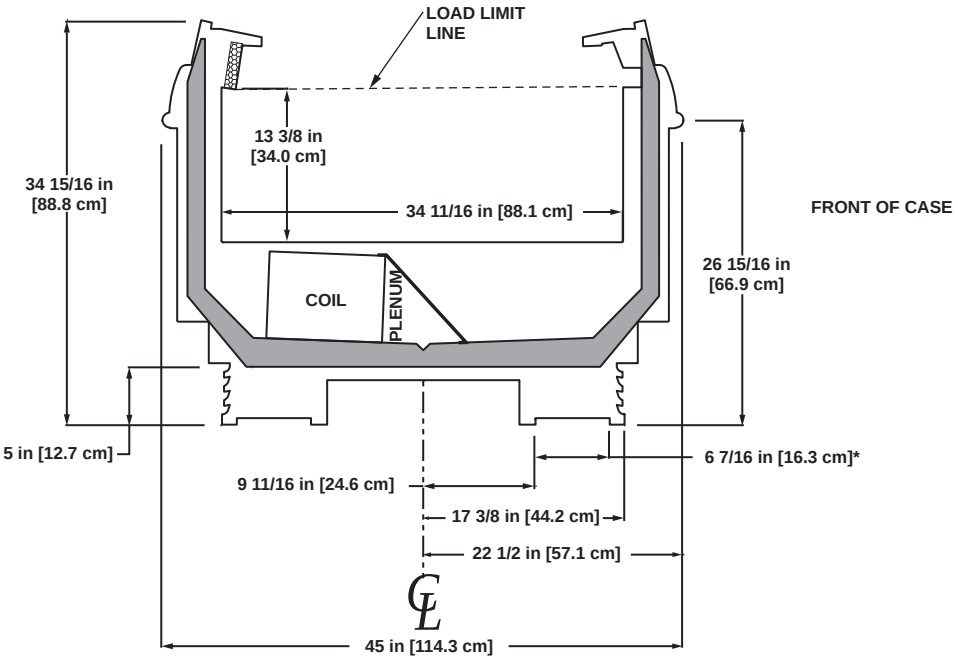
5 Average discharge air velocity at peak of defrost.

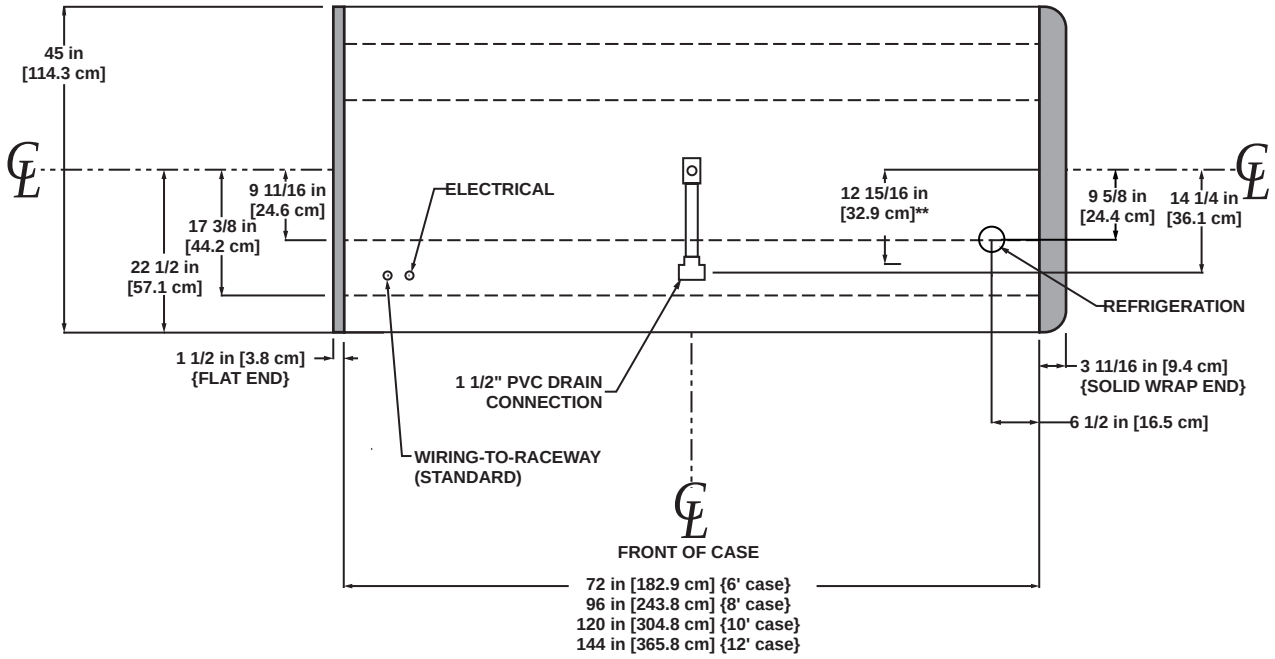
6 NOTE: "- - -" indicates that feature is not an option on this case model.

Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

All measurements are taken per ASHRAE - 72 - 2005 specifications.

STANDARD FRONT



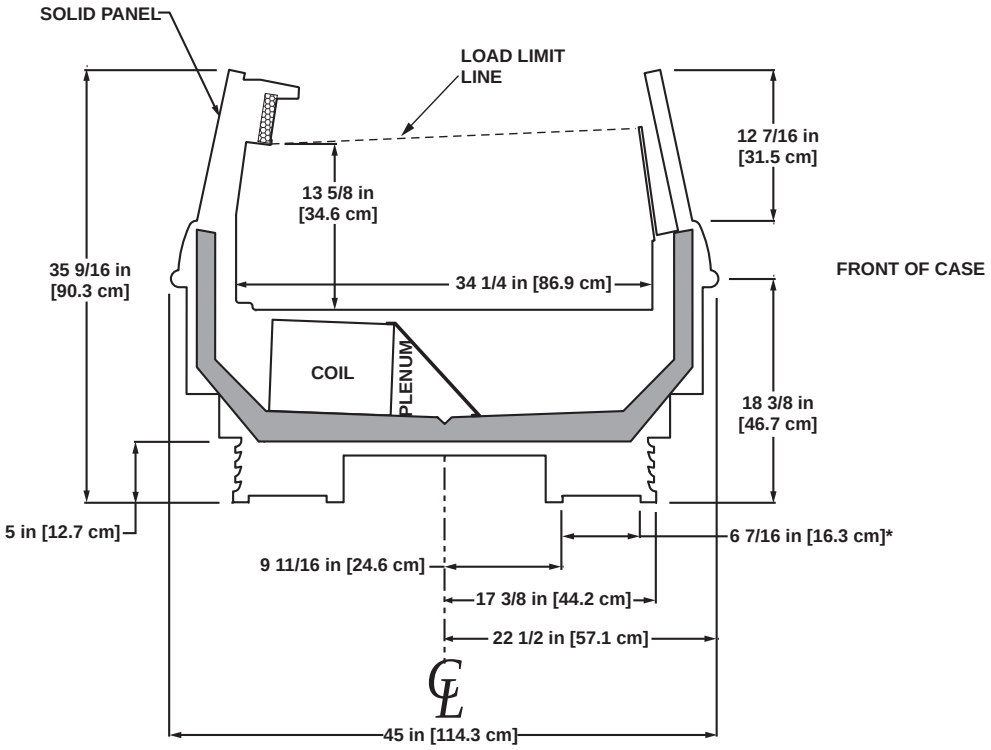


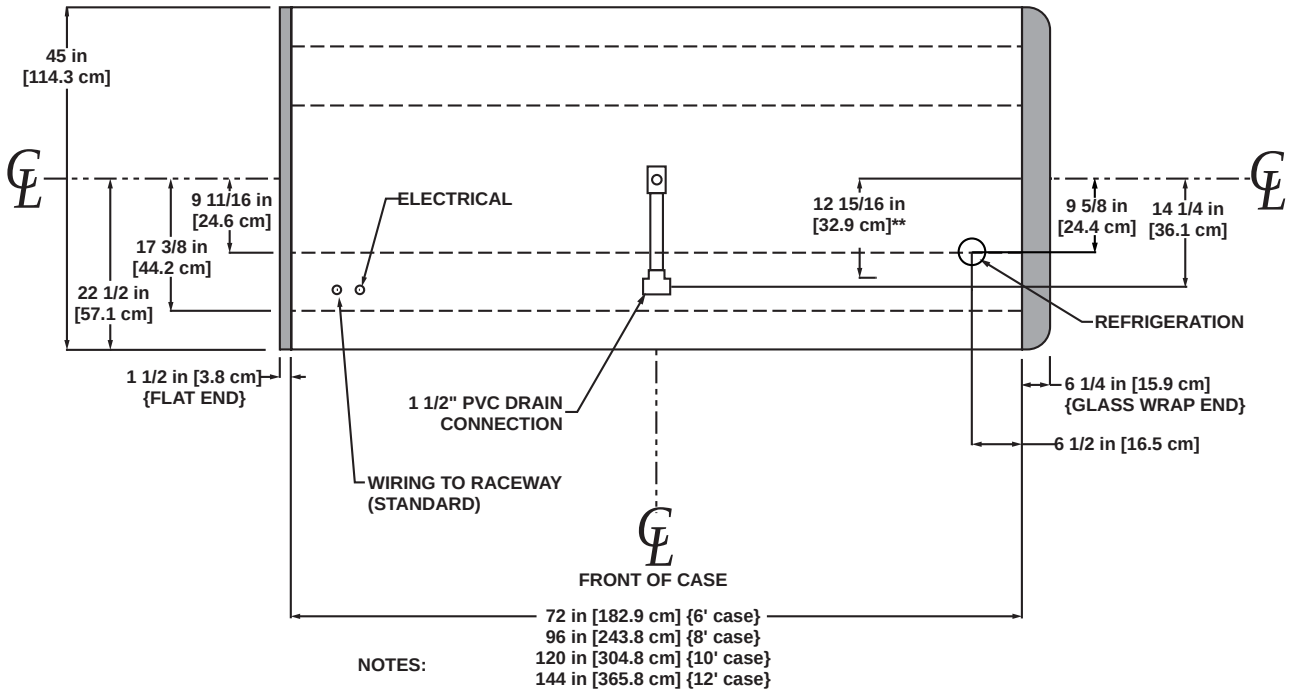
NOTES:

*** STUB-UP AREA**
**** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS**

- **SUCTION LINE - 7/8", LIQUID LINE - 3/8"**
- **DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE**

THERMOPANE GLASS FRONT





NOTES:

* STUB-UP AREA

** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

- SUCTION LINE - 7/8", LIQUID LINE - 3/8"
- DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE

ON5DM Narrow Multi-Deck Merchandiser

4', 6', 8' & 12' (Dairy / Deli / Produce)

Electrical Data

Case Length	Fans Per Case	Standard Fans 120 Volts Amps	Standard Fans 120 Volts Watts	High-Efficiency Fans 120 Volts Amps	High-Efficiency Fans 120 Volts Watts	Anti-Condensate Heaters 120 Volts Amps	Anti-Condensate Heaters 120 Volts Watts	Defrost Heaters 208 Volts Amps	Defrost Heaters 208 Volts Watts	Defrost Heaters 240 Volts Amps	Defrost Heaters 240 Volts Watts
4'	2	1.00	60	0.47	28	- - -[1]	- - -	1.92	400	2.22	532
6'	3	1.50	90	0.70	42	- - -	- - -	2.88	600	3.33	798
8'	4	2.00	120	0.93	56	- - -	- - -	3.85	800	4.44	1065
12'	5	2.50	150	1.17	70	- - -	- - -	5.77	1200	6.67	1600

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row) 120 Volts Amps	Fluorescent Lighting (Per Light Row) 120 Volts Watts	Clearvoyant LED Lighting (Per Light Row) Standard Power (Cornice or Shelf) 120 Volts Amps	Standard Power Watts	High Power (Cornice) 120 Volts Amps	High Power Watts
4'	1	4'	0.23	28	0.10	11.9	0.22	26.2
6'	2	3'	0.37	44	0.14	16.6	0.30	35.8
8'	2	4'	0.47	56	0.20	23.8	0.44	52.4
12'	3	4'	0.70	84	0.30	35.7	0.66	78.6

2 rows of lights per

Guidelines & Control Settings

Application	Front Sill Heights	[2]BTUH/ft Conventional	[2]BTUH/ft Parallel	Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge[3] Air Velocity (FPM)
Dairy Deli Cut Produce	Std. Dairy	1856	1691	6 - 8	22	32	215
	2.5" Ext.	1807	1646	6 - 8	22	31	215
	5" Ext.	1777	1619	6 - 8	22	31	215
	7.5" Ext.	1713	1561	6 - 8	22	31	215
Beverage Bulk Produce	Std. Dairy	1701	1550	6 - 8	29	37	215
	2.5" Ext.	1655	1508	6 - 8	29	36	215
	5" Ext.	1598	1456	6 - 8	29	36	215
	7.5" Ext.	1570	1430	6 - 8	29	36	215

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost Fail-Safe (min)	Electric Defrost Termination Temp (°F)	Timed-Off Defrost Fail-Safe (min)	Timed-Off Defrost Termination Temp (°F)	Hot Gas Defrost Fail-Safe (min)	Hot Gas Defrost Termination Temp (°F)	Reverse Air Defrost Fail-Safe (min)	Reverse Air Defrost Termination Temp (°F)
4	6 - 8	32	47	42	47	26	45	42	45

1 NOTE: "- - -" indicates that feature is not an option on this case model.

2 BTUH/ft notes:

- Listed BTUH/ft indicate unlighted shelves. For T8 lighted shelves and 3rd row lighting, add 80 BTUH per 4' lighted shelf and 60 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Standard fans increase refrigeration load by 96 BTUH/fan.

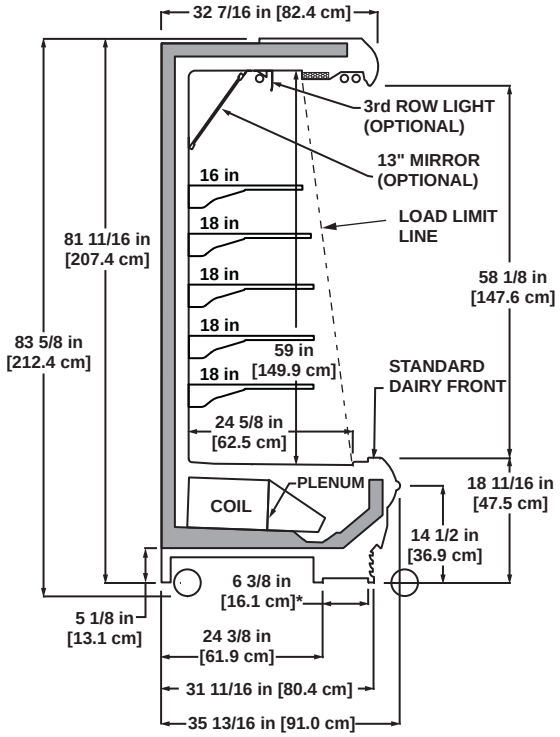
3 Average discharge air velocity at peak of defrost.

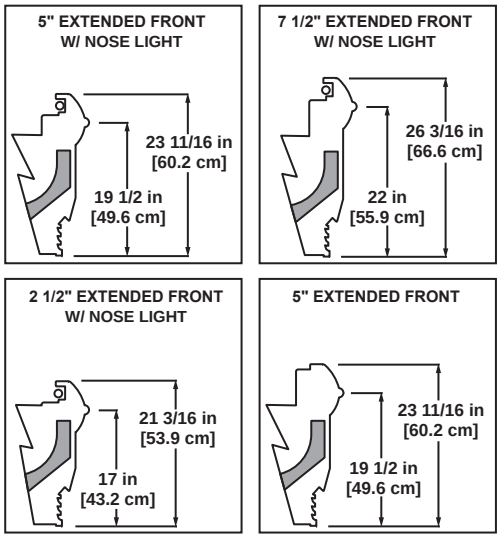
Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

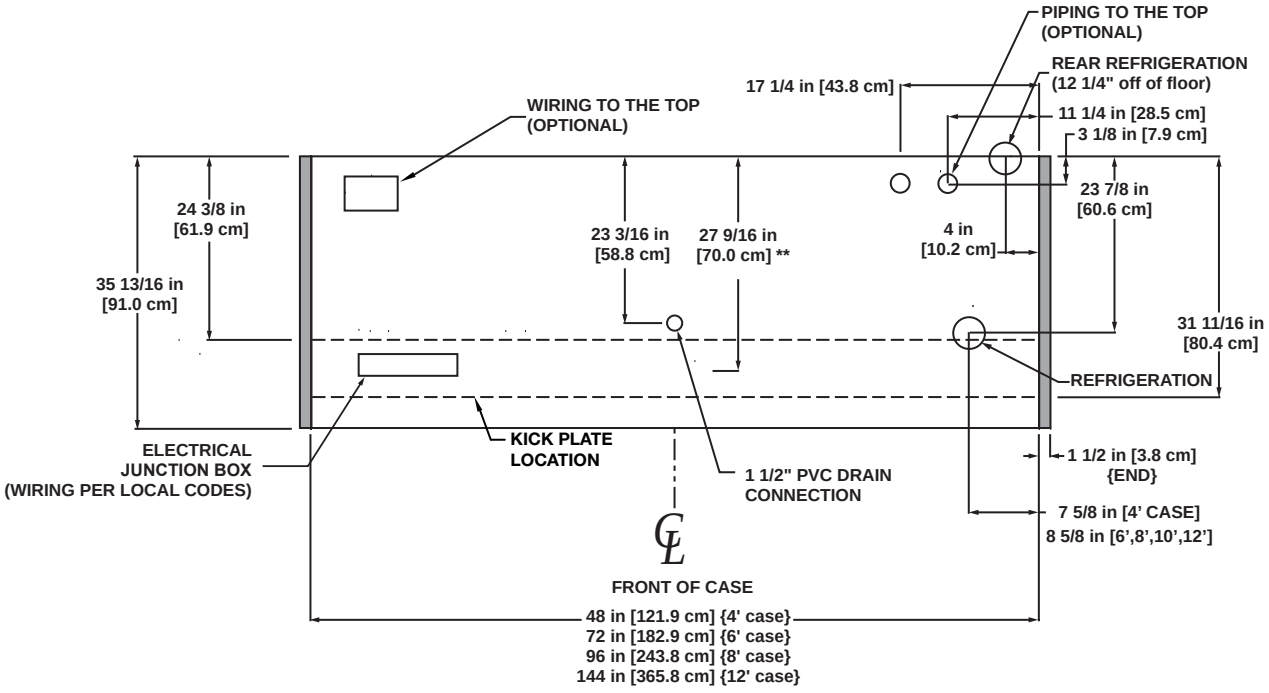
All measurements are taken per ASHRAE - 72 - 2005 specifications.

ON5DM Narrow Multi-Deck Merchandiser

4', 6', 8' & 12' (Dairy / Deli / Produce)







NOTES:

*** STUB-UP AREA**
**** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS**

- **FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARY WITH BASEFRAME HEIGHT**
- **ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT**
- **WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT**
- **A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL**
- **AVAILABLE SHELF SIZES: 10", 12", 14", 16" & 18" TOP SHELF MUST BE 16" OR SHORTER.**
- **RECOMMENDED CONFIGURATION IS 16" SHELF AND 3 OR 4 18" SHELVES BELOW TOP SHELF)**
- **DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE**

ON3UM Narrow Multi-Deck Merchandiser

4', 6', 8' & 12' (Dairy / Deli / Meat / Produce)

Electrical Data

Case Length	Fans Per Case	Standard Fans		High Efficiency Fans		Anti-Condensate[1] Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
4'	2	1.00	60	0.15	9.2	0.14	17	1.92	400	2.22	532
6'	2	1.00	60	0.15	9.2	0.20	24	2.88	600	3.33	798
8'	3	1.50	90	0.23	13.8	0.25	30	3.85	800	4.44	1065
12'	4	2.00	120	0.31	18.4	0.38	46	5.77	1200	6.67	1600

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row)		Clearvoyant LED Lighting (Per Light Row) Standard Power (Cornice or Shelf)		High Power (Cornice)	
			120 Volts		120 Volts		120 Volts	
			Amps	Watts	Amps	Watts	Amps	Watts
4'	1	4'	0.23	28	0.10	11.9	0.22	26.2
6'	2	3'	0.37	44	0.14	16.6	0.30	35.8
8'	2	4'	0.47	56	0.20	23.8	0.44	52.4
12'	3	4'	0.70	84	0.30	35.7	0.66	78.6

2 rows of lamps per case.

Guidelines & Control Settings

[2]BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge[3] Air Velocity (FPM)
Conventional	Parallel				
811	752	6 - 8	22	28	230

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
3	6 - 8	40	47	45	45	26	45	45	45

1 Anti-condensate heater data for unlighted rear sill. For lighted rear sill, double the values.

2 BTUH/ft notes:

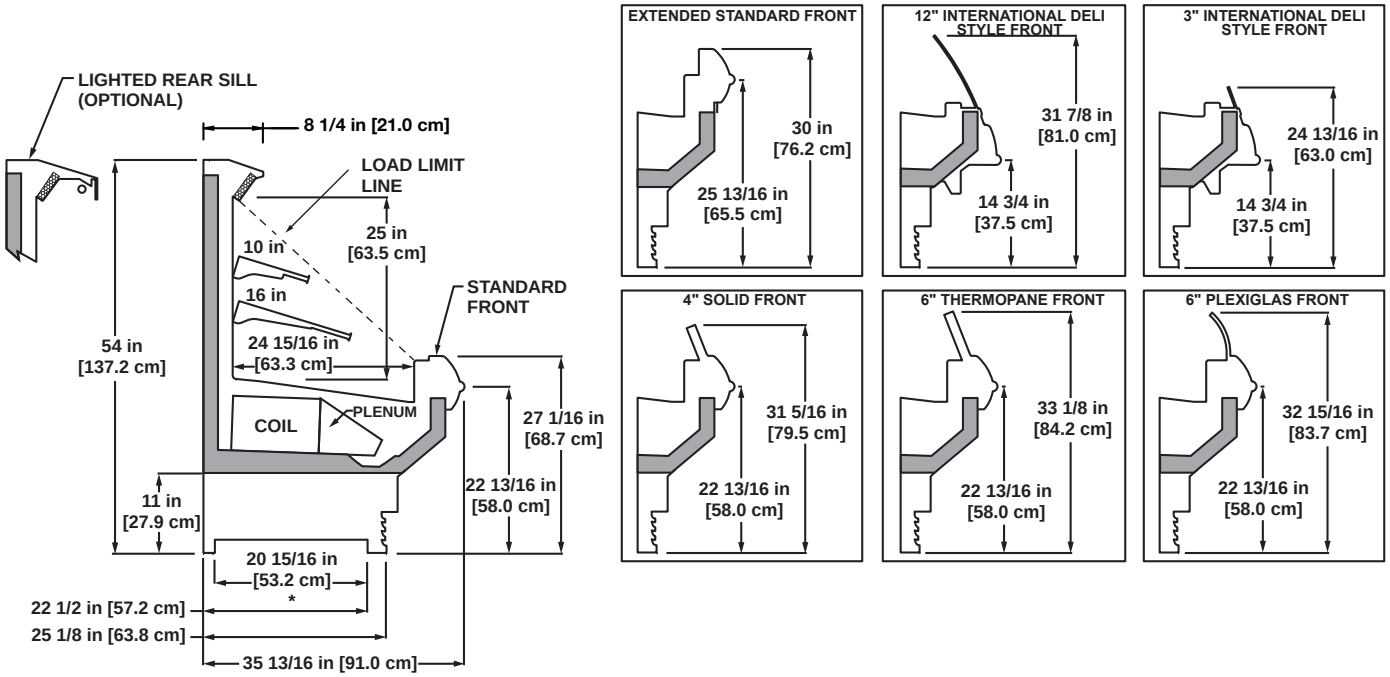
- Listed case BTUH/ft indicates unlighted shelves. For T8 lighted shelves and 3rd row lighting, add 80 BTUH per 4' lighted shelf and 60 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Standard fans increase refrigeration load by 96 BTUH/fan.
- Model ON3UM only available for meat application with a thermopane-glass front or a curved plexiglass front.

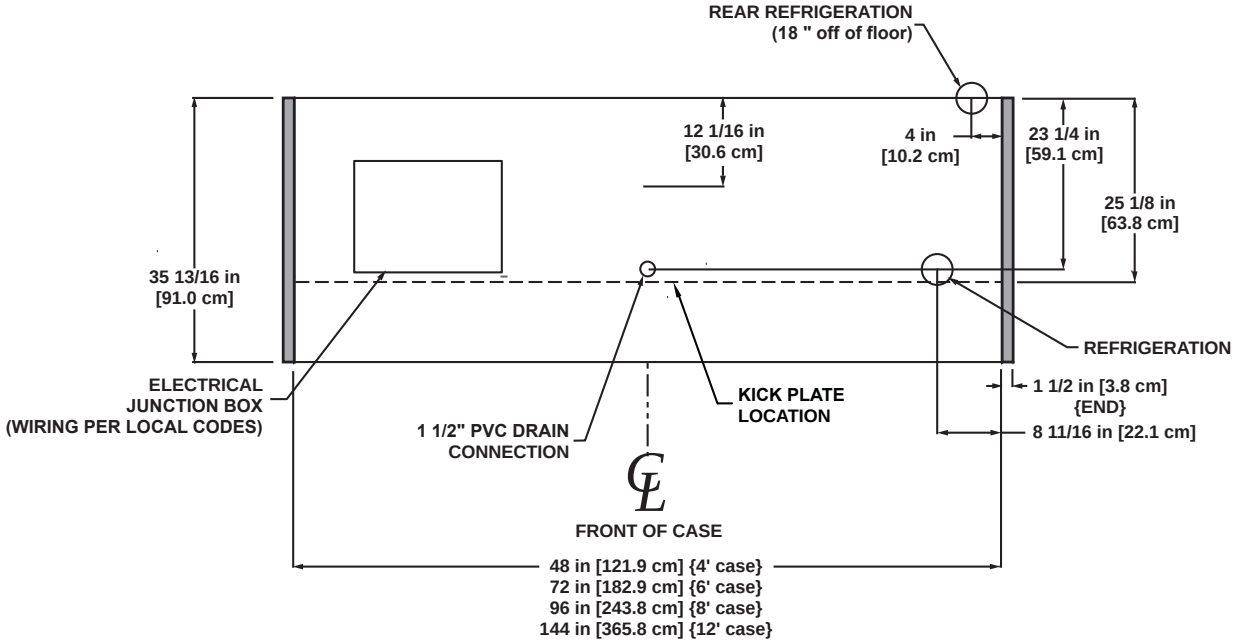
3 Average discharge air velocity at peak of defrost.

Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

All measurements are taken per ASHRAE - 72 - 2005 specifications.

(11" BASEFRAME)



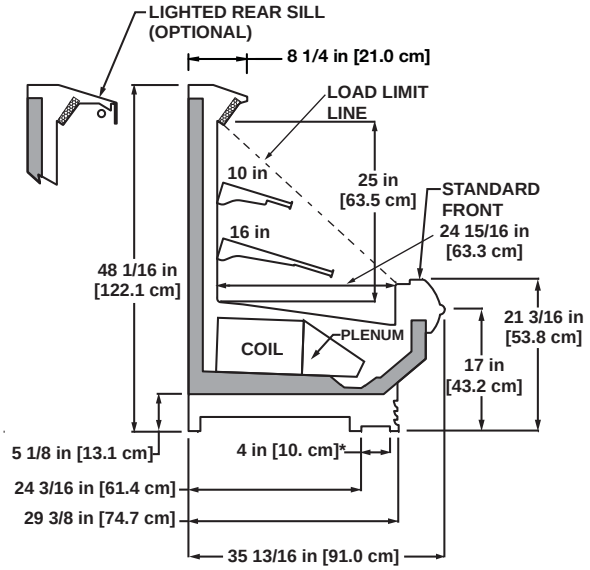


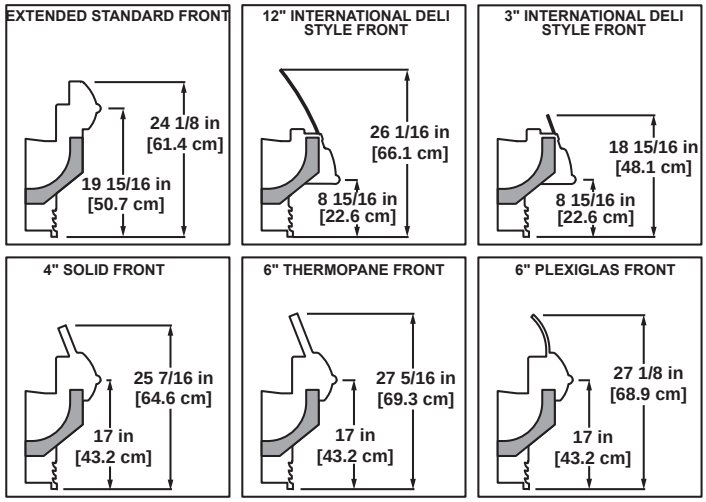
NOTES:

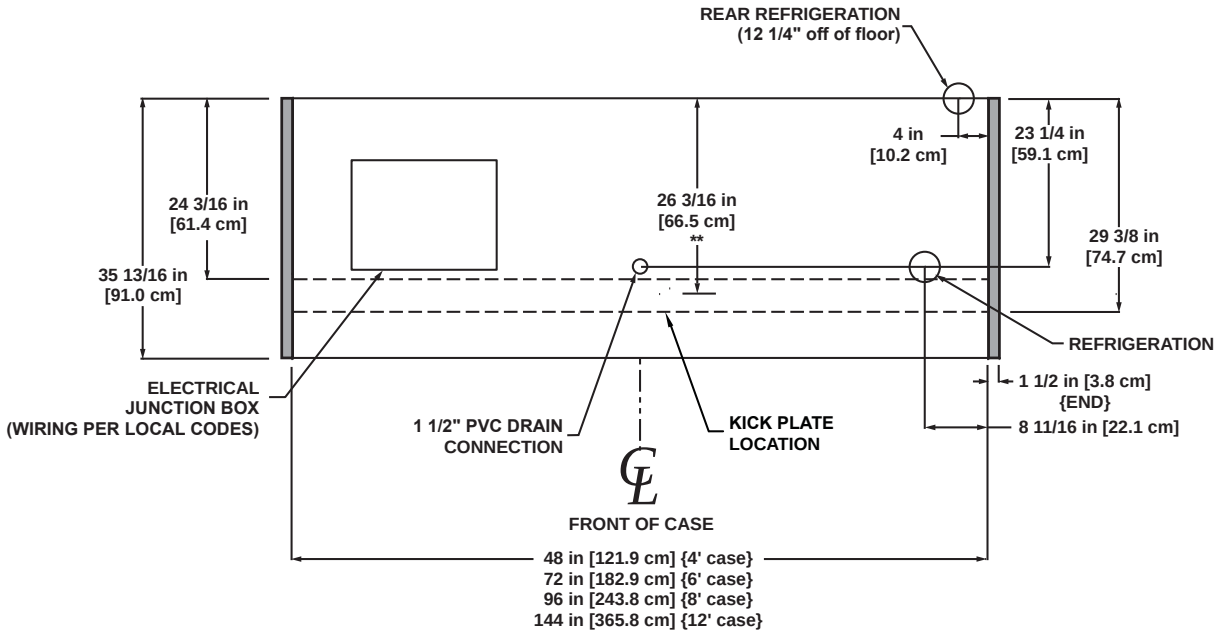
*** STUB-UP AREA**
**** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS**

- **FRONT AND REAR SILL HEIGHTS VARY WITH BASEFRAME HEIGHT**
- **ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT**
- **A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL**
- **AVAILABLE SHELF SIZES: 10", 12", 14" & 16"**
- **PRODUCT ON TOP SHELF SHOULD BE 3" BELOW DISCHARGE**
- **RECOMMENDED SHELF CONFIGURATION IN ROWS: 1-10" & 1-16"**
- **DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE**

(5" BASEFRAME)







NOTES:

* STUB-UP AREA
** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

- FRONT AND REAR SILL HEIGHTS VARY WITH BASEFRAME HEIGHT
- ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT
- A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL
- AVAILABLE SHELF SIZES: 10", 12", 14" & 16"
- PRODUCT ON TOP SHELF SHOULD BE 3" BELOW DISCHARGE
- RECOMMENDED SHELF CONFIGURATION IN ROWS: 1-10" & 1-16"
- DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE

OWIZ Wide Single-Deck Island Merchandiser

8' & 12' (Frozen Food / Ice Cream)

Electrical Data

Case[1] Length	Fans Per Case	Standard Fans		High Efficiency Fans		Drain Heaters		Defrost[2] Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
F-8'	4	1.36	68	0.60	44	0.26	30	7.69	1600	8.88	2130
F-12'	6	2.04	102	0.90	66	0.26	30	11.54	2400	13.31	3195
C-8'	4	1.36	68	0.60	44	0.26	30	11.54	2400	13.31	3195
C-12'	6	2.04	102	0.90	66	0.26	30	17.31	3600	19.98	4795

Anti-Condensate Heater Data

Case Length	Solid[3] Front		Glass Front		Glass[4] Cap		Glass Wrap[5] End		Super Structure	
	120 Volts		120 Volts		120 Volts		120 Volts		120 Volts	
	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
8'	2.62	314	3.02	362	0.50	60	0.68	82	0.50	60
12'	3.96	475	438	526	0.74	89	0.68	82	0.76	91

Lighting Data

Case Length	Shelf Depth	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row)		Clearvoyant LED Lighting (Per Light Row)			
						Standard Power (Cornice or Shelf)		High Power (Cornice)	
				120 Volts		120 Volts		120 Volts	
				Amps	Watts	Amps	Watts	Amps	Watts
8'	Super Structure/All Shelves	4	4ft	0.93	112	0.40	47.6	0.87	104.8
12'	Super Structure/All Shelves	6	4ft	1.4	168	0.595	71.4	1.31	157.2

Guidelines & Control Settings

Application	[6]BTUH/ft		Superheat Set Point @ Bulb (ºF)	Evaporator (ºF)	Discharge Air (ºF)	Discharge[7] Air Velocity (FPM)
	Conventional	Parallel				
Frozen Food	610	587	3-5	-12	-6	180
Ice Cream	719	692	3-5	-22	-16	180
Medium Temp.	456	450	6-8	17	27	180

Defrost Controls

Application	Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
			Fail-Safe (min)	Termination Temp (ºF)	Fail-Safe (min)	Termination Temp (ºF)	Fail-Safe (min)	Termination Temp (ºF)	Fail-Safe (min)	Termination Temp (ºF)
Frozen Food / Ice Cream	1	13-15	60	49	- - -[8]	- - -	20	60	- - -	- - -
Medium Temp.	1	13-15	35	49	- - -	- - -	20	60	- - -	- - -

1 "F" = frozen food; "C" = ice cream.

2 Defrost data for one side of case only.

3 Solid wraparound ends have no anti-condensate heaters.

4 Glass cap heater for stainless steel glass cap option only.

5 Data given is for one glass wraparound end.

6 Standard fans increase refrigeration load by 96 BTUH/fan.

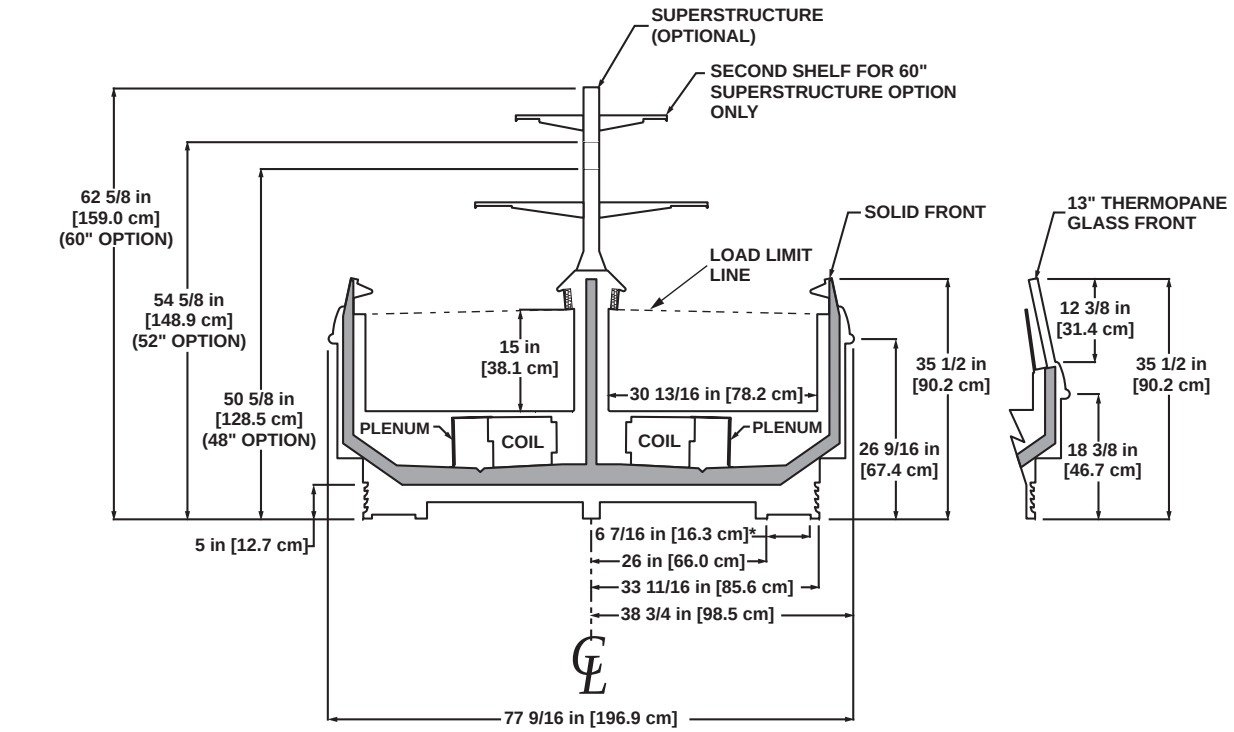
7 Average discharge air velocity at peak of defrost.

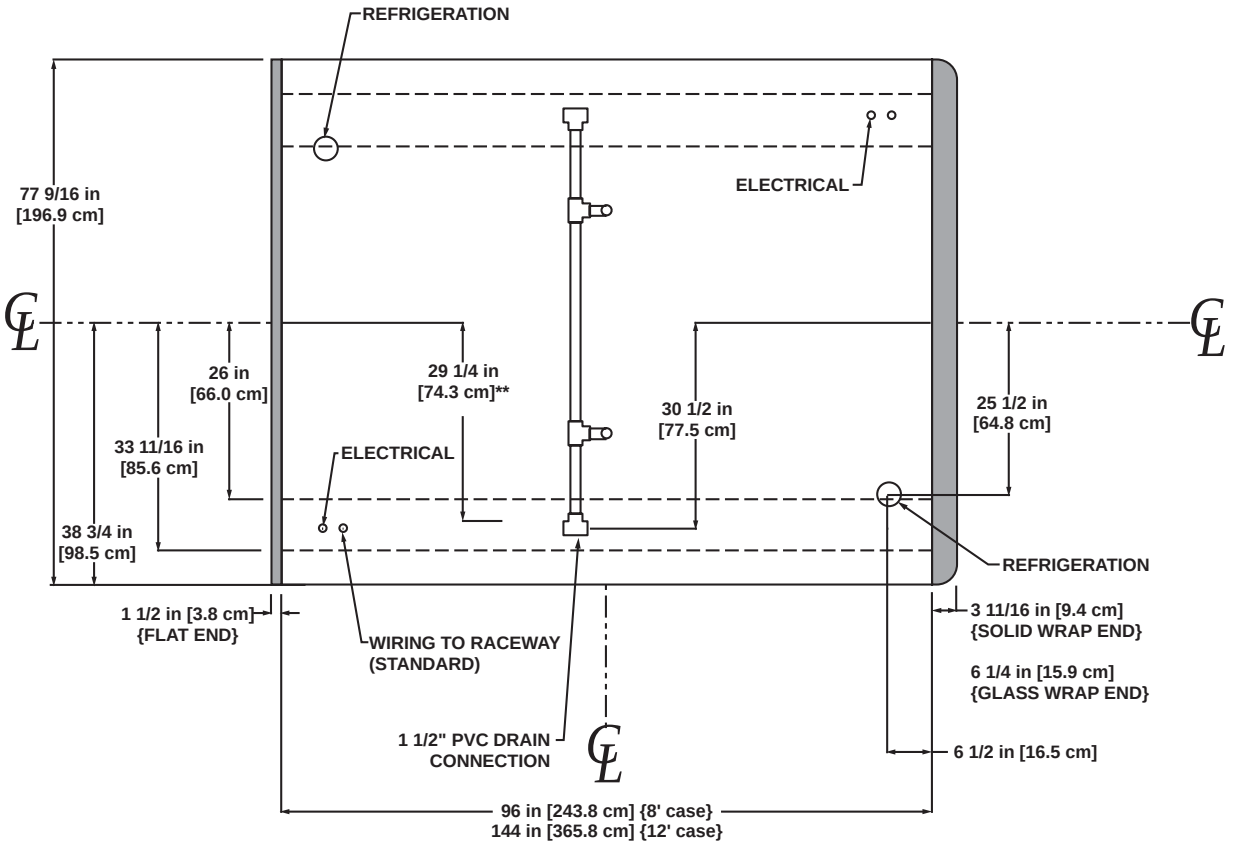
8 NOTE: "- - -" indicates that feature is not an option on this case model.

Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

All measurements are taken per ASHRAE - 72 - 2005 specifications.

OWIZ Wide Single-Deck Island Merchandiser
8' & 12' (Frozen Food / Ice Cream)





NOTES:

* STUB-UP AREA

** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

ONRZH High Narrow Reach-In Glass Door Merchandiser

1, 2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)

Electrical Data

Doors	Fans Per Case	Standard Fans		High Efficiency Fans		Defrost Heaters (1-Phase)				Defrost Heaters[1] (3-Phase)			
		120 Volts		120 Volts		208 Volts		240 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps[2]	Watts	Amps[2]	Watts
1-door	1	0.50	30	0.15	9	4.89	1020	5.67	1359	2.82	1020	3.27	1359
2-door	2	1.00	60	0.31	18	10.99	2286	12.66	3038	7.61	2286	8.76	3038
3-door	3	1.50	90	0.46	28	12.40	2580	14.27	3425	8.59	2580	9.88	3425
4-door	4	2.00	120	0.611	37	16.29	3388	18.89	4533	11.28	3388	13.08	4533
5-door	5	2.50	150	0.77	46	19.89	4138	22.93	5503	13.78	4138	15.88	5503
6-door	6	3.00	180	0.92	55	23.09	4803	26.65	6395	16.28	4803	18.46	6395

Lighting Data

Doors	Fluorescent Lighting		LED Lighting								
	Standard (60w)		Optimax Pro[3]			GE IMMERSION			Crossfire/Polaris[3]		
	120 Volts		120 Volts		BTUH Credit Per Door	120 Volts		BTUH Credit Per Door	120 Volts		BTUH Credit Per Door
	Amps	Watts	Amps	Watts		Amps	Watts		Amps	Watts	
1-door	1.00	120	0.17	20	206	0.13	16	214	0.13	15	216
2-door	1.50	180	0.33	39	145	0.27	32	152	0.25	30	154
3-door	2.00	240	0.48	58	144	0.40	48	152	0.38	45	154
4-door	2.50	300	0.64	77	135	0.53	64	143	0.50	60	146
5-door	3.00	360	0.80	96	131	0.67	80	138	0.63	75	141
6-door	3.50	420	0.96	115	127	0.80	96	135	0.75	90	138

Anti-Condensate Heater Data

Doors	Anthony						Gemtron					
	101		Eliminaator[5]		Eliminaator 2[5]		Polar		Polar LE		Polar EF	
	120 Volts		120 Volts		120 Volts		120 Volts		120 Volts		120 Volts	
	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
1-door	- - -[4]	- - -	- - -	- - -	- - -	- - -	- - -	- - -	1.55	186	- - -	- - -
2-door	4.10	492	1.79	214	1.24	149	2.39	287	1.67	201	1.19	143
3-door	5.89	707	2.63	315	1.81	217	3.58	430	2.50	301	1.78	214
4-door	7.77	932	3.46	415	2.37	284	4.77	573	3.33	401	2.37	285
5-door	9.61	1154	4.35	522	2.98	358	6.00	720	4.20	505	3.00	360
6-door	11.23	1347	5.20	624	3.56	427	7.14	857	4.98	599	3.54	425

Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

All measurements are taken per ASHRAE - 72 - 2005 specifications.

Guidelines & Control Settings

Application	Door	[6]BTUH/door		Evaporator (°F)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Discharge[7] Air Velocity (FPM)
		Conventional	Parallel				
Frozen	Standard	1286	1249	-11	3 - 5	-3	460
	Eliminaator/Polar LE (multi-door)	1127	1095	-11	3 - 5	-3	460
	Polar LE (single-door)	1527	1484	-8	3 - 5	2	300
Ice Cream	Standard	1347	1309	-17	3 - 5	-8	460
	Eliminaator/Polar LE (multi-door)	1166	1133	-17	3 - 5	-8	460
	Polar LE (single-door)	1601	1555	-17	3 - 5	-7	305

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
1	13 - 15	46	73[8]	- - -	- - -	24	73[9]	- - -	- - -

1 3-phase load is unbalanced.

2 Figure given is maximum line amperage per phase.

3 Low-power lights. High-power option available.

4 NOTE: "- - -" indicates that feature is not an option on this case model.

5 Values provided are for doors with no heat on the glass.

6 Standard fans increase refrigeration load by 96 BTUH/fan.

7 Average discharge air velocity at peak of defrost.

8 The recommended location is in the center of the coil on the second pass. If using a discharge air temperature to terminate defrost, utilize a 55ºF termination temp.

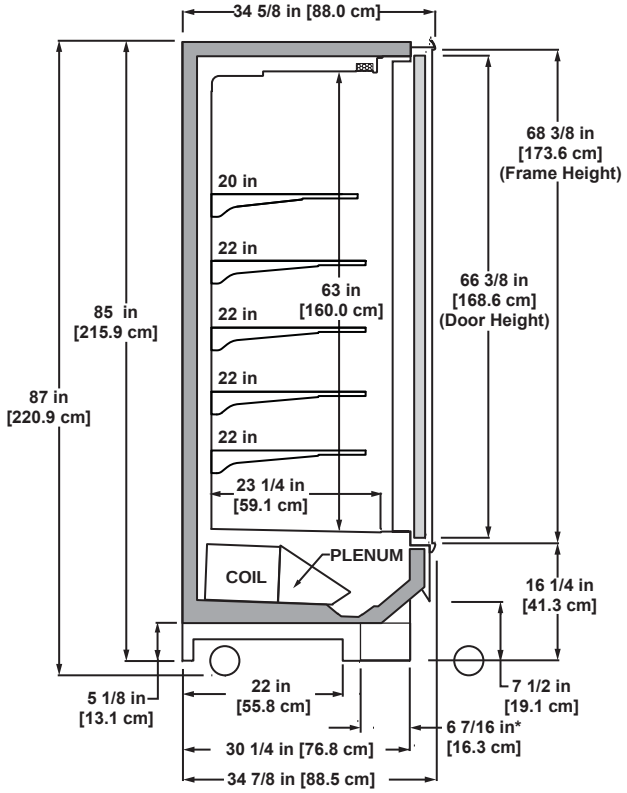
9 The recommended location is on the dump line. If using a discharge air temperature to terminate defrost, utilize a 55ºF termination temp.

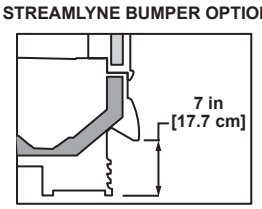
Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

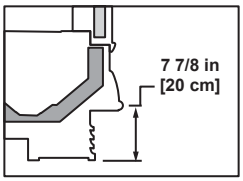
All measurements are taken per ASHRAE - 72 - 2005 specifications.

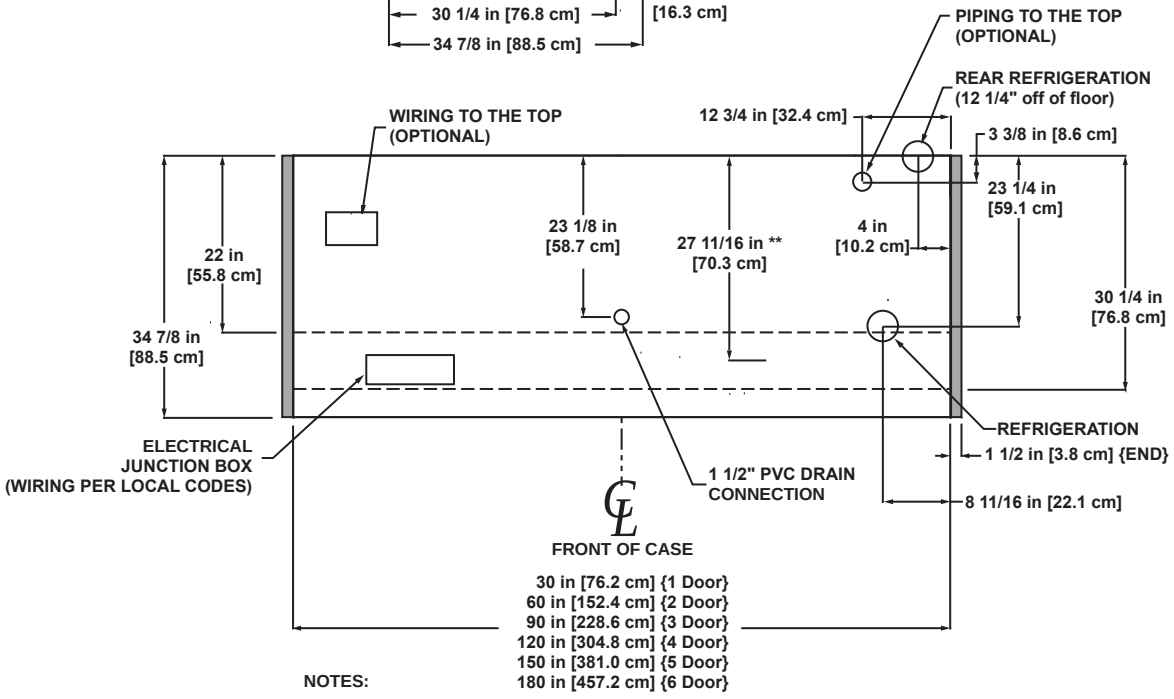
ONRZH High Narrow Reach-In Glass Door Merchandiser

1, 2, 3, 4, 5 & 6-door (Frozen Food / Ice Cream)









NOTES:

* STUB-UP AREA

** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

- ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT
- WIRING-TO-THE-TOP- ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT
- A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL
- SUCTION LINE (2DR & 3DR) 5/8", SUCTION LINE (4DR, 5DR & 6DR) 7/8"
- LIQUID LINE (ALL LENGTHS) - 3/8", LIQUID LINE w/ HOT GAS DEFROST (ALL LENGTHS) - 1/2"
- AVAILABLE SHELF SIZES: WIRE SHELVES 16", 18", 20" & 22"; SOLID SHELVES 18", 20" & 22"
- TOP SHELF MUST BE 20" OR SHORTER
- RECOMMENDED CONFIGURATION IS 20" SHELF AND 4 22" SHELVES BELOW TOP SHELF)
- DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE

OWIZ Wide Single-Deck Island Merchandiser

8' & 12' (Frozen Food / Ice Cream)

Electrical Data

Case[1] Length	Fans Per Case	Standard Fans		High Efficiency Fans		Drain Heaters		Defrost[2] Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
F-8'	4	1.36	68	0.60	44	0.26	30	7.69	1600	8.88	2130
F-12'	6	2.04	102	0.90	66	0.26	30	11.54	2400	13.31	3195
C-8'	4	1.36	68	0.60	44	0.26	30	11.54	2400	13.31	3195
C-12'	6	2.04	102	0.90	66	0.26	30	17.31	3600	19.98	4795

Anti-Condensate Heater Data

Case Length	Solid[3] Front		Glass Front		Glass[4] Cap		Glass Wrap[5] End		Super Structure	
	120 Volts		120 Volts		120 Volts		120 Volts		120 Volts	
	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
8'	2.62	314	3.02	362	0.50	60	0.68	82	0.50	60
12'	3.96	475	438	526	0.74	89	0.68	82	0.76	91

Lighting Data

Case Length	Shelf Depth	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row)		Clearvoyant LED Lighting (Per Light Row)			
						Standard Power (Cornice or Shelf)		High Power (Cornice)	
				120 Volts		120 Volts		120 Volts	
				Amps	Watts	Amps	Watts	Amps	Watts
8'	Super Structure/All Shelves	4	4ft	0.93	112	0.40	47.6	0.87	104.8
12'	Super Structure/All Shelves	6	4ft	1.4	168	0.595	71.4	1.31	157.2

Guidelines & Control Settings

Application	[6]BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge[7] Air Velocity (FPM)
	Conventional	Parallel				
Frozen Food	610	587	3-5	-12	-6	180
Ice Cream	719	692	3-5	-22	-16	180
Medium Temp.	456	450	6-8	17	27	180

Defrost Controls

Application	Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
			Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
Frozen Food / Ice Cream	1	13-15	60	49	- - -[8]	- - -	20	60	- - -	- - -
Medium Temp.	1	13-15	35	49	- - -	- - -	20	60	- - -	- - -

1 "F" = frozen food; "C" = ice cream.

2 Defrost data for one side of case only.

3 Solid wraparound ends have no anti-condensate heaters.

4 Glass cap heater for stainless steel glass cap option only.

5 Data given is for one glass wraparound end.

6 Standard fans increase refrigeration load by 96 BTUH/fan.

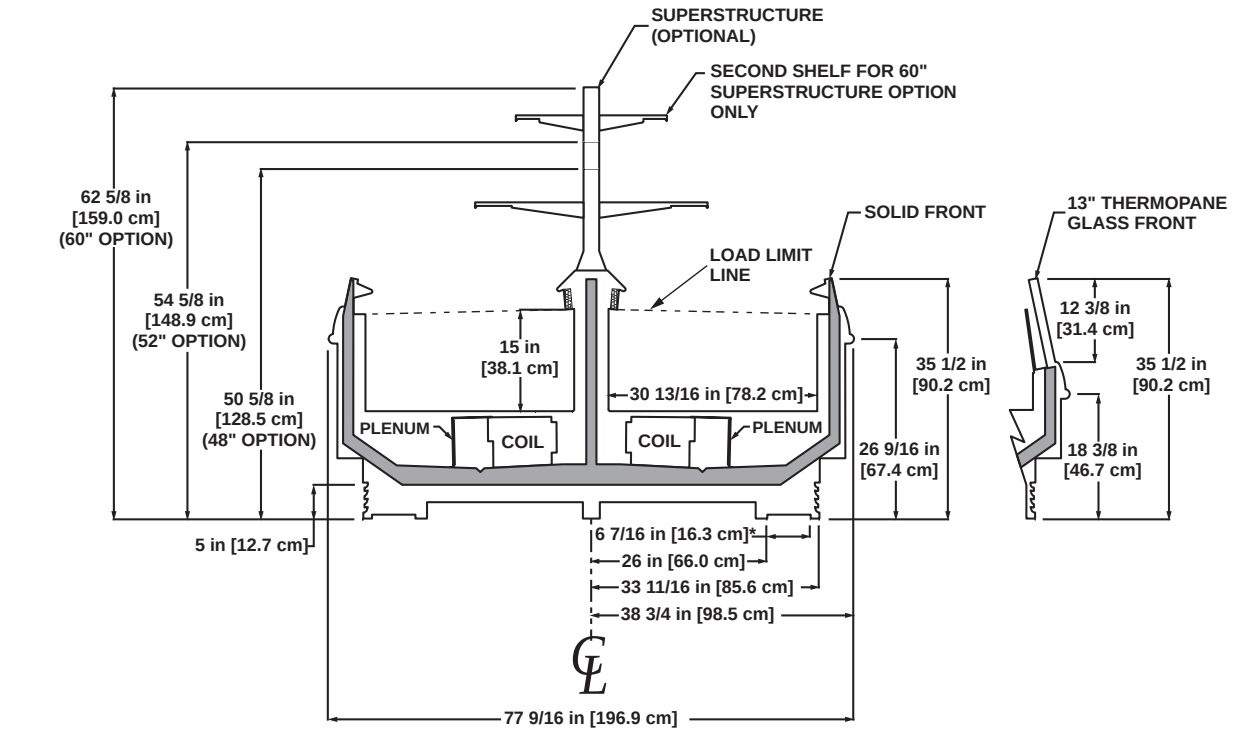
7 Average discharge air velocity at peak of defrost.

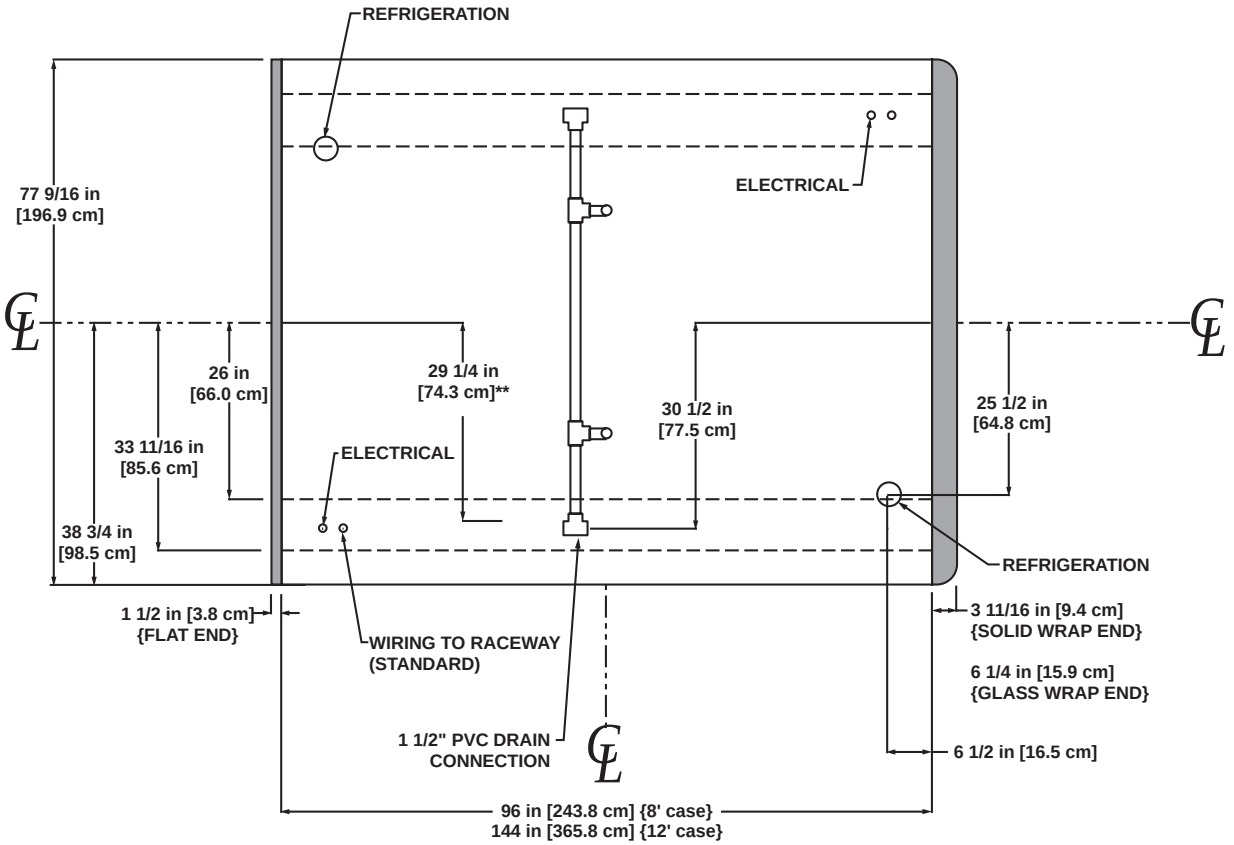
8 NOTE: "- - -" indicates that feature is not an option on this case model.

Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

All measurements are taken per ASHRAE - 72 - 2005 specifications.

OWIZ Wide Single-Deck Island Merchandiser
8' & 12' (Frozen Food / Ice Cream)





NOTES:

* STUB-UP AREA

** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS

ON5DM Narrow Multi-Deck Merchandiser

4', 6', 8' & 12' (Dairy / Deli / Produce)

Electrical Data

Case Length	Fans Per Case	Standard Fans 120 Volts Amps	Standard Fans 120 Volts Watts	High-Efficiency Fans 120 Volts Amps	High-Efficiency Fans 120 Volts Watts	Anti-Condensate Heaters 120 Volts Amps	Anti-Condensate Heaters 120 Volts Watts	Defrost Heaters 208 Volts Amps	Defrost Heaters 208 Volts Watts	Defrost Heaters 240 Volts Amps	Defrost Heaters 240 Volts Watts
4'	2	1.00	60	0.47	28	- - -[1]	- - -	1.92	400	2.22	532
6'	3	1.50	90	0.70	42	- - -	- - -	2.88	600	3.33	798
8'	4	2.00	120	0.93	56	- - -	- - -	3.85	800	4.44	1065
12'	5	2.50	150	1.17	70	- - -	- - -	5.77	1200	6.67	1600

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row) 120 Volts Amps	Fluorescent Lighting (Per Light Row) 120 Volts Watts	Clearvoyant LED Lighting (Per Light Row) Standard Power (Cornice or Shelf) 120 Volts Amps	Standard Power Watts	High Power (Cornice) 120 Volts Amps	High Power Watts
4'	1	4'	0.23	28	0.10	11.9	0.22	26.2
6'	2	3'	0.37	44	0.14	16.6	0.30	35.8
8'	2	4'	0.47	56	0.20	23.8	0.44	52.4
12'	3	4'	0.70	84	0.30	35.7	0.66	78.6

2 rows of lights per

Guidelines & Control Settings

Application	Front Sill Heights	[2]BTUH/ft Conventional	[2]BTUH/ft Parallel	Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge[3] Air Velocity (FPM)
Dairy Deli Cut Produce	Std. Dairy	1856	1691	6 - 8	22	32	215
	2.5" Ext.	1807	1646	6 - 8	22	31	215
	5" Ext.	1777	1619	6 - 8	22	31	215
	7.5" Ext.	1713	1561	6 - 8	22	31	215
Beverage Bulk Produce	Std. Dairy	1701	1550	6 - 8	29	37	215
	2.5" Ext.	1655	1508	6 - 8	29	36	215
	5" Ext.	1598	1456	6 - 8	29	36	215
	7.5" Ext.	1570	1430	6 - 8	29	36	215

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost Fail-Safe (min)	Electric Defrost Termination Temp (°F)	Timed-Off Defrost Fail-Safe (min)	Timed-Off Defrost Termination Temp (°F)	Hot Gas Defrost Fail-Safe (min)	Hot Gas Defrost Termination Temp (°F)	Reverse Air Defrost Fail-Safe (min)	Reverse Air Defrost Termination Temp (°F)
4	6 - 8	32	47	42	47	26	45	42	45

1 NOTE: "- - -" indicates that feature is not an option on this case model.

2 BTUH/ft notes:

- Listed BTUH/ft indicate unlighted shelves. For T8 lighted shelves and 3rd row lighting, add 80 BTUH per 4' lighted shelf and 60 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Standard fans increase refrigeration load by 96 BTUH/fan.

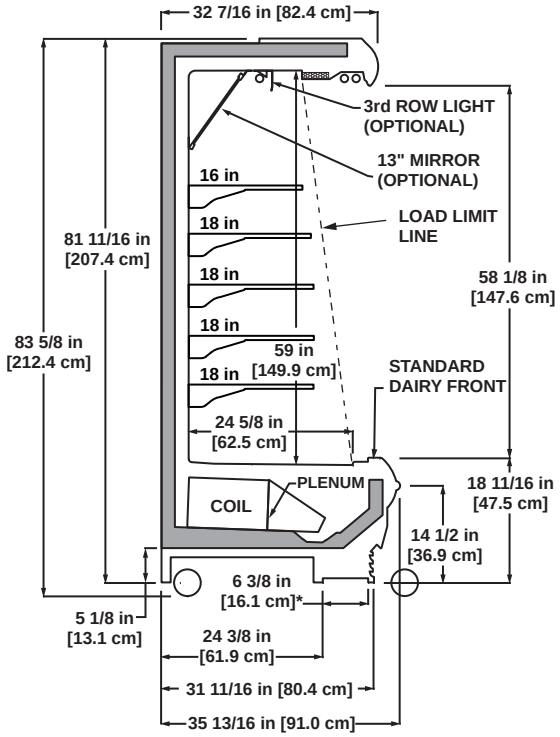
3 Average discharge air velocity at peak of defrost.

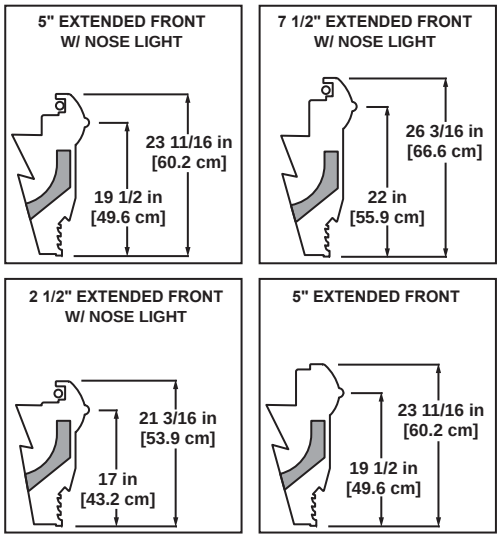
Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
3	6am - 2pm - 10pm
4	12am - 6am - 12pm - 6pm

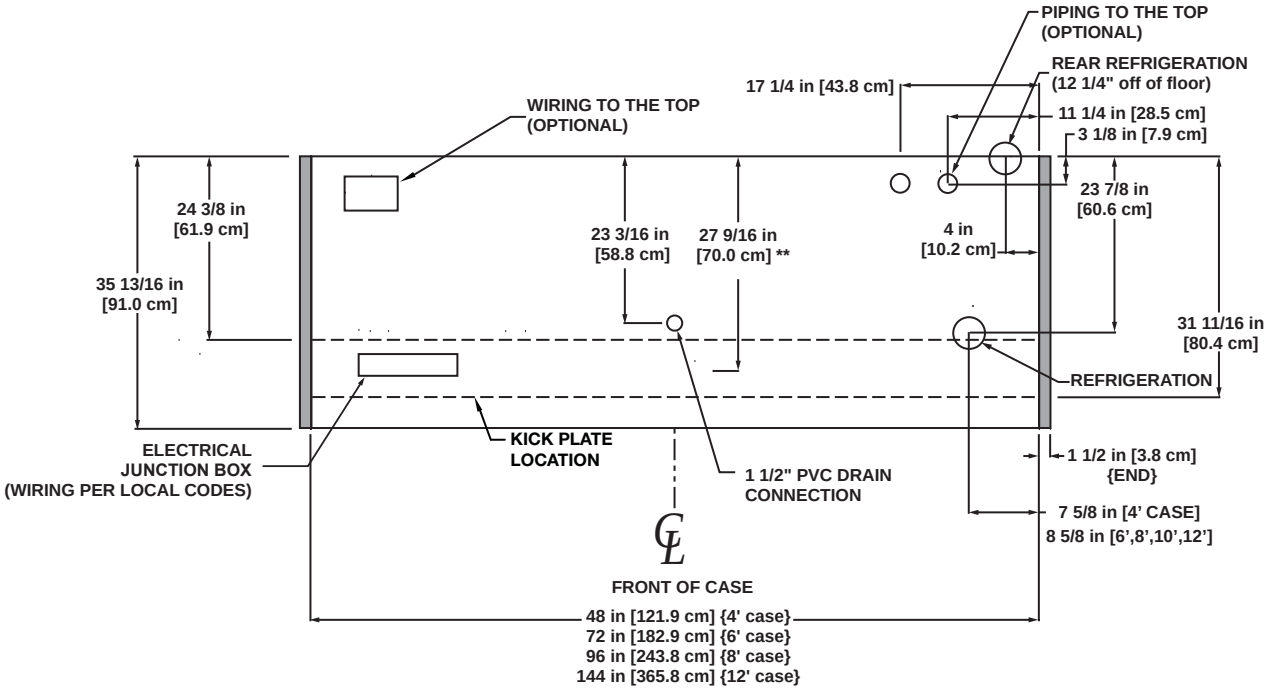
All measurements are taken per ASHRAE - 72 - 2005 specifications.

ON5DM Narrow Multi-Deck Merchandiser

4', 6', 8' & 12' (Dairy / Deli / Produce)







NOTES:

*** STUB-UP AREA**
**** RECOMMENDED STUB-UP CENTERLINE FOR ELECTRICAL AND HUB DRAINS**

- **FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARY WITH BASEFRAME HEIGHT**
- **ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT**
- **WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT**
- **A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL**
- **AVAILABLE SHELF SIZES: 10", 12", 14", 16" & 18" TOP SHELF MUST BE 16" OR SHORTER.**
- **RECOMMENDED CONFIGURATION IS 16" SHELF AND 3 OR 4 18" SHELVES BELOW TOP SHELF)**
- **DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE**

OHPH High Multi-Deck Merchandiser
6', 8' & 12' (Produce)

Electrical Data

Case Length	Fans Per Case	Standard Fans		High-Efficiency Fans		Anti-Condensate Heaters		Defrost Heaters			
		120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
		Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
6'	3	1.50	90	0.70	42	- - -[1]	- - -	2.88	600	3.33	798
8'	4	2.00	120	0.93	56	- - -	- - -	3.85	800	4.44	1065
12'	5	2.50	150	1.17	70	- - -	- - -	5.77	1200	6.67	1600

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row)		Clearvoyant LED Lighting (Per Light Row)			
					Standard Power (Cornice or Shelf)		High Power (Cornice)	
			120 Volts		120 Volts		120 Volts	
			Amps	Watts	Amps	Watts	Amps	Watts
6'	2	3'	0.37	44	0.14	16.6	0.30	35.8
8'	2	4'	0.47	56	0.20	23.8	0.44	52.4
12'	3	4'	0.70	84	0.30	35.7	0.66	78.6

2 rows of lamps per

Guidelines & Control Settings

Model	[2]BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge[3] Air Velocity (FPM)
	Conventional	Parallel				
Cut Produce	1445	1340	6 - 8	26	30	330
Bulk Produce	1181	1095	6 - 8	29	31	230

Defrost Controls

Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
3	6 - 8	35	47	45	47	26	45	50	45

1 NOTE: "- - -" indicates that feature is not an option on this case model.

2 BTUH/ft notes:

- Listed BTUH/ft indicate unlighted shelves. For T8 lighted shelves and 3rd row lighting, add 80 BTUH per 4' lighted shelf and 60 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For LED lighting, add 36 BTUH per 4' lighted shelf and 27 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case.
- Standard fans increase refrigeration load by 96 BTUH/fan.

3 Average discharge air velocity at peak of defrost.

Medium Temperature Defrost Schedule	
Defrost per Day	Time
1	12 midnight
2	12am - 12pm
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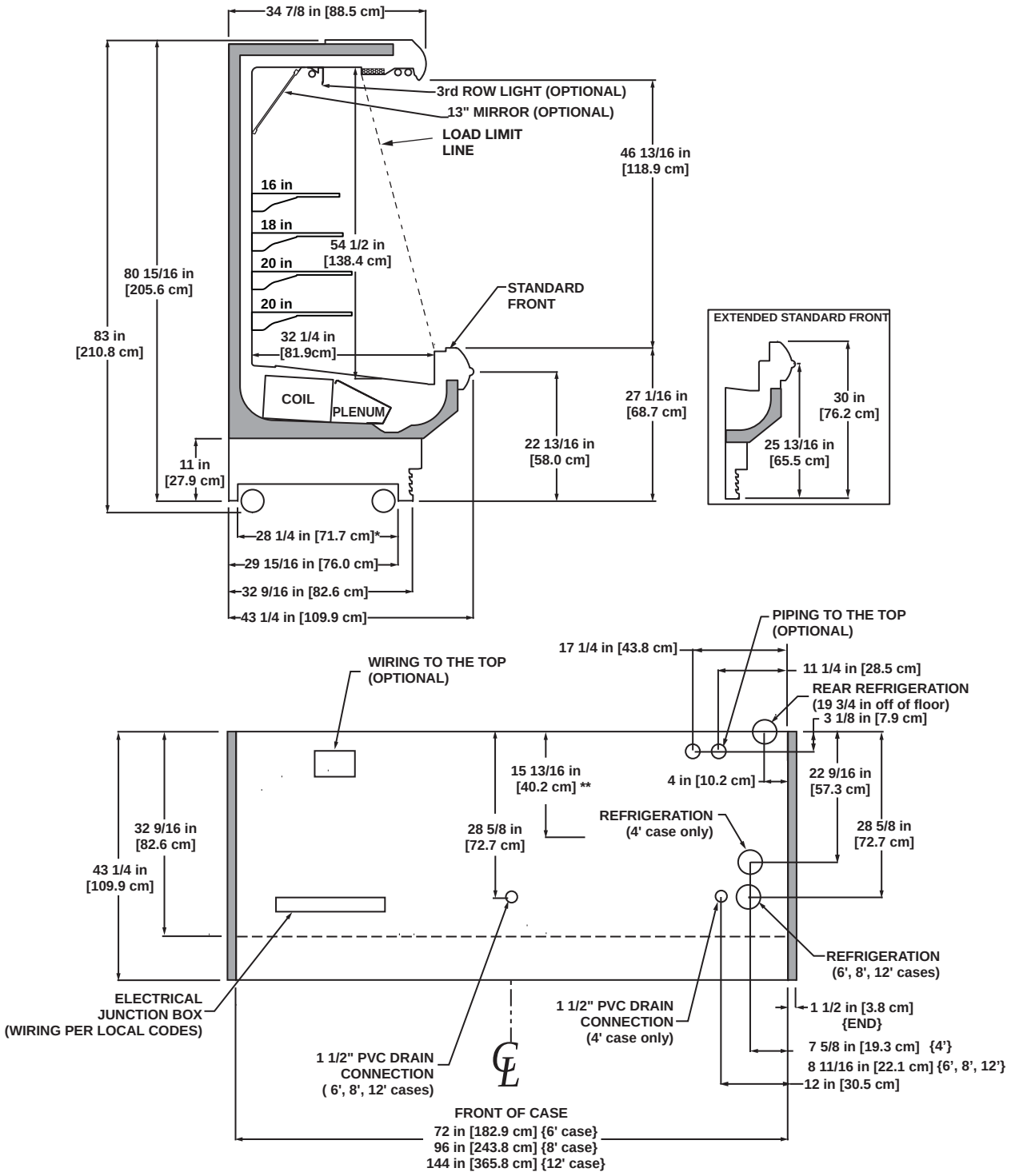
4	12am - 6am - 12pm - 6pm

All measurements are taken per ASHRAE - 72 - 2005 specifications.

OHPH High Multi-Deck Merchandiser
6', 8' & 12' (Produce)



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- **A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL**
- **AVAILABLE SHELF SIZES: 10", 12", 14", 16", 18" & 20**
- **DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE**

Mercantile Customer Project Commitment Agreement
Cash Rebate Option

THIS MERCANTILE CUSTOMER PROJECT COMMITMENT AGREEMENT ("Agreement") is made and entered into by and between Ohio Edison Company, its successors and assigns (hereinafter called the "Company") and Giant Eagle, Inc. , Taxpayer ID No. 25-0698270 its permitted successors and assigns (hereinafter called the "Customer") (collectively the "Parties" or individually the "Party") and is effective on the date last executed by the Parties as indicated below.

WITNESSETH

WHEREAS, the Company is an electric distribution utility and electric light company, as both of these terms are defined in R.C. § 4928.01(A); and

WHEREAS, Customer is a mercantile customer, as that term is defined in R.C. § 4928.01(A)(19), doing business within the Company's certified service territory; and

WHEREAS, R.C. § 4928.66 (the "Statute") requires the Company to meet certain energy efficiency and peak demand reduction ("EE&PDR") benchmarks; and

WHEREAS, when complying with certain EE&PDR benchmarks the Company may include the effects of mercantile customer-sited EE&PDR projects; and

WHEREAS, Customer has certain customer-sited demand reduction, demand response, or energy efficiency project(s) as set forth in attached Exhibit 1 (the "Customer Energy Project(s)") that it desires to commit to the Company for integration into the Company's Energy Efficiency & Peak Demand Reduction Program Portfolio Plan ("Company Plan") that the Company will implement in order to comply with the Statute; and

WHEREAS, the Customer, pursuant to the Public Utilities Commission of Ohio's ("Commission") September 15, 2010 Order in Case No. 10-834-EL-EEC, desires to pursue a cash rebate of some of the costs pertaining to its Customer Energy Project(s) ("Cash Rebate") and is committing the Customer Energy Project(s) as a result of such incentive.

WHEREAS, Customer's decision to commit its Customer Energy Project(s) to the Company for inclusion in the Company Plan has been reasonably encouraged by the possibility of a Cash Rebate.

WHEREAS, in consideration of, and upon receipt of, said cash rebate, Customer will commit the Customer Energy Project(s) to the Company and will comply with all other terms and conditions set forth herein.

NOW THEREFORE, in consideration of the mutual promises set forth herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties, intending to be legally bound, do hereby agree as follows:

1. **Customer Energy Projects**. Customer hereby commits to the Company and Company accepts for integration into the Company Plan the Customer Energy Project(s) set forth on attached Exhibit 1. Said commitment shall be for the life of the Customer Energy Project(s). Company will incorporate said project(s) into the Company Plan to the extent that such projects qualify. In so committing, and as evidenced by the affidavit attached hereto as Exhibit A, Customer acknowledges that the information provided to the Company about the Customer Energy Project(s) is true and accurate to the best of its knowledge.

a. By committing the Customer Energy Project(s) to the Company, Customer acknowledges and agrees that the Company shall control the use of the kWh and/or kW reductions resulting from said projects for purposes of complying with the Statute. By committing the Customer Energy Project(s), Customer further acknowledges and agrees that the Company shall take ownership of the energy efficiency capacity rights associated with said Project(s) and shall, at its sole discretion, aggregate said capacity into the PJM market through an auction. Any proceeds from any such bids accepted by PJM will be used to offset the costs charged to the Customer and other of the Company's customers for compliance with state mandated energy efficiency and/or peak demand requirements

b. The Company acknowledges that some of Customer's Energy Projects contemplated in this paragraph may have been performed under certain other federal and/or state programs in which certain parameters are required to be maintained in order to retain preferential financing or other government benefits (individually and collectively, as appropriate, "Benefits"). In the event that the use of any such project by the Company in any way affects such Benefits, and upon written request from the Customer, Company will release said Customer's Energy Project(s) to the extent necessary for Customer to meet the prerequisites for such Benefits. Customer acknowledges that such release (i) may affect Customer's cash rebate discussed in Article 3 below; and (ii) will not affect any of Customer's other requirements or obligations.

c. Any future Customer Energy Project(s) committed by Customer shall be subject to a separate application and, upon approval by the Commission, said projects shall become part of this Agreement.

d. Customer will provide Company or Company's agent(s) with reasonable assistance in the preparation of the Commission's standard joint application for approval of this Agreement ("Joint Application") that will be filed with the Commission, with such Joint Application being consistent with then current Commission requirements.

e. Upon written request and reasonable advance notice, Customer will grant employees or authorized agents of either the Company or the Commission reasonable, pre-arranged access to the Customer Energy Project(s) for purposes of measuring and verifying energy savings and/or peak demand reductions resulting from the Customer Energy Project(s). It is expressly agreed that consultants of either the Company or the Commission are their respective authorized agents.

2. **Joint Application to the Commission.** The Parties will submit the Joint Application using the Commission's standard "Application to Commit Energy Efficiency/Peak Demand Reduction Programs" ("Joint Application") in which they will seek the Commission's approval of (i) this Agreement: (ii) the commitment of the Customer Energy Project(s) for inclusion in the Company Plan; and (iii) the Customer's Cash Rebate.

   The Joint Application shall include all information as set forth in the Commission's standard form which, includes without limitation:

   i. A narrative description of the Customer Energy Project(s), including but not limited to, make, model and year of any installed and/or replaced equipment;
   ii. A copy of this Agreement; and
   iii. A description of all methodologies, protocols, and practices used or proposed to be used in measuring and verifying program results.

3. **Customer Cash Rebate.** Upon Commission approval of the Joint Application, Customer shall provide Company with a W-9 tax form, which shall at a minimum include Customer's tax identification number. Within the greater of 90 days of the Commission's approval of the Joint Application or the completion of the Customer Energy Project, the Company will issue to the Customer the Cash Rebate in the amount set forth in the Commission's Finding and Order approving the Joint Application.

    a. Customer acknowledges: i) that the Company will cap the Cash Rebate at the lesser of 50% of Customer Energy Project(s) costs or $250,000; ii) the maximum rebate that the Customer may receive per year is $500,000 per Taxpayer Identification Number per utility service territory; and iii) if the Customer Energy Project qualifies for a rebate program approved by the Commission and offered by the Company, Customer may still elect to file such project under the Company's mercantile customer self direct program, however the Cash Rebate that will be paid shall be discounted by 25%; and

    b. Customer acknowledges that breaches of this Agreement, include, but are not limited to:

        i. Customer's failure to comply with the terms and conditions set forth in the Agreement, or its equivalent, within a reasonable period of time after receipt of written notice of such non-compliance;

        ii. Customer knowingly falsifying any documents provided to the Company or the Commission in connection with this Agreement or the Joint Application.

    c. In the event of a breach of this Agreement by the Customer, Customer agrees and acknowledges that it will repay to the Company, within 90 days of receipt of written notice of said breach, the full amount of the Cash Rebate paid under this Agreement. This remedy is in addition to any and all other remedies available to the Company by law or equity.

4. **Termination of Agreement.** This Agreement shall automatically terminate:

    a. If the Commission fails to approve the Joint Agreement;

    b. Upon order of the Commission; or

    c. At the end of the life of the last Customer Energy Project subject to this Agreement.

    Customer shall also have an option to terminate this Agreement should the Commission not approve the Customer's Cash Rebate, provided that Customer provides the Company with written notice of such termination within ten days of either the Commission issuing a final appealable order or the Ohio Supreme Court issuing its opinion should the matter be appealed.

5. **Confidentiality.** Each Party shall hold in confidence and not release or disclose to any person any document or information furnished by the other Party in connection with this Agreement that is designated as confidential and proprietary ("Confidential Information"), unless: (i) compelled to disclose such document or information by judicial, regulatory or administrative process or other provisions of law; (ii) such document or information is generally available to the public; or (iii) such document or information was available to the receiving Party on a non-confidential basis at the time of disclosure.

    a. Notwithstanding the above, a Party may disclose to its employees, directors, attorneys, consultants and agents all documents and information furnished by the other Party in connection with this Agreement, provided that such employees, directors, attorneys,

consultants and agents have been advised of the confidential nature of this information and through such disclosure are deemed to be bound by the terms set forth herein.

b. A Party receiving such Confidential Information shall protect it with the same standard of care as its own confidential or proprietary information.

c. A Party receiving notice or otherwise concluding that Confidential Information furnished by the other Party in connection with this Agreement is being sought under any provision of law, to the extent it is permitted to do so under any applicable law, shall endeavor to: (i) promptly notify the other Party; and (ii) use reasonable efforts in cooperation with the other Party to seek confidential treatment of such Confidential Information, including without limitation, the filing of such information under a valid protective order.

d. By executing this Agreement, Customer hereby acknowledges and agrees that Company may disclose to the Commission or its Staff any and all Customer information, including Confidential Information, related to a Customer Energy Project, provided that Company uses reasonable efforts to seek confidential treatment of the same.

6. **Taxes.** Customer shall be responsible for all tax consequences (if any) arising from the payment of the Cash Rebate.

7. **Notices.** Unless otherwise stated herein, all notices, demands or requests required or permitted under this Agreement must be in writing and must be delivered or sent by overnight express mail, courier service, electronic mail or facsimile transmission addressed as follows:

If to the Company:

FirstEnergy Service Company
76 South Main Street
Akron, OH 44308
Attn: Victoria Nofziger
Telephone: 330-384-4684
Fax: 330-761-4281
Email: ymnofziger@firstenergycorp.com

If to the Customer:

Giant Eagle, Inc.
701 Alpha Drive
Pittsburgh, PA 15238
Attn:Antoinette Lichty
Telephone:412-967-3649
Fax:412-968-1612
Email:antoinette.lichty@gianteagle.com

With copy to:
Giant Eagle, Inc.
101 Kappa Drive
Pittsburgh, PA 15238
Attn: Legal Department

or to such other person at such other address as a Party may designate by like notice to the other Party. Notice received after the close of the business day will be deemed received on the next business day; provided that notice by facsimile transmission will be deemed to have been received by the recipient if the recipient confirms receipt telephonically or in writing.

8. **Authority to Act.** The Parties represent and warrant that they are represented by counsel in connection with this Agreement, have been fully advised in connection with the execution thereof, have taken all legal and corporate steps necessary to enter into this Agreement, and that the undersigned has the authority to enter into this Agreement, to bind the Parties to all provisions herein and to take the actions required to be performed in fulfillment of the undertakings contained herein.

9. **Non-Waiver.** The delay or failure of either party to assert or enforce in any instance strict performance of any of the terms of this Agreement or to exercise any rights hereunder conferred, shall not be construed as a waiver or relinquishment to any extent of its rights to assert or rely upon such terms or rights at any later time or on any future occasion.

10. **Entire Agreement.** This Agreement, along with related exhibits, and the Company's Rider DSE, or its equivalent, as amended from time to time by the Commission, contains the Parties' entire understanding with respect to the matters addressed herein and there are no verbal or collateral representations, undertakings, or agreements not expressly set forth herein. No change in, addition to, or waiver of the terms of this Agreement shall be binding upon any of the Parties unless the same is set forth in writing and signed by an authorized representative of each of the Parties. In the event of any conflict between Rider DSE or its equivalent and this document, the latter shall prevail.

11. **Assignment.** Customer may not assign any of its rights or obligations under this Agreement without obtaining the prior written consent of the Company, which consent will not be unreasonably withheld. No assignment of this Agreement will relieve the assigning Party of any of its obligations under this Agreement until such obligations have been assumed by the assignee and all necessary consents have been obtained.

12. **Severability.** If any portion of this Agreement is held invalid, the Parties agree that such invalidity shall not affect the validity of the remaining portions of this Agreement, and the Parties further agree to substitute for the invalid portion a valid provision that most closely approximates the economic effect and intent of the invalid provision.

13. **Governing Law.** This Agreement shall be governed by the laws and regulations of the State of Ohio, without regard to its conflict of law provisions.

14. **Execution and Counterparts.** This Agreement may be executed in multiple counterparts, which taken together shall constitute an original without the necessity of all parties signing the same page or the same documents, and may be executed by signatures to electronically or telephonically transmitted counterparts in lieu of original printed or photocopied documents. Signatures transmitted by facsimile shall be considered original signatures.

IN WITNESS WHEREOF, the Parties hereto have caused this Agreement to be executed by their duly authorized officers or representatives as of the day and year set forth below.

Ohio Edison Company
(Company)

By: _____

Title: V.P. Of Energy Efficiency

Date: 3-18-13

Giant Eagle, Inc.
(Customer)

By: _____

Title: VP- Sourcing

Date: 1-31-13

Affidavit of Giant Eagle, Inc. – Exhibit _A _

STATE OF OHIO)
) SS:
COUNTY OF)

I, ,being first duly sworn in accordance with law, deposes and states as follows:

1. I am the of Giant Eagle, Inc. ("Customer") As part of my duties, I oversee energy related matters at the Company.
2. The Customer has agreed to commit certain energy efficiency projects toOhio Edison Company ("Utility"), which are the subject of the agreement to which this affidavit is attached ("Project(s)").
3. In exchange for making such a commitment, the Utility has agreed to provide Customer with Cash ("Incentive"). This Incentive was a critical factor in the Customer's decision to go forward with the Project(s) and to commit the Project(s) to the Utility.
4. All information related to said Project(s) that has been submitted to the Utility is true and accurate to the best of my knowledge.

FURTHER AFFIANT SAYETH NAUGHT.

_____

Sworn to before me and subscribed in my presence this ___ day of _____, 20__.

_____
Notary

Summary: Application to Commit Energy Efficiency/Peak Demand Reduction Programs of Ohio Edison Company and Giant Eagle # 229 Brunswick electronically filed by Ms. Jennifer M. Sybyl on behalf of Ohio Edison Company and Giant Eagle # 229 Brunswick