



Case No.: 13-1429-EL-EEC

Mercantile Customer: Giant Eagle, Inc.

Electric Utility: The Cleveland Electric Illuminating Company

Program Title or Description: Project 1 - 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 store #228 Solon

Principal address: 701 Alpha Drive Pittsburgh, PA 15238

Address of facility for which this energy efficiency program applies: 34310 Aurora Rd., Solon, Ohio 44139

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: The Cleveland Electric Illuminating 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):
3/11/2013.
- ☐ 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: ____ 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: 95,250 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.

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?

3/11/2013 - 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 - 13 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 \$5,715.00. (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.



Public Utilities Commission

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

Case No.: 13 - 1429 -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.

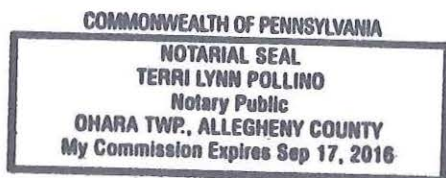

Signature of Affiant & Title
VP-Sourcing

Sworn and subscribed before me this 12th day of June, 2013 Month/Year


Signature of official administering oath

Terrilyn Pollino, Notary
Print Name and Title

My commission expires on 9.17.2016



Customer Legal Entity Name: Giant Eagle, Inc.
Site Address: Giant Eagle #228 Solon
Principal Address: 34310 Aurora Rd.

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	High Efficiency Refrigerated Cases	44 new refrigerated food cases with high efficiency options were installed at this location. Electrically commutated motors and LED lighting options were chosen instead of using the standard shaded pole motors and fluorescent lighting technology. While the standard cases require a lower initial financial commitment, the high efficiency cases require less energy to operate. The following high-efficiency Hill Phoenix cases were installed: (4) O5Z 6', (2) ORZH 3 door, (4) ORZH 4 door, (9) ORZH 5 door, (9) ORZH 6 door, (1) ON5DM 6', (2) ON5DM 8', (1) ON5DM 12', (6) OHM 12', (1) O5DM 8', (2) O5DM 12', (1) O5DMH 4', (1) ON5DMH 8', and (1) ON5DMH 12'.	See the attached energy calculations "GE 228_Refrigerated Cases Energy Savings.pdf".	N/A	Standard efficiency refrigerated cases with shaded pole fan motors and T8 fluorescent lighting.

Docket No. 13-1429
Site: 34310 Aurora Rd.

Exhibit 2

Customer Legal Entity Name: Giant Eagle, Inc.
Site Address: Giant Eagle #228 Solon
Principal Address: 34310 Aurora Rd.

	Unadjusted Usage, kwh (A)	Weather Adjusted Usage, kwh (B)	Weather Adjusted Usage with Energy Efficiency Addbacks, kwh (c) <i>Note 1</i>
2012	3,949,200	3,949,200	3,949,200
Average	3,949,200	3,949,200	3,949,200

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) \$ <i>Note 2</i>	Commitment Payment \$
1	High Efficiency Refrigerated Cases	03/11/2013	\$394,898	\$197,449	95,250	95,250	13	\$7,620	\$5,715	
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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	95	\$ 308	\$ 29,364	\$ 4,050	\$5,715		\$ 9,765	3.0
Total	95	\$ 308	29,364	4,050	\$5,715	\$0	9,765	3.0

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 #228 Solon
Docket No. 13-1429

Site: 34310 Aurora Rd.



Ohio Edison • The Illuminating Company • Toledo Edison

Mercantile Customer Program - Custom Project Rebate Calculator

Project Name and Number:	Project 1 - HE Refrigerated Cases
Site Name:	Giant Eagle store #228 Solon
Completed by (Name):	Aetos Construction Co.
Date completed:	3/11/2013

Energy Conservation Measure	Annual Energy Savings kWh	Eligible Prescriptive Rebate Amount kWh * \$0.08
High efficiency refrigerated cases	95,250	7620.00
Total Project Energy Savings kWh	95,250	
Total Custom Prescriptive Rebate Amount \$		\$ 7,620.00

Notes about this rebate calculation:

The baseline equipment used in the energy calculations consisted of refrigerated cases with fluorescent lighting and shaded pole fan motors. The new, high efficiency equipment has LED lighting and ECM fan motors. The high efficiency measures were compared against the standard options of LED case lighting and shaded pole motors to determine the energy savings. Please see the attached document "GE 228_Refrigerated Cases Energy Savings.pdf" for the calculated energy savings.

Giant Eagle Store #228 Solon - H.E. Refrigerated Cases							Fan Hours of Op.				8760		Store Hours of Op.														6935									
							Fan Quantity	Std. Fan W	Std. Fan kW	Std. Fan kWh	H.E. Fan W	H.E. Fan kW	H.E. Fan kWh	Fan Savings kW	Fan Savings kWh	Lamp Qty.	Std. Lighting W	Std. Lighting kW	Std. Lighting kWh	LED Lighting W	LED Lighting kW	LED Lighting kWh	LED Lighting Interactive Savings kW	LED Lighting Interactive Savings kWh	LED Lighting Controls Savings kWh	Interactive Factor kW	Interactive Factor kWh	Coincidence Factor Demand	Lighting Controls Factor							
OSZ 6' Frozen Food (x4)	0697414		Cut Sheet 1	Low	No	LED/ECM Fans	8	35	0.28	2452.8	15.5	0.12	1086.24	0.16	1367	6	22.0	0.13	915.4	8.3	0.05	345.4	0.02	172.7	0.0	0.50	0.50	0.94	1.00							
ORZH 3 Door (x2)	0697414		Cut Sheet 2	Low	No	LED/ECM Fans	6	30	0.18	1576.8	9.3	0.06	486.18	0.12	1091	8	60.0	0.48	3328.8	12.0	0.10	665.8	0.05	332.9	0.0	0.50	0.50	0.94	1.00							
ORZH 5 Door (x8)	0697414		Cut Sheet 3	Low	No	LED/ECM Fans	40	30	1.2	10512	9.2	0.37	3223.68	0.83	7288	48	60.0	2.88	19972.8	13.3	0.64	4427.3	0.30	2213.7	0.0	0.50	0.50	0.94	1.00							
ORZH 4 Door	0697414		Cut Sheet 4	Low	No	LED/ECM Fans	4	30	0.12	1051.2	9.3	0.04	324.12	0.08	727	5	60.0	0.30	2080.5	12.8	0.06	443.8	0.03	221.9	0.0	0.50	0.50	0.94	1.00							
ORZH 6 Door	0697414		Cut Sheet 5	Low	No	LED/ECM Fans	7	30	0.21	1839.6	9.2	0.06	562.30	0.15	1277	7	60.0	0.42	2912.7	13.7	0.10	665.1	0.05	332.5	0.0	0.50	0.50	0.94	1.00							
ORZH 6 Door (x3)	0697414		Cut Sheet 5	Low	No	LED/ECM Fans	21	30	0.63	5518.8	9.2	0.19	1692.43	0.44	3826	21	60.0	1.26	8738.1	13.7	0.29	1995.2	0.14	997.6	0.0	0.50	0.50	0.94	1.00							
ORZH 4 Door	0697414		Cut Sheet 4	Low	No	LED/ECM Fans	4	30	0.12	1051.2	9.3	0.04	325.87	0.08	725	5	60.0	0.30	2080.5	12.8	0.06	443.8	0.03	221.9	0.0	0.50	0.50	0.94	1.00							
ORZH 5 Door	0697414		Cut Sheet 3	Low	No	LED/ECM Fans	5	30	0.15	1314	9.2	0.05	402.96	0.10	911	6	60.0	0.36	2496.6	13.3	0.08	553.4	0.04	276.7	0.0	0.50	0.50	0.94	1.00							
ORZH 4 Door (x2)	0697414		Cut Sheet 4	Low	No	LED/ECM Fans	8	30	0.24	2102.4	9.3	0.07	651.74	0.17	1451	10	60.0	0.60	4161.0	12.8	0.13	887.7	0.06	443.8	0.0	0.50	0.50	0.94	1.00							
ORZH 6 Door (x5)	0697414	\$294,027.78	Cut Sheet 5	Low	No	LED/ECM Fans	35	30	1.05	9198	9.2	0.32	2820.72	0.73	6377	35	60.0	2.10	14563.5	13.7	0.48	3325.3	0.23	1662.7	0.0	0.50	0.50	0.94	1.00							
ONSDM 6'	0700836		Cut Sheet 6	Medium	No	LED/ECM Fans	3	30	0.09	788.4	14.0	0.04	367.92	0.05	420	4	22.0	0.19	610.3	8.3	0.03	230.2	0.01	163.5	0.0	0.29	0.29	0.94	1.00							
ONSDM 12'	0700836		Cut Sheet 7	Medium	No	LED/ECM Fans	5	30	0.15	1314	14.0	0.07	613.20	0.08	701	3	28.0	0.08	582.5	11.9	0.04	247.6	0.01	175.8	0.0	0.29	0.29	0.94	1.00							
ONSDM 8' (x2)	0700836	\$26,682.18	Cut Sheet 8	Medium	No	LED/ECM Fans	8	30	0.24	2102.4	14.0	0.11	981.12	0.13	1121	8	28.0	0.22	1553.4	11.9	0.10	660.2	0.03	468.8	0.0	0.29	0.29	0.94	1.00							
OHM 12' (x6)	0698054		Cut Sheet 9	Medium	No	LED/ECM Fans	24	30	0.72	6307.2	11.7	0.28	2459.81	0.44	3847	18	28.0	0.50	3495.2	11.9	0.21	1485.5	0.06	1054.7	0.0	0.29	0.29	0.94	1.00							
OSDM 8'	0698054		Cut Sheet 10	Medium	No	LED/ECM Fans	3	30	0.09	788.4	14.0	0.04	367.92	0.05	420	4	28.0	0.11	776.7	11.9	0.05	330.1	0.01	234.4	0.0	0.29	0.29	0.94	1.00							
OSDM 12' (x2)	0698054	\$57,728.05	Cut Sheet 11	Medium	No	LED/ECM Fans	8	30	0.24	2102.4	14.0	0.11	981.12	0.13	1121	12	28.0	0.34	2330.2	11.9	0.14	990.3	0.04	703.1	0.0	0.29	0.29	0.94	1.00							
ONSDMH 8'	0697415		Cut Sheet 12	Medium	No	LED/ECM Fans	4	30	0.12	1051.2	14.0	0.06	490.56	0.06	561	4	28.0	0.11	776.7	11.9	0.05	330.1	0.01	234.4	0.0	0.29	0.29	0.94	1.00							
ONSDMH 12'	0697415	\$12,550.05	Cut Sheet 13	Medium	No	LED/ECM Fans	5	30	0.15	1314	14.0	0.07	613.20	0.08	701	6	28.0	0.17	1165.1	11.9	0.07	495.2	0.02	351.6	0.0	0.29	0.29	0.94	1.00							
OSDMH 4'	0697416	\$3,910.29	Cut Sheet 14	Medium	No	LED/ECM Fans	1	72	0.072	630.72	18.0	0.02	157.68	0.05	473	1	28.0	0.03	194.2	11.9	0.01	82.5	0.00	58.6	0.0	0.29	0.29	0.94	1.00							
Total Material Cost		\$394,898.35					Before kW		15.9		Before kWh		120,617.9																							
							After kW		3.4		After kWh		25,367.5																							
							Savings kW		12.4		Savings kWh		95,250.4																							

Electrical Data

Case Length	Fans ¹ Per Case				Standard Fans		High-Efficiency Fans		Anti-Condensate ² Heaters		Defrost ³ Heaters			
					120 Volts		120 Volts		120 Volts		208 Volts		240 Volts	
	Pri.	Sec.	Amb.	Total	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts	Amps	Watts
6'	4	2	2	8	4.56	280	1.47	124	2.25	270	9.99	3600	11.53	4794
8'	5	3	2	10	5.70	352	1.84	155	3.10	344	13.32	4800	15.37	6390
12'	7	4	3	14	7.98	490	2.57	217	4.18	493	20.00	7200	23.06	9585

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

3 rows of lights per case

Guidelines & Control Settings

Front Sill Heights	4BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge ⁵ Air Velocity (FPM)		
	Conventional	Parallel				Pri.	Sec.	Amb.
22"	1902	1787	3-5	-17	-5	650	425	275
28"	1865	1752	3-5	-17	-5	650	425	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)
3	13 - 15	34	50	- - - ⁶	- - -	24	60	- - -	- - -

1 Pri. = Primary; Sec. = Secondary; Amb. = Ambient

2 Cases equipped with windowed ends add 1.85 amps per end.

3 3-phase load. Figure given is maximum amps per phase.

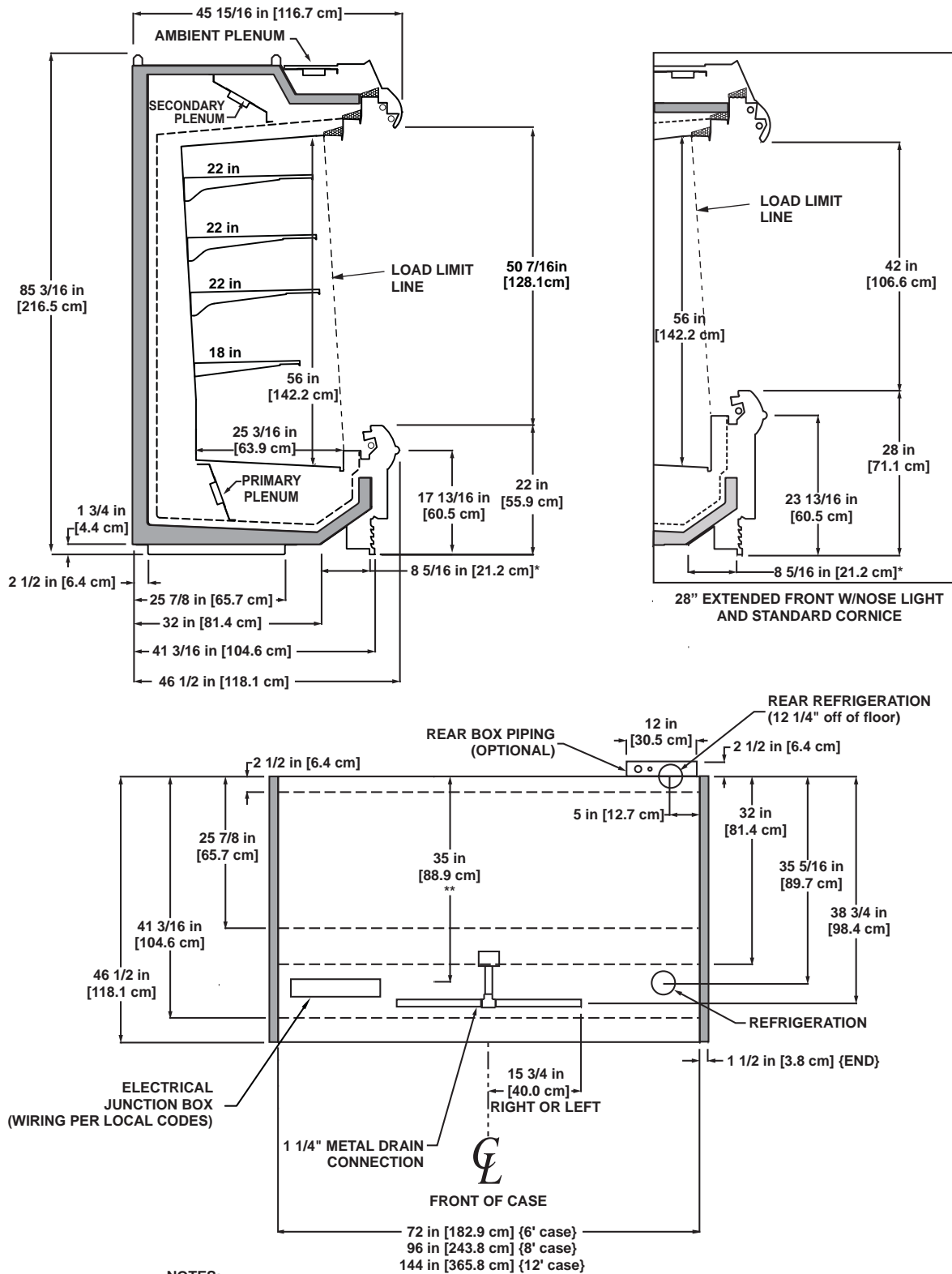
4 Standard fans increase refrigeration load by 96 BTUH/fan.

5 Average discharge air velocity at peak of defrost.

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

05Z Multi-Deck Merchandiser

6', 8' & 12' (Frozen Food)



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
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	
	2-door	1.50	180	0.33	39	145	0.27	32	152	0.25	30
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 ⁴		Eliminaator 2 ⁴		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
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

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	---	---

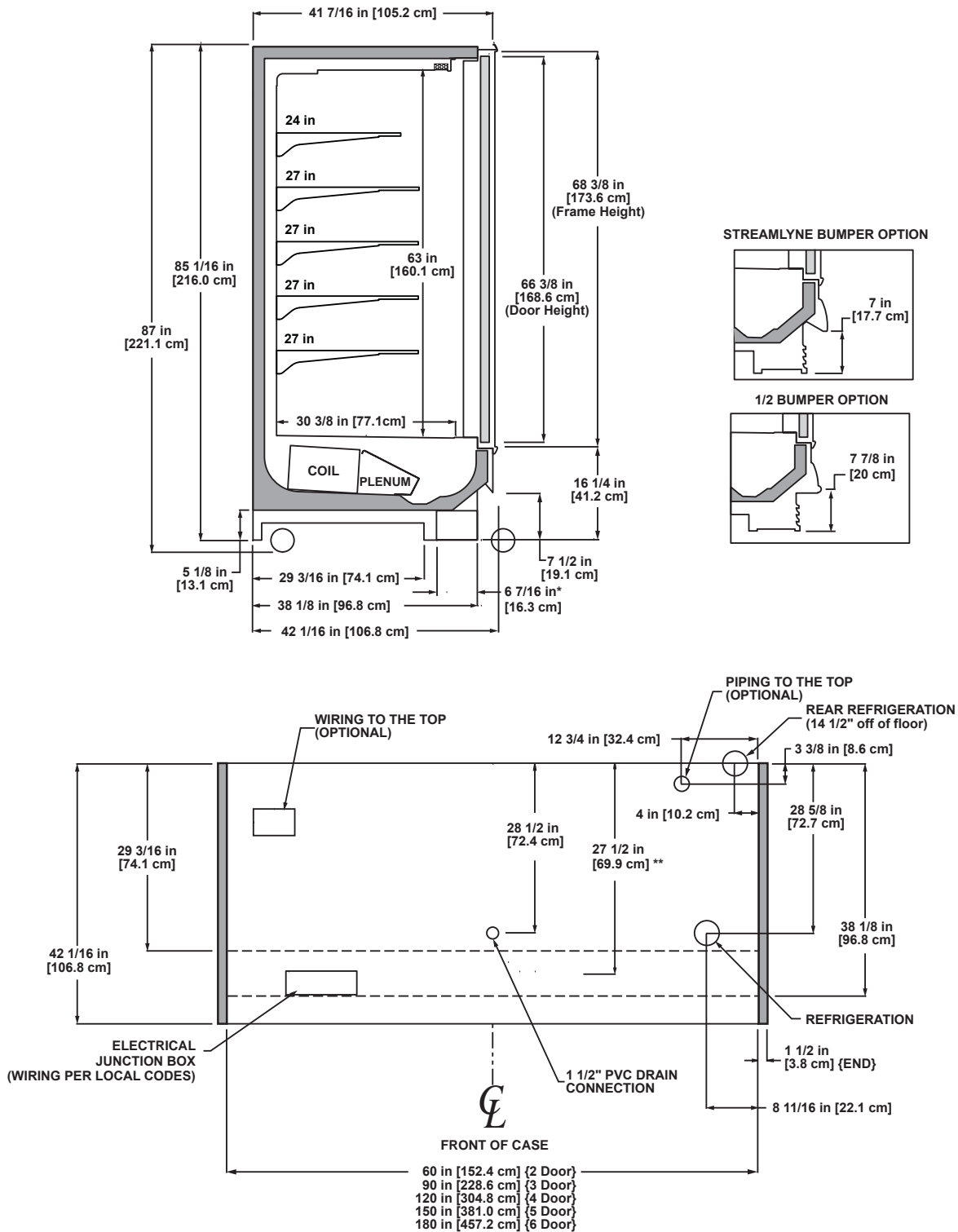
- 1 3-phase load is unbalanced.
- 2 Figure given is maximum line amperage per phase.
- 3 Low-power lights. High-power option available.
- 4 Values provided are for doors with no heat on the glass.
- 5 Standard fans increase refrigeration load by 96 BTUH/fan.
- 6 Average discharge air velocity at peak 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 55°F 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 55°F termination temp.

REACH-IN

Frozen Food / Ice Cream

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", LIQUID 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

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
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	
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 ⁴		Eliminaator 2 ⁴		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
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

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	---	---

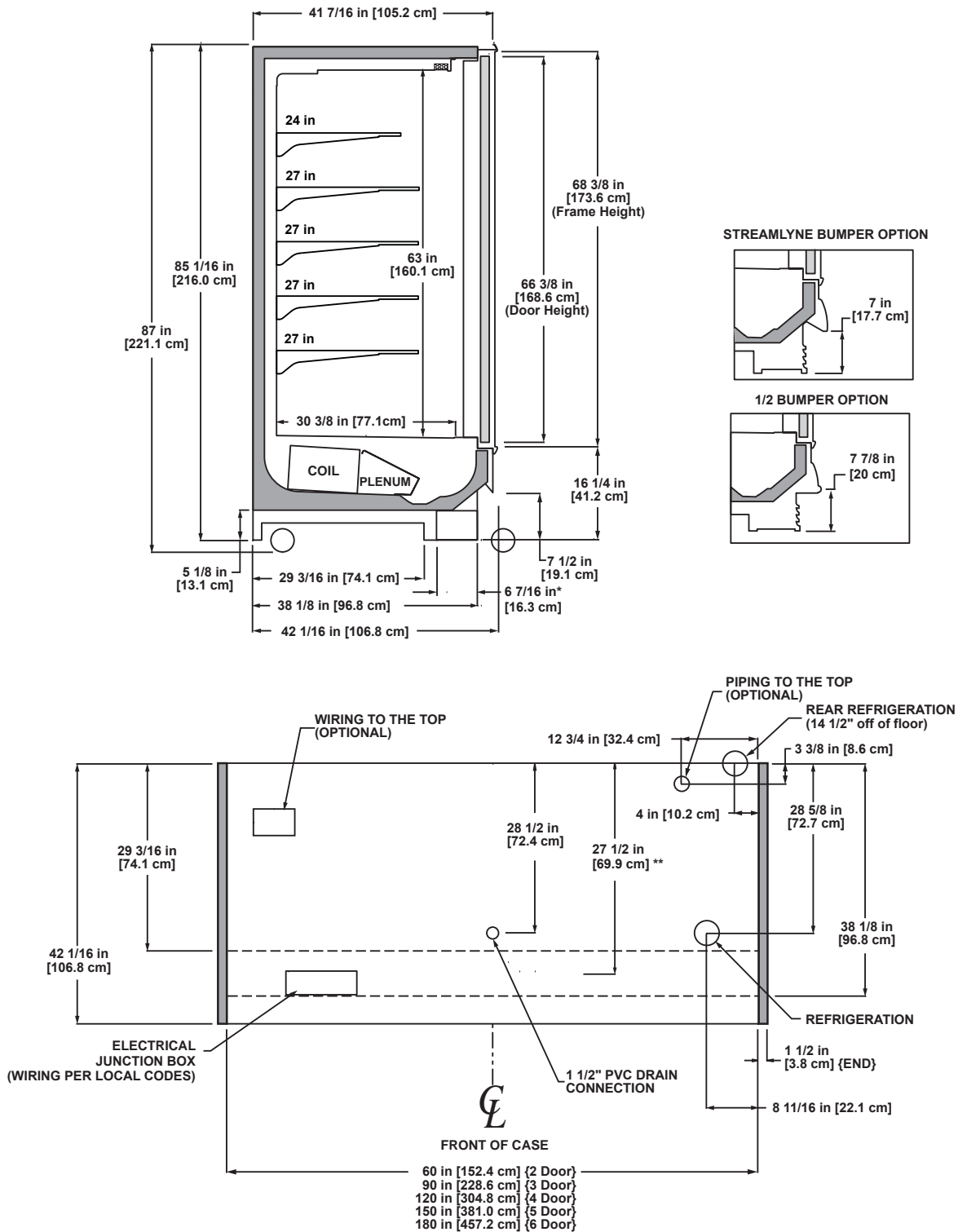
- 1 3-phase load is unbalanced.
- 2 Figure given is maximum line amperage per phase.
- 3 Low-power lights. High-power option available.
- 4 Values provided are for doors with no heat on the glass.
- 5 Standard fans increase refrigeration load by 96 BTUH/fan.
- 6 Average discharge air velocity at peak 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 55°F 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 55°F termination temp.

REACH-IN

Frozen Food / Ice Cream

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", LIQUID 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

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
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	
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 ⁴		Eliminaator 2 ⁴		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
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

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	---	---

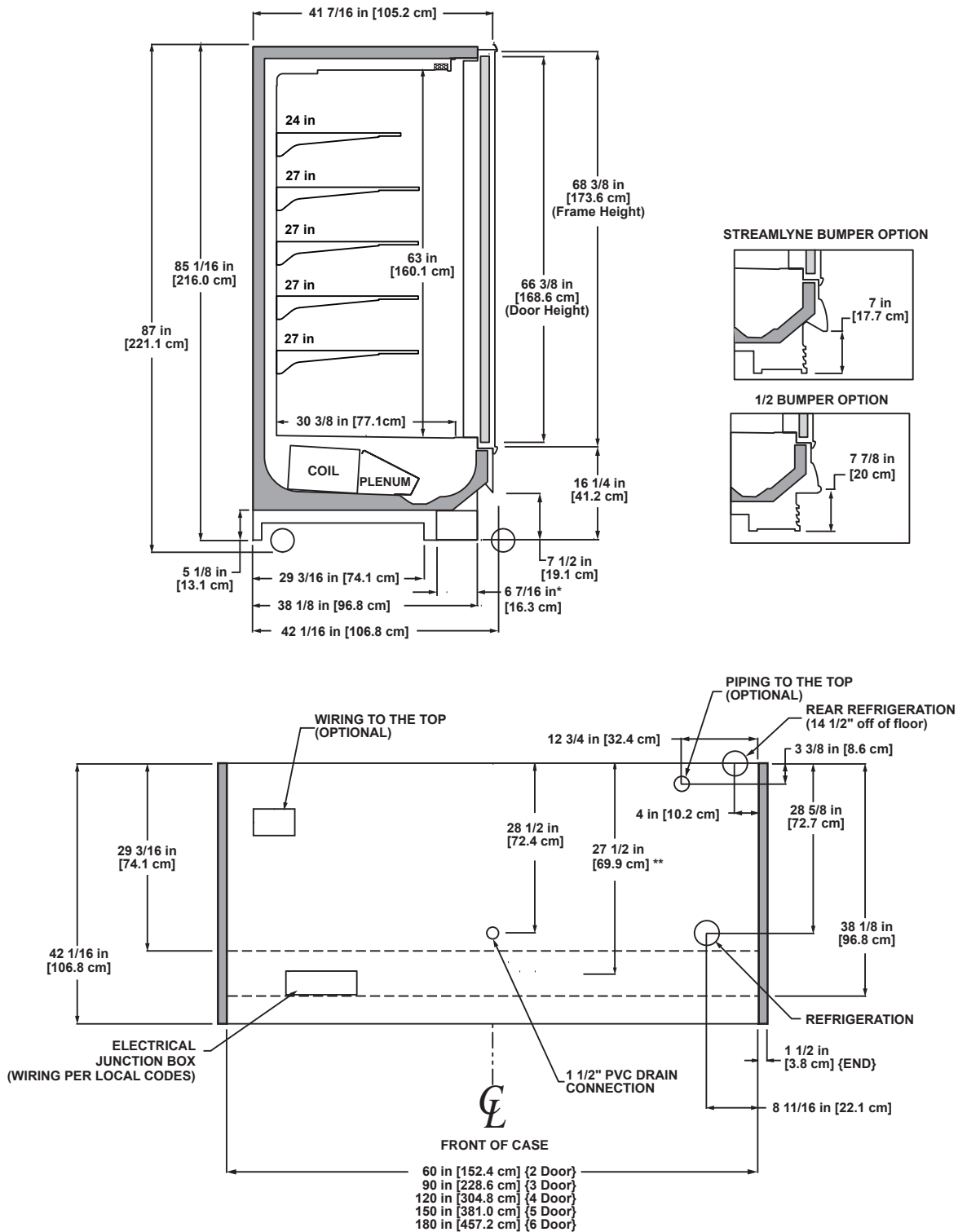
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- 2 Figure given is maximum line amperage per phase.
- 3 Low-power lights. High-power option available.
- 4 Values provided are for doors with no heat on the glass.
- 5 Standard fans increase refrigeration load by 96 BTUH/fan.
- 6 Average discharge 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 55°F 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 55°F termination temp.

REACH-IN

Frozen Food / Ice Cream

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
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- 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

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
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	
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 ⁴		Eliminaator 2 ⁴		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
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

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	---	---

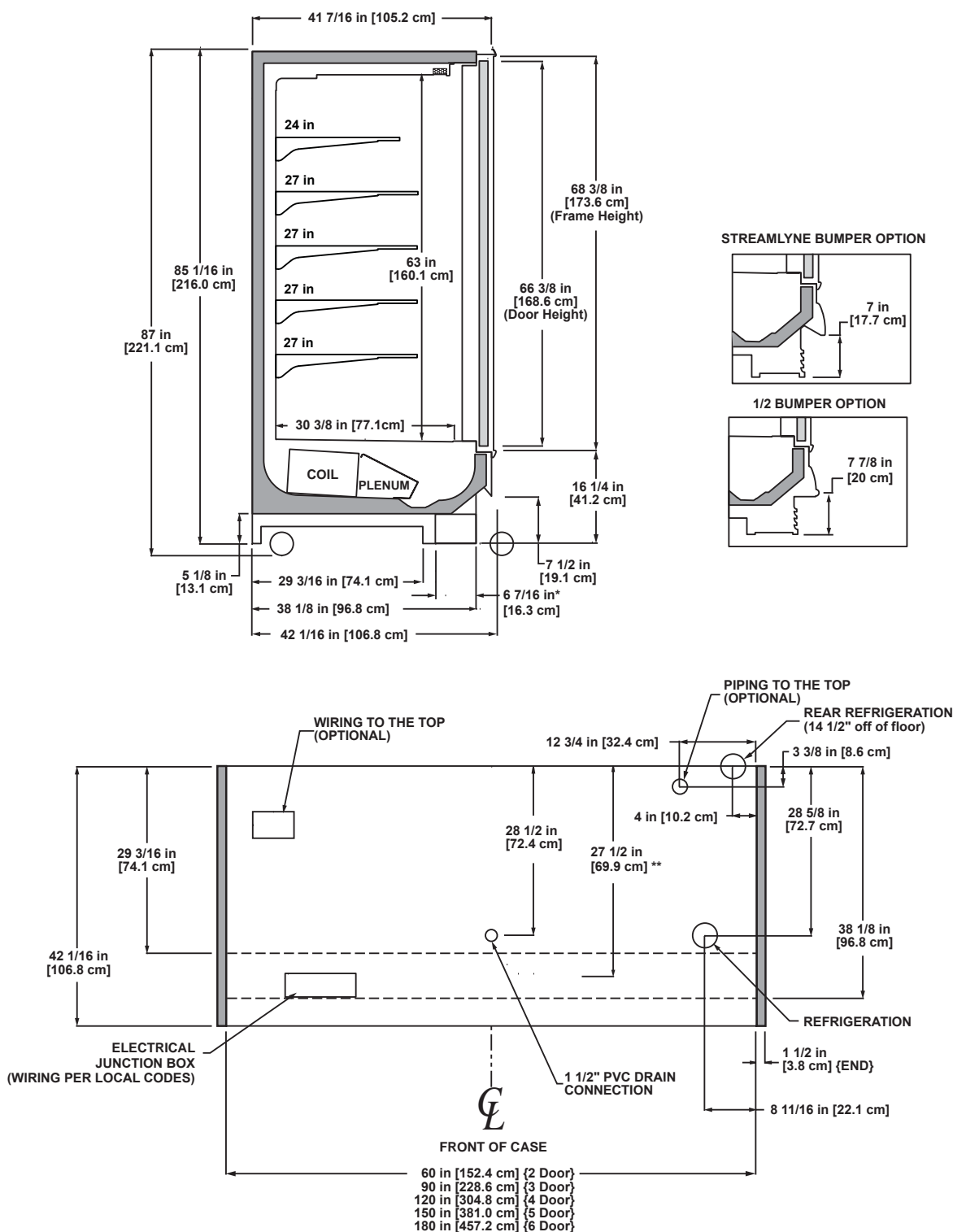
- 1 3-phase load is unbalanced.
- 2 Figure given is maximum line amperage per phase.
- 3 Low-power lights. High-power option available.
- 4 Values provided are for doors with no heat on the glass.
- 5 Standard fans increase refrigeration load by 96 BTUH/fan.
- 6 Average discharge air velocity at peak 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 55°F 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 55°F termination temp.

REACH-IN

Frozen Food / Ice Cream

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", LIQUID 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

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	---	---	1.92	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)			
			120 Volts		Standard Power (Cornice or Shelf)		High Power (Cornice)	
			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	²BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge³ Air Velocity (FPM)
		Conventional	Parallel				
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		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.

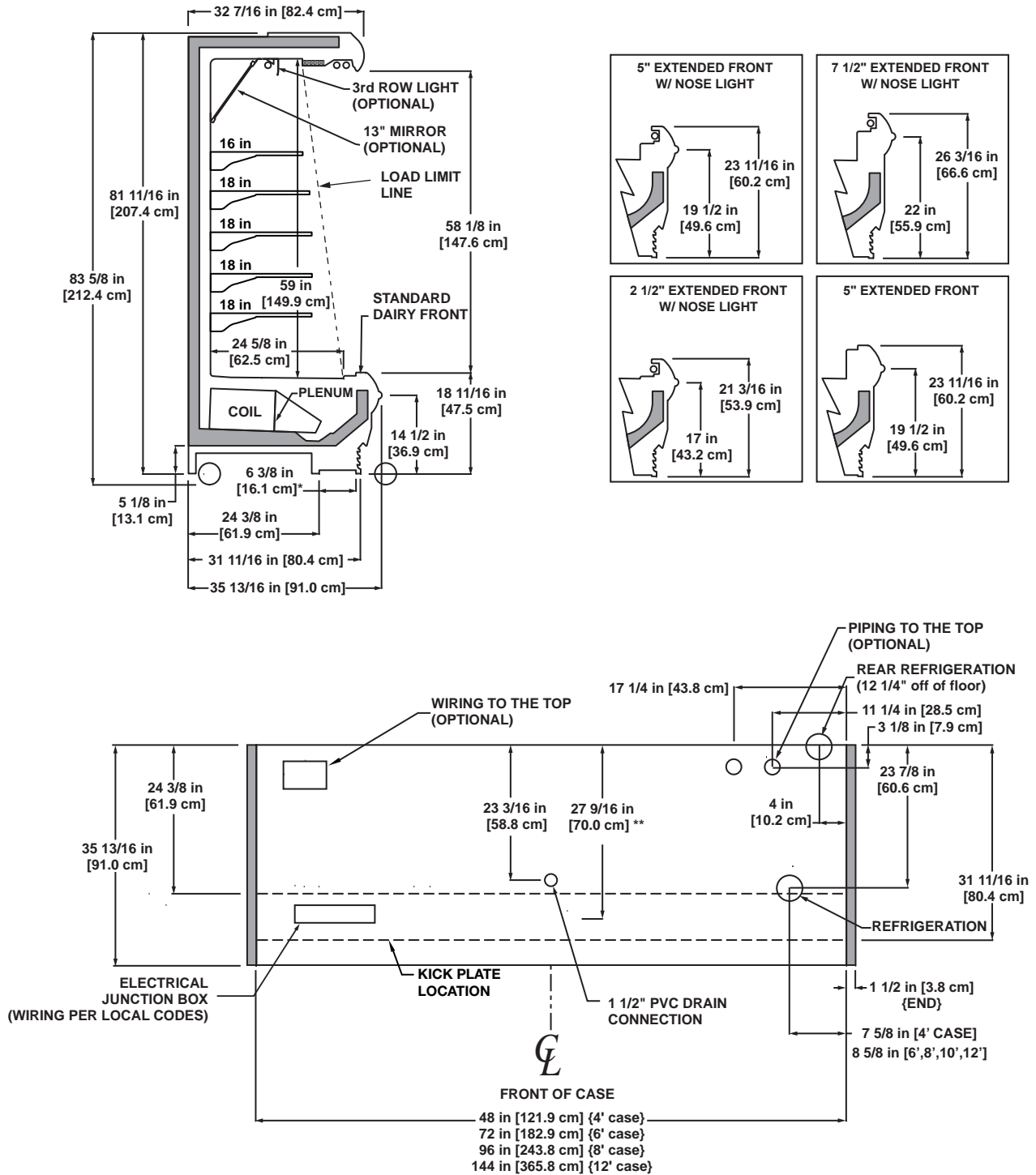
2 BTUH/ft notes:

- 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.

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



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	---	---	1.92	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)			
			120 Volts		Standard Power (Cornice or Shelf)		High Power (Cornice)	
			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	²BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge³ Air Velocity (FPM)
		Conventional	Parallel				
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		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.

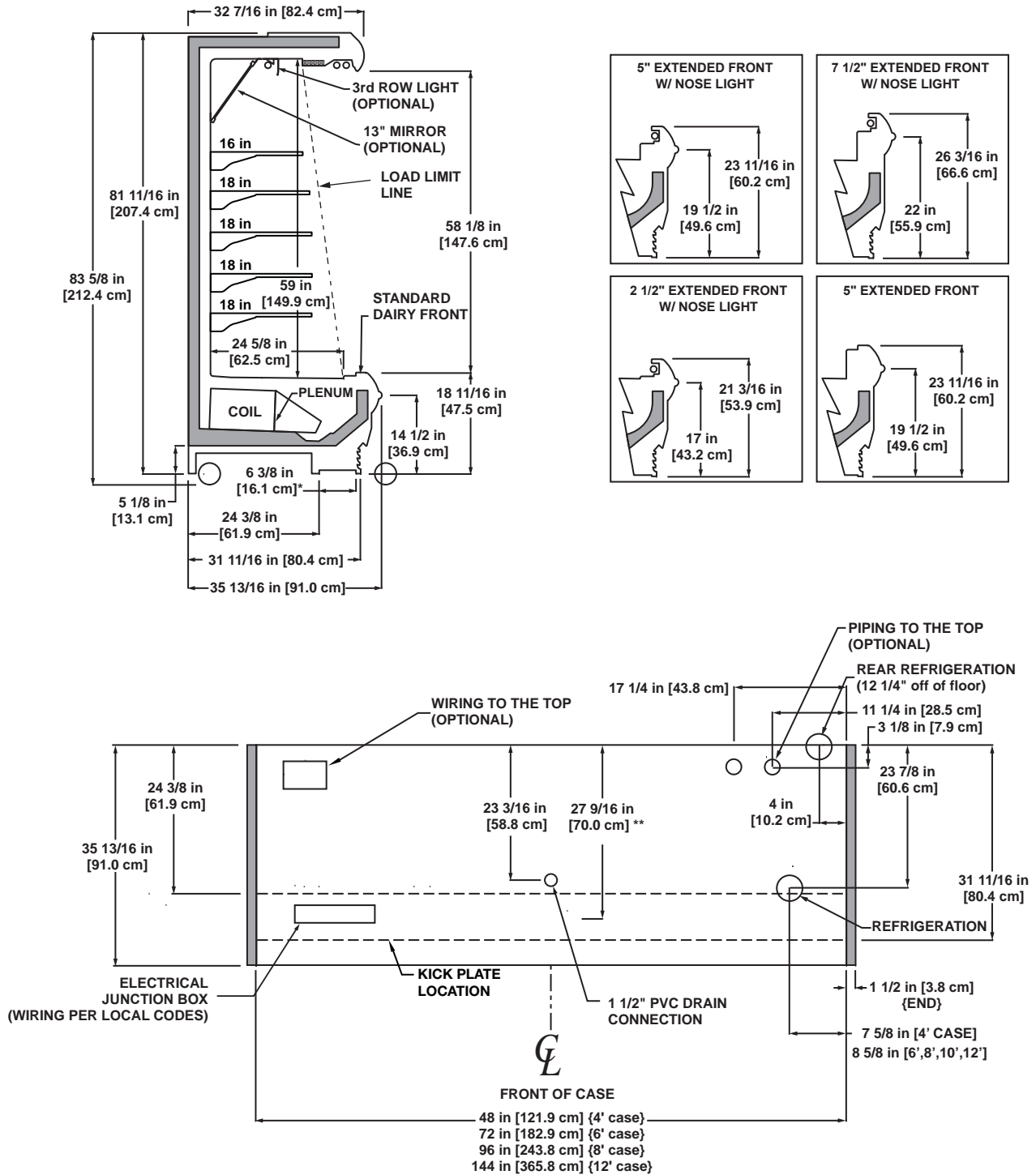
2 BTUH/ft notes:

- 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.

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



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	---	---	1.92	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)			
			120 Volts		Standard Power (Cornice or Shelf)		High Power (Cornice)	
			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	²BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge³ Air Velocity (FPM)
		Conventional	Parallel				
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		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.

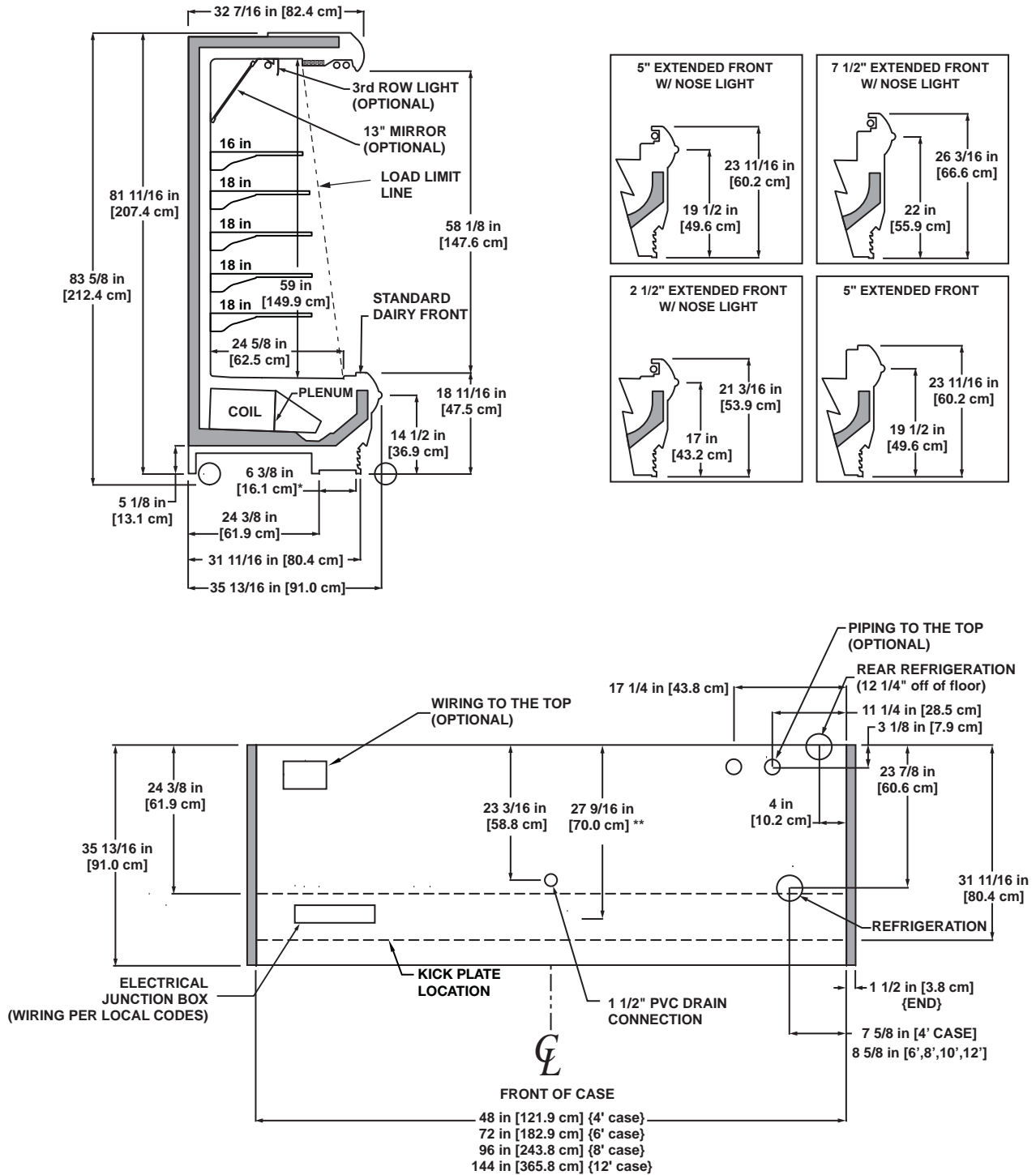
2 BTUH/ft notes:

- 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.

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



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'	2	1.00	60	0.39	23.4	---	---	2.88	600	3.33	798
8'	3	1.50	90	0.59	35.1	---	---	3.85	800	4.44	1065
12'	4	2.00	120	0.78	46.8	---	---	5.77	1200	6.67	1600

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting		Clearvoyant LED Lighting (Per Light Row)			
			(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

Guidelines & Control Settings

Front/Rear Sill Heights	² BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge ³ Air Velocity (FPM)
	Conventional	Parallel				
Standard	1410	1273	6 - 8	22	28	350
All Others	1361	1229	6 - 8	22	28	350

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	35	47	45	47	26	45	45	45

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

2 BTUH/ft notes:

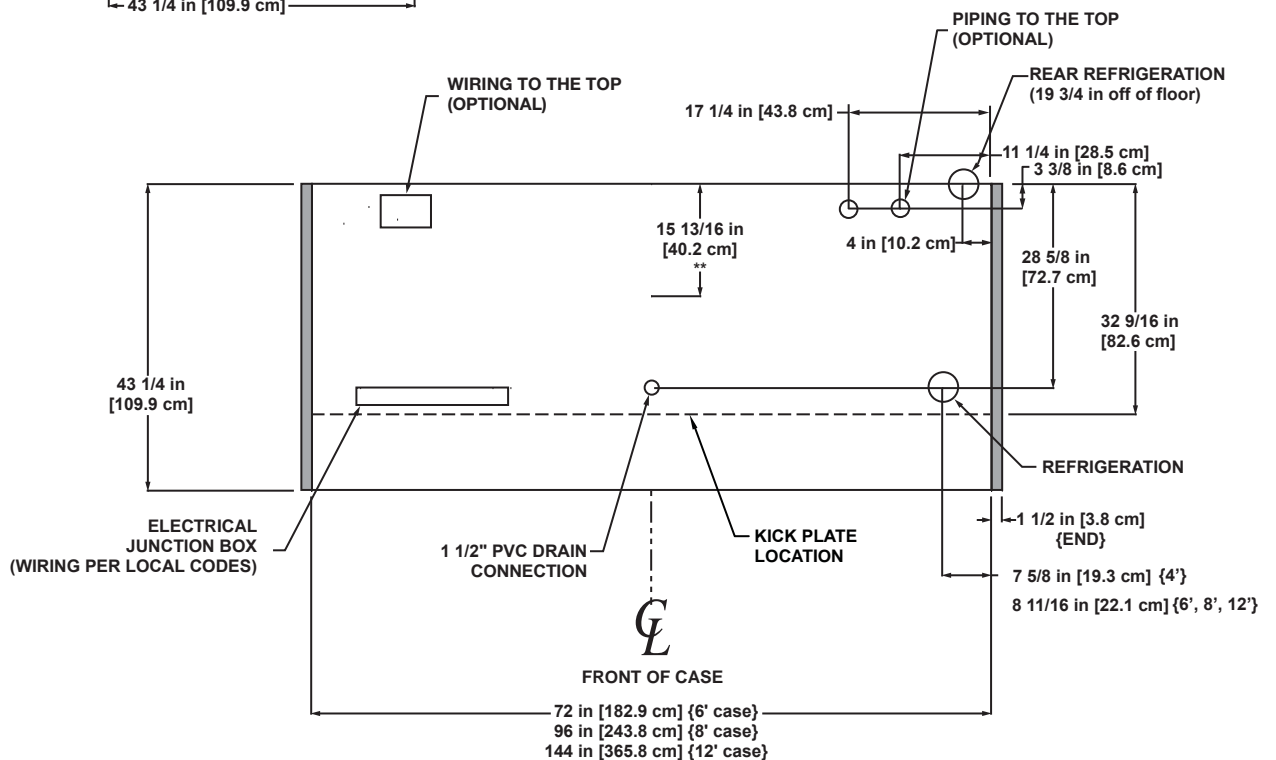
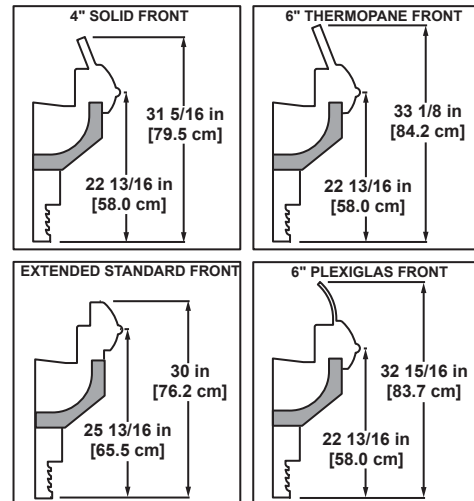
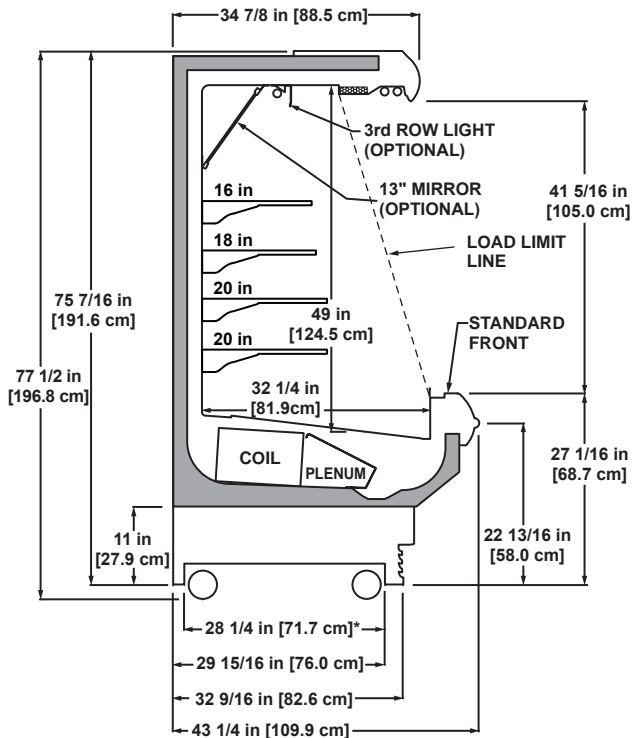
- Listed BTUH/ft indicate unlighted shelves. For T8 lighted shelves and 3rd row lighting, add 80 BTUH per 4' lighted shelf and 60 BTUH per 3' lighted shelf to determine Total Lighting BTUH Load, then divide the Total Lighting BTUH Load by the length of the case. For LED lighting, add 36 BTUH per 4' lighted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

OHM Multi-Deck Merchandiser

6', 8' & 12' (Deli / Meat)

(11" BASEFRAME)



NOTES:

* STUB-UP AREA

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

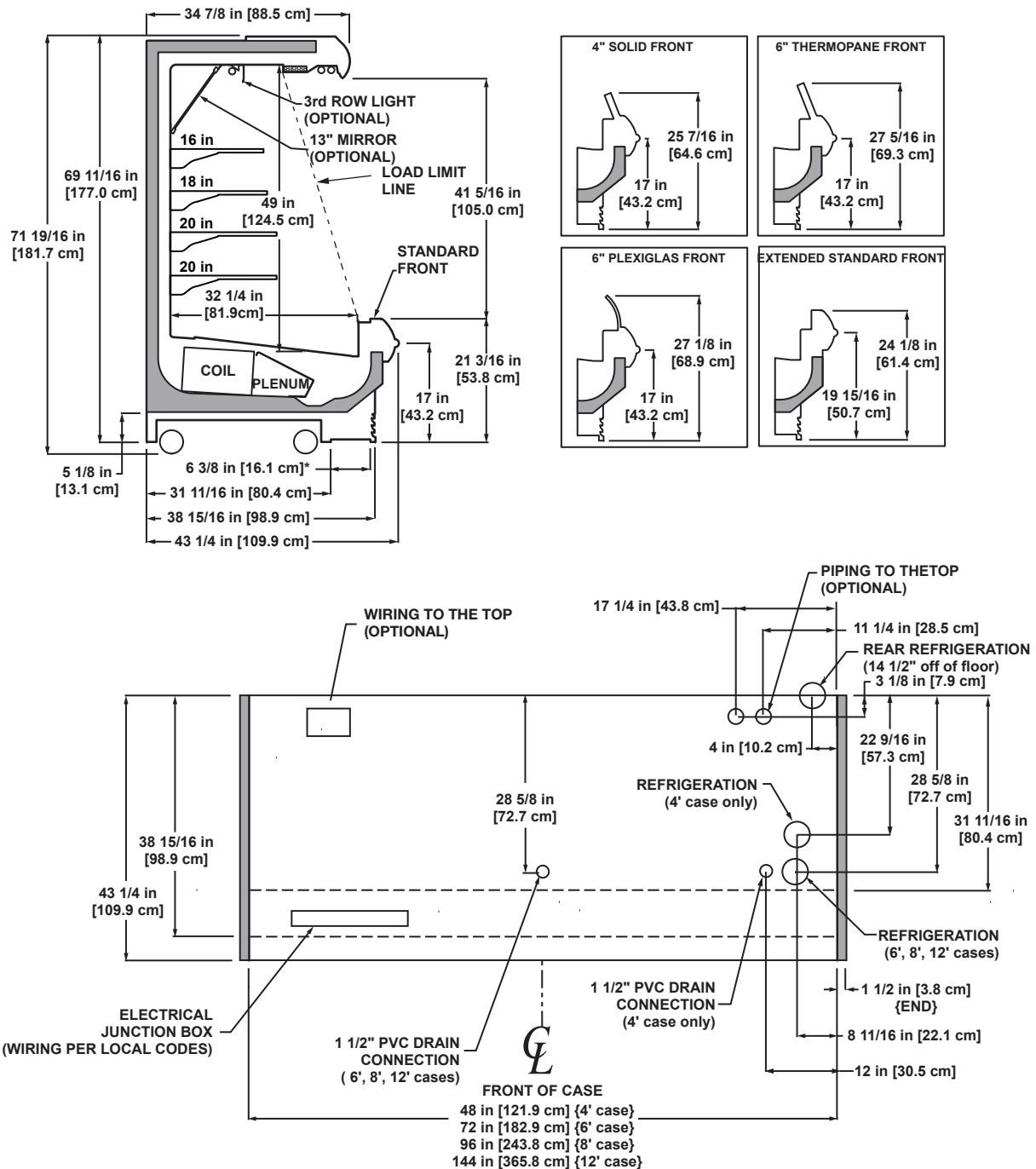
- FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARIES WITH BASEFRAME HEIGHT
- ENDS ADD APPROXIMATELY 1 INCH TO CASE HEIGHT
- WIRING-TO-THE-TOP ADDS APPROXIMATELY 4 INCHES TO CASE HEIGHT
- A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL
- AVAILABLE SHELF SIZES: 10", 12", 14", 16",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



OHM Multi-Deck Merchandiser

6', 8' & 12' (Deli / Meat)

(5" BASEFRAME)



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	---	---	1.92	400	2.22	532
6'	2	1.00	60	0.47	28	---	---	2.88	600	3.33	798
8'	3	1.50	90	0.70	42	---	---	3.85	800	4.44	1065
12'	4	2.00	120	0.93	56	---	---	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)			
			120 Volts		Standard Power (Cornice or Shelf)		High Power (Cornice)	
			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

Application	Front Sill Heights	2BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge ³ Air Velocity (FPM)
		Conventional	Parallel				
Deli	2.5" Ext.	1600	1458	6 - 8	22	30	270
	5" Ext.	1556	1418	6 - 8	22	30	270
	7.5" Ext.	1523	1388	6 - 8	22	30	270
Dairy Cut Produce	Std. Dairy	1490	1358	6 - 8	26	34	270
	2.5" Ext.	1448	1319	6 - 8	26	34	270
	5" Ext.	1415	1289	6 - 8	26	34	270
	7.5" Ext.	1381	1258	6 - 8	26	34	270
Beverage Bulk Produce	Std. Dairy	1512	1378	6 - 8	29	36	270
	2.5" Ext.	1469	1338	6 - 8	29	36	270
	5" Ext.	1436	1308	6 - 8	29	36	270
	7.5" Ext.	1403	1278	6 - 8	29	36	270

Defrost Controls

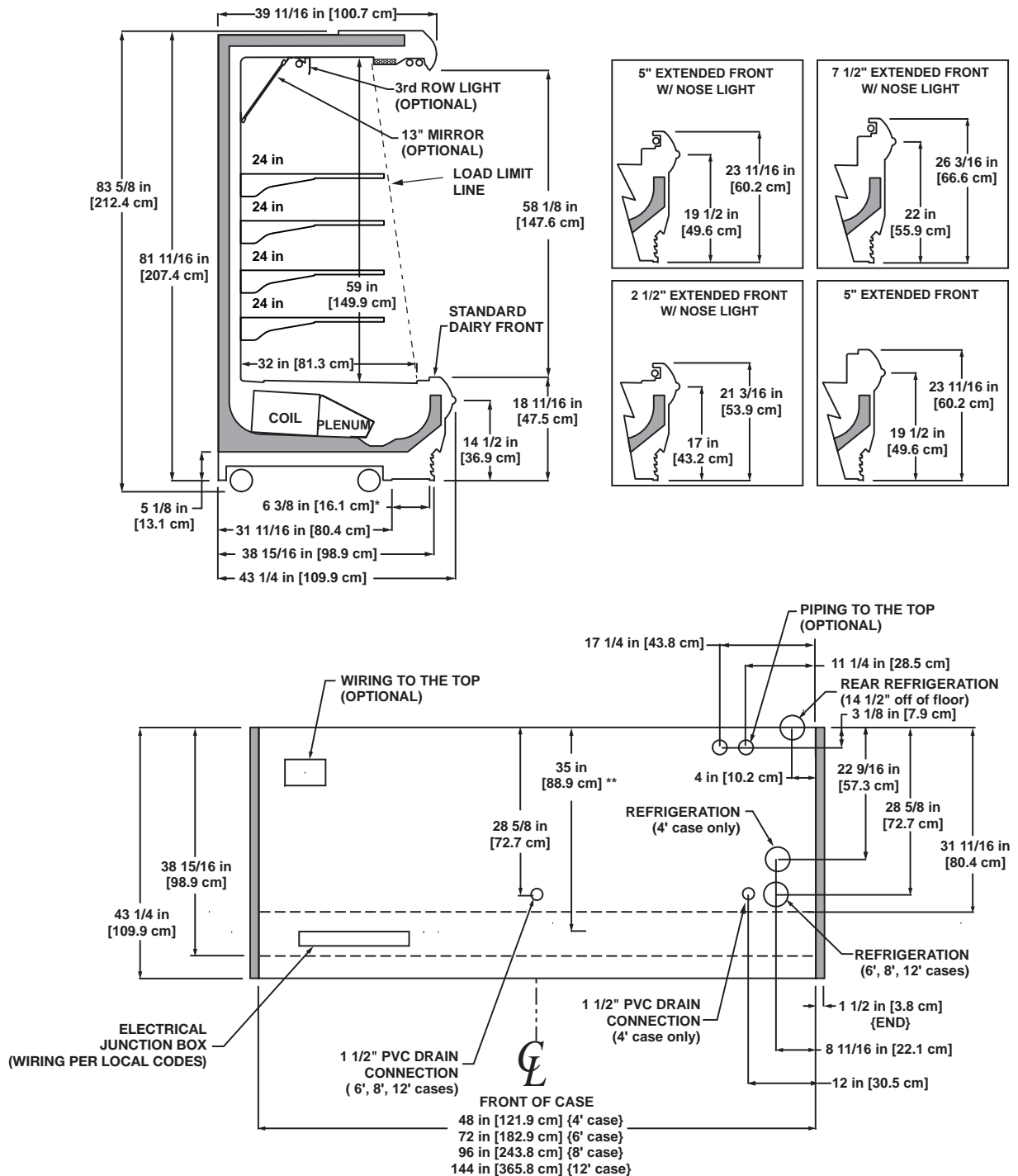
Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
4	6 - 8	32	47	42	47	26	45	42	45

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.



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	---	---	1.92	400	2.22	532
6'	2	1.00	60	0.47	28	---	---	2.88	600	3.33	798
8'	3	1.50	90	0.70	42	---	---	3.85	800	4.44	1065
12'	4	2.00	120	0.93	56	---	---	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)		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

Application	Front Sill Heights	BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge ³ Air Velocity (FPM)
		Conventional	Parallel				
Deli	2.5" Ext.	1600	1458	6 - 8	22	30	270
	5" Ext.	1556	1418	6 - 8	22	30	270
	7.5" Ext.	1523	1388	6 - 8	22	30	270
Dairy Cut Produce	Std. Dairy	1490	1358	6 - 8	26	34	270
	2.5" Ext.	1448	1319	6 - 8	26	34	270
	5" Ext.	1415	1289	6 - 8	26	34	270
	7.5" Ext.	1381	1258	6 - 8	26	34	270
Beverage Bulk Produce	Std. Dairy	1512	1378	6 - 8	29	36	270
	2.5" Ext.	1469	1338	6 - 8	29	36	270
	5" Ext.	1436	1308	6 - 8	29	36	270
	7.5" Ext.	1403	1278	6 - 8	29	36	270

Defrost Controls

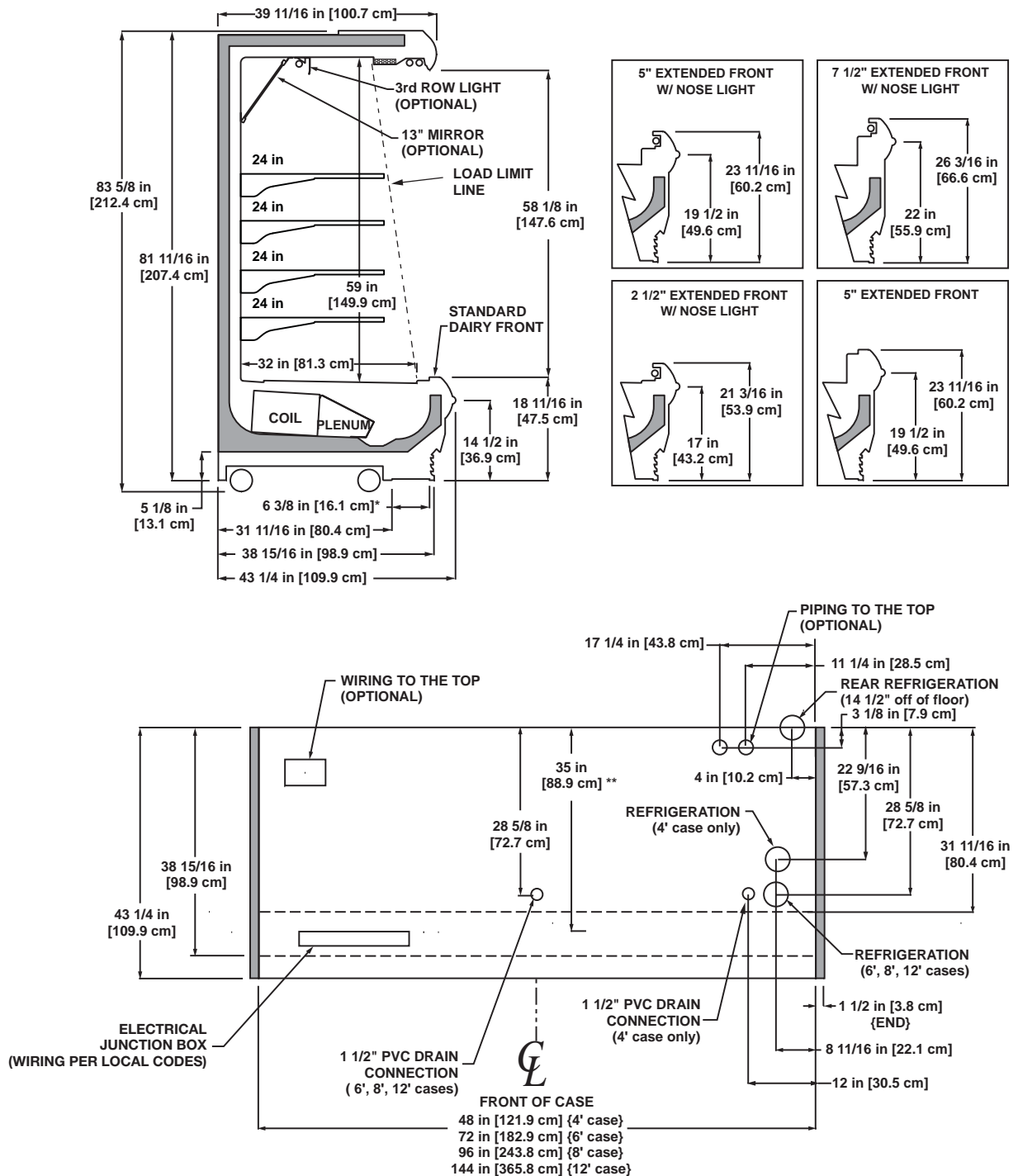
Defrosts Per Day	Run-Off Time (min)	Electric Defrost		Timed-Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
		Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)	Fail-Safe (min)	Termination Temp (°F)
4	6 - 8	32	47	42	47	26	45	42	45

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.



NOTES:

* STUB-UP AREA

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

- FRONT SILL HEIGHT AND OVERALL CASE HEIGHT VARIES 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", 22" & 24"
- DASHED LINES SIGNIFY AREA INSIDE BASE RAIL BEHIND KICK-PLATE



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	---	---	1.92	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)			
			120 Volts		Standard Power (Cornice or Shelf)		High Power (Cornice)	
			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	²BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator (°F)	Discharge Air (°F)	Discharge³ 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.

MULTI-DECK

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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	---	---	1.92	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)		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	2BTUH/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.

MULTI-DECK

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Electrical Data

Case Length	Fans Per Case	High Efficiency Fans		Anti-Condensate Heaters	
		120 Volts		120 Volts	
		Amps	Watts	Amps	Watts
4'	1	0.23	18	---	---
6'	2	0.47	35	---	---
8'	2	0.47	35	---	---
12'	3	0.70	53	---	---

Standard fan

Lighting Data

Case Length	Lights Per Row	Light Length	Fluorescent Lighting (Per Light Row)		Clearvoyant LED Lighting (Per Light Row)			
			120 Volts		Standard Power (Cornice or Shelf)		High Power (Cornice)	
			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

Guidelines & Control Settings

Application	Front Sill Heights	²BTUH/ft		Superheat Set Point @ Bulb (°F)	Evaporator³ (°F)	Discharge⁴ Air (°F)	Discharge⁵ Air Velocity (FPM)
		Conventional	Parallel				
Dairy Deli Cut Produce	Std. Dairy	1571	1375	6 - 8	28	33	150
	2.5" Ext.	1531	1340	6 - 8	28	33	150
	5" Ext.	1503	1315	6 - 8	28	33	150
	7.5" Ext.	1480	1295	6 - 8	28	33	150
Beverage Bulk Produce	Std. Dairy	1198	1165	6 - 8	34	37	150
	2.5" Ext.	1162	1130	6 - 8	34	37	150
	5" Ext.	1137	1105	6 - 8	34	37	150
	7.5" Ext.	1116	1085	6 - 8	34	37	150

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)
Dairy / Deli / Cut Produce	6	---	---	---	40	42	---	---	---	---
Beverage / Bulk Produce	2	---	---	---	30	42	---	---	---	---

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.

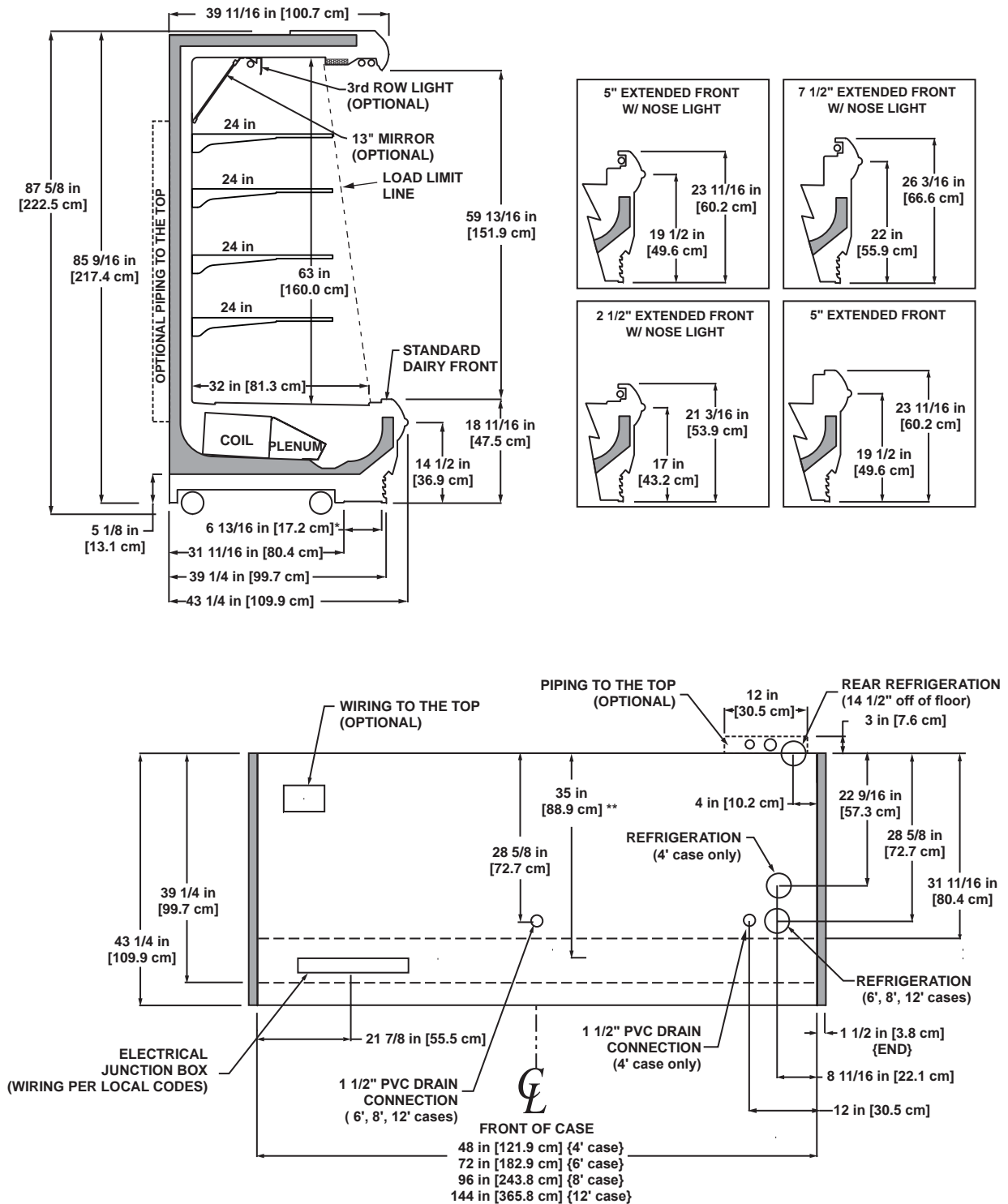
3 Listed evaporator temperature indicates unlighted shelves. For lighted shelves and/or aftermarket merchandising accessories, reduce the listed evaporator temperature by 2°F.

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.

O5DMH-NRG High Multi-Deck Merchandiser with Synerg-E™

4', 6', 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 1 INCH TO CASE HEIGHT
- A 2" MINIMUM AIR GAP IS REQUIRED BETWEEN THE REAR OF THE CASE AND A WALL
- SUCTION LINE (4' & 6') - 5/8", SUCTION LINE (8' & 12') - 7/8", LIQUID LINE (ALL LENGTHS) - 3/8"
- AVAILABLE SHELF SIZES: 10", 12", 14", 16", 18", 20", 22" & 24"
- 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 The Cleveland Electric Illuminating 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: vmnofziger@firstenergycorp.com

If to the Customer:

Giant Eagle, Inc
101 Kappa 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.

The Cleveland Electric Illuminating Company
(Company)

By:

Jah C. Pargin

Title: V.P. Of Energy Efficiency

Date:

2-18-13

Giant Eagle, Inc.

(Customer)

By:

Karl *nk*

Title:

VP - Sourcing

Date:

1-31-13

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

10/8/2013 10:32:42 AM

in

Case No(s). 13-1429-EL-EEC

Summary: Application to Commit Energy Efficiency/Peak Demand Reduction Programs of The Cleveland Electric Illuminating Company and Giant Eagle, Inc. electronically filed by Ms. Jennifer M. Sybyl on behalf of The Cleveland Electric Illuminating Company and Giant Eagle, Inc.