Ohio | Public Utilities Commission

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

Case No.: 12-1513 -EL-EEC

Mercantile Customer: **United Way of Greater Cincinnati**

Electric Utility: **Duke Energy**

Program Title or Description: **Whole Building Energy Conservation Upgrade**

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: **United Way of Greater Cincinnati**

Principal address: **2400 Reading Rd Cincinnati, Ohio 45202**

Address of facility for which this energy efficiency program applies:

2400 Reading Rd Cincinnati, Ohio 45202

Name and telephone number for responses to questions:

Grady Reid Jr 513-287-1038

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. (**Refer to Appendix A for 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: **Duke Energy**

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)).

□ 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): **September 2009 – February 2011**

This project was a combination of total renovation and facility expansions and included addition of new spray foam insulation, Low E coated windows and glass doors, upgraded roofing with reflective membrane and new HVAC system that using water source heat pumps, VFD's, heat recovery units and roof top units.

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□ 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.

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: **632,842 kWh** (**Refer to Appendix B for calculations and supporting documents).**

Please describe the less efficient new equipment that was rejected in favor of the more efficient new equipment.

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?

New equipment was installed starting September 2009 and was finished February 2011.

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

77 kW
Refer to Appendix B for calculations and supporting documents.

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 **25,000.00**. **Refer to Appendix C for documentation.** (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 **10.13** (Skip to Subsection 2.) **Refer to Appendix D for calculations and supporting documents.**

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 **$407,827**.

The utility's program costs were **$15,267**.

The utility's incentive costs/rebate costs were **$25,000.**

Refer to Appendix D for calculations and supporting documents.

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.

Refer to Offer Letter following this application

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.

DUKE ENERGY CORPORATION
Mercantile Self Direct Program
139 East Fourth Street
Cincinnati, OH 45202

513 629 5572 fax

March 12, 2012

Mr. Dan Kirschner
United Way of Greater Cincinnati
2400 Reading Rd
Cincinnati, Ohio 45202

Subject: Your Application for a Duke Energy Mercantile Self-Direct Rebate

Dear Mr Kirschner:

Thank you for your Duke Energy Mercantile Self Direct rebate application. As noted in the Energy Conservation Measure (ECM) chart on page two, a total rebate of $25,000.00 has been proposed for your whole building energy savings upgrade completed in the 2011calendar year. All Self Direct Rebates are contingent upon approval by the Public Utilities Commission of Ohio (PUCO).

At your earliest convenience, please indicate if you accept this rebate by

- providing your signature on page two
- completing the PUCO-required affidavit on page three.

Please return the documents to my attention via fax at 513-629-5572 or e-mail to SelfDirect@Duke-Energy.com. Upon receipt, Duke Energy will submit the necessary documentation to PUCO. Following PUCO's approval, Duke Energy will remit payment.

At Duke Energy, we value your business and look forward to working with you on this and future energy efficiency projects. We hope you will consider our Smart $aver® incentives, when applicable. Please contact me if you have any questions.

Sincerely,

Grady Reid, Jr
Product Manager
Mercantile Self Direct Rebates

cc: Marvin Blade, Duke Energy
Rob Jung, WECC

Please indicate your response to this rebate offer within 30 days of receipt.

☒ Rebate is accepted. ☐ Rebate is declined.

By accepting this rebate, United Way of Greater Cincinnati affirms its intention to commit and integrate the energy efficiency projects listed on the following pages into Duke Energy's peak demand reduction, demand response and/or energy efficiency programs.

Additionally, United Way of Greater Cincinnati also agrees to serve as joint applicant in any future filings necessary to secure approval of this arrangement as required by PUCO and to comply with any information and reporting requirements imposed by rule or as part of that approval.

Finally, United Way of Greater Cincinnati affirms that all application information submitted to Duke Energy pursuant to this rebate offer is true and accurate. Information in question would include, but not be limited to, project scope, equipment specifications, equipment operational details, project costs, project completion dates, and the quantity of energy conservation measures installed.

If rebate is accepted, will you use the monies to fund future energy efficiency and/or demand reduction projects?

☐ YES ☒ NO ?

If rebate is declined, please indicate reason (optional):

[signature] Dani Kirschner 3/19/12

Customer Signature Printed Name Date

Proposed Rebate Amounts

Measure ID	Energy Conservation Measure (ECM)	Proposed Rebate Amount
ECM-1	Whole Building Energy Conservation Upgrade (HVAC, Lighting, Windows, and Insulation)	$25,000
Total		$25,000

Ohio | Public Utilities Commission

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

Case No.: ____-____-EL-EEC

State of _____ :

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

1. I am the duly authorized representative of:

United Way of Greater Cincinnati
[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.

3. I am aware of fines and penalties which may be imposed under Ohio Revised Code Sections 2921.11, 2921.31, 4903.02, 4903.03, and 4903.99 for submitting false information.

Dan Kirschner, Director, Property Services
Signature of Affiant & Title

Sworn and subscribed before me this 19 day of March, 2012 Month/Year

Melissa Lohman
Signature of official administering oath

MELISSA LOHMAN
Notary Public, State of Ohio
My Commission Expires 11-15-2014
Print Name and Title

My commission expires on 11/15/2014

	Appendix A		
58100675 01			
UNITED WAY OF GREATER			
2400 READING RD			
CINCINNATI, OH 45206			
Date	Days	Read	Actual KWH
9/23/2011	30	0	115,720
8/24/2011	29	0	121,242
7/26/2011	32	0	131,816
7/26/2011	32	0	263,632
6/24/2011	30	0	116,664
5/25/2011	29	0	100,280
4/26/2011	32	0	105,388
3/25/2011	29	0	103,479
2/24/2011	29	0	114,836
1/26/2011	30	0	94,676
12/27/2010	35	0	98,641
11/22/2010	31	0	68,020
Total			**1,434,394**

Appendix B – United Way Energy Savings Achieved

	Pre-Project (at the meter)			Post-Project (at the meter)			Savings (at the meter)	
ECM	**As-Found Building**	**Total Annual kWh[1]**	**Summer Coincident kW[1]**	**Renovated Building**	**Total Annual kWh[1]**	**Summer Coincident kW[2]**	**Energy Savings (kWh)**	**Demand Savings (kW)[2]**
ECM1	Building used early 1900's era boilers and HVAC system, T12 Lighting system, lack of insulation, and combination of original and replacement windows.	1,819,200	522	Whole Building Energy Conservation Upgrade (HVAC, Lighting, Windows, and Insulation)	1,230,700	450	588,500	72

Notes:

1. Energy consumption baseline, demand baseline and post-project energy consumption basis are outlined in the following pages.
2. Demand savings are returned by DSMore software as a result of energy savings allocations at the coincident hour. Post-project demand is calculated as the difference between pre-project modeled demand and the DSMore software result.

Application of 7.43% line losses yields **632,842 kWh** savings and **77 coincident kW** savings at the plant. This value also reflects minor rounding error resulting from the analytical mode of DSMore software used to model the projects.

MONTHLY DATA

JAN 2012 V2

Salesforce Opportunity Name	*United Way of Cincinnati - Whole Bldg. Upgrade*	Application #	11-335 MSD	Rev.	0
Project Name	*United Way of Cincinnati - Whole Bldg. Upgrade*			State	OH

Baseline source: Model
Savings source:

ECM 1

	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual
Baseline kWh	156,600	140,200	154,300	136,800	149,900	166,100	165,400	177,400	146,700	142,100	139,400	144,300	1,819,200
monthly savings	76,600	66,000	66,200	49,700	38,400	29,700	27,500	29,500	36,700	47,100	57,200	63,900	588,500
savings percent	49%	47%	43%	36%	26%	18%	17%	17%	25%	33%	41%	44%	
percent for DSMore	51.09%	52.92%	57.10%	63.67%	74.38%	82.12%	83.37%	83.37%	74.98%	66.85%	58.97%	55.72%	
Baseline kW	378	378	381	423	459	513	515	522	514	454	385	376	522
monthly savings	173	173	58	54	62	72	72	80	80	55	38	171	173
savings percent	46%	46%	15%	13%	14%	14%	14%	15%	15%	12%	10%	46%	
percent for DSMore	54.16%	54.17%	84.79%	87.32%	86.48%	86.00%	86.09%	84.66%	84.50%	87.93%	90.22%	54.47%	

	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual
Baseline kWh	157,300	140,800	154,800	137,000	150,000	166,100	165,400	177,400	146,800	142,300	139,800	144,800	1,822,500
Elec Spc Htg	700	600	500	200	100	0	0	0	100	200	400	500	3300
Net Baseline kWh	156,600	140,200	154,300	136,800	149,900	166,100	165,400	177,400	146,700	142,100	139,400	144,300	1,819,200
Proposed kWh	89600	79300	90800	88000	111800	136500	137900	147900	110000	95000	83600	84300	1,254,700
Elec Spc Htg	9600	5100	2700	900	300	100	0	0	0	0	1400	3900	24,000
Net Proposed kWh	80,000	74,200	88,100	87,100	111,500	136,400	137,900	147,900	110,000	95,000	82,200	80,400	1,230,700

	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec	Annual
Baseline kW	379	379	381	423	459	513	515	522	514	454	385	377	
Elec Spc Htg	1.1	1.2	0	0	0	0	0	0	0	0	0	1.1	
Net Baseline kW	378	378	381	423	459	513	515	522	514	454	385	376	
Proposed kW	288.7	263.5	323.6	369.8	397.6	441.1	443.2	441.5	434.1	399.1	347	250.3	
Elec Spc Htg	84.1	58.9	0.9	0.8	0.5	0.1	0	0	0	0	0.1	45.7	
Net Proposed kW	205	205	323	369	397	441	443	442	434	399	347	205	

Appendix C - United Way - Cash Rebate Calculation

Measure	Quantity	Commitment Payment/Rebate Rate	Total Cash Rebate
Whole Building Energy Conservation Upgrade (HVAC, Lighting, Windows, and Insulation)	1	50% of incentive that would be offered by the Smart $aver Custom program	**$25,000.00**

Appendix D United Way Building Upgrade -UCT Value

Building Upgrade

Measure	Total Avoided Cost	Program Cost	Incentive	Quantity	Measure UCT
Whole Building Energy Conservation Upgrade (HVAC, Lighting, Windows, and Insulation)	$407,827	$15,267	$25,000	1	**10.13**
Totals	**$407,827**	**$15,267**	**$25,000**	**1**	

Total Avoided Supply Costs	$407,827	***UCT***	***10.13***
Total Program Costs	$15,267		
Total Incentive	$25,000		

Ohio Mercantile Self Direct Program

Application Guide & Cover Sheet

Questions? Call 1-866-380-9580 or visit www.duke-energy.com.

Email this form along with completed Mercantile Self Direct Prescriptive or Custom applications, proof of payment, energy savings calculations and spec sheets to SelfDirect@Duke-Energy.com. You may also fax to 1-513-419-5572.

Mercantile customers, defined as using at least 700,000 kWh annually are eligible for the Mercantile Self Direct program. Please indicate mercantile qualification:

- ☒ a single Duke Energy Ohio account
- ☐ multiple accounts in Ohio (energy usage with other utilities may be counted toward the total)

Please list Duke Energy account numbers below (attach listing of multiple accounts an/or billing history for other utilities as required):

Account Number	Annual Usage	Account Number	Annual Usage
5810-0675-01-1	1151000		

Self Direct rebates are available for completed Custom projects that have not previously received a Duke Energy Smart $aver® Custom Incentive. Self Direct incentives are applicable to Prescriptive measures that were installed more than 90 days prior to submission to Duke Energy and have not previously received a Duke Energy Prescriptive rebate.

Self Direct Program requirements dictate that certain projects that may be Prescriptive in nature under the Smart $aver program must be evaluated using the Custom process. Use the table on page two as a guide to determine which Self Direct program fits your project(s). Apply for Self Direct projects using the appropriate application forms in conjunction with this cover sheet. Where Mercantile Self Direct Prescriptive applications are listed, please refer to the measure list on that application. If your measure is not listed, you may be eligible for a Self Direct Custom rebate. Self Direct Custom applications, like Smart $aver Custom applications, should include detailed analysis of pre-project and post-project energy usage and project costs. Please indicate which type of rebate applications are included in the table provided on page two.

Please check each box to indicate completion of the following program requirements:

☐ All sections of appropriate application(s) are completed	☒ Proof of payment.*	☐ Manufacturer's Spec sheets	☒ Energy model/calculations and detailed inputs for Custom applications

* If a single payment record is intended to demonstrate the costs of both Prescriptive & Custom projects, please include an additional document with an estimated breakout of costs for each Prescriptive and Custom energy conservation measure.

Mercantile Self Direct
Nonresidential Custom Rebate Application
PART 1

1. Contact Information (Required)

Duke Energy Customer Contact Information						
Company Name	United Way of Greater Cincinnati					
Address	2400 Reading Road					
Project Contact	Dan Kirschner					
City	Cincinnati	State	OH	Zip Code	45202	
Title	Director, Property Services					
Office Phone	513-762-7168	Mobile Phone	513-509-6205	Fax	513-762-7146	
E-mail Address	kirschner@uwgc.org					

Equipment Vendor / Contractor / Architect / Engineer Contact Information						
Company Name	Green Building Auditors					
Address	28 Woodland Hills Dr. Unit #10					
City	Southgate	State	KY	Zip Code	41071	
Project Contact	John Kirschner					
Title	President					
Office Phone		Mobile Phone	859-250-9692	Fax	859-441-1505	
E-mail Address	jkirschner@greenbuildingauditors.com					
Describe Role	Incentive Coordination					

Payment Information					
Payee Legal Company Name (as shown on Federal income tax return):	United Way of Greater Cincinnati				
Mailing Address	2400 Reading Road				
City	Cincinnati	State	OH	Zip Code	45202
Type of organization (check one) ☐ Individual/Sole Proprietor ☐ Corporation ☐ Partnership ☐ Unit of Government ☒ Non-Profit (non-corporation)					
Payee Federal Tax ID # of Legal Company Name Above:	31-0537502				
Who should receive incentive payment? (select one) ☒ Customer ☐ Vendor (Customer must sign below)					
If the vendor is to receive payment, please sign below: I hereby authorize payment of incentive directly to vendor: Customer Signature _____ Date____/___/_____ (mm/dd/yyyy)					

Mercantile Self Direct
Nonresidential Custom Rebate Application
PART 1

2. Project Information (Required)

A. Please indicate project type:
- ☐ New Construction
- ☒ Expansion at an existing facility
- ☐ Replacing equipment due to equipment failure
- ☐ Replacing equipment that is estimated to have remaining useful life of 2 years or less
- ☐ Replacing equipment that is estimated to have remaining useful life of more than 2 years
- ☐ Behavioral, operational and/or procedural programs/projects

B. Please describe your project, or attach a detailed project description that describes the project.
See Attached Project Summary

C. When did you start and complete implementation?
Start date (mm/yyyy) End date 02/2011 (mm/yyyy)

D. Are you also applying for Self-Direct Prescriptive incentives and, if so, which one(s)[1]?
NA.

E. Please indicate which worksheet(s) you are submitting for this application (check all that apply):
- ☐ Lighting
- ☐ Variable Frequency Drive (VFD)
- ☐ Compressed Air
- ☐ Energy Management System (EMS)
- ☒ General (for projects not easily submitted using one of the above worksheets)

F. Please tell us if there is anything about your electrical energy projections (either for the baseline or the proposed project) that you are either unsure about or for which you have made significant assumptions. Attach additional sheets as needed.
NA

Required: Attach a supplier or contractor invoice or other equivalent information documenting the Implementation Cost for each project listed in your application. (Note: self-install costs cannot be included in the Implementation Cost)

[1] If your project involves some equipment that is eligible for prescriptive incentives and some equipment that is likely eligible for custom incentives, and if it is feasible to separate the equipment for the energy analysis, then the equipment will be evaluated separately. If it is not feasible to separate the equipment for analysis, then the equipment will be evaluated together in the custom application.

3. Signature (Required – must be signed by Duke Energy customer)

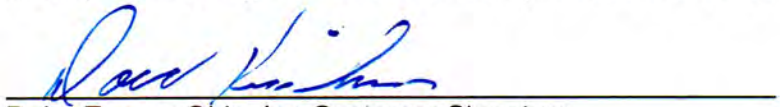
Customer Consent to Release of Personal Information

I, (insert name) Dan Kirschner, do hereby consent to Duke Energy disclosing my Duke Energy Ohio, Inc Account Number and Federal Tax ID Number to its subcontractors solely for the purpose of administering Duke Energy Ohio's Mercantile Self-Direct Program. I understand that such subcontractors are contractually bound to otherwise maintain my Duke Energy Ohio, Inc Account Number and Federal Tax ID Number in the strictest of confidence.

I realize that under the rules and regulations of the public utilities commission, I may refuse to allow Duke Energy Ohio, Inc to release the information set forth above. By my signature, I freely give Duke Energy Ohio, Inc permission to release the information designated above.

Application Signature

I certify that I meet the eligibility requirements of the Duke Energy Ohio, Inc Mercantile Self Direct Custom Incentives Program and that all information provided within this application is correct to the best of my knowledge. I agree to the terms and conditions set forth for this program. I certify that the numbers, energy savings, and responses shown on this form are correct. Further, I certify that the taxpayer identification number is current and correct. I am not subject to backup withholding because: (a) I am exempt from backup withholding; or (b) I have not been notified by the IRS that I am subject to backup withholding as a result of a failure to report all interest or dividends; or (c) the IRS has notified me that I am no longer subject to backup withholding. I am a U.S. citizen (includes a U.S. resident alien).



Duke Energy Ohio, Inc Customer Signature

Print Name Dan Kirschner

Date 9-27-11

The General Worksheet is part 2 of the application. Do not submit this file without submitting a completed Part1 Custom Application document file, which can be found at www.duke-energy.com. This worksheet is for all projects that are not easily submitted through one of the other worksheets

Before you complete this application, please note the following important criteria:

- Submitting this application does not guarantee an incentive will be approved.
- Incentive already decided to proceed.
- Electric demand and/or energy reductions must be well documented with auditable calculations.

- Incomplete applications will not be reviewed; all fields are required.

Refer to the complete list of Instructions and Disclaimers, found in the Mercantile Self Direct Custom Application Part 1 document.

Please enter your information and data into the cells that are shaded.
Cells in white are locked and cannot be written over.

Duke Energy Customer Contact Information (Match the information in Application Part 1):

Name	Dan Kirschner
Company	United Way of Greater Cincinnati

Equipment Vendor / Project Engineer Contact Information

Name	John Kirschner
Company	Green Building Auditors

Before proceeding with the custom application, please verify that your project is not on the Self-Direct Prescriptive application.
The prescriptive incentive applications can be found at:
http://www.duke-energy.com/ohio-large-business/smart-saver/mercantile-self-direct.asp
Prescriptive rebate amounts are pre-approved.

List of Sites (Required)

App No.	
Rev.	

Provide a list of sites addressed by this custom incentive application

Site ID (see note 1)	Duke Energy Electric Account Number(s) (see note 2)	Facility Address	List of Proposed Projects at each site	Annual Hours of Operation	Gross Square Footage	Conditioned Square Footage	Facility Age (years)
225	*12345678 01*	*Example: 123 Main Street, Anywhere USA 12345*	*Project Name(s)*	*5,840*	*42,000*	*38,000*	*12*
1	*58100675*	*2400 Reading Road Cincinnati, OH 45202*	*Renovation/Expansion of facility whole building measures.*	*2,300*	*116,000*	*116,000*	*96*

1 Site ID
Can be a store number, building name or other way to identify the location. If there is only one site involved in this application, then a Site ID is not necessary.

2 Account Numbers
Must match the facility of the proposed project(s). If there are multiple meters at a site, only include the meters that pertain to the project(s).

For each project, answer the following questions (use one worksheet per project)

App No.	0
Rev.	0

Project Name: UWGC Renovation

How would you classify this project? (Place an x in all boxes that apply.)

Lighting		**Heating/Cooling**		**Air Compressor**		**Energy Management System**	
VFD		**Motors/Pumps**		**Process Equipment**		**Other, describe below:**	
						Whole Building Energy Measures	

Brief Project Description

Describe the Baseline (see note 3) Equipment/System	Describe the Proposed High Efficiency Project
Building used early 1900's era boilers and HVAC system, T12 Lighting system, lack of insulation, and combination of original and replacement windows.	**Whole building renovation see attached project report detailing the upgraded HVAC, Lighting, Windows, and Insulation**

If Existing Equipment is the Baseline, how many years of useful life remain or how many years until scheduled replacement? 0

Detailed Project Description Attached? Yes (Required)

Operating Hours (see note 4)

	Weekday		Saturday		Sunday		Weeks of Use in Year	Total Annual
24 x 7	**Start Hour**	**End Hour**	**Start Hour**	**End Hour**	**Start Hour**	**End Hour**	(see note 5)	**Hours of Use**
							52	***2,300***

Energy Savings

	Baseline (see Note 3)	Proposed	Savings	Describe how energy numbers were calculated
Annual Electric Energy	1,151,000 kWh	537,000 kWh	614,000 kWh	
Electric Demand	0 kW	0 kW	0 kW	
Calculations attached	Yes	Yes	(Required)	Components and load calcualtions were entered into eQuest Software.

Simple Payback

Average electric rate ($/kWh) on the applicable accounts (see note 6)			$0.10
Estimated annual electric savings			$61,400
Other annual savings in addition to electric savings, such as operations, maintenance, other fuels			
Incremental cost to implement the project (equipment & installation) (see note 7)			##########
Copy of vendor proposal is attached (see note 8)			Yes
Simple Electric Payback in years (see note 9)	56.8319544	**Total Payback in years**	56.8319544

3 Baseline
Retrofit projects: the existing equipment is the baseline.
New construction projects: the baseline is the standard option in today's market, taking into account any applicable organizational, local, state or federal codes or standards currently in effect.

4 Operating Hours
Describe when the equipment is typically used. If the project is proposed for more than one site, provide any variations in operating hours between the sites on a separate sheet.

5 Weeks of Use in Year
If the equipment is not in use 52 weeks during the year (for example, during holiday or summer break), provide an explanation of when usage is not expected and why:

6 Average electric rate ($/kWh)
If you do not know your average electric rate, use $0.10/kWh.

7 Incremental cost to implement the project
Costs exclude self installation costs. Retrofit projects, incremental cost is the total cost of the proposed project. New construction or where the existing equipment must be replaced anyway, then incremental cost is the premium of the proposed high efficiency project over baseline.

8 Copy of vendor invoice is attached
Vendor invoices detailing costs of the project are always required.
New construction projects or where the existing equipment must be replaced anyway, vendor proposal of baseline must also be attached.

9 Simple Electric Payback
If the simple electric payback is less than 1 year, the rebate structure is affected. Double check average electric rate for correct payback.

KOHRS LONNEMANN HEIL ENGINEERS, PSC
FT. THOMAS EXECUTIVE CENTRE
1538 ALEXANDRIA PIKE, STE.11
FT. THOMAS, KENTUCKY 41075
859-442-8050
859-442-8058 FAX

104 BROWN STREET
DAYTON, OHIO 45402
937-220-9700
937-220-9702 FAX

TWO MIRANOVA PLACE, ST. 280
COLUMBUS, OHIO 43215
614-228-2180
614-228-2183 FAX

33 Greene Street

Energy Analysis Input Summary

1. Building Envelope
   - 1.1. Alternate One: Proposed Building
     - 1.1.1. Roof: Wood 8in concrete built up with R-30 insulation
     - 1.1.2. Exterior walls: 12in HW concrete with brick vernier and R-18 insulation
     - 1.1.3. Slab: 12in concrete slab, no insulation
   - 1.2. Alternate Two: ASHRAE 90.1-2004
     - 1.2.1. Roof: Wood 8in concrete built up with R-30 insulation
     - 1.2.2. Exterior walls: 12in HW concrete with brick vernier and R-18 insulation
     - 1.2.3. Slab: 12in concrete slab, no insulation
2. Vertical Fenestrations
   - 2.1. Alternate One: Proposed Building
     - 2.1.1. Windows: Double Clear/Tint, U-factor of 0.55, SHGC-0.76, VT=0.81
     - 2.1.2. Doors: Double Clear/Tint, U-factor of 0.55, SHGC-0.76, VT=0.81
   - 2.2. Alternate Two: ASHRAE 901.-2004
     - 2.2.1. Windows: Single Clear/Tint, U-factor of 1.04, SHGC-0.86, VT=0.9
     - 2.2.2. Doors: Double Clear/Tint, U-factor of 0.881
3. Operational Schedule
   - 3.1. Lighting, miscellaneous load and occupancy usage schedules run from 7am to 9pm Monday through Friday, 7am to 6pm Saturday, Sunday and Holidays.
   - 3.2. Domestic Hot Water is run from 7am to 9pm Monday through Friday, 7am to 6pm Saturday, Sunday and Holidays.
4. Lighting Power Density
   - 4.1. Alternate One: Proposed Model
     - 4.1.1. 0.88 W/ ft^2 Building Area Method
   - 4.2. Alternate Two: ASHRAE 90.1-2004
     - 4.2.1. 1.0 W/ ft^2-Office Building Area Method

5. Domestic Water Heating

5.1. Alternate One: Proposed Model

5.1.1. 300 Gallon natural gas storage tank with 75% efficiency.

5.2. Alternate Two: ASHRAE 90.1-2004

5.2.1. 300 Gallon natural gas storage tank with 75% efficiency.

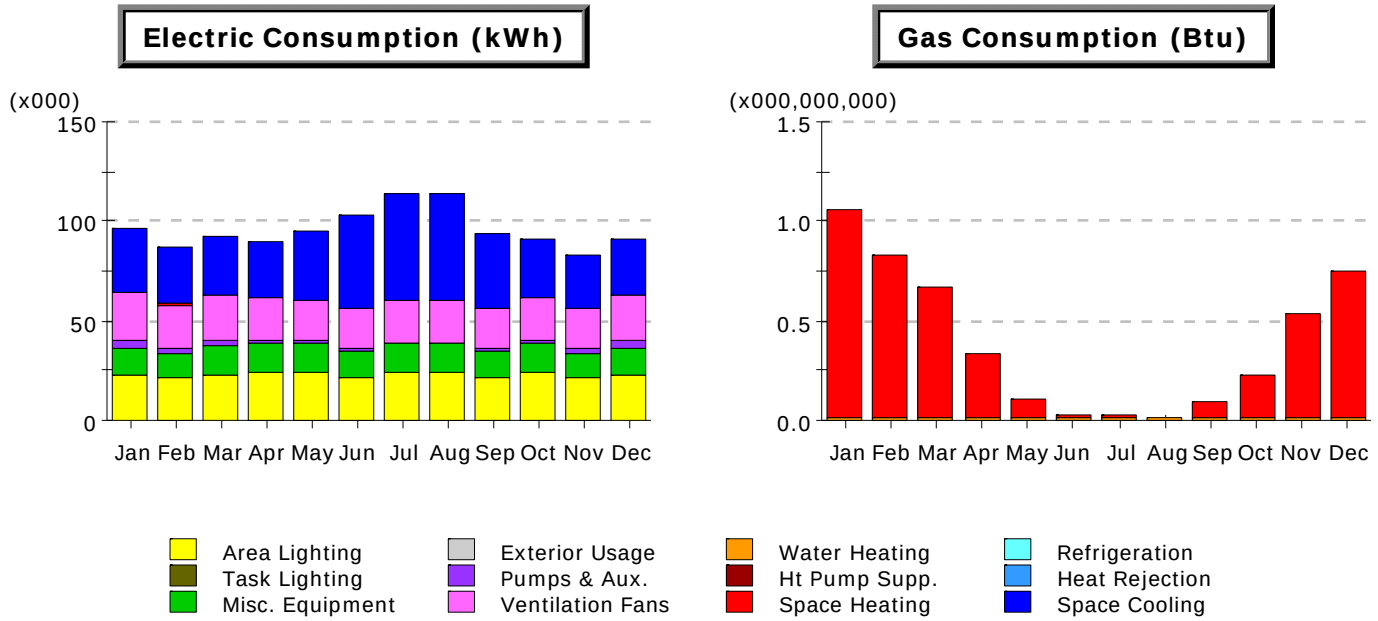
6. HVAC System

6.1. Alternate One: Proposed Building

6.1.1. Water source heat pumps for cooling, heating and ventilation. The water source heat pumps are served by a cooling tower and a boiler. The water source heat pump has a cooling efficiency of 10.4 EER and heating efficiency of 3.0 COP. The cooling tower is a fluid cooler with a single speed fan. The boiler combustion efficiency is 80%. The condenser flow is delivered by two constant volume pumps.

6.2. Alternate Two: System Two ASHRAE 90.1-2004

6.2.1. The building is served by four packaged rooftop units with DX cooling and hot water heating. DX cooling contains an efficiency of 8.2 EER. Two equally sized boilers with an efficiency of 80% are used for the hot water heating.

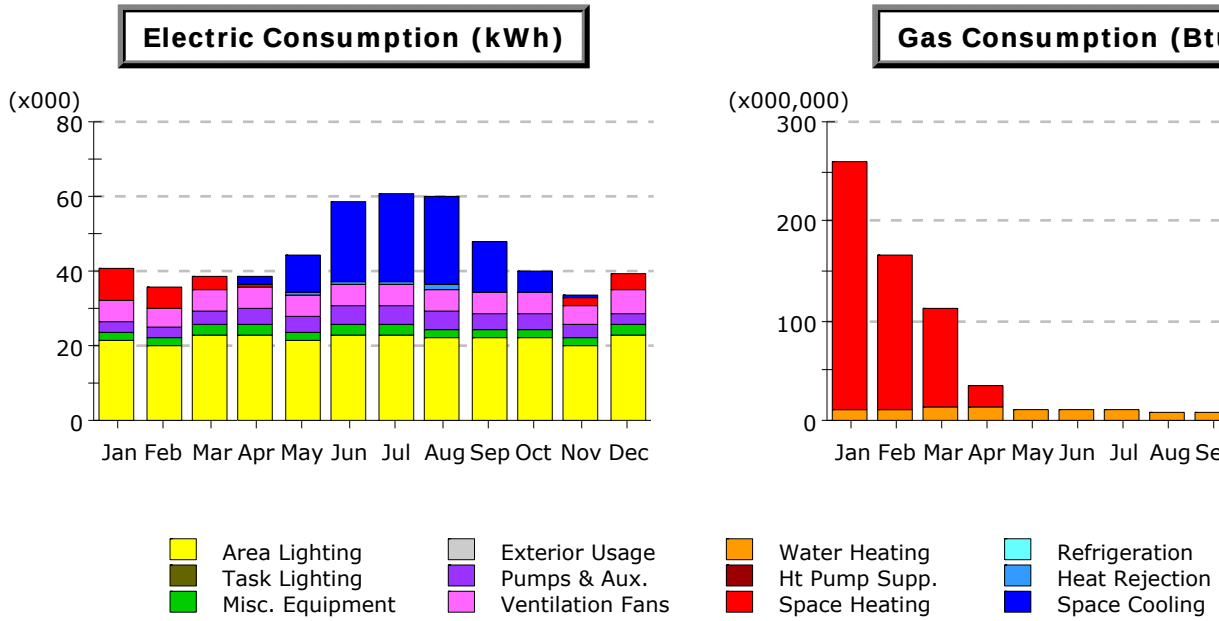


Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	31.7	28.8	29.7	28.2	34.2	46.7	53.2	53.8	37.4	30.3	26.2	28.7	429.0
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	0.6	0.5	0.4	0.2	0.1	0.0	0.0	0.0	0.1	0.2	0.3	0.5	2.8
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	24.1	21.5	22.6	20.8	21.0	20.5	21.3	21.3	20.1	20.9	19.9	22.5	256.5
Pumps & Aux.	3.4	3.0	2.9	2.2	1.3	0.6	0.6	0.6	1.2	1.9	2.6	3.1	23.6
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	13.7	12.4	13.8	14.2	14.2	13.1	14.2	14.3	13.1	14.2	12.5	13.7	163.6
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	23.1	20.9	23.1	24.1	24.1	22.1	24.1	24.1	22.0	24.1	21.0	23.1	275.9
Total	96.5	87.1	92.5	89.8	95.0	103.0	113.4	114.1	94.0	91.6	82.6	91.7	1,151.4

Gas Consumption (Btu x000,000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	1.05	0.82	0.66	0.32	0.10	0.02	0.01	0.01	0.09	0.22	0.52	0.74	4.55
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.12
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	1.06	0.83	0.67	0.33	0.11	0.03	0.02	0.02	0.10	0.23	0.53	0.75	4.67



Electric Consumption (kWh x000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	0.13	1.94	10.25	21.84	23.62	23.71	13.54	5.48	0.51	-	101.04
Heat Reject.	-	-	-	0.00	0.12	0.67	0.76	0.76	0.33	0.08	0.00	-	2.72
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	8.68	5.57	3.62	0.96	0.18	0.09	0.02	-	0.01	0.13	2.24	4.80	26.29
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	-	-	-	-	-	-	-	-	-	-	-	-	-
Vent. Fans	5.55	5.11	5.77	5.77	5.55	5.77	5.77	5.77	5.55	5.77	5.11	5.77	67.28
Pumps & Aux.	3.24	2.98	3.45	4.27	4.74	4.93	4.98	5.00	4.04	3.81	3.23	3.40	48.07
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	2.25	2.11	2.43	2.40	2.26	2.40	2.41	2.35	2.31	2.34	2.14	2.41	27.82
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	21.17	20.02	23.10	23.03	21.20	23.03	23.06	22.19	22.05	22.16	20.11	23.06	264.18
Total	40.89	35.78	38.50	38.38	44.29	58.75	60.63	59.79	47.83	39.76	33.35	39.45	537.41

Gas Consumption (Btu x000,000)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Space Cool	-	-	-	-	-	-	-	-	-	-	-	-	-
Heat Reject.	-	-	-	-	-	-	-	-	-	-	-	-	-
Refrigeration	-	-	-	-	-	-	-	-	-	-	-	-	-
Space Heat	247.59	155.66	100.59	22.56	-	-	-	-	-	2.88	60.66	131.61	721.54
HP Supp.	-	-	-	-	-	-	-	-	-	-	-	-	-
Hot Water	11.18	10.88	12.52	12.19	10.54	10.49	9.81	9.06	8.93	9.39	9.23	11.32	125.56
Vent. Fans	-	-	-	-	-	-	-	-	-	-	-	-	-
Pumps & Aux.	-	-	-	-	-	-	-	-	-	-	-	-	-
Ext. Usage	-	-	-	-	-	-	-	-	-	-	-	-	-
Misc. Equip.	-	-	-	-	-	-	-	-	-	-	-	-	-
Task Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Area Lights	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	258.78	166.54	113.11	34.75	10.54	10.49	9.81	9.06	8.93	12.27	69.89	142.93	847.10

APPLICATION AND CERTIFICATE FOR PAYMENT

AIA Document G702 PAGE 1 OF 5 PAGES

TO OWNER: United Way of Greater Cincinnati
2400 Reading Road #3
Cincinnati, OH
45202 US

PROJECT: United Way Renovation/Addition
2400 Reading Road #3
Cincinnati, OH
45202 US

APPLICATION NO.: 17
PERIOD TO : 30-NOV-10
PROJECT NOS.: 09-4580-00
INVOICE NO. 000710
CONTRACT DATE : 02-JUN-09

Distribution to:
- ☐ OWNER
- ☐ ARCHITECT
- ☐ CONTRACTOR
- ☐
- ☐

FROM CONTRACTOR: Triversity Group LLC
One North Commerce Park Drive
Cincinnati, OH
45215

ARCHITECT:

CONTRACT FOR: United Way Renovation/Addition

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract. Continuation sheet is attached.

1. ORIGINAL CONTRACT SUM	$	11,044,830.00
2. Net change by change orders	$	345,886.00
3. CONTRACT SUM TO DATE (Line1 +/- 2)	$	11,390,716.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	$	9,839,475.37
5. RETAINAGE: Total retainage Column I of G703)	$	597,469.07
6. TOTAL EARNED LESS RETAINAGE (Line 4 less Line 5 Total)	$	9,242,006.30
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT (Line 6 from prior Certificate)	$	8,646,561.76
8. CURRENT PAYMENT DUE	$	595,444.54
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 less Line 6)	$	2,148,709.70

CHANGE ORDER SUMMARY		ADDITIONS	DEDUCTIONS
Change Order approved in previous months by Owner		**354,258.00**	**-8,372.00**
APPROVED THIS MONTH			
Number	Date Approved		
CURRENT TOTAL		**0.00**	**0.00**
Net Change by Change Orders			**345,886.00**

AIA DOCUMENT G702 - APPLICATION AND CERTIFICATE FOR PAYMENT
THE AMERICAN INSTITUE OF ARCHITECTS 1735 NEW YORK AVENUE NW WASHINGTON DC 20006

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for payment were issued and payments received from the Owner, and that current payment shown herein is now due.

Contractor : Triversity Group LLC

By : _____ Date : 12-3-10

State of : Kentucky

County of : Boone

Subscribed and sworn to before me this 3rd 12th day of December 2010

Notary Public: Nicole M. Walz

My Commission expires: 4-5-14

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the above application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of Work is in accordance with the Contract Documents, and the Contractor is entitled to the payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED.....$ 595,444.54

(Attach explanation If amount certified differs from the amount applied for. Initial figures on this Application and on the Continuation Sheet that are changed to conform to the amount certified.)

ARCHITECT :

By : _____ Date : 12.3.10

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner of Contractor under this Contract.

Triversity Group LLC

CONTINUATION SHEET **AIA DOCUMENT G703** PAGE: 2

AIA DOCUMENT G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification is attached.
In tabulation below, amounts are stated to the nearest cent.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NUMBER : 17
APPLICATION DATE : 12-03-2010
PERIOD TO : 11-30-2010
PROJECT NO : 09-4580-00

INVOICE NO. 000710

A	B	C			D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE			WORK COMPLETED (D+E)		MATERIAL PRESENTLY STORED	TOTAL COMPLETED AND STORED TO DATE	PER % (G/C)	BALANCE TO FINISH	RETAINAGE
		ORIGINAL	CHANGE ORDERS	CURRENT	FROM PREVIOUS APPLICATION	THIS PERIOD					
09-4580-00	**General Requirements**										
09-4580-00	General Requirements	333,973.00	23,439.74	357,412.74	281,088.68	29,384.87	0.00	310,473.55	86.87	46,939.19	0.00
	General Requirements Total:	*333,973.00*	*23,439.74*	*357,412.74*	*281,088.68*	*29,384.87*	*0.00*	*310,473.55*	*86.87*	*46,939.19*	*0.00*
09-4580-01	**General Conditions**										
09-4580-01	General Conditions	711,610.00	-25,086.00	686,524.00	565,314.75	36,228.00	0.00	601,542.75	87.62	84,981.25	0.00
	General Conditions Total:	*711,610.00*	*-25,086.00*	*686,524.00*	*565,314.75*	*36,228.00*	*0.00*	*601,542.75*	*87.62*	*84,981.25*	*0.00*
09-4580-02	**Subcontracts**										
09-4580-02-026600	Site Utilities Package	263,444.00	26,211.00	289,655.00	287,355.00	2,300.00	0.00	289,655.00	100.00	0.00	28,965.50
09-4580-02-027800	Underground Electrical	170,400.00	139,245.00	309,645.00	293,768.00	15,302.00	0.00	309,070.00	99.81	575.00	30,907.01
09-4580-02-028300	Fences And Gates - Standard	0.00	15,364.00	15,364.00	0.00	0.00	0.00	0.00	.00	15,364.00	0.00
09-4580-02-029000	Landscaping (Trees, Plants, Grass, Sod, Relocate)	0.00	70,986.00	70,986.00	9,765.00	0.00	0.00	9,765.00	13.76	61,221.00	976.50
09-4580-02-030000	Complete Concrete Package	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
09-4580-02-031640	Slab On Grade - Place/Finish/Cure	0.00	8,689.00	8,689.00	8,690.00	0.00	0.00	8,690.00	100.01	-1.00	0.00
09-4580-02-038000	Resteel	0.00	17,440.00	17,440.00	17,439.00	0.00	0.00	17,439.00	99.99	1.00	0.00
09-4580-02-042000	Masonry Package	0.00	168,000.00	168,000.00	168,000.00	0.00	0.00	168,000.00	100.00	0.00	0.00
09-4580-02-045000	Masonry Restoration & Cleaning	0.00	248,119.00	248,119.00	240,788.29	0.00	0.00	240,788.29	97.05	7,330.71	24,078.83
09-4580-02-050000	Structural Steel Package	103,309.00	-8,971.00	94,338.00	94,338.00	0.00	0.00	94,338.00	100.00	0.00	0.00

CONTINUATION SHEET **AIA DOCUMENT G703** PAGE: 3

AIA DOCUMENT G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification is attached.
In tabulation below, amounts are stated to the nearest cent.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NUMBER : 17
APPLICATION DATE : 12-03-2010
PERIOD TO : 11-30-2010
INVOICE NO. 000710

A	B	C			D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE			WORK COMPLETED (D+E)		MATERIAL PRESENTLY STORED	TOTAL COMPLETED AND STORED TO DATE	PER % (G/C)	BALANCE TO FINISH	RETAINAGE
		ORIGINAL	CHANGE ORDERS	CURRENT	FROM PREVIOUS APPLICATION	THIS PERIOD					
09-4580-02	**Subcontracts**										
09-4580-02-055000	Misc. Steel- F&I	0.00	278,381.00	278,381.00	136,176.00	35,214.00	0.00	171,390.00	61.57	106,991.00	17,139.00
09-4580-02-064100	Custom Casework	0.00	105,179.00	105,179.00	77,817.75	0.00	0.00	77,817.75	73.99	27,361.25	7,781.78
09-4580-02-075000	Roofing Package	0.00	397,506.00	397,506.00	195,324.50	13,567.00	0.00	208,891.50	52.55	188,614.50	20,889.15
09-4580-02-082100	Wood Doors & Hardware	0.00	122,356.00	122,356.00	53,808.95	4,118.42	0.00	57,927.37	47.34	64,428.63	0.00
09-4580-02-083300	OH Doors & Grilles	0.00	18,094.00	18,094.00	17,872.49	0.00	0.00	17,872.49	98.78	221.51	0.00
09-4580-02-085200	Aluminum Windows	0.00	456,308.00	456,308.00	447,810.39	5,447.50	0.00	453,257.89	99.33	3,050.11	45,325.79
09-4580-02-085500	Alum Entrances,Storefronts	0.00	252,401.00	252,401.00	246,508.50	5,490.50	0.00	251,999.00	99.84	402.00	25,199.90
09-4580-02-091000	Drywall Systems Package	0.00	799,131.00	799,131.00	649,453.74	71,824.33	0.00	721,278.07	90.26	77,852.93	72,127.81
09-4580-02-093000	Flooring Package	0.00	323,112.00	323,112.00	221,004.20	0.00	0.00	221,004.20	68.40	102,107.80	22,100.42
09-4580-02-093100	Ceramic Tile	0.00	64,309.00	64,309.00	51,837.00	0.00	0.00	51,837.00	80.61	12,472.00	5,183.70
09-4580-02-095250	Acoustical Sound Treatment Systems	0.00	5,499.00	5,499.00	4,920.00	0.00	0.00	4,920.00	89.47	579.00	0.00
09-4580-02-099010	Painting	0.00	143,456.00	143,456.00	74,357.00	16,954.00	0.00	91,311.00	63.65	52,145.00	9,131.10
09-4580-02-101600	Toilet Partitions	0.00	28,482.00	28,482.00	25,517.00	0.00	0.00	25,517.00	89.59	2,965.00	0.00
09-4580-02-104400	Identification Devices-Interior	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00

CONTINUATION SHEET **AIA DOCUMENT G703** PAGE: 4

AIA DOCUMENT G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification is attached.
In tabulation below, amounts are stated to the nearest cent.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NUMBER : 17
APPLICATION DATE : 12-03-2010
PERIOD TO : 11-30-2010
INVOICE NO. 000710

A	B	C			D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE			WORK COMPLETED (D+E)		MATERIAL PRESENTLY STORED	TOTAL COMPLETED AND STORED TO DATE	PER % (G/C)	BALANCE TO FINISH	RETAINAGE
		ORIGINAL	CHANGE ORDERS	CURRENT	FROM PREVIOUS APPLICATION	THIS PERIOD					
09-4580-02	**Subcontracts**										
09-4580-02-114520	Residential Appliances	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
09-4580-02-125000	Window Treatments	0.00	49,111.00	49,111.00	22,181.00	0.00	0.00	22,181.00	45.17	26,930.00	2,218.10
09-4580-02-142000	Elevators	0.00	66,149.00	66,149.00	58,504.00	0.00	0.00	58,504.00	88.44	7,645.00	5,851.00
09-4580-02-153000	Fire Protection Package	183,750.00	-14,423.00	169,327.00	147,015.00	0.00	0.00	147,015.00	86.82	22,312.00	14,701.50
09-4580-02-154000	Plumbing Package	0.00	345,789.00	345,789.00	302,506.56	7,306.50	0.00	309,813.06	89.60	35,975.94	30,981.33
09-4580-02-156000	HVAC Package	0.00	1,323,018.00	1,323,018.00	1,184,167.00	44,934.00	0.00	1,229,101.00	92.90	93,917.00	61,455.00
09-4580-02-160000	Electrical Package	0.00	1,922,476.84	1,922,476.84	1,539,591.35	184,965.00	0.00	1,724,556.35	89.70	197,920.49	172,455.65
09-4580-02-170201	Subcontract Budget Fund	7,380,369.00	-7,309,946.40	70,422.60	0.00	0.00	0.00	0.00	.00	70,422.60	0.00
09-4580-02-170202	Owner Budget Fund - Reserved	10,000.00	-10,000.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
09-4580-02-170203	Owner Swing Space	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00
09-4580-03-010100	General Trades	926,502.00	872,844.33	1,799,346.33	1,576,990.44	83,114.89	0.00	1,660,105.33	92.26	139,241.00	0.00
	Subcontracts Total:	*9,037,774.00*	*924,315.77*	*9,962,089.77*	*8,153,506.16*	*490,538.14*	*0.00*	*8,644,044.30*	*86.77*	*1,318,045.47*	*597,469.07*
CONTINGENCY	**CM Contingency**										
09-4580-00-170101	CM Contingency	655,418.00	-580,786.84	74,631.16	0.00	0.00	0.00	0.00	.00	74,631.16	0.00
	CM Contingency Total:	*655,418.00*	*-580,786.84*	*74,631.16*	*0.00*	*0.00*	*0.00*	*0.00*	*.00*	*74,631.16*	*0.00*

CONTINUATION SHEET **AIA DOCUMENT G703** PAGE: 5

AIA DOCUMENT G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification is attached.
In tabulation below, amounts are stated to the nearest cent.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NUMBER : 17
APPLICATION DATE : 12-03-2010
PERIOD TO : 11-30-2010
INVOICE NO. 000710

A	B	C			D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE			WORK COMPLETED (D+E)		MATERIAL PRESENTLY STORED	TOTAL COMPLETED AND STORED TO DATE	PER % (G/C)	BALANCE TO FINISH	RETAINAGE
		ORIGINAL	CHANGE ORDERS	CURRENT	FROM PREVIOUS APPLICATION	THIS PERIOD					
FEE	**Fee**										
09-4580-00-CC	Carrying Charge	0.00	0.00	0.00	10,368.74	698.30	0.00	11,067.04		-11,067.04	0.00
09-4580-00-FEE	Fee	306,055.00	4,003.33	310,058.33	256,497.42	15,850.31	0.00	272,347.73	87.84	37,710.60	0.00
	Fee Total:	*306,055.00*	*4,003.33*	*310,058.33*	*266,866.16*	*16,548.61*	*0.00*	*283,414.77*	*91.41*	*26,643.56*	*0.00*
	Total:	***11,044,830.00***	***345,886.00***	***11,390,716.00***	***9,266,775.75***	***572,699.62***	***0.00***	***9,839,475.37***	***86.38***	***1,551,240.63***	***597,469.07***
	PROJECT TOTAL :	**11,044,830.00**	**345,886.00**	**11,390,716.00**	**9,266,775.75**	**572,699.62**	**0.00**	**9,839,475.37**	**86.38**	**1,551,240.63**	**597,469.07**

<NEW PAGE> 2

APPLICATION AND CERTIFICATE FOR PAYMENT - CONTINUATION SHEET

PROJECT: UNITED WAY
CONTRACT FOR: ROOF RENOVATION
TO: TRIVERSITY GROUP LLC

JOB ID: 101358
INVOICE NO: 011068

APPLICATION NO 6 DATE 11-19-10
PERIOD TO: 11-30-10
CONTRACTOR: WM. KRAMER & SON, INC.
ARCHITECT:
ARCHITECT'S PROJECT NO:

A	B	C	D	E	F	G		H	I
ITEM NO	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED PREVIOUS APPLICATION (D+E)	WORK COMPLETED THIS PERIOD	MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G/C)	BALANCE TO FINISH (C-G)	RETAINAGE
1	ROOF MATERIAL	105727.00	68725.00			68725.00	65%	37002.00	6872.50
2	ROOF LABOR	135308.00	87950.00			87950.00	65%	47358.00	8795.00
3	SHEET METAL MATERIAL	4988.00	4988.00			4988.00	100%		498.80
4	SHEET METAL LABOR	11247.00	6750.00			6750.00	60%	4497.00	675.00
5	ALLOWANCE	30000.00	7786.50	13567.00		21353.50	71%	8646.50	2135.35
6	MINORITY SUB	75000.00						75000.00	
7	SETUP SUPERVISION	15109.00	8300.00			8300.00	55%	6809.00	830.00
8	CO 1 TREMCO ROOF CHANGE	16652.00	10825.00			10825.00	65%	5827.00	1082.50
	APPLICATION TOTALS	394031.00	195324.50	13567.00	.00	208891.50	53%	185139.50	20889.15

State of Ohio
County of HAMILTON ss CLEVES OHIO November 19, 2010.

KEVIN G. KRAMER being first duly sworn says that he is THE VICE PRESIDENT,

of WM. KRAMER & SON, INC. the (sub/original) contractor having a contract with

Triversity Group LLC the general contractor,

an United Way Renovation / Addition situated on or around or in front of the following described property:

in Hamilton County, Ohio/Kentucky viz: 2400 Reading Road Cincinnati ,Ohio 45202,

whereof Triversity Group LLC **general contractor** was the owner, part owner or lessee.

SUB-CONTRACTORS

Affiant further says that the following shows the names and addresses of every sub-contractor in the employ of said WM. KRAMER & SON, INC. giving the amount, if any, which is due, or to become due, to them, or any of them, for work done, or machinery, material or fuel furnished to date hereof, under said contracts.

NOTE: This statement must be accompanied by a similar sworn statement signed by each of the sub-contractors listed below.

NAME	ADDRESS	TRADE	Amount Due or to become Due for Work and Materials to Date thereof	
NO SUB-CONTRACTORS				

MATERIAL MEN

Said affiant further says that the following shows the names and addresses of every person furnishing machinery, material or fuel to WM. KRAMER & SON, INC. giving the amount, if any, which is due, or to become due, to them, or any of them, for machinery, material or fuel furnished to date hereof, under said contracts.

NAME	ADDRESS	Kind of Machinery, Material or Fuel	Amount Due or to Become Due for Material Furnished to Date Hereof	
ALL MATERIAL OUT OF STOCK	& PAID IN FULL			

NOTE – The above must be accompanied by "Certificate of Maintenance". In lieu of such certificate, there may be furnished a written waiver of lien, a written release or receipt.

AFFIDAVIT
OF
ORIGINAL OR SUB-CONTRACTOR

LABOR

Said affiant further says that the following shows the names and addresses of every unpaid laborer in the employ of _____ WM. KRAMER & SON, INC. _____ furnishing labor under said contract, giving the amount, if any, which is due, or to become due, for labor done to date hereof.

NOTE – If the fact is that every laborer has been paid in full, then recite: "Every laborer has been paid in full." If not, then give each unpaid laborer's name and address and the amount due or to become due.

NAME	ADDRESS	HOURS	Amount Due or to Become Due For Labor Furnished to Date Hereof	
	E VERY LABORER HAS BEEN PAID IN FULL			

Affiant further states that there is due or to become due to WM. KRAMER & SON, INC. for work performed or machinery, material or fuel furnished to Triversity Group, LLC to date hereof under said contacts, the sum of $ 12,210.38.

That the amounts due or to become due to said sub-contractors, material-men and laborers, for work done or machinery, material or fuel furnished to the date hereof, to WM. KRAMER & SON, INC. are fully and correctly set forth opposite their names, respectively, in the aforesaid statements, and further evidenced by certificates of ever person furnishing machinery, material or fuel, herein attached and made a part hereof.

Affiant further says that WM. KRAMER &: SON, INC. has not employed or purchased or procured machinery, material or fuel from, or sub-contracted with any person, firm or cooperation, other than those above mentioned, and owes for no labor performed, or machinery, material or fuel furnished, under said contracts, other than above set forth.

Kevin G. Kramer

KEVIN G. KRAMER, VICE PRESIDENT

SWORN TO BEFORE ME AND SUBSCRIBED IN MY PRESENCE, at CLEVES Ohio, this 19 day of November, 2010.

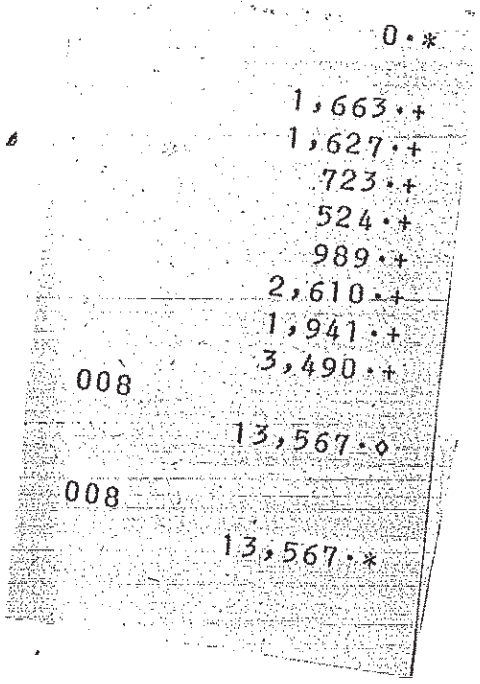
NOTARIAL SEAL STATE OF OHIO

BARBARA J. WILLIAMS
Notary Public, State of Ohio
My Commission Expires 06-11-2012

Barbara J. Williams

NOTARY PUBLIC

1. Secretary, Treasurer, name of firm, or agent, as cases may be.
2. Name and address.
3. "Owner", "part-owner", "lessee" or "authorized agent of the owner, part-owner or Lessee" or "original" or "principal contractor under a contract with _____ the owner, part-owner or lessee", as the case may be.
4. "Constructing, altering or repairing a boat, Vessel or other watercraft", or "erecting, altering, repairing or removing a house, mill, manufactory or any furnace, or furnace material therein, or other building appurtenant fixture, bridge or other Structure", or "digging" drilling, boring, operating, or completing and repairing of any gas well, oil well or other well", or "altering, repairing or constructing any oil derrick, oil tank, oil or gas pipeline", or "furnishing tile for the drainage of any lot or land".
5. Accurate description of property.


0.*
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989.+
2,610.+
1,941.+
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ADDITIONAL WORK AUTHORIZATION

WM. KRAMER & SON, INC.
9171 Harrison Pike, Unit 12
CLEVES, OH 45002
(513) 353-1142 Fax (513) 353-1157
E-Mail: roofinfo@eos.net

OWNER'S NAME: Tri Versity		PHONE: 615-2040	DATE: 11-1-2010
STREET: 2400 Reading Rd.		JOB NAME: United Way	JOB NUMBER
CITY: Cintin	STATE: OH.	STREET: 2400 Reading Rd.	
EXISTING CONTRACT NUMBER	DATE OF EXISTING CONTRACT	CITY: Cinti, OH.	STATE

You are authorized to perform the following specifically described additional work:

10/27/2010

A.) Opened roof membrane for installation of safty anchors for window washers.

b.) 4 man hrs.

10/27/2010

A.) Performed Demo @ applied base on East penthouse area

b.) 18 man Hrs.

11/1/2010

A.) opened roof for Safty Anchors.
1 Hrs.

Allowance
A.E. OK

Total man Hrs. 23
@ 59.75
1374.25
OH 10 137.43
Sub 1511.68
Prof. 10 151.17
1662.85

ADDITIONAL CHARGE FOR ABOVE WORK IS: $ $1,663.

Payment will be made as follows: ______

Above additional work to be performed under same conditions as specified in original contract unless otherwise stipulated.

Date ______ Authorizing Signature ______
(OWNER SIGNS HERE)

We hereby agree to furnish labor and materials - complete in accordance with the above specifications, at above stated price.

Authorized Signature [signature] Date 11-9-2010
(CONTRACTOR SIGNS HERE)

THIS IS CHANGE ORDER NO. 18

NOTE: This Revision becomes part of, and in conformance with, the existing contract.

ADDITIONAL WORK AUTHORIZATION

WM. KRAMER & SON, INC.
9171 Harrison Pike, Unit 12
CLEVES, OH 45002
(513) 353-1142 Fax (513) 353-1157
E-Mail: roofinfo@eos.net

OWNER'S NAME: Tri-versity	PHONE: 615-2040	DATE: 10/23/2010	
STREET: 2400 Reading Rd.	JOB NAME: United Way	JOB NUMBER: 09-4580	
CITY: Cinti. STATE: OH.	STREET: 2400 Reading Rd.		
EXISTING CONTRACT NUMBER:	DATE OF EXISTING CONTRACT:	CITY: Cinti.	STATE: OH.

You are authorized to perform the following specifically described additional work:

Roof area on North East corner of Bldg. where penthouse demo was performed.

A) 22½ man Hrs. @ 59.75 = 1344.38
A.E.V. 10% OH 134.44
1478.82
OK 10% Prof. 147.88
11-4-10 1626.70

ADDITIONAL CHARGE FOR ABOVE WORK IS: $ 1627.00

Payment will be made as follows: _____

Above additional work to be performed under same conditions as specified in original contract unless otherwise stipulated.

Date _____ Authorizing Signature _____ (OWNER SIGNS HERE)

We hereby agree to furnish labor and materials - complete in accordance with the above specifications, at above stated price.

Authorized Signature _____ (CONTRACTOR SIGNS HERE) Date 11-9-2010

THIS IS CHANGE ORDER NO. 17

NOTE: This Revision becomes part of, and in conformance with, the existing contract.

ADDITIONAL WORK AUTHORIZATION

WM. KRAMER & SON, INC.
9171 Harrison Pike, Unit 12
CLEVES, OH 45002
(513) 353-1142 Fax (513) 353-1157
E-Mail: roofinfo@eos.net

OWNER'S NAME: Triversity		PHONE: 615-2040	DATE: 10/20/2010
STREET: 2400 Reading Rd.		JOB NAME: United Way	JOB NUMBER: 09-4580
CITY: Cinti.	STATE: OH.	STREET: 2400 Reading Rd.	
EXISTING CONTRACT NUMBER:	DATE OF EXISTING CONTRACT:	CITY: Cinti.	STATE: OH.

You are authorized to perform the following specifically described additional work:

Removed debris from penthouse demo.
on North East corner of Bldg.

A.) 2 men 5 hrs.

a.) Total Hrs. 10 @ 59.75 $597.50

Oh 10% 59.75

657.25

Sal. 10% 65.73

722.98

ADDITIONAL CHARGE FOR ABOVE WORK IS: $ 723.00

Payment will be made as follows:

Above additional work to be performed under same conditions as specified in original contract unless otherwise stipulated.

Date _____ Authorizing Signature _____ (OWNER SIGNS HERE)

We hereby agree to furnish labor and materials - complete in accordance with the above specifications, at above stated price.

Authorized Signature _____ (CONTRACTOR SIGNS HERE) Date 10/20/10

THIS IS CHANGE ORDER NO. 16

NOTE: This Revision becomes part of, and in conformance with, the existing contract.

ADDITIONAL WORK AUTHORIZATION

WM. KRAMER & SON, INC.
9171 Harrison Pike, Unit 12
CLEVES, OH 45002
(513) 353-1142 Fax (513) 353-1157
E-Mail: roofinfo@eos.net

OWNER'S NAME Traverstill / Messer	PHONE	DATE 9-1-2010	
STREET	JOB NAME United Way	JOB NUMBER	
CITY	STATE	STREET	
EXISTING CONTRACT NUMBER	DATE OF EXISTING CONTRACT	CITY	STATE

You are authorized to perform the following specifically described additional work:

Remove & Reinstall Box Gutter
at main Canopy Due to Height Change
per Anthony

2 m 2 1/2 hr = 5@70 = 350.-
3 sk Portland Cement @ 18. = 54.-
40' - membrane @ 2.50 = 100.-
80 - fasteners @ 0.25 = 20.-
524.00

ADDITIONAL CHARGE FOR ABOVE WORK IS: $ $524.00

Payment will be made as follows: _____

Above additional work to be performed under same conditions as specified in original contract unless otherwise stipulated.

Date _____ Authorizing Signature Ken Anthony
(OWNER SIGNS HERE)

We hereby agree to furnish labor and materials - complete in accordance with the above specifications, at above stated price.

Authorized Signature Paul Stone BMK Date 9-1-2010
(CONTRACTOR SIGNS HERE)

THIS IS CHANGE ORDER NO. 11

NOTE: This Revision becomes part of, and in conformance with, the existing contract.

ADDITIONAL WORK AUTHORIZATION

WM. KRAMER & SON, INC.
9171 Harrison Pike, Unit 12
CLEVES, OH 45002
(513) 353-1142 Fax (513) 353-1157
E-Mail: roofinfo@eos.net

OWNER'S NAME University / Messer		PHONE	DATE 9-2-2010
STREET		JOB NAME	JOB NUMBER
CITY	STATE	STREET	
EXISTING CONTRACT NUMBER	DATE OF EXISTING CONTRACT	CITY	STATE

You are authorized to perform the following specifically described additional work:

Added [illegible] flashing at all HVAC units because of added wood & steel for curb requirements

FAB 2.5 hr	175.–
Deliv 1.5 hr	105.–
Erect 6.5 hr	455.–
metal 3 sheets [illegible] @ 68	204.–
68 screws @ .30	20.4
3 tubes caulk @ 10 =	30.–
	989.4

ADDITIONAL CHARGE FOR ABOVE WORK IS: $ 989.00

Payment will be made as follows: __________

Above additional work to be performed under same conditions as specified in original contract unless otherwise stipulated.

Date ________ Authorizing Signature [signature]
(OWNER SIGNS HERE)

We hereby agree to furnish labor and materials - complete in accordance with the above specifications, at above stated price.

Authorized Signature [signature] Date 9-2-2010
(CONTRACTOR SIGNS HERE)

THIS IS CHANGE ORDER NO. 12

NOTE: This Revision becomes part of, and in conformance with, the existing contract.

ADDITIONAL WORK AUTHORIZATION

WM. KRAMER & SON, INC.
9171 Harrison Pike, Unit 12
CLEVES, OH 45002
(513) 353-1142 Fax (513) 353-1157
E-Mail: roofinfo@eos.net

OWNER'S NAME: MESSER		PHONE	DATE: 9/14/10
STREET		JOB NAME: 4 NITED WAY	JOB NUMBER
CITY	STATE	STREET	
EXISTING CONTRACT NUMBER	DATE OF EXISTING CONTRACT	CITY	STATE

You are authorized to perform the following specifically described additional work:

Pickup / Deliver MATERIAL 2 @ 50.00	100.00
1 ROLL 10 x 100 .045 REG. @ .55/ft	330.00
5 qt BONDING ADH @ 113.00	113.00
1 qt MB 250 @ 38.80	38.80
1½ ROLLS 3" SEAM TAPE 65/rl	97.50
2 - 3" FRAMES + PADS @ 10.00	20.00
2 - 9" FRAMES + PADS @ 15.00	30.00
2 - GARBAGE BAGS @ 1	2.00
1 ROLL 10 x 50' .045 REG. .55/ft	275.00
17.25 hours labor @ 59.25	1030.69
1 e nasp @ .50	3.00
* Temp Floor Protection at	2259.69
Chimney and Floor to contain	225.97 10%
water at concrete curbing	2485.66
per Anthony & Bruce	124.28 5%
	2609.94

ADDITIONAL CHARGE FOR ABOVE WORK IS: $ $2,610.00

Payment will be made as follows: _____

Above additional work to be performed under same conditions as specified in original contract unless otherwise stipulated.

Date _____ Authorizing Signature for Bruce & Anthony
(OWNER SIGNS HERE)

We hereby agree to furnish labor and materials - complete in accordance with the above specifications, at above stated price.

Authorized Signature S M Kramer
(CONTRACTOR SIGNS HERE) Date 9-14-2010

THIS IS CHANGE ORDER NO. 13

NOTE: This Revision becomes part of, and in conformance with, the existing contract.

ADDITIONAL WORK AUTHORIZATION

WM. KRAMER & SON, INC.
9171 Harrison Pike, Unit 12
CLEVES, OH 45002
(513) 353-1142 Fax (513) 353-1157
E-Mail: roofinfo@eos.net

OWNER'S NAME United Way	PHONE	DATE
STREET	JOB NAME	JOB NUMBER
CITY / STATE	STREET	
EXISTING CONTRACT NUMBER / DATE OF EXISTING CONTRACT	CITY	STATE

You are authorized to perform the following specifically described additional work: metal bibs @ Built in of under stone coping

200 1 1/4 SS Sheeters
@ .65 = 130.00
2 Tubes Gray Caulking @ 12.00 = 24.00
100 #44 SS pop Rivets
@ .07 = 7.00

Alex Hewitt 7 Alex 1hr Truck Time
8 @ 59.75 = 478.–
Rick Holm 7 @ 59.75 = 418.25

installing Bib arround AC Units

Installing SS Bib around perimeter below stone Coping
metal / FAB 2.5 @ 59.75 = 149.38
3 sheets SS @ 158 = = 474.00

1680.63
168.06 10% OH
1848.69
92.44 5% Prof

ADDITIONAL CHARGE FOR ABOVE WORK IS: $ $1,941.00

Payment will be made as follows: ______

Above additional work to be performed under same conditions as specified in original contract unless otherwise stipulated.

Date ______ Authorizing Signature ______
(OWNER SIGNS HERE)

We hereby agree to furnish labor and materials - complete in accordance with the above specifications, at above stated price.

Authorized Signature [signature] (CONTRACTOR SIGNS HERE) Date 9-23-2010

THIS IS CHANGE ORDER NO. 14

NOTE: This Revision becomes part of, and in conformance with, the existing contract.

ADDITIONAL WORK AUTHORIZATION

WM. KRAMER & SON, INC.
9171 Harrison Pike, Unit 12
CLEVES, OH 45002
(513) 353-1142 Fax (513) 353-1157
E-Mail: roofinfo@eos.net

OWNER'S NAME Taverati Jonessa		PHONE	DATE 10-28-
STREET		JOB NAME United Way	JOB NUMBER
CITY	STATE	STREET	
EXISTING CONTRACT NUMBER	DATE OF EXISTING CONTRACT	CITY	STATE

You are authorized to perform the following specifically described additional work:

ADD Roof Drain Inserts into existing
Drains (9) Material 1783.00
LABOR 1102.00
2885
10% OH 288.50
3173.50
10% Prof. 317.35
3490.85

ADDITIONAL CHARGE FOR ABOVE WORK IS: $ 3490.00

Payment will be made as follows: ______

Above additional work to be performed under same conditions as specified in original contract unless otherwise stipulated.

Date ______ Authorizing Signature [signature]
(OWNER SIGNS HERE)

We hereby agree to furnish labor and materials - complete in accordance with the above specifications, at above stated price.

Authorized Signature [signature] Date 10-28-2010
(CONTRACTOR SIGNS HERE)

THIS IS CHANGE ORDER NO. 15

NOTE: This Revision becomes part of, and in conformance with, the existing contract.

CONTINUATION SHEET

AIA DOCUMENT G703 (Instructions on reverse side)

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification, is attached.
In tabulations below, amounts are stated to the nearest dollar.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO.: 9
APPLICATION DATE: 11/16/2010
PERIOD TO: 11/30/2010
ARCHITECT'S PROJECT NO.: 4580SC06

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED FROM PREVIOUS APPLICATION (D + E)	WORK COMPLETED THIS PERIOD	MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	BALANCE TO FINISH (C − G)	RETAINAGE (IF VARIABLE) RATE)
24	8 - M: Cleaning Windows	3,000	750	0	0	750	25	2,250	75
25	9 - M: Cleaning CW & SF	800	0	0	0	0	0	800	0
26	10: CO #1	24,342	24,342	0	0	24,342	100	0	2,434
27	11: CO#2-Material Windows	1,070	1,070	0	0	1,070	100	0	107
28	12: CO #3-Material window flshg/new entry	28,592	28,592	0	0	28,592	100	0	2,859
29	13: CO #4-Window Trim	3,214	3,214	0	0	3,214	100	0	321
30	14: CO #5-Glass	880	0	880	0	880	100	0	88
31	15: CO #6-Finish on Ent Doors	2,434	0	2,434	0	2,434	100	0	243
		456,308	447,810.39	~~5,448~~ 5447.50	0	453,258	99	3,050	45,326

CONTINUATION SHEET

AIA DOCUMENT G703 (Instructions on reverse side)

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification, is attached.
In tabulations below, amounts are stated to the nearest dollar.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO.: 11
APPLICATION DATE: 11/16/2010
PERIOD TO: 11/30/2010
ARCHITECT'S PROJECT NO.: 4580SC15

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED: FROM PREVIOUS APPLICATION (D + E)	WORK COMPLETED: THIS PERIOD	MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	BALANCE TO FINISH (C - G)	RETAINAGE (IF VARIABLE) RATE)
1	Bond Cost	4,000	4,000	0	0	4,000	100	0	400
2	074000 Centria CS-660 Panels	0	0	0	0	0	***	0	0
2A	LABOR	32,500	32,500	0	0	32,500	100	0	3,250
3	074000 McDougal Comp Panels	0	0	0	0	0	***	0	0
3A	LABOR	38,000	38,000	0	0	38,000	100	0	3,800
4	084100 Kawneer SF	0	0	0	0	0	***	0	0
4A	LABOR	12,000	12,000	0	0	12,000	100	0	1,200
5	08440 Kawneer Curtainwall	0	0	0	0	0	***	0	0
5A	LABOR	16,715	16,715	0	0	16,715	100	0	1,672
6	085100 Windows	0	0	0	0	0	***	0	0
6A	LABOR 1ST FLOOR	26,100	26,100	0	0	26,100	100	0	2,610
6B	LABOR 2ND FLOOR	26,100	26,100	0	0	26,100	100	0	2,610
6C	LABOR 3RD FLOOR	26,100	26,100	0	0	26,100	100	0	2,610
6D	LABOR 4TH FLOOR	19,700	19,700	0	0	19,700	100	0	1,970
6E	LABOR PENTHOUSE	2,495	2,495	0	0	2,495	100	0	250
7	088000 Glazing	0	0	0	0	0	***	0	0
7A	LABOR EXTERIOR	10,250	10,250	0	0	10,250	100	0	1,025
7B	LABOR INTERIOR	5,040	2,520	2,520	0	5,040	100	0	504
8	CO #1 BOND	6,450	6,450	0	0	6,450	100	0	645
9	CO #2 BOND	-2,809	-2,809	0	0	-2,809	100	0	-281
10	CO # 3 WINDOWS	16,707	16,707	0	0	16,707	100	0	1,671
11	CO #4 WINDOWS/LABOR	523	523	0	0	523	100	0	52
12	CO #5 WINDOW FLSHG/ ENTRY	5,941	2,971	2,971	0	5,941	100	0	594
13	CO #6-WINDOW TRIM	6,187	6,187	0	0	6,187	100	0	619
		251,999	246,508.50	5,490.50	0	251,999	100	0	25,200

AIA® Document G703™ – 1992

Continuation Sheet

AIA Document G702™, Application and Certification for Payment, containing Contractor's signed certification is attached.
In tabulations below, amounts are stated to the nearest dollar.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 10
APPLICATION DATE: 11/20/2010
PERIOD TO: 11/30/2010
ARCHITECT'S PROJECT NO: 4580SC16

A	B	C	D	E	F	G		H	I
			WORK COMPLETED						
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD	MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)	BALANCE TO FINISH (C − G)	RETAINAGE (If variable rate)
58	4TH FLOOR	0.00	0.00	0.00	0.00	0.00	***	0.00	0.00
59	FRAMING LABOR	24,000.00	24,000.00	0.00	0.00	24,000.00	100	0.00	2,400.00
60	FRAMING MATERIAL	14,400.00	14,400.00	0.00	0.00	14,400.00	100	0.00	1,440.00
61	INSULATION LABOR	2,000.00	2,000.00	0.00	0.00	2,000.00	100	0.00	200.00
62	INSULATION MATERIAL	2,100.00	2,100.00	0.00	0.00	2,100.00	100	0.00	210.00
63	HANGING LABOR	19,000.00	14,250.00	4,750.00	0.00	19,000.00	100	0.00	1,900.00
64	HANGING MATERIAL	7,400.00	7,400.00	0.00	0.00	7,400.00	100	0.00	740.00
65	FINISHING LABOR	18,000.00	9,000.00	8,100.00	0.00	17,100.00	95	900.00	1,710.00
66	FINISHING MATERIAL	3,200.00	3,200.00	0.00	0.00	3,200.00	100	0.00	320.00
67	ACOUSTICAL CEILINGS LABOR	8,000.00	0.00	2,000.00	0.00	2,000.00	25	6,000.00	200.00
68	ACOUSTICAL CEILINGS MATERIAL	19,000.00	0.00	9,500.00	0.00	9,500.00	50	9,500.00	950.00
69	*	0.00	0.00	0.00	0.00	0.00	***	0.00	0.00
70	EXTERIOR SPRAY FOAM INSULATION (SUB)	54,000.00	40,500.26	13,499.74	0.00	54,000.00	100	0.00	5,400.00
71	OPERABLE WALL TOP TRACK LABOR	1,000.00	1,000.00	0.00	0.00	1,000.00	100	0.00	100.00
72	OPERABLE WALL TOP TRACK MATERIAL	3,000.00	3,000.00	0.00	0.00	3,000.00	100	0.00	300.00
73	OPERABLE WALL LABOR	4,200.00	0.00	4,200.00	0.00	4,200.00	100	0.00	420.00
74	OPERABLE WALL MATERIAL	43,500.00	43,500.00	0.00	0.00	43,500.00	100	0.00	4,350.00
	GRAND TOTAL								

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

SCHEDULE OF VALUES PECK HANNAFORD + BRIGGS

SUBCONTRACT APPLICATION FOR PAYMENT IS ATTACHED

UNITED WAY RENOVATION/ADDITION

In tabulations below, amounts are stated to the nearest dollar.
Use Column J on Contractors where variable retainage for line items may apply.

APPLICATION NUMBER: 9 PHB #: 210090
APPLICATION DATE: 11/11/10
PERIOD TO: 11/30/10
Contract No.: 09-4580-00

A	B	C	D	E	F	G	H	I	J
Item No.	Description of Work	Scheduled Value	Work Completed		Materials Presently Stored (Not in D or E)	Total Completed and Stored To Date (D+E+F)	% (G/C)	Balance To Finish (C-G)	Retainage 10% (Enter % Above)
			From Previous Application (D+E)	This period					
1	Mobilization/Demobilization	27,000	20,000	4,000	-	24,000	89%	3,000	2,400
2	Coordination	46,000	46,000	-	-	46,000	100%	0	4,600
3	PHASE 1		-		-	-	-	0	-
4	**Water Source Heat Pumps**	**72,000**	**72,000**	-	-	**72,000**	**100%**	**0**	**7,200**
5	**Energy Recovery Vents**	**50,900**	**50,900**		-	**50,900**	**100%**	**0**	**5,090**
6	**Cooling Tower**	**36,700**	**36,700**	-	-	**36,700**	**100%**	**0**	**3,670**
7	**RTU's**	**68,157**	**68,157**	-	-	**68,157**	**100%**	**0**	**6,816**
8	**Fans**	**7,000**	**7,000**	-	-	**7,000**	**100%**	**0**	**700**
9	**Unit Heaters**	**13,200**	**13,200**	-	-	**13,200**	**100%**	**0**	**1,320**
10	**Pumps**	**10,170**	**10,170**	-	-	**10,170**	**100%**	**0**	**1,017**
11	Boilers	74,000	74,000		-	74,000	100%	0	7,400
12	Air Devices	13,000	13,000	-	-	13,000	100%	0	1,300
13	Sheetmetal Material	83,901	83,901	-		83,901	100%	0	8,390
14	Sheetmetal Labor	114,200	114,200	-		114,200	100%	0	11,420
15	Piping Material	47,120	47,120	-		47,120	100%	0	4,712
16	Piping Labor	98,540	98,540	-		98,540	100%	0	9,854
17	Insulation	51,300	51,300	-	-	51,300	100%	0	5,130
18	Controls	73,500	73,500	-		73,500	100%	0	7,350
19	Balancing	7,600	7,600	-	-	7,600	100%	0	760
20	Chemical Treatment	4,000	2,000	-		2,000		2,000	
21	PHASE 2		-		-	-	-	0	-
22	**Water Source Heat Pumps**	**46,780**	**46,780**	-	-	**46,780**	**100%**	**0**	**4,678**
23	**Fans**	**1,000**	**1,000**	-		**1,000**	**100%**	**0**	**100**
24	Air Devices	10,000	-		-	-	-	10,000	-
25	Sheetmetal Material	45,180	44,800		-	44,800	99%	380	4,480
26	Sheetmetal Labor	61,600	46,000	6,000		52,000	84%	9,600	5,200
27	Piping Material	31,412	24,000	3,000		27,000	86%	4,412	2,700
28	Piping Labor	42,240	25,344	8,000		33,344	79%	8,896	3,334
29	Insulation	34,200	6,840	10,000		16,840	49%	17,360	1,684
30	Controls	31,500	15,740	5,000		20,740	66%	10,760	2,074
31	Balancing	4,800				-	-	4,800	-
32	Allowance (include CO #2,# 5)	50,320	38,000	-		38,000	76%	12,320	3,800
33	CO #1	32,317	32,317	-		32,317	100%	0	3,232
34	CO #3	918	918	-		918	100%	0	92
35	CO #4	4,191	4,191			4,191	100%	0	419
36	CO #6	1,029	1,029			1,029	100%	0	103
36	CO #7	7,920	7,920	-		7,920	100%	0	792
37	CO# 8	8,934		8,934		8,934	100%	0	893
	TOTALS	1,312,629	1,184,167	44,934	0	1,229,101	94%	83,528	122,910

NOTE: MBE PARTICIPATION IN BOLD

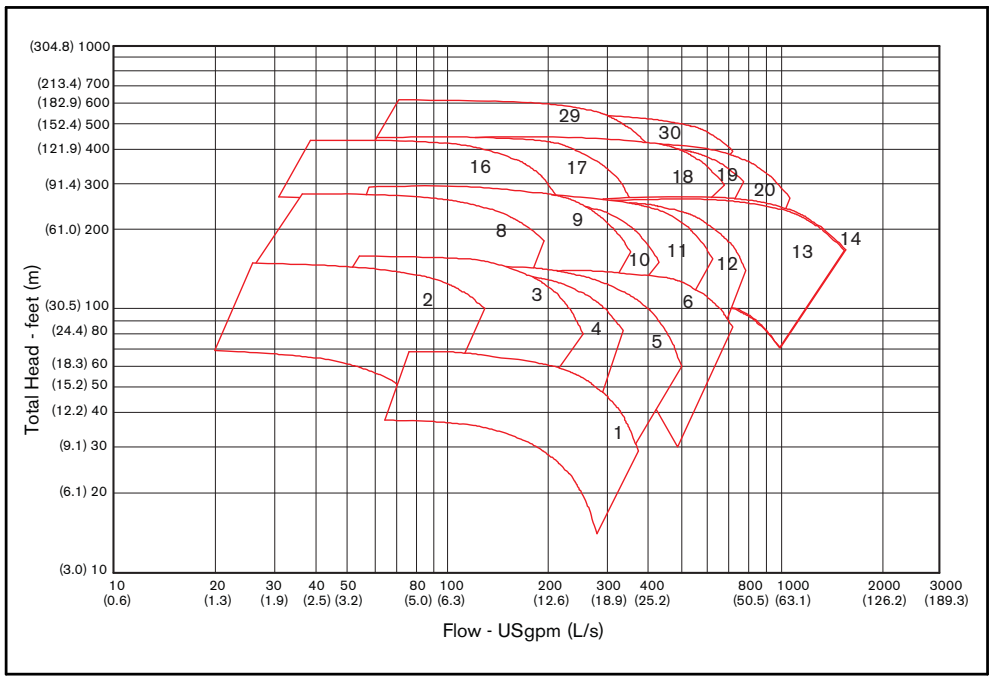
ARMSTRONG

FILE NO:	42.20
DATE:	Oct. 23, 2008
SUPERSEDES:	42.20
DATE:	Jan. 25, 2008

Series 4280

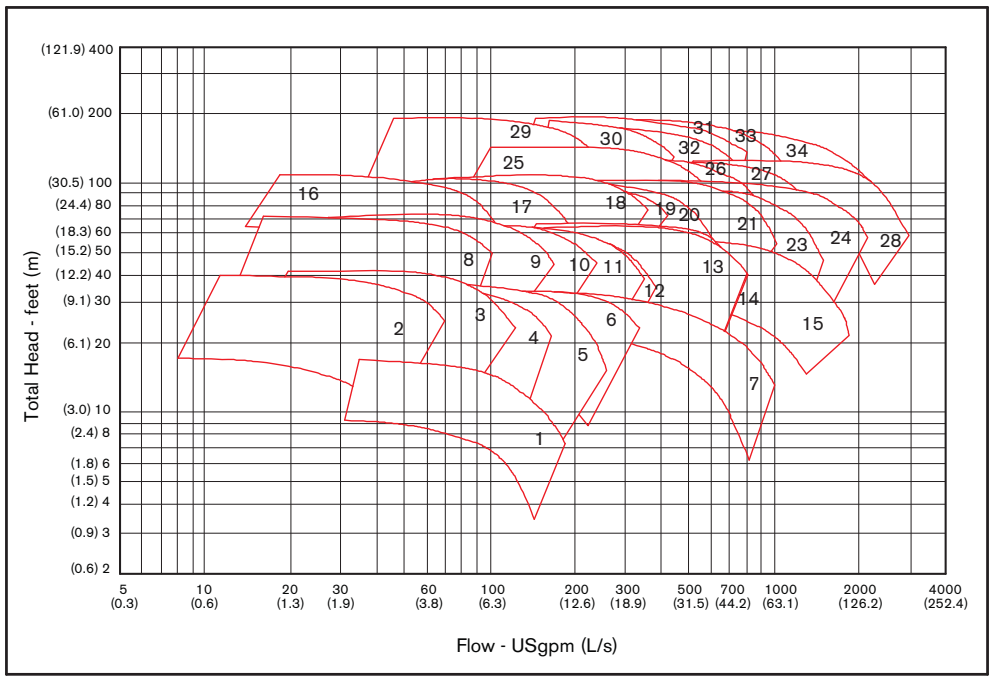
COMPOSITE CURVES

4280 - 3600 RPM



Legend	
No.	Suction x Discharge x Impeller
1	3x3x5
2	1.5x1x6
3	3x1.5x6
4	3x2x6
5	3x2.5x6
6	4x3x6
8	1.5x1x8
9	3x1.5x8
10	3x2x8
11	3x2.5x8
12	4x3x8
13	5x4x8
14	6x4x8
16	2x1x10
17	3x1.5x10
18	3x2x10
19	3x2.5x10
20	4x3x10
29	3x1.5x13
30	3x2x13

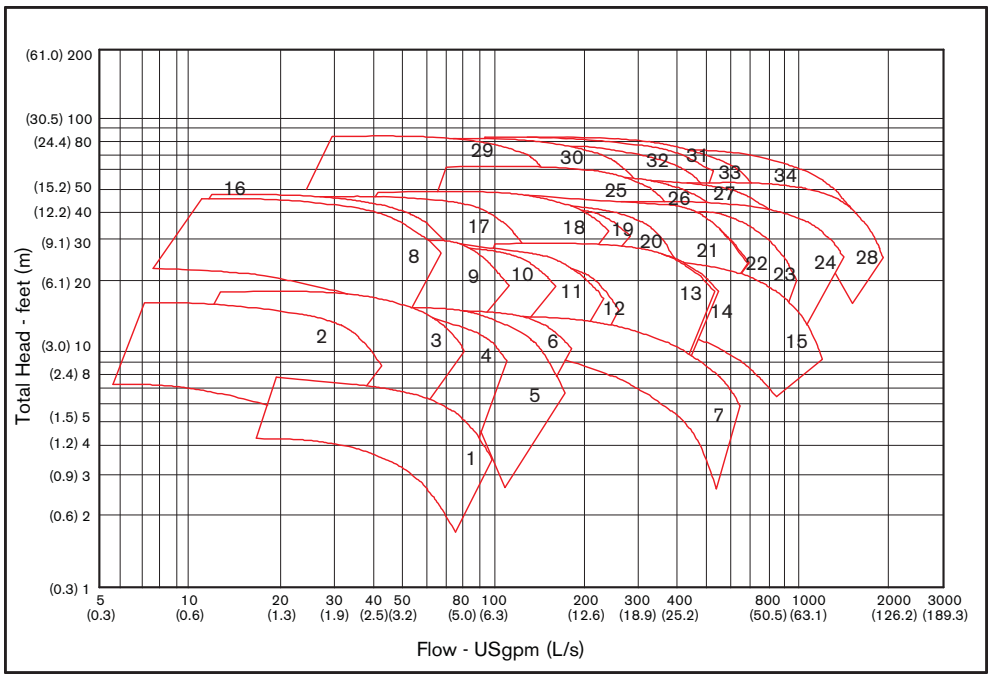
4280 - 1800 RPM



Legend	
No.	Suction x Discharge x Impeller
1	3x3x5
2	1.5x1x6
3	3x1.5x6
4	3x2x6
5	3x2.5x6
6	4x3x6
7	6x6x6
8	1.5x1x8
9	3x1.5x8
10	3x2x8
11	3x2.5x8
12	4x3x8
13	5x4x8
14	6x4x8
15	8x8x8
16	2x1x10
17	3x1.5x10
18	3x2x10
19	3x2.5x10
20	4x3x10
21	5x4x10
22	6x4x10
23	6x5x10
24	8x6x10
25	4x3x11.5
26	5x4x11.5
27	6x5x11.5
28	8x6x11.5
29	3x1.5x13
30	3x2x13
31	4x3x13
32	4x3x13L
33	6x4x13
34	8x6x13

ARMSTRONG

4280 - 1200 RPM



Legend	
No.	Suction x Discharge x Impeller
1	3x3x5
2	1.5x1x6
3	3x1.5x6
4	3x2x6
5	3x2.5x6
6	4x3x6
7	6x6x6
8	1.5x1x8
9	3x1.5x8
10	3x2x8
11	3x2.5x8
12	4x3x8
13	5x4x8
14	6x4x8
15	8x8x8
16	2x1x10
17	3x1.5x10
18	3x2x10
19	3x2.5x10
20	4x3x10
21	5x4x10
22	6x4x10
23	6x5x10
24	8x6x10
25	4x3x11.5
26	5x4x11.5
27	6x5x11.5
28	8x6x11.5
29	3x1.5x13
30	3x2x13
31	4x3x13
32	4x3x13L
33	6x4x13
34	8x6x13

S. A. Armstrong Limited
23 Bertrand Avenue
Toronto, Ontario
Canada, M1L 2P3
T: (416) 755-2291
F (Main): (416) 759-9101

Armstrong Pumps Inc.
93 East Avenue
North Tonawanda, New York
U.S.A. 14120-6594
T: (716) 693-8813
F: (716) 693-8970

Armstrong Holden Brooke Pullen
Wenlock Way
Manchester
United Kingdom, M12 5JL
T: +44 (0) 161 223 2223
F: +44 (0) 161 220 9660

ARMSTRONG

FILE NO:	43.782
DATE:	Mar. 30, 2010
SUPERSEDES:	43.752
DATE:	July 7, 2008

Series PiB 4380

Close Coupled Vertical-In-line Pumps

SUBMITTAL

JOB: _____ REPRESENTATIVE: _____

ORDER NO: _____ DATE: _____

ENGINEER: _____ SUBMITTED BY: _____ DATE: _____

CONTRACTOR: _____ APPROVED BY: _____ DATE: _____

PUMP DESIGN DATA			
PUMP MODEL:		QUANTITY REQUIRED:	
CAPACITY:	USgpm (l/s)	HEAD:	ft. (m)
LIQUID:		TEMPERATURE:	°F (°C)
FLANGE RATING: ANSI 125			
MAXIMUM WORKING PRESSURE: 175 psig (12 BAR)			
MAXIMUM OPERATING TEMPERATURE: 250°F (121°C)			

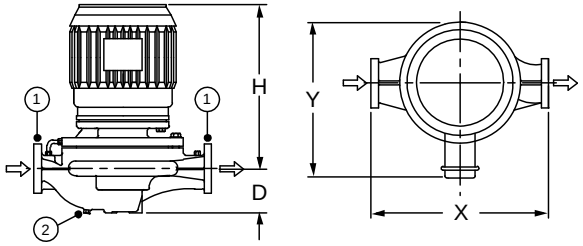
MATERIALS OF CONSTRUCTION	
CASING	CAST IRON
COMPANION FLANGES	CAST IRON
IMPELLER	BRONZE
MOTOR SHAFT	CARBON STEEL
SHAFT SLEEVE	BRONZE
GASKET	NON-ASBESTOS FIBER

ADDITIONAL NOTES

MOTOR DESIGN DATA	
FREQUENCY	60 HERTZ
VOLTAGE	SEE BELOW
EFFICIENCY	ENERGY EFFICIENT NEMA 12.11
ENCLOSURE	TEFC

MECHANICAL SEAL DESIGN DATA	
STYLE	INSIDE SINGLE SPRING
TYPE	ARMSTRONG 2A
ROTATING FACE	CARBON
STATIONARY FACE	SILICON-CARBIDE
SECONDARY SEAL	EPDM*
SPRINGS	STAINLESS STEEL
ROTATING HARDWARE	STAINLESS STEEL

* NOT SUITABLE FOR USE ON OIL SERVICE



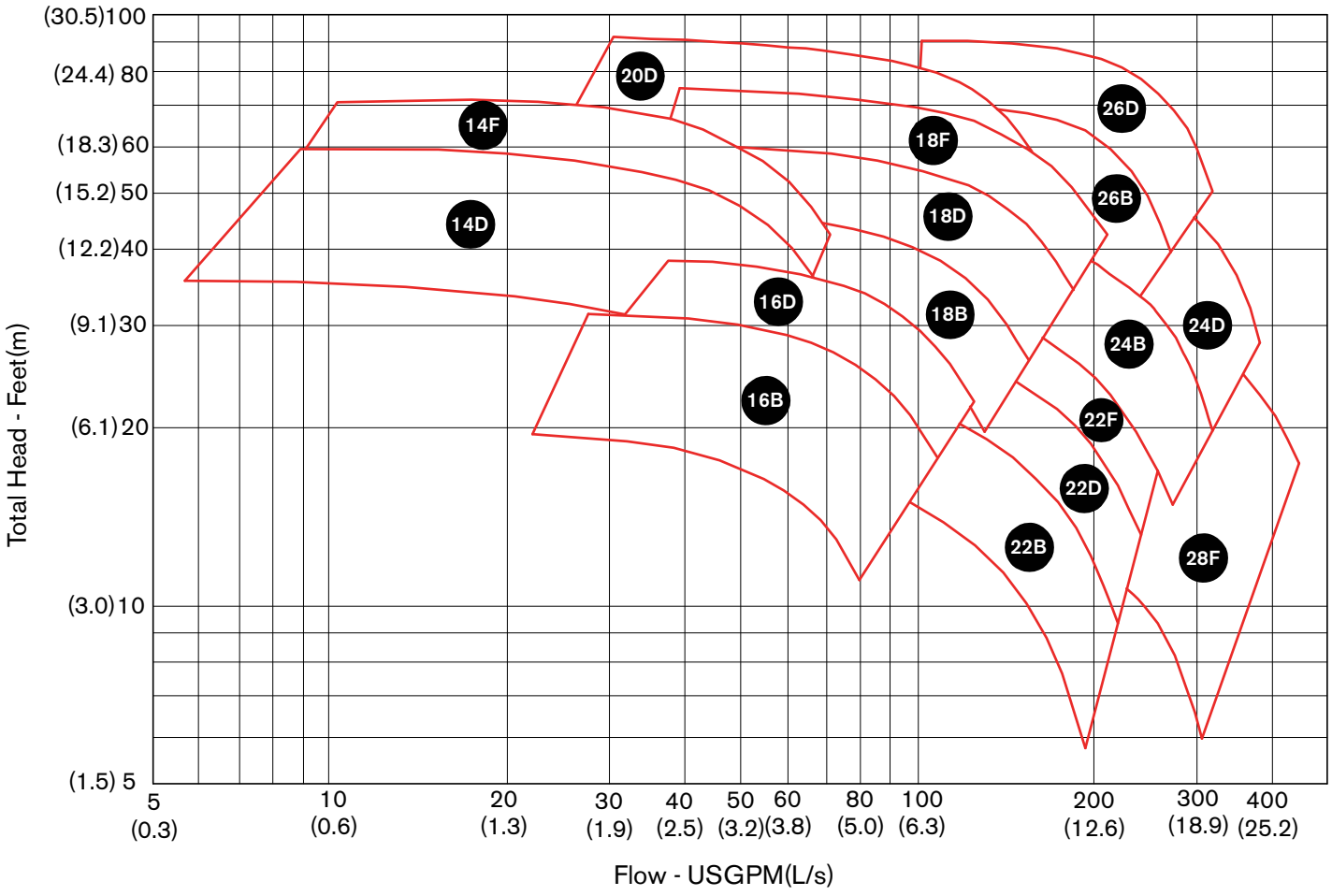
① ¼" NPT GAUGE TAPPINGS
② ¼" NPT DRAIN

MODEL	CURVE	CONNECTIONS (ANSI 125)	MOTOR			IMPELLER DIAMETER	DIMENSIONS				ASSEMBLY WEIGHT
			HP	PHASE & VOLTAGE	RPM		X	Y	H	D	
4380-1508F-1.5/4	14D	1.50	1.50	3 Phase 208-230/460 Volt or 575 Volt	1800	7.62	16.00 (406)	11.75 (298)	15.75 (400)	5.75 (146)	156 (70.8)
4380-1508F-2.0/4	14F	1.50	2.00		1800	8.19	16.00 (406)	11.75 (298)	15.75 (400)	5.75 (146)	156 (70.8)
4380-2206F-1.0/4	16B	2.00	1.00		1800	5.52	15.00 (381)	10.63 (270)	14.75 (375)	4.88 (124)	140 (63.5)
4380-2206F-1.5/4	16D	2.00	1.50		1800	6.03	15.00 (381)	10.63 (270)	15.75 (400)	4.88 (124)	145 (65.8)
4380-2208F-2.0/4	18B	2.00	2.00		1800	6.75	18.00 (457)	11.75 (298)	15.75 (400)	5.13 (130)	172 (78.0)
4380-2208F-3.0/4	18D	2.00	3.00		1800	7.55	18.00 (457)	12.75 (324)	20.13 (511)	5.13 (130)	187 (84.8)
4380-2208F-5.0/4	18F	2.00	5.00		1800	8.19	18.00 (457)	12.75 (324)	20.13 (511)	5.13 (130)	212 (96.2)
4380-2210F-5.0/4	20D	2.00	5.00		1800	9.38	19.00 (483)	13.75 (349)	20.13 (511)	5.38 (137)	245 (111.1)
4380-3306F-1.0/4	22B	3.00	1.00		1800	5.16	18.00 (457)	11.88 (302)	14.75 (375)	6.00 (152)	156 (70.8)
4380-3306F-1.5/4	22D	3.00	1.50		1800	5.69	18.00 (457)	11.88 (302)	15.75 (400)	6.00 (152)	161 (73.0)
4380-3306F-2.0/4	22F	3.00	2.00		1800	6.11	18.00 (457)	11.88 (302)	15.75 (400)	6.00 (152)	161 (73.0)
4380-3308F-3.0/4	24B	3.00	3.00		1800	6.74	22.00 (559)	13.88 (352)	20.13 (511)	6.38 (162)	213 (96.6)
4380-3308F-5.0/4	24D	3.00	5.00		1800	7.87	22.00 (559)	13.88 (352)	20.13 (511)	6.38 (162)	238 (108.0)
4380-3310F-5.0/4	26B	3.00	5.00		1800	8.24	21.00 (533)	14.25 (362)	20.13 (511)	6.25 (159)	282 (128.0)
4380-3310F-7.5/4	26D	3.00	7.50		1800	9.23	21.00 (533)	16.63 (422)	25.63 (651)	6.25 (159)	331 (150.1)
4380-4406F-3.0/4	28F	4.00	3.00		1800	6.19	22.00 (559)	13.88 (352)	20.38 (518)	7.75 (197)	213 (96.6)

Note : All dimensions are in inches (mm) and weights in lbs (kg).
For exact installation data please write factory for certified dimensions.

ARMSTRONG

PERFORMANCE CURVES



CURVE	MODEL
14D	4380-1508F-1.5/4
14F	4380-1508F-2.0/4
16B	4380-2206F-1.0/4
16D	4380-2206F-1.5/4
18B	4380-2208F-2.0/4
18D	4380-2208F-3.0/4
18F	4380-2208F-5.0/4
20D	4380-2210F-5.0/4

CURVE	MODEL
22B	4380-3306F-1.0/4
22D	4380-3306F-1.5/4
22F	4380-3306F-2.0/4
24B	4380-3308F-3.0/4
24D	4380-3308F-5.0/4
26B	4380-3310F-5.0/4
26D	4380-3310F-7.5/4
28F	4380-4406F-3.0/4

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Toronto, Ontario
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Armstrong Holden Brooke Pullen
Wenlock Way
Manchester
United Kingdom, M12 5JL
T: +44 (0) 161 223 2223
F: +44 (0) 161 220 9660

Submittal Data Information

KV Series Vertical Close Coupled Pumps

301-1122

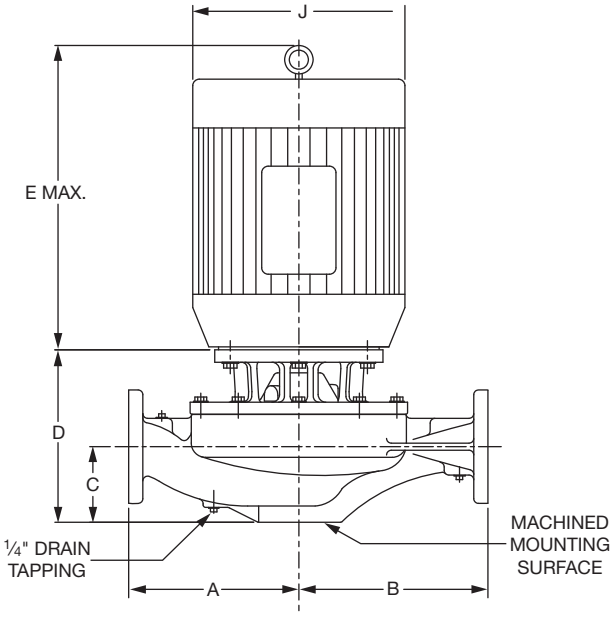
EFFECTIVE: JANUARY 8, 2010 SUPERSEDES: NOVEMBER 1, 2009 1160 RPM MODEL 2508

JOB _____ ENGINEER _____

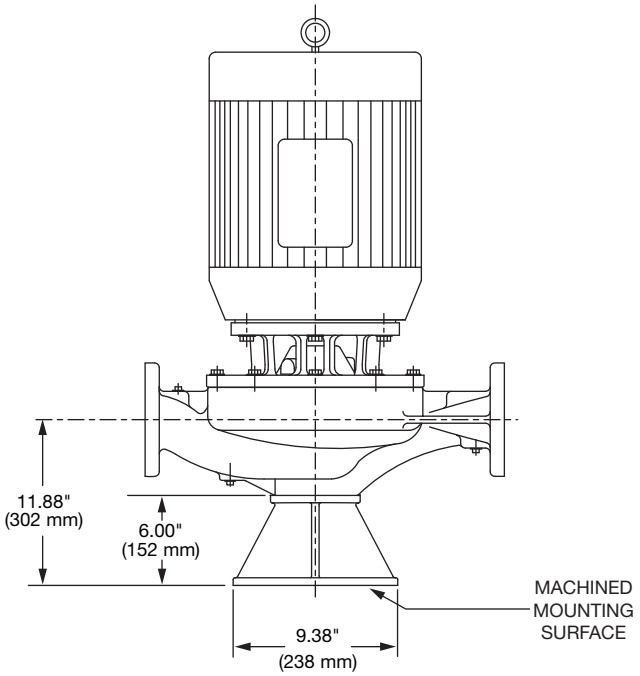
CONTRACTOR _____ REP. _____

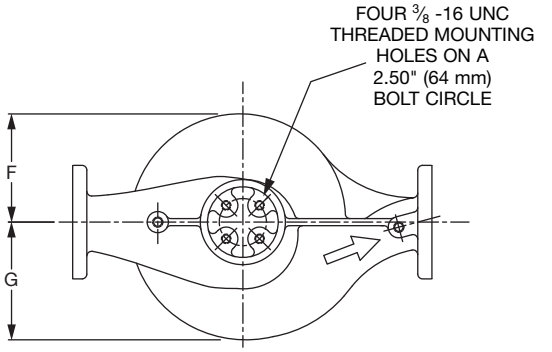
ITEM NO.	MODEL NO.	IMPELLER DIA.	G.P.M.	HEAD/FT.	H.P.	ELEC. CHAR.

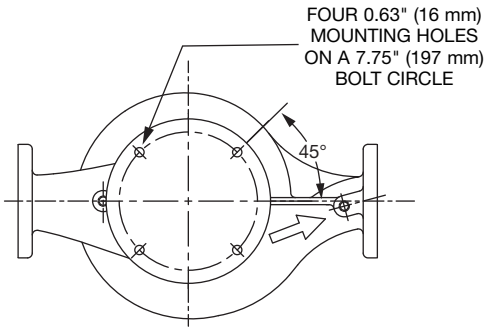
WEIGHT _____ PUMP/MOTOR _____



PUMP WITH OPTIONAL SUPPORT STAND







DIMENSIONS *A & B Dimensions apply for all pump sizes.

Model No.	Conn.	Motor Frame	HP 1160 RPM	Flange Size ASA	A*	B*	C	D	E MAX	F	G	H	J DIA
2508	2½ x 2½ (64 x 64)	145JM	1	2½ (64)	9.56 (242) if ANSI Class 125 9.88 (250) if ANSI Class 250	9.00 (228) if ANSI Class 125 9.31 (236) if ANSI Class 250	5.88 (149)	10.27 (260)	13.43 (341)	6.10 (155)	6.99 (177)	0.25 (6)	6.62 (168)
		182JM	1.5					10.27 (260)	13.94 (354)				7.88 (200)
		184JM	2					10.27 (260)	15.58 (396)				7.88 (200)
		213JM	3					10.27 (260)	16.68 (424)				9.56 (234)

English dimensions are in inches. Metric dimensions are in millimeters. Metric data is presented in ( ).
Do not use for construction purposes unless certified.

MATERIALS OF CONSTRUCTION

Item	BRONZE FITTED		ALL IRON	
	Standard Pump Construction	Optional	Standard	Optional
Casing	Cast Iron ASTM A48 Class 30A	N/A	Cast Iron ASTM A48 Class 30A	N/A
Impeller	Bronze ASTM B584-836	CF	Cast Iron ASTM A48 Class 30A	CF
Wear Ring	None	Bronze ASTM B584-932 SAE660	None	N/A
Shaft	Carbon Steel	St. Steel AISI 416 ASTM A582	Carbon Steel	St. Steel AISI 416 ASTM A582
Shaft Sleeve	Bronze ASTM B584-932 SAE660	St. Steel AISI 303 ASTM A276	St. Steel AISI 303 ASTM A276	CF
Mechanical Seal	Ceramic / EPT	Tungsten Carbide / EPT	Ceramic / EPT	Tungsten Carbide / EPT
Seal Flush Line	Copper	CF	Stainless Steel	CF
Support Stand	N/A	Ductile Iron ASTM A536-84 Grade: 65-45-12	N/A	Ductile Iron ASTM A536-84 Grade: 65-45-12

CF - Consult Factory N/A - Not Available

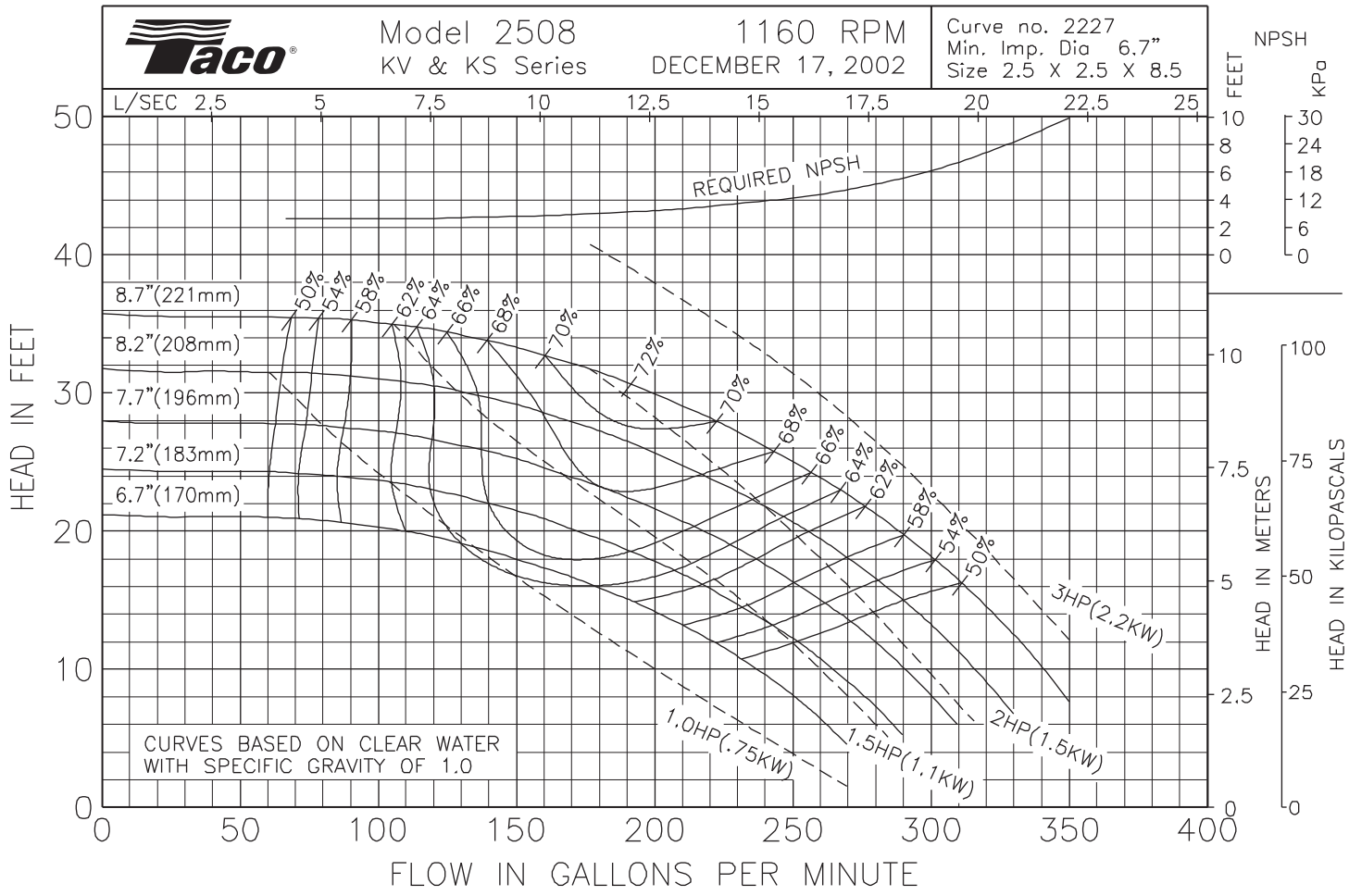
OPERATING SPECIFICATIONS

	Standard		Optional
Flange	ANSI Class 125	ANSI Class 250	
Pressure	175 PSIG* (1210 KPA)	300 PSIG** (2070 KPA)	CF
Temperature	250°F (120°C)	250°F (120°C)	CF

Motors: All NEMA Standard (T Frame)
* In accordance with ANSI Standard B16.1 Class 125
** In accordance with ANSI Standard B16.1 Class 250 Dim.

MAXIMUM ASSEMBLY WEIGHT

Motor Frame	Weight without Optional Stand Lbs (Kg)	Weight with Optional Stand Lbs (Kg)
143JM - 145JM	143 (65)	162 (73)
182JM - 184JM	179 (81)	198 (90)
213JM - 215JM	203 (92)	222 (101)



Comments: _____

Do it Once. Do it Right.®

TACO, INC., 1160 Cranston Street, Cranston, RI 02920 Telephone: (401) 942-8000 FAX: (401) 942-2360.
TACO (Canada), Ltd., 8450 Lawson Road, Unit #3, Milton, Ontario L9T 0J8. Telephone: 905/564-9422. FAX: 905/564-9436.
Visit our web site at: http://www.taco-hvac.com

BID FORM - DOCUMENT 004100

All Blanks Shall Be Filled In

SC- 13 Contractor Name WM. KRAMER & SON, INC.

Subcontract Title Roofing

Bids Received: 2:00 p.m. local time
Date: November 24, 2009

TO: Triversity Group, LLC
5158 Fishwick Drive
Cincinnati, OH 45216
Construction Manager

In response to your request for bids and in compliance with the Contract Requirements, the undersigned proposes to furnish all labor, materials, and equipment, all supervision, coordination, all related incidentals necessary to perform the:

United Way of Greater Cincinnati
Renovation and Addition
BID PACKAGE #8 Fit-Out

In strict accordance with the Project Manual and the Drawings dated: November 4, 2009 including Addenda numbered 1 through 1, inclusive. Each Bidder, in submitting this proposal, the undersigned agrees that the Bid will not be withdrawn for a period of 60 consecutive calendar days following the date of Bid Opening; further, that if a Notice to Proceed or if a prepared Agreement provided by the Construction Manager is received at the business address identified below, within the above named 60 day period, the undersigned will, within two days of such receipt, acknowledge acceptance of the contract award and will execute and deliver the Agreement and will proceed in accordance with requirements of the Contract Documents for this project and have the Project at substantial completion on or before dates described in Construction Schedule, Section 013110.

This Subcontractor agrees to the provisions as set forth in the Bidding Documents, including the Instructions to Bidders and Description of Work & Subcontract, List of Drawings, the Contract Requirements, and Division 1 of General Requirements. The successful bidder will be required to enter into an agreement with Triversity utilizing the standard Triversity Construction Subcontract Agreement with addendum.

I. BASE BID

Bidder agrees to perform all work for:
Subcontract SC#- 13 Roofing (Fill in Subcontract No.)

All Labor, Material, Equipment, applicable taxes and Supervision for the sum of:

Three Hundred Seventy Seven Thousand Three Hundred Seventy ~~Dollars~~ Nine Dollars ($ 377,379.00)

Bid Breakdown:

Labor:	$ 172,569
Material:	$ 204,810
Sales Tax:	$ 0
Total:	$ 377,379
Bond:	$ Add + 4,700.00

Voluntary United Way Contribution/Donation (deduct from Total) <$ 2,500.00 >

COMBINATION BID

	Subcontract #___	Subcontract #___	Subcontract #___
Labor	$	$	$
Material	$	$	$
Sales Tax	$	$	$
TOTAL COMBINATION BID			$
Bond	$	$	$

II. QUALIFICATIONS

A. State any qualifications to Bidder's Proposal:

See Attached Letterhead

B. Minority and Women Owned Business Participation (20% minimum goal):

MBE / WBE (Circle One) Company Name: Henn Plumbing

Work Scope: Material & Dumpster Supply

Contract Amt: 74,715.00

MBE / WBE participation of bid amount 20 %

C. Suppliers and Subcontractors

List all major suppliers and subcontractors included in Base Bid:

Metal ~~Panels~~: Metal Panel Systems
Roof

D. Safety

EMR (Experience Modification Rate) for 2009: .51

III. SUBSTITUTIONS

All substitutions shall be submitted on the Substitution Request Form in Section 016000 Product Requirements and be submitted with the Bid Form on the Bid due date.

IV. VALUE ENGINEERING

Base bid must be per plans and specifications without modification. However, value engineering is encouraged and will be considered for award. List any value engineering ideas and impact on base bid:

If ILWC and a 25 year roof system is used on existing building in lieu of rigid insulation and speced roof, with average R30, 25 year roof and insulation warranty, deduct, $5,500.00.

V. BONDS

A. To supply a 100% Performance Bond and a Labor and Material Payment Bond:

Add $ 4,700.00 to Base Bid

B. Name of Surety Cincinnati Insurance Company

VI. Breakout pricing

Provide total cost for the following (total cost to be included in base bid):

SC-25 Access Control and CCTV $_____

SC-11 Monumental Stair $_____

SC-19 Vinyl Wallcovering $_____

*SC-16 Acoustic Spray Ceiling treatment $*_____

*SC-16 Exterior Spray Foam Insulation $*_____

*SC-18 Floor prep (leveling) $*_____

*SC-18 Average $/SY Carpet (labor/material/adhesive)$*_____

VII. UNIT PRICE

SC-10 Tuckpointing $_____/LF
SC-10 Brick replacement$_____/LF

VIII. ALTERNATE

SC-18 Alternate #1 Wood Flooring (spec. section 01 2300) _____
Voluntary Alternate _____ Base Bid _____

IX. GENERAL

This Contractor / Subcontractor agrees to provisions as set forth in the Bidding Documents, including; the Instructions to Bidders, Multiple Contract Summary, List of Drawings, General Conditions, and the Division I of the General Requirements. The successful bidder will be required to enter into an agreement with Triversity Refer to Section 00 1000 Instructions to Bidders for Basis of Award.

X. NAME OF BIDDER

Firm Name Wm. Kramer & Son, Inc.

Address 9171 Harrison Pike, Unit 12
Cleves, OH 45002

Telephone (513) 353-1142 Fax 513) 353-1157

By Stephen M. Kramer

Signature _____

Title President

Date 1-6-2010

State Whether a

- [x] Corporation
- [ ] Partnership
- [ ] Sole Proprietorship

END OF SECTION

WM. KRAMER & SON, INC.
9171 Harrison Pike Cleves, OH 45002-9075 (513) 353-1142
www.kramerroofing.com E-Mail: roofinfo@eos.net Fax (513) 353-1157

January 6, 2010
(email btumlin@messer.com)

Triversity Group, LLC
2400 Reading Road
Cincinnati, Ohio 45202

Attention: Mr. Bruce Tumlin

Subject: United Way - Qualifications

Dear Mr.Tumlin:

Below is a list of qualifications for the project:

1. New drains furnished and installed by others not included in this price.
2. The existing entry roof half round will be repaired and is included in this price.
3. Existing EPDM roofing and rigid insulation will be recycled at no additional cost to the owner.
4. Leak detection alternate no price available at time of bid. Price to be forwarded at a later date.
5. $30,000.00 is included as an allowance for repairs and temporary water tightness.
6. Wood at column D and 6 is included.
7. New water table metal will be installed at column line 1.
8. 225 ft. of walkway has been included any additional walkway will be priced at $18.00 per lineal foot 30" wide.
9. No overtime has been included in this proposal.
10. If we furnish and install tie-off post for window washers utilizing Guardian Safety Products add $12,825.00.
11. Sheet metal cap flashing at the new building is not included.
12. Standing seam metal roof at loading dock including all gutters, downspouts, flashing and counter flashings is included.
13. 20% participation is included in our proposal.
14. Roof hatch will be 2'6 x 3.0 steel curb and aluminum lid, furnished and

installed is included.

"Celebrating 100 Years in Business"

Commercial & Industrial Roofing & Sheet Metal Contractors Since 1907

WM. KRAMER & SON, INC.

15. If hoisting is required on Reading Road and a street permit or sidewalk permit is required cost of such is not included in this proposal, this will be an added cost due to any restrictions that may be because of ample space of trucks, etc. for unloading purposes.
16. Tie off post if installed by others need to be a minimum of 8" above the finished roof for proper flashing.
17. Please take into consideration the tapered insulation thicknesses when others I install the post.
18. There is approximate $5,000.00 duplication in the temporary roofing as well as for the water tightness is included in my proposal.

BID FORM - DOCUMENT 004100

All Blanks Shall Be Filled In

SC - 16 Contractor Name OK Interiors Corp

Subcontract Title Drywall/Acoustic Ceilings

Bids Received: 2:00 p.m. local time
Date: November 24, 2009

TO: Triversity Group, LLC
5158 Fishwick Drive
Cincinnati, OH 45216
Construction Manager
Fax: 381-3937

In response to your request for bids and in compliance with the Contract Requirements, the undersigned proposes to furnish all labor, materials, and equipment, all supervision, coordination, all related incidentals necessary to perform the:

United Way of Greater Cincinnati
Renovation and Addition
BID PACKAGE #8 Fit-Out

In strict accordance with the Project Manual and the Drawings dated: November 4, 2009 including Addenda numbered 0, through 1, inclusive. Each Bidder, in submitting this proposal, the undersigned agrees that the Bid will not be withdrawn for a period of 60 consecutive calendar days following the date of Bid Opening; further, that if a Notice to Proceed or if a prepared Agreement provided by the Construction Manager is received at the business address identified below, within the above named 60 day period, the undersigned will, within two days of such receipt, acknowledge acceptance of the contract award and will execute and deliver the Agreement and will proceed in accordance with requirements of the Contract Documents for this project and have the Project at substantial completion on or before dates described in Construction Schedule, Section 013110.

This Subcontractor agrees to the provisions as set forth in the Bidding Documents, including the Instructions to Bidders and Description of Work & Subcontract, List of Drawings, the Contract Requirements, and Division 1 of General Requirements. The successful bidder will be required to enter into an agreement with Triversity utilizing the standard Triversity Construction Subcontract Agreement with addendum.

I BASE BID

Bidder agrees to perform all work for:
Subcontract SC#- 16 Drywall/Acoustic Ceilings (Fill in Subcontract No.)

All Labor, Material, Equipment, applicable taxes and Supervision for the sum of:

Seven Thousand One Hundred Nineteen Thousand Seven Hundred Dollars ($ 719,700.00)

Bid Breakdown:

Labor:	$	405,700.00
Material:	$	314,000.00
Sales Tax:	$	0
Total:	$	719,700.00
Bond: ADD	$	7,200.00

Voluntary United Way Contribution/Donation (deduct from Total) <$ _____>

COMBINATION BID

	Subcontract #___	Subcontract #___	Subcontract #___
Labor	$	$	$
Material	$	$	$
Sales Tax	$	$	$
TOTAL COMBINATION BID			$
Bond	$	$	$

II. QUALIFICATIONS

A. State any qualifications to Bidder's Proposal

See attached

B. Minority and Women Owned Business Participation (20% minimum goal):

MBE / (WBE) (Circle One) Company Name: OK Interiors Corp

Work Scope: All work

Contract Amt:

MBE / (WBE) participation of bid amount: 100 %

C. Suppliers and Subcontractors

List all major suppliers and subcontractors included in Base Bid:

Metal Panels: N/A

D. Safety

EMR (Experience Modification Rate) for 2009 .56

III. SUBSTITUTIONS

All substitutions shall be submitted on the Substitution Request Form in Section 01600 Product Requirements and be submitted with the Bid Form on the Bid due date.

IV. VALUE ENGINEERING

Base bid must be per plans and specifications without modification. However, value engineering *is* encouraged and will be considered for award. List any value engineering ideas and impact on base bid:

See qualification sheet

V. BONDS

A. To supply a 100% Performance Bond and a Labor and Material Payment Bond:

Add $ 7,200.00 to Base Bid

B. Name of Surety Great American Insurance Company

VI. Breakout pricing

Provide total cost for the following (total cost to be included in base bid):

SC-25 Access Control and CCTV $ N/A

SC-11 Monumental Stair $ N/A

SC-19 Vinyl Wallcovering $ N/A

SC-16 Acoustic Spray Ceiling treatment $ 26,000

SC-16 Exterior Spray Foam Insulation $ 67,000

SC-18 Floor prep (leveling) $ N/A

SC-18 Average $/SY Carpet (labor/material/adhesive) $ N/A

VII. UNIT PRICE

SC-10 Tuckpointing $ - /LF
SC-10 Brick replacement $ - /LF

VIII. ALTERNATE

SC-18 Alternate #1 Wood Flooring (spec. section 01 2300) -
Voluntary Alternate - Base Bid -

IX GENERAL

This Contractor / Subcontractor agrees to provisions as set forth in the Bidding Documents, including: the Instructions to Bidders, Multiple Contract Summary, List of Drawings, General Conditions, and the Division I of the General Requirements. The successful bidder will be required to enter into an agreement with Triversity Refer to Section 00 1000 Instructions to Bidders for Basis of Award.

X NAME OF BIDDER

Firm Name OK Interiors Corp

Address 11100 Ashburn Road
Cincinnati OH 45240

Telephone (513) 742-3278 Fax 513) 595-8493

By Steve Schramm

Signature Steve Schramm

Title V.P. of Operations

Date 11/24/2009

State Whether a

- ☒ Corporation
- ☐ Partnership
- ☐ Sole Proprietorship

END OF SECTION

RCNC6486

Certification Number

August 14, 2010

Expiration Date

NWBOC

NATIONAL WOMEN BUSINESS OWNERS CORPORATION

Certifies that:

OK Interiors Corporation

has successfully met the requirements of the NWBOC National Certification Program for certification as a woman-owned and woman-controlled business.

President

August 15, 2009

Date

NWBOC, 1001 W Jasmine Dr., #G, Lake Park, FL 33403 800-675-5066 www.nwboc.org

Tampering or altering this certificate is, in the discretion of NWBOC, grounds for termination of certification.

Women's Business Enterprise National Council

in partnership with

Ohio River Valley - Women's Business Council

certifies that the criteria for certification as a

Women's Business Enterprise

(WBE)

has been met by

OK Interiors Corporation

Women's Business Enterprise National Council

WBENC

Expiration Date: 08/20/2010

Certificate Number: 2005111128

SIC Code(s): 1742

NAICS Codes: 238310

Authorized by Rea N. Walden, Ph.D., Executive Director
Ohio River Valley - Women's Business Council

OKI INTERIORS CORP

MORE THAN CEILINGS & DRYWALL

UNITED WAY OF GREATER CINCINNATI
RENOVATION AND ADDITION
QUALIFICATIONS

- Truss Drilling is included for Panelfold Door
- Add $700.00 to include additional structural support for stack not shown on drawings
- Carnegie Xorel Fabric is included with Panelfold Door
- Deduct $5,000.00 to use Panelfold Woven Fabric in-lieu-of Xorel (looks the same!)
- Spray Insulation price does not include sealer for existing deck (Add $10,500 if needed)
- Deduct $1,500 to change Type 5 ceiling tile to Vinyl Gypsum in-lieu-of Mylar
- Many conflicts exist between the Room Finish Schedule and the Reflected Ceiling Drawing. We used the reflected drawing as our guide
- It is our interpretation that the 4" Aluminum Trim is only where shown on drawings. All 1' slots are to be formed with standard grid components
- Aircraft Cable is figured only at the aluminum trim within 4' of exposed deck. The balance of the slots are to be standard suspension
- No wood ceilings included (Area outside Conference Rooms assumed by others)
- We are assuming no acoustic or drywall ceiling work above ornamental stair connecting 3rd and 4th Floors.
- 1900 pieces of building stock tile have been applied to the material used on the second floor. New material will be chosen to match (5/8 x 2 x 2 Reveal Edge Fissured)
- Deduct of $20,000 is available if all ceiling tile types shift to match existing building standards (5/8 x 2 x 2 Reveal)
- Allowance of $30,000 is included
- Skim coating of existing walls (public areas only) is included per specifications
- All new walls are to be Level 4 Finish per specifications
- Drywall, framing and returns are included above and below windows
- Aluminum reveals are included where shown on elevations (Room 103, 104, Center Stair)
- Print shop framing and drywall are not included
- Sizable savings can be realized if we change the foam insulation at the building perimeter to standard batts and vapor barrier

BID FORM - DOCUMENT 004100

All Blanks Shall Be Filled In

SC - 24 HVAC

Subcontract Title HVAC

Contractor Name Peck Hamilton & Briggs

Bids Received: **2:00 p.m. local time**
Date: **November 24, 2009**

TO: Triversity Group, LLC
5158 Fishwick Drive
Cincinnati, OH 45216
Construction Manager

In response to your request for bids and in compliance with the Contract Requirements, the undersigned proposes to furnish all labor, materials, and equipment, all supervision, coordination, all related incidentals necessary to perform the:

United Way of Greater Cincinnati
Renovation and Addition
BID PACKAGE #B Fit-Out

In strict accordance with the Project Manual and the Drawings dated: November 4, 2009 including Addenda numbered 1, through _____, inclusive. Each Bidder, in submitting this proposal, the undersigned agrees that the Bid will not be withdrawn for a period of 60 consecutive calendar days following the date of Bid Opening; further, that if a Notice to Proceed or if a prepared Agreement provided by the Construction Manager is received at the business address identified below, within the above named 60 day period, the undersigned will, within two days of such receipt, acknowledge acceptance of the contract award and will execute and deliver the Agreement and will proceed in accordance with requirements of the Contract Documents for this project and have the Project at substantial completion on or before dates described in Construction Schedule, Section 013110.

This Subcontractor agrees to the provisions as set forth in the Bidding Documents, including the Instructions to Bidders and Description of Work & Subcontract, List of Drawings, the Contract Requirements, and Division 1 of General Requirements. The successful bidder will be required to enter into an agreement with Triversity utilizing the standard Triversity Construction Subcontract Agreement with addendum

1. BASE BID

Bidder agrees to perform all work for:
Subcontract SC#- 24 HVAC (Fill in Subcontract No.)

All Labor, Material, Equipment, applicable taxes and Supervision for the sum of:
One million two hundred nine thousand Dollars ($1209000)

Bid Breakdown:

Labor:	$ 709,000
Material:	$ 500,000.
Sales Tax:	$ -0-
Total:	$ 1,209,000.
Bond:	$ 11,000 NOT IN BASE BID

Voluntary United Way Contribution/Donation (deduct from Total) <$ NOTE: $1500. CONTRIBUTION WITH VISA CARD IN NOVEMBER HAS BEEN MADE

COMBINATION BID

	Subcontract #___	Subcontract #___	Subcontract #___
Labor	$	$	$
Material	$	$	$
Sales Tax	$	$	$
TOTAL COMBINATION BID			$
Bond	$	$	$

II. QUALIFICATIONS

A. State any qualifications to Bidder's Proposal:

B. Minority and Women Owned Business Participation (20% minimum goal):

(MBE)/ WBE (Circle One) Company Name: RKelly Inc

Work Scope: Vendor

Contract Amt: $300,000

(MBE) WBE participation of bid amount 25 %

C. Suppliers and Subcontractors

List all major suppliers and subcontractors included in Base Bid.

Metal Panels:

D. Safety

EMR (Experience Modification Rate) for 2009: .74

III. SUBSTITUTIONS

All substitutions shall be submitted on the Substitution Request Form in Section 016000 Product Requirements and be submitted with the Bid Form on the Bid due date.

IV. VALUE ENGINEERING

Base bid must be per plans and specifications without modification. However, value engineering is encouraged and will be considered for award. List any value engineering ideas and impact on base bid:

V. BONDS

A. To supply a 100% Performance Bond and a Labor and Material Payment Bond:

Add $11,000 to Base Bid

B. Name of Surety Zurich c/o AON Risk

VI. Breakout pricing

Provide total cost for the following (total cost to be included in base bid):

SC-25 Access Control and CCTV $________

SC-11 Monumental Stair $________

SC-19 Vinyl Wallcovering $________

*SC-16 Acoustic Spray Ceiling treatment $*________

*SC-16 Exterior Spray Foam Insulation $*________

*SC-18 Floor prep (leveling) $*________

*SC-18 Average $/SY Carpet (labor/material/adhesive)$*________

VII. UNIT PRICE

SC-10 Tuckpointing $______/LF
SC-10 Brick replacement$______/LF

VIII. ALTERNATE

SC-18 Alternate #1 Wood Flooring (spec. section 01 2300) ________
Voluntary Alternate ________ Base Bid ________

IX GENERAL

This Contractor / Subcontractor agrees to provisions as set forth in the Bidding Documents, including; the Instructions to Bidders, Multiple Contract Summary, List of Drawings, General Conditions, and the Division 1 of the General Requirements. The successful bidder will be required to enter into an agreement with Triversity Refer to Section 00 1000 Instructions to Bidders for Basis of Award.

X. NAME OF BIDDER

Firm Name Peck Hannaford & Briggs Co

Address 4670 Chester Ave

Cincinnati, Ohio 45232

Telephone (513) 681-4600 Fax (513) 681-4746

By Jerry A Grevert

Signature [signature]

Title VP

Date 11/24/09

State Whether a

- ☒ Corporation
- ☐ Partnership
- ☐ Sole Proprietorship

END OF SECTION

POWERply™ Standard Plus Smooth

A Smooth-Surfaced, Fiberglass Mat and Scrim Reinforced SBS/SEBS Modified Bitumen Membrane

Composition: POWERply Standard Plus Smooth is a fire resistant, smooth surfaced modified bitumen membrane. It consists of specially selected bitumens, modified with compatible SBS/SEBS elastomers and reinforced with a high-tensile, fiberglass reinforced. POWERply Standard Plus Smooth is asbestos free and exceeds the requirements of ASTM D 6163, Type II, Grade S.

Basic Uses: POWERply Standard Plus Smooth is designed for applications in modified bitumen roofing and flashing systems where a high-tensile fiberglass, reinforced, smooth-surfaced membrane is desired.

Limitations:

- Not intended to perform under ponding conditions.
- Not to be exposed to solvents, oils, or other contaminants harmful to asphaltic materials.
- Backnail on roofs with slopes 2:12 inches (16.6%) or greater.
- Not intended for phased construction.
- Must be surfaced with aggregate or coatings.

Dimensions: POWERply Standard Plus Smooth is a 2.1 mm (83 mils) thick membrane. Each roll covers 150 sq.ft. (13.9 m²) when applied. Roll dimensions are 3' x 56'8" (0.91m x 17.3m).

Weight: Approximately 98 lbs. (44.5 kg) per roll.

Packaging: POWERply Standard Plus Smooth is available in pallets only, with 20 rolls per pallet.

General Application Data: Roof replacement usually involves more complexities than new construction roofing projects. Situations such as rusted and/or deteriorated roof decks, rotted wood components, rooftop equipment that cannot be moved or shut down, and numerous other conditions are often encountered.

Product Advantages

Features	Benefits
Polymer modified asphalt	• Resists thermal shock and splitting • Superior fire resistance
Strong fiberglass reinforcement	• Exceptional tensile strength, tear strength and toughness
No torch flame	• Reduced risk of fire
UL Classified	• Fire Protection

The following application information is designed to serve as a general guide. Your local Tremco Representative will prepare detailed specifications based on the condition of your roof.

Structural Decks: The roof deck must be properly designed and structurally sound.

Drainage: Ponding conditions are unacceptable and will adversely affect the performance of any roofing system. If positive drainage does not exist, then water removal from the roof surface must be facilitated by lowering drains and/or by installing additional drains, tapered insulation systems, or Tremco approved lightweight insulating concrete slope system.

Insulation: Insulation must be dry and kept dry. No more insulation shall be installed than can be covered that day. The use of Fas-N-Free Adhesive for solvent free, fastener free insulation attachment is the preferred method of attachment unless otherwise specified.

Installation Procedures: According to job specifications, prepare the surface to be covered:

- Replace areas of wet insulation, deteriorated deck and wood components;
- Install roof insulation or a nailed base sheet.

Plan the placement of POWERply Roof Systems to ensure that water flows along or over, but not against, the exposed edges of the membrane.

Starting at the low point of the roof, install the modified bitumen roof system according to the project specifications.

Place the POWERply membrane in a uniform and continuous application of adhesive. Side laps four (4") inches (100 mm) minimum; end laps six (6") inches (150 mm) minimum. Offset base laps from membrane laps. Stagger ends 36" (approximately 1m) minimum. To assure complete and uniform adhesion, adhesive should exude past lap edges.

For hot applications, the adhesive temperature must be at the EVT or 425°F (218°C) at the point of application, whichever is greater.

THERMastic™, POWERply Modified Hot Melt Adhesive, and Premium IV Asphalt are recommended hot-melt adhesives for POWERply membranes. Hot applied modified bitumen membranes require special application techniques under cool ambient temperatures and/or moderate wind conditions. Consult your local Tremco Representative for specific recommendations.

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For cold process applications, cut the POWERply Standard Plus Smooth in 16' to 18' (4.9 to 5.5m) lengths maximum. Allow lengths to relax for the following time lengths prior to installation:
Above 55°F (13°C): 30 minutes
Below 55°F (13°C): 60 minutes

POWERply Rubberized Cold Adhesive and POWERply Cold Adhesive are recommended cold-applied adhesives for POWERply membranes. Consult your local Tremco Representative for specific recommendations.

Coverage Rates:
Hot melt interply application rate: 1.24 kg/m² (25 lb/100 sqft).
Cold process interply application rate: 0.8 L/m² (2.0 gal/SQ).

Surfacing: Smooth reflective coatings and aggregate surface options are available. Consult your local Tremco representative for specific recommendations.

Precautions: Use must read container and/or packaging labels and Material Safety Data Sheets for health and safety precautions prior to use.

Availability and Cost: Contact your local Tremco Representative for pricing and availability. For the name and contact information of your Representative, please contact the Roofing & Building Maintenance Division at (216) 292-5000.

Maintenance: Your local Tremco Roofing Representative can provide you with effective maintenance procedures, which may vary depending upon specific conditions. Periodic inspections, early repairs and preventive maintenance are all part of a sound roof program.

Guarantee / Warranty: Tremco Incorporated warrants POWERply Standard Plus Smooth to be free of defects and to meet published physical properties when tested according to ASTM and Tremco standards. Under this warranty, any POWERply Standard Plus Smooth product that is proved to be defective when applied in accordance to our written instructions and in applications recommended by Tremco as suitable for this product will be replaced with like product at not charge. THIS IS BUYERS SOLE AND EXCLUSIVE REMEDY.

All claims concerning product defects must be made in writing within twelve (12) months of shipment. The absence of such claims in writing during this period will constitute a waiver of all claims with respect to such product.

This warranty shall be IN LIEU OF any other warranty, express or implied, including but not limited to, any implied warranty of MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Technical Services: Your local Tremco Representative, working with the Technical Service Staff, can help analyze condition and needs to develop recommendations for special applications. The services of the Tremco Research Center, which has earned a unique reputation in weatherproofing technology, complement and extend the services of the Tremco Technical Service staff.

Physical Performance Characteristics

POWERply™ Standard Plus Smooth

Property	Typical Value	Test Method
Thickness	83 mils (2.1mm)	ASTM D 5147
Tensile Strength @ 0°F (-18°C)	MD 160 lbf/in. XD 160 lbf/in	ASTM D 5147
Elongation @ 0°F (-18°)	5.5% MD 5.5% XMD	ASTM D 5147
Tensile Strength @ 73°F (23°C)	MD 120 lbf/in. XD 120 lbf/in	ASTM D 5147
Elongation @ 73°F (23°C)	MD 7.5% XMD 7.2%	ASTM D 5147
Elongation @ 73°F (23°C) @ 5% max. load	40% MD 40% XMD	ASTM D 5147
Tear Strength @ 73°F (23°C)	MD 210 lbf. XD 210 lbf.	ASTM D 5147
Low Temperature Flexibility	-25°F (-32°C)	ASTM D 5147

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If questions arise as to the soundness of a structure, its ability to support a planned installation properly, or whether material below the structure will be disturbed, the Owner should obtain the opinion of competent structural engineers before proceeding. Tremco accepts no liability for any failure of the structure or material below the structure or for resultant damages, and no Tremco Representative is authorized to vary this disclaimer.

TREMCO
An RPM Company

3735 Green Road
Beachwood, OH 44122
216-292-5000

220 Wicksteed Ave
Toronto, ONT M4H 1G7
416-421-3300

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POWERply™ Standard FR

A Fire Rated Granule Surfaced Modified Bitumen Membrane

Composition: POWERply™ Standard FR is a granule surfaced weathering membrane with fire resistant characteristics. It consists of specially selected bitumens, modified with compatible SBS elastomers and a glass reinforcing mat and is surfaced with an embedded layer of factory applied granules. POWERply Standard FR is also asbestos free. POWERply Standard FR was formerly known as THERM MB LTD. POWERply Standard FR exceeds ASTM D 6163, Type I, Grade G.

Basic Use: POWERply Standard FR is designed for application in both hot and cold applied roof systems where a granule surfaced membrane is desired. POWERply Standard FR has a fire rating of Class A.

Limitations:
- Not intended to perform under ponding conditions. Positive drainage required.
- Not to be exposed to solvents, oils, or other contaminants harmful to asphaltic materials.
- Backnail on roofs with slopes 2:12 (2" per foot) (16.6%) or greater.

Dimensions: Available in 3.0 mm thick, 3' (0.91m) wide rolls. 100 square foot (9.29m²) per roll as applied. Approximate roll weight is 101 lbs. (45.8 kg). Available in pallets only.

Color: The factory applied granule surfacing is available in white, tan, and black. Other colors, such as red, blue, and green are also available. Contact your local Tremco Representative for additional details.

Product Advantages

Features	Benefits
Polymer modified asphalt	• Resists thermal shock and splitting
Fiberglass reinforced	• Strong yet pliable to resist tears and splits
Fire resistant	• Meets building codes and insurance requirements
Factory applied surfacing	• Saves job site labor and application errors
UL Classified	• Fire Protection

General Application Data: Roof replacement usually involves more complexities than new construction roofing. Often encountered are situations such as rusted/deteriorated decks, rotted wood components, rooftop equipment which cannot be moved or shut down, and numerous other conditions.

The following application information is designed to serve as a general guide. Your local Tremco Representative will prepare detailed specifications based upon your roof's conditions.

Structural deck: Must be properly designed and structurally sound.

Drainage: Ponding conditions are unacceptable and will adversely affect performance of any roofing system. If positive drainage does not exist, water removal must be facilitated by lowering drains, and/or installing additional drains, tapered insulation, or a Tremco approved lightweight cellular insulating concrete slope system.

Insulation: Insulation must be dry and kept dry. No more insulation shall be installed than can be covered that day The use of FAS-n-Free® Adhesive for solvent free fastener free insulation attachment is the preferred method of securement unless otherwise specified.

Installation Procedures: According to job specifications, prepare the surface to be covered:
- Replace areas of wet insulation, deteriorated deck and wood components.
- Install roof insulation or nailed base sheet and multi-ply base ply system.

Cold Process POWERply Standard FR: For application in cold process adhesive, cut POWERply Standard FR in 16 to 18' (4.9-5.5 m) lengths maximum. Allow lengths to relax.

Above 55°F (13°C): 30 minutes minimum
Below 55°F (13°C): 60 minutes minimum

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Hot applied POWERply Standard FR: THERMastic, POWERply Modified Hot Melt, and Premium IV Asphalt are recommended as adhesives for POWERply Standard FR. Hot applied modified bitumen membranes require special application techniques under cool ambient temperatures and/or moderate wind conditions. Consult your local Tremco Representative for specific recommendations.

Application: Plan the placement of POWERply Standard FR to ensure that water flows over or along, but not against, the exposed edges.

Starting at the low point of the roof, apply a uniform and continuous application of adhesive according to specifications. Embed ply sheets as specified. Avoid walking on plies during placement.

Place POWERply Standard FR in a uniform and continuous application of adhesive. Lap selvage 4" (100mm) minimum; end laps 6" (150mm) minimum. Offset laps from base laps. Stagger ends 36" (1m) minimum. To assure complete and uniform adhesion, adhesive should exude past lap edges. Install flashings as specified.

Precautions: Users must read container labels and Material Safety Data Sheets for health and safety precautions prior to use.

Availability and Cost: Contact your local Tremco Roofing Representative for pricing and availability. For the name and number of your Representative, call the Roofing Division at 216/292-5000.

Maintenance: Your local Tremco Roofing Representative can provide you with effective maintenance procedures which may vary, depending upon specific conditions. Periodic inspections, early repairs and preventive maintenance are all part of a sound roof program.

Guarantee/Warranty: Tremco Incorporated warrants POWERply Standard FR to be free of defects and to meet published physical properties when tested according to ASTM and Tremco standards. Under this warranty, any product that is proved to be defective when applied in accordance to our written instructions, and in applications recommended by Tremco as suitable for this product will be replaced with like product at no charge. THIS IS BUYERS SOLE AND EXCLUSIVE REMEDY. All claims concerning product defects must be made in writing within twelve (12) months of shipment. The absence of such claims in writing during this period will constitute a waiver of all claims with respect to such product.
This warranty shall be IN LIEU OF any other warranty, express or implied, including but not limited to, any implied warranty of MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Physical Performance Characteristics

POWERply™ Standard FR

Property	Typical Value	Test Method
Thickness	0.120 in. (3.0 mm)	ASTM D 5147-05
Tensile strength @ 0°F (-18°C)	120 lbf/in. MD (21kN/m) 115 lbf/in. XMD (20kN/m)	ASTM D 5147-05
Elongation at 0°F (-18°C)	2.6% MD 2.5% XMD	ASTM D 5147-05
Tensile Strength @ 77°F (25°C)	81 lbf/in MD (14.1kN/m) 76 lbf/in XMD (13.2 kN/m)	ASTM D 5147-05
Elongation at 77°F (25°C)	7.7% MD 7.9% XMD	ASTM D 5147-05
Tear strength at 77°F (25°C)	104 lbf MD (462N) 108 lbf XMD (480N)	ASTM D 5147-05
Low Temp Flex	-15°F (-26°C)	ASTM D 5147-05
Dimentional Stability	pass	ASTM D 5147-05
Compund Stability at 215°F (102°C)	pass	ASTM D 5147-05
Puncture resistance	70 lbf (310N)	ASTM E 154-99

Technical Services: Your local Tremco Representative, working with the Technical Service Staff, can help analyze conditions and needs to develop recommendations for special applications. The services of the Tremco Research Center, which has earned a unique reputation in weatherproofing technology, complement and extend the services of the Tremco Technical Service staff.

Statement of Policy and Responsibility: Tremco takes responsibility for furnishing quality materials and for providing specifications and recommendations for their proper installation.
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TREMCO
An RPM Company

3735 Green Road
Beachwood, OH 44122
216-292-5000

220 Wicksteed Ave
Toronto, ONT M4H 1G7
416-421-3300

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POWERply™ APP FR

A High Elongation Granule Surfaced Polyester Reinforced APP Modified Bitumen Membrane

Composition: POWERply APP FR is a granule surfaced, fire rated modified bitumen membrane. It consists of specially selected asphalt,modified with a blend of APP polymers and fire retardant additives, and reinforced with a non-woven polyester mat. The back of the sheet is surfaced with a light layer of sand. POWERply APP FR is furnished with a factory applied white granule surfacing and meets the performance requirements of ASTM D 6222-98, Type I Grade G. POWERply APP FR is asbestos free.

Basic Uses: POWERply APP FR is designed for use in torch applications and cold process installations. It is used in multi-ply applications where a polyester reinforced granule surfaced membrane is desired. POWERply APP FR may also be used as a flashing sheet.

Limitations:

- Not intended to perform under ponding conditions. Positive drainage required.
- Not intended for application in hot applied bituminous adhesives.
- Not to be exposed to solvents, oils, or other contaminants harmful to asphaltic materials.
- Backnail on roofs with slopes 2:12 (2" per foot) (16.6%) or greater.
- Special precautions are required for applications at temperatures below 40° F (4.5°C). Store rolls in a heated area. Do not throw or drop rolls, as this may crack the coating. Do not double stack rolls with or without pallets.

Dimensions: Available in a 4.5 mm thick, 1 m. x 10 m (39-3/8" x 32' 10") roll. Roll covers 9 m^2 (97 sq ft.) when applied. Each roll weighs approximately 112 lbs. (50.8 kg.). Selvage width is 3-3/8" (86 mm).

Packaging: POWERply APP FR is available in pallets only, with 20 rolls per pallet.

General Application Data: Roof replacement usually involves more complexities than new construction roofing. Often encountered are situations such as rusted/deteriorated decks, rotted wood components, rooftop equipment which cannot be moved or shut down, and numerous other conditions.

Product Advantages

Features	Benefits
APP polymer modified bitumen	Excellent long term weatherability
Polyester reinforced	Puncture resistant Tough and durable reinforcement
Torch applied/cold applied	Economical application method Versatile
Factory applied surfacing reduces application errors	Saves jobsite labor
UL Classified	Fire resistant roof assembly

The following application information is designed to serve as a general guide. Your local Tremco Representative will prepare detailed specifications based upon your roof's conditions.

Structural deck: Must be properly designed and structurally sound.

Drainage: Ponding conditions are unacceptable and will adversely affect performance of any roofing system. If positive drainage does not exist, water removal must be facilitated by lowering drains, and/or installing additional drains, tapered insulation, or a Tremco approved lightweight insulating concrete slope system.

Insulation: Insulation must be dry and kept dry. No more insulation shall be installed than can be covered that day.

The use of FAS-n-Free® Adhesive for solvent free fastener free insulation attachment is the preferred method of securement unless otherwise specified.

Installation Procedures: According to job specifications, prepare the surface to be covered:

- Replace areas of wet insulation, deteriorated deck and wood components.
- Install roof insulation or nailed base sheet and multi-ply base ply system.

Application: Plan placement of POWERply APP FR to ensure that water flows over or along, but not against, the exposed edges. Starting at the low point of the roof, set the roll and unroll the roll up to half of the length where possible to assure proper alignment. Torch apply the flame to the surface of the coiled roll until the surface reaches the proper application temperature (330°F to 350°F [166°C to 176°C]).

The torch flame must be moved from side to side to heat the back of the sheet enough to develop a glossy sheen. In addition, the selvage and end lap areas of the previously applied sheet must be torch heated to provide proper adhesion. Heavy smoke from the torched surface indicates the surface is being overheated.

Slowly unroll the torch heated roll while applying sufficient pressure to the roll to adhere the sheet to the underlying surface. A 1/8" to 3/8" (3 mm to 10 mm) bleed out of APP bitumen extending beyond the edge of each lap is required. Roll side laps and end laps with a steel lap roller and check all laps for proper adhesion.

The granules on POWERply APP FR must be fully embedded prior to adhering additional sheeting over it, such as with end laps, base flashings, or for patchwork. Heat the granule section and press the granules into the compound using a

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steel trowel to provide a surface capable of proper adhesion. Any section of POWERply APP FR not protected by granule surfacing must be surfaced with loose granules embedded into the sheet after softening the surface with a torch.

Side laps 3-3/8" (86mm) Minimum; end laps 6" (152mm) minimum. Offset membrane laps from base ply laps. Stagger end laps at least 36" (914 mm). Install flashings as specified.

POWERply Standard Cold Adhesive is recommended for cold process applications. Apply adhesive to the substrate in a full and continuous coverage, however do not apply adhesive on side seam and end lap areas. Wipe any excess adhesive from these areas, then torch/heat weld all seam and end lap areas.

Precautions: Provide written notice to the local fire department in localities where required. Obtain permits for application of roofing by torch where required.

Roofing workers should wear proper protective equipment for torch installations, including long sleeved nonsynthetic shirts, long pants with no cuffs, boots, heat resistant gloves, and a face shield.

Roofing workers must be properly trained in a safe application techniques for torch applied roofing, such as provided by the CERTA (Certified Roofing Torch Applicator) Program.

Do not torch onto or near combustible materials or surfaces. Do not torch near or into vents, openings, cracks, or penetrations into the building. Shut off power fans in the torch area. Never leave lighted torches unattended.

A fire watch never shorter than 1 hour after the torch application is required for all torch applications. A longer fire watch may be necessary due to the size or configuration of the building. Use an infra-red heat detection device to detect hot spots or smoldering materials. If a fire is detected, contact the fire department immediately.

Tremco does not supervise contractors or any other person in the application of heat welded torch applied modified bitumens and assumes no responsibility for fire damage or any other damages.

Users must read container labels and material safety data sheets for health and safety precautions prior to use.

Availability and Cost: Contact your local Tremco Roofing Representative for pricing and availability. For the name and number of your Representative, call the Roofing Division at 216/292-5000.

Maintenance: Your local Tremco Roofing Representative can provide you with effective maintenance procedures which may vary, depending upon specific conditions. Periodic inspections, early repairs and preventive maintenance are all part of a sound roof program.

Guarantee/Warranty: Tremco Incorporated warrants POWERply APP FR to be free of defects and to meet published physical properties when tested according to ASTM and Tremco standards. Under this warranty, any product that is proved to be defective when applied in accordance to our written instructions, and in applications recommended by Tremco as suitable for this product will be replaced with like product at no charge. THIS IS BUYERS SOLE AND EXCLUSIVE REMEDY.
All claims concerning product defects must be made in writing within twelve (12) months of shipment. The absence of such claims in writing during this period will constitute a waiver of all claims with respect to such product.

Physical Performance Characteristics

POWERply™ APP FR

Property	Typical Value	Test Method
Thickness	0.180 in. (4.5 mm)	ASTM D 6222-98
Tensile strength @ 0°F (-18°C)	151 lbf/in. MD (26.4kN/m) 105 lbf/in. XMD (18.4kN/m)	ASTM D 6222-98
Elongation at 0°F (-18°C)	38% MD 42% XMD	ASTM D 6222-98
Tear strength at 77°F (25°C)	175 lbf/MD (778N) 143 lbf/XMD (636N)	ASTM D 6222-98
Low Temperature Flexibility	12°F (-11°C)	ASTM D 6222-98
Dimensional Stability	0.90% MD 0.60% XMD	ASTM D 6222-98

This warranty shall be IN LIEU OF any other warranty, express or implied, including but not limited to, any implied warranty of MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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An RPM Company

3735 Green Road
Beachwood, OH 44122
216-292-5000

220 Wicksteed Ave
Toronto, ONT M4H 1G7
416-421-3300

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SIPLAST LIGHTWEIGHT INSULATING CONCRETE

THE NVS SYSTEM

siplast

Siplast Lightweight Insulating Concrete Systems

Siplast Lightweight Insulating Concretes are composite systems that combine the unique properties of lightweight insulating concrete and Insulperm premium expanded polystyrene foam insulation board. The polystyrene insulation board can be installed in thicknesses necessary for high insulation values and in stair-step fashion, facilitating prompt drainage of water from the roof surface.

By design, Siplast Lightweight Insulating Concrete Systems encapsulate the insulation board in insulating concrete. All constructions provide superior fire protection and wind resistance, resist air infiltration and are fully bonded to the substrate, resulting in a stable, monolithic insulation system built for the long term.

The NVS System Concept

The NVS (Non-Vented Substrate) System has been engineered for use over concrete substrates, reroofing and, where appropriate, re-cover applications. In these applications, NVS Lightweight Insulating Concrete, combined with Insulperm insulation board, provides slope-to-drain over flat or irregular substrates.

Typically, there are inherent difficulties in achieving slope with concrete substrates, and in reroofing and re-cover applications. Cast-in-place concrete is usually poured dead-level. On the other hand, precast concrete has camber in the slabs and variations in joint heights. In reroofing, proper slope is difficult to achieve because of roof deck deflection or an initial flat design. In re-cover applications, surface irregularities are common. The use of NVS Lightweight Insulating Concrete and stair-stepped Insulperm eliminates substrate irregularities and achieves a positive slope-to-drain design.

The NVS System is more economical than installing tapered rigid board systems or sloping the structural concrete. Depending on the condition of the existing roof system, the NVS System can also eliminate the need for costly tear-off and simplify surface preparation.

NVS Lightweight Insulating Concrete

NVS Concrete is a 1:3.5 volume ratio of Portland cement to patented NVS Concrete Aggregate. NVS Insulating Concrete has a minimum dry density of 35 pounds (13.61 kg), and provides a minimum compressive strength of 300 psi (2068.44 kPa). Because of its high compressive and tensile strength, NVS requires only a 1-inch (25 mm) minimum thickness over the top of the substrate or Insulperm insulation board if used.

Insulperm Insulation

Insulperm is a patented, premium quality nominal 1 pcf (16 kg/m^3) density expanded polystyrene insulation board. It serves as the primary insulator and, when used in a stair-stepped configuration, is the base for the system's slope-to-drain capability.

Insulperm insulation is supplied in 2-foot by 4-foot (.61 m x 1.22 m) boards in thicknesses from 1 inch (25 mm). This product is configured to give the system composite strength and ensure release of moisture vapor. Insulperm is a lightweight expanded polystyrene insulation board; it adds little dead load to the assembly.

Fire Rated Construction

NVS System is approved by Factory Mutual as a non-combustible rated roof substrate. The NVS System is listed in the *Factory Mutual Approval Guide* for new and reroofing applications over structural concrete decks.

The NVS System is listed by Underwriters Laboratories for hourly fire rated designs over structural concrete substrates. Designs published in the Underwriters Laboratories *Fire Resistance Directory* include:

Concrete Deck Roof Assembly Design No.	Hourly Rating
P708	2
P810	2
P905	2
P910	2
P913	2
P916	2
D708	3
D916	3
D923	3
D925	3
D927	3

Wind Rated Construction

NVS Lightweight Insulating Concrete with up to a 12-inch (305 mm) thickness of Insulperm insulation board over structural concrete decks or properly prepared existing built-up roofs over structural concrete meets the requirements of Factory Mutual windstorm constructions.

Approvals and Guide References

Underwriters Laboratories Listed
Factory Mutual Approved
ICC Evaluation Service, Inc. Report Number 2309
Metro-Dade Product Control No. 02-0411.01 and 03-0320.13
Other local and regional approvals available

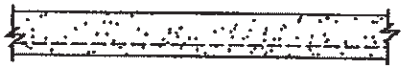
Structural Bases

The NVS System may be used over a variety of structural bases which include:

Pre-stressed single tees

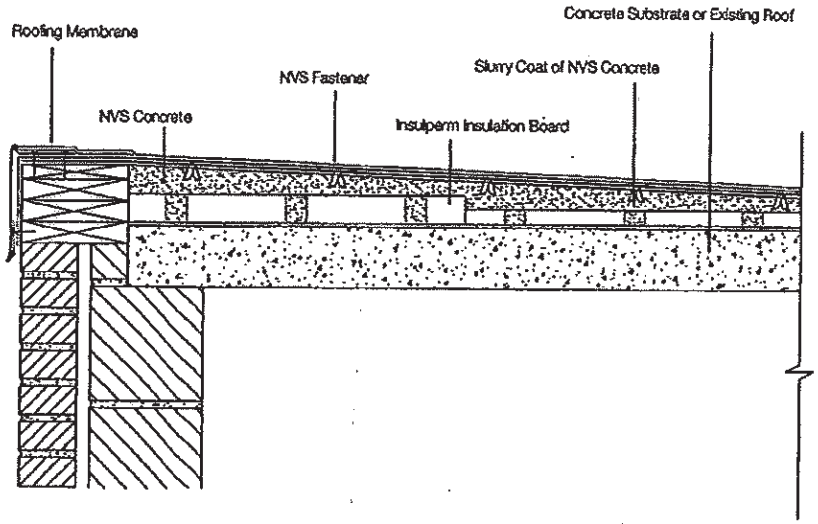
Pre-stressed double tees

Structural Concrete



Channel Slabs

The NVS System



Insulation Value Table for Reroofing and Concrete Substrate Designs

(includes roof membrane, 1 inch of NVS Concrete, and optional thicknesses of Insulperm over the substrate.)

	Values Based on 1 Inch of NVS Concrete				
			U-Factor No Ceiling Heat Flow		
Thickness of Insulperm	Dry Weight of Insulperm & NVS Concrete (PSF)	Wet Weight of Insulperm & NVS Concrete (PSF)	Up	Down	R-Factor
0"	2.9	5.7	0.498	0.417	0.1
1"	3.4	6.6	0.168	0.158	4.8
1½"	3.5	6.7	0.128	0.122	6.7
2"	3.6	6.9	0.103	0.099	8.6
2½"	3.7	7.0	0.087	0.084	10.4
3"	3.8	7.1	0.075	0.073	12.3
3½"	3.9	7.2	0.066	0.064	14.1
4"	3.9	7.4	0.059	0.057	16.0
5"	4.1	7.6	0.048	0.047	19.6
6"	4.3	7.8	0.041	0.040	23.3
7"	4.4	8.1	0.036	0.035	26.9
8"	4.6	8.3	0.032	0.031	30.6
9"	4.7	8.6	0.028	0.028	34.2
10"	4.9	8.8	0.026	0.025	37.8
11"	5.1	9.1	0.024	0.023	41.5
12"	5.2	9.3	0.022	0.021	45.1

**Includes air films and roofing membrane.*

Notes:

1. NVS Lightweight Insulating Concrete properties are based on the material at minimum dry density. The thermal conductivity data is derived from independent testing of materials in accordance with ASTM Specification C 177. Thermal conductivity of Insulperm is based on 40° F mean temperature and NVS Concrete is based on 75°F mean temperature. U-factors are based on series-parallel heat flow calculations defined in the ASHRAE *Handbook of Fundamentals* and are shown in constant thickness insulation. All values shown are intended only as guidelines. Insulation performance for all materials and/or systems is affected by building environment, installation and design procedures which may cause variations from calculated values.

2. A roofing membrane will add the following typical weights to the system weight listed above:

Modified Bitumen	2 pounds per sf
4 ply built-up roof with gravel	6 pounds per sf
Mechanically fastened single ply	0.5 pounds per sf

When using NVS in a re-cover or reroofing application, Siplast strongly recommends that a registered structural engineer evaluate the design and verify that the existing structure is capable of supporting the added weight of the new assembly.

PART 1: GENERAL

1.01 SECTION INCLUDES:

A. Lightweight Insulating Concrete Application to Prepared Substrate

1.02 RELATED SECTIONS

A. Section [---] - Testing Laboratory Services
B. Section [---] - Rough Carpentry
C. Section [---] - Roof Deck
D. Section [---] - Roofing
E. Section [---] - Sheet Metal Flashing and Trim

1.03 REFERENCE STANDARDS

References in these specifications to standards, test methods and codes, are implied to mean the latest edition of each such standard adopted. The following is an abbreviated list of associations, institutions, and societies that may be used as references throughout these specifications.

ASTM American Society for Testing and Materials Philadelphia, PA
FM Factory Mutual Engineering and Research Norwood, MA
UL Underwriters Laboratories Northbrook, IL

1.04 SUBMITTALS

All submittals that do not conform to the following requirements will be rejected.

A. Submittal of Equals: Submit lightweight insulating concrete systems to be considered as equals to the specified roof system no less than 10 days prior to bid date. Primary lightweight insulating concrete systems that have been reviewed and accepted as equals to the specified system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding. Submittals shall include the following:

1. Submit manufacturer's instructions for proper placement of the proposed lightweight insulating concrete roof insulation system.
2. Submit documentation confirming compliance with FM 1-[---] Windstorm Resistance Classification utilizing the specific roof membrane system proposed for use on this project.
   a) Submit documentation confirming that the specific expanded polystyrene proposed for use on this project is approved by Factory Mutual for use in conjunction with the proposed lightweight insulating concrete system.
3. Submit a letter from the supplier of the proposed lightweight insulating concrete system confirming that the expanded polystyrene used as a component in the lightweight insulating concrete system is to be furnished by the supplier of the proposed lightweight insulating concrete system.
4. Submit shop drawings including a roof plan, roof slopes, and thickness of insulation.
5. Submit a sample copy of the warranty covering the proposed lightweight insulating concrete system.
   ** NOTE: The above item is applicable when a performance warranty for the lightweight concrete is required.*
6. Submit a sample copy of the roof system guarantee covering the proposed lightweight insulating concrete system and roof membrane system.
7. Submit a letter from the roof membrane manufacturer confirming the intention to issue the roof system guarantee covering the proposed lightweight insulating concrete system and roof membrane system at project completion.
   ** NOTE: The above items 6 and 7 are applicable when a single source roof system guarantee covering the lightweight insulating concrete system and roof membrane system is required.*
8. Submit a letter from the proposed lightweight insulating concrete system supplier confirming that the Contractor is approved to install the proposed lightweight insulating concrete system.

1.05 QUALITY ASSURANCE

A. Acceptable Contractor: The contractor must be certified in writing prior to bid by the supplier to install the proposed lightweight insulating concrete system.

B. Agency Approvals: The proposed lightweight insulating concrete system shall conform to the following requirements. No other testing agency approvals will be accepted.

1. **Underwriters Laboratories:** Tested by Underwriters Laboratories in accordance with the procedures of ASTM E 119 and listed in the most recent Underwriters Laboratories Fire Resistance Directory. Lightweight insulating concrete roof insulation components are defined by Underwriters Laboratories under sections CCVW for foamed plastic and CJZZ for vermiculite aggregate in the latest edition of the Underwriters Laboratories Fire Resistance Directory.
2. **Factory Mutual:** Tested by Factory Mutual Research and listed in the most recent Factory Mutual Approval Guide as non-combustible or Class 1, and for 1-[---] windstorm classification utilizing the specific roof membrane system proposed for use on this project.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver materials in the supplier's original unopened packages, fully identified as to manufacturer, brand or other identifying data and bearing the proper Underwriters Laboratories label.

B. Storage: Store bagged concrete aggregate products in a dry location until ready for application. Expanded polystyrene board should not be stored in areas of standing water prior to application but can be exposed to rainwater before application. Boards must be clean and free from foreign substances.

1.07 PROJECT/SITE CONDITIONS

A. Requirements Prior to Job Start

1. **Notification:** Give a minimum of 5 days notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.
2. **Permits:** Obtain all permits required by local agencies and pay all fees that may be required for the performance of the work.
3. **Safety:** Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NRCA and other industry or local governmental groups.

B. Environmental Requirements

1. **Precipitation:** Do not apply materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that materials and building interiors are protected from possible moisture damage or contamination.
2. **Temperature Restrictions:** When air temperatures of 40°F (4.4°C) or above are predicted to occur within the first 24 hours after placement, normal mixing and application procedures may be used. When air temperatures of 32°F to 40°F (0°C - 4.4°C) are predicted to occur within the first 24 hours after placement, warm water may be used. The mix temperature should not exceed 100°F (37.8°C) at the point of placement. Do not install the lightweight insulating concrete system when air temperatures are below 32°F (0°C).

1.08 WARRANTY/GUARANTEE

A. Insulation System Warranty: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the insulation system manufacturer's 10-year labor and materials warranty. The insulation system warranty shall include the composite roof deck system consisting of pregenerated foam and polystyrene insulation panels. All repair or replacement costs covered under the guarantee shall be borne by the insulation system manufacturer. The guarantee shall be a term type, without deductibles or limitations on coverage amount, and be issued at no additional cost to the Owner. Specific items covered during the term of the insulation system warranty include:

1. The actual resistance to heat flow through the roof insulation will be at least 80% of the design thermal resistance, provided that the roofing membrane is free of leaks.
2. The roof insulation will remain in a reroofable condition should the roof membrane require replacement (excluding damage caused by fastener pullout during removal of the old membrane.)
3. The Insulating Concrete Warranty will not limit, by geographic location, the owners rights for claims, actions, and/or proceedings.
4. The roof insulation material will not cause structural damage to the building as a result of expansion from thermal or chemical action.

> *Siplast Ten-Year Roof Insulation Performance Warranty*
> **NOTE: The above specification item is applicable when a performance warranty for the lightweight concrete only is required.*

B. Roof System Guarantee: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with a labor and materials endorsement to the roof membrane manufacturer's guarantee confirming that a single guarantee covers both the lightweight insulating concrete system and the roof membrane/flashing system. The roof system guarantee shall include both the roofing and flashing membrane, and the specified new lightweight insulating concrete system consisting of pregenerated foam, patented-preformed polystyrene panels, base sheet, and base sheet fasteners. All repair or replacement costs covered under the guarantee shall be borne by the roof membrane/flashing manufacturer. The guarantee shall be for a 10 year term, without deductibles or limitations on coverage amount, and be issued at no additional cost to the Owner. Specific items covered under the roof system guarantee include:

1. The actual resistance to heat flow through the roof insulation will be at least 80% of the design thermal resistance, provided that the roofing membrane is free of leaks;
2. The roof insulation will remain in a reroofable condition should the roof membrane require replacement (excluding damage caused by fastener pullout during removal of the old membrane.)
3. The roof insulation will remain in place even if the roof membrane sustains wind damage covered by the guarantee.
4. The base sheet, base sheet fasteners and polystyrene panels will be covered by the guarantee.
5. The roof system guarantee will not limit, by geographic location, the Owner's rights for claims, actions, and/or proceedings.
6. The roof insulation material will not cause structural damage to the building as a result of expansion from thermal or chemical action.

> *Siplast Ten-Year Roof System Guarantee*
> **NOTE: The above specification item is applicable when a roof system guarantee covering both the lightweight concrete system and roof membrane system is required.*

PART 2: PRODUCTS

2.01 MATERIALS

A. Acceptable Manufacturer: Provide a lightweight insulating concrete roof insulation system incorporating vermiculite aggregate and expanded polystyrene board supplied by a single manufacturer.

> *NVS Roof Insulation System by Siplast, Inc., Irving, TX*

2.02 SYSTEM DESCRIPTION

A. Lightweight Concrete System Description: Provide materials used in the lightweight concrete roof insulation system conforming to the following.

1. Portland Cement: Portland cement conforming to Type I, II, or III as defined by ASTM C 150.
2. Vermiculite Aggregate: Vermiculite concrete aggregate conforming to ASTM C 332.

> *NVS Concrete Aggregate by Siplast, Inc., Irving, TX*

3. Expanded Polystyrene Insulation Board: Expanded polystyrene (EPS) insulation board having a nominal density of 1 pcf (16 kg/m³) defined as Type I by ASTM C 578 and containing approximately 3% open area. Each bundle of board shall be delivered to the job site with clear identification as to manufacturer and shall carry the Factory Mutual approval label and the Underwriter's Laboratories Classified label on each bundle.

> *Insulperm Insulation Board by Siplast, Inc., Irving, TX*

4. Water: Potable water that is clean and free of deleterious amounts of acid, alkali and organic materials.

2.03 MIX DESIGN

A. Density: Mix Portland cement and vermiculite concrete aggregate in 1:3.5 volume ratio with water to achieve a wet density ranging from 60 to 68 pcf (960 to 1089 kg/m³), resulting in a minimum dry density of 35 pcf (561 kg/m³), and minimum compressive strength of 300 psi (2068 kPa).

PART 3: EXECUTION

3.01 EXAMINATION

A. General: Ensure that all surfaces to receive lightweight insulating concrete are free of oil, grease, paints/primers, loose mill scale, dirt, or other foreign substances. Where necessary, cleaning or other corrections of surfaces to receive lightweight insulating concrete is the responsibility of the party causing the unacceptable condition of the substrate.

B. Substrate Acceptance: With the general contractor present, examine surfaces to receive the roof insulation system and determine that the surfaces are acceptable prior to placement of the lightweight insulating concrete system.

siplast

For more information, contact:
Siplast
1000 E. Rochelle Blvd.,
Irving, Texas 75062
469-995-2200
Facsimile: 469-995-2205

In Canada:
201 Bewicke Ave., Suite 210
North Vancouver, BC, Canada V7M 3M7
604-929-7687

Customer Service in North America:
Toll Free 1-800-922-8800

www.siplast.com

An Icopal Group Company

3.02 PREPARATION

A. General: Remove water or any other substance that would interfere with bonding of the lightweight concrete system.

3.03 APPLICATION

A. General: Provide equipment and application procedures conforming to the material supplier's application instructions.

B. Applications Not Incorporating Expanded Polystyrene Panels: *Place lightweight insulating concrete in a 1-inch (25 mm) minimum thickness over the top of a [concrete substrate, temporary roof].* ***Place lightweight insulating concrete in a 1¼-inch (32 mm) minimum thickness over the top of a gravel surfaced substrate.***

C. Applications Incorporating Expanded Polystyrene Panels: When the specified expanded polystyrene insulation panels are to be incorporated into the lightweight insulating concrete system, place a 1/8-inch (3 mm) minimum thickness of insulating concrete slurry coat over top of the prepared substrate or for metal deck applications, fill the flutes and place a 1/8-inch (3 mm) minimum slurry over the top corrugation of metal deck before embedding the expanded polystyrene insulation panels. Place the thickness of expanded polystyrene insulation panels shown in the approved shop drawings within 30 minutes of applying the insulating concrete slurry coat to the substrate. The maximum allowable panel step in a stair-step design is 1 inch (25 mm). *[The following day, fill the holes in the expanded polystyrene insulation panels and place a 1-inch (25 mm) minimum thickness of insulating concrete over top of the expanded polystyrene insulation panels.* ***Fill the holes in the expanded polystyrene insulation panels and place a 1-inch (25 mm) minimum thickness of insulating concrete over top of the expanded polystyrene insulation panels within 4 hours after application of the expanded polystyrene insulation panels.]***

** NOTE: The italic text in Item B and C above is applicable for NVS systems requiring an Enhanced Windstorm Rated Construction. The bold italic text in Item B and C above is applicable for NVS systems not requiring an Enhanced Windstorm Rated Construction.*

D. Thermal Resistance: Install the specified lightweight insulating concrete system to provide for an [average/minimum] thermal value of R[—]or as shown on the architectural details/drawings.

E. Slope: Install the specified lightweight insulating concrete system to provide for a minimum positive roof slope of [— —] inch per foot ([— —] %). See the structural drawings for slope provided by the roof framing system.

3.04 FIELD QUALITY CONTROL

A. Protection: Avoid roof-top traffic over the roof insulation system until one can walk over the surface without creating surface damage.

B. Compressive Strength Testing: The Architect has the option to select an independent testing laboratory to randomly sample the top placement of insulating concrete to verify the thickness and density, and to secure and test compressive strength cylinders in accordance with ASTM C 495. The Owner will be responsible for the cost and engagement of the independent testing laboratory services.
** NOTE: The above testing is only necessary when the lightweight insulating concrete system is designed as a diaphragm to resist seismic or wind loads.*

C. Application Monitoring: Monitor the thickness and wet density of the lightweight insulating concrete at the time of placement to determine conformance to the manufacturer's requirements. Monitor the placement of proper thickness of polystyrene insulation board in accordance with the contract documents.

D. Fastener Withdrawal Testing: Conduct a base ply fastener pull test 3 or more days following the application of the lightweight insulating concrete to ensure a minimum withdrawal resistance of 40 pounds (18 kg) per fastener.

3.05 PATCHING

A. Patching: Perform all patching and repairing of insulating concrete using Zono-Patch or other materials approved by the lightweight insulating concrete supplier.

INSULPERM®
INSULATION BOARD

Commercial Product Data Sheet

Product Description

Insulperm is a premium quality CFC-free expanded polystyrene insulation board of nominal 1 pcf density defined as Type I by ASTM C 578. It is specifically designed for use in Siplast Lightweight Insulating Concrete Systems. Manufactured in 2-foot x 4-foot boards, Insulperm is available in thicknesses from 1 inch to 16 inches. This extremely lightweight board is specially designed to give the system great composite strength while allowing the release of moisture vapor.

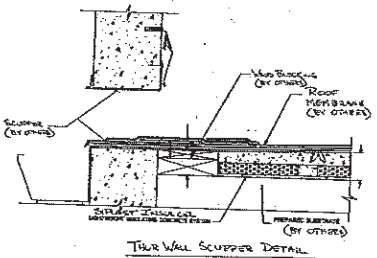
Product Uses

Insulperm serves as the primary insulating component in Siplast Lightweight Insulating Concrete Systems. It also forms the base for the System's slope-to-drain capability when installed in a stair-step configuration. Insulperm is intended to be encapsulated in one of the insulating concretes used in Siplast Lightweight Insulating Concrete Systems.

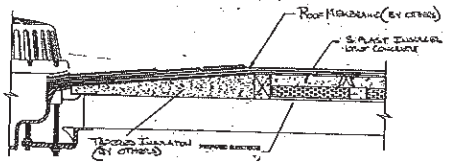
Product Approvals

Insulperm Insulation Board is fully Approved by Factory Mutual and Underwriters Laboratories for use in fire and wind rated assemblies. Contact Siplast/Icopal for specific details of these approvals.

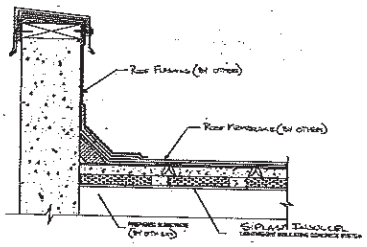
Patent Pending
12/03



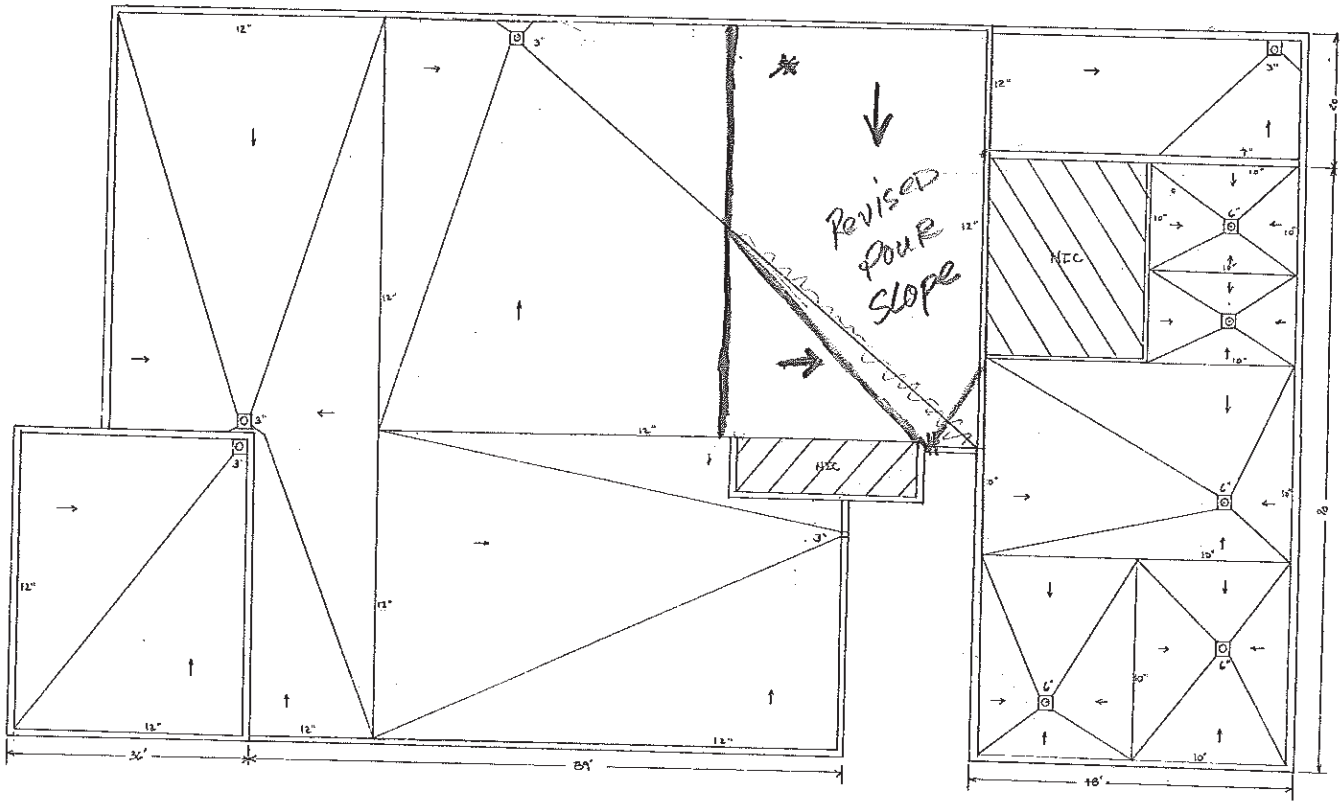
THRU WALL SCUPPER DETAIL
NTS



ROOF DRAIN DETAIL
NTS

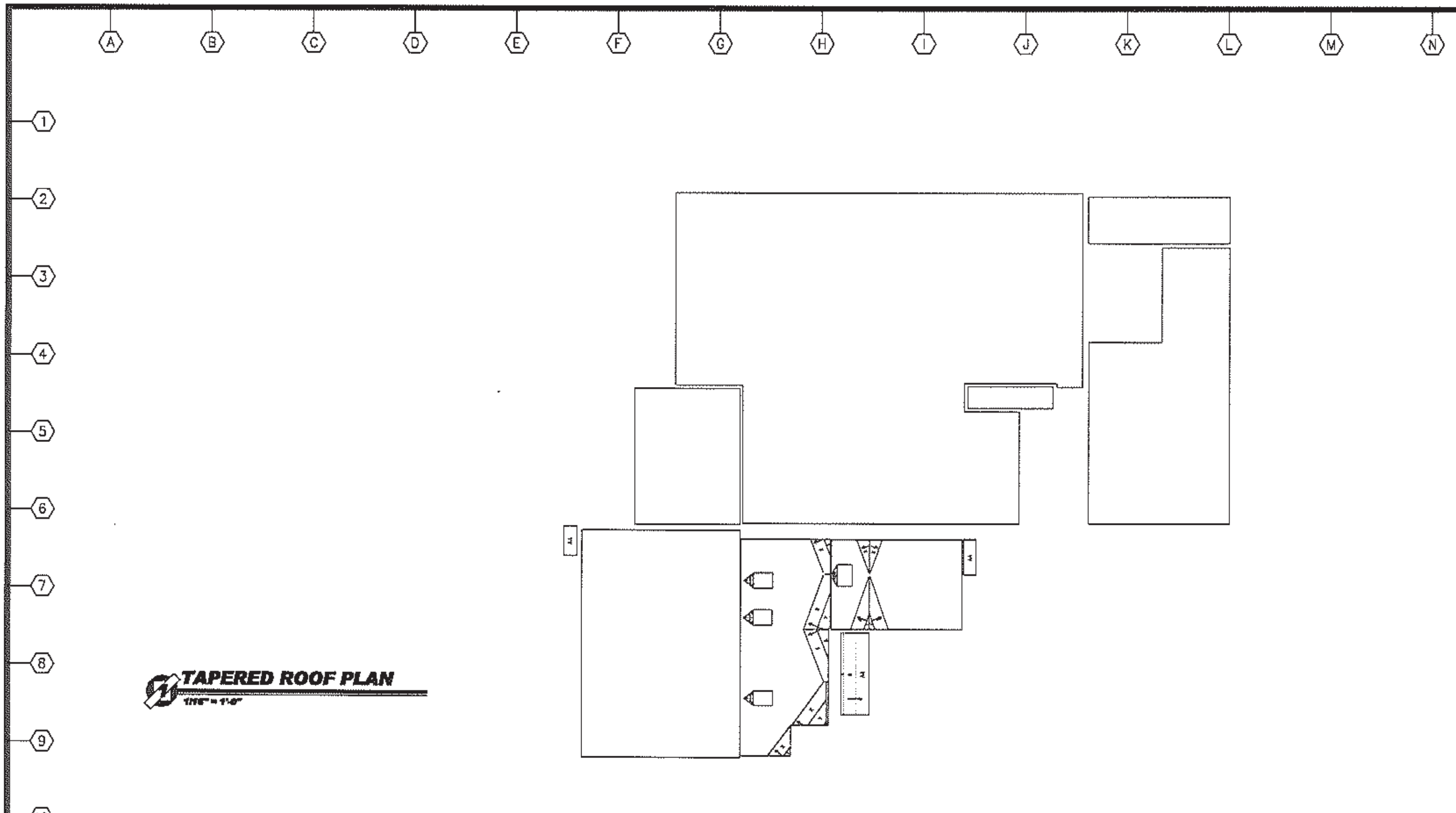


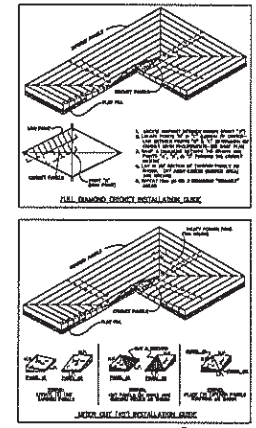
HIGH WALL / PARAPET DETAIL
NTS



ROOF PLAN
SCALE: 1/8" = 1'

HWZ CONTRACTING - CINCINNATI			
JOB United Way of Greater Cin.			
LOCATION Cincinnati, Ohio			
OWNER United Way of Greater Cin.			
ARCHITECT			
CONTRACTOR W.A. Krahnke Sons, Inc.			
DRAWN BY FPF	DATE 2/2/10	REVISIONS —	SHEET NO. 1 of 1
APPROVED BY			DATE





North Coast
Commercial Roofing Systems

IMPORTANT!
INSTALLER MUST VERIFY ALL FIELD DIMENSIONS, DRAIN AND SCUPPER LOCATIONS AND PRODUCT SPECIFICATIONS FOR ACCURACY. MATERIAL WILL BE SHIPPED TO MATCH THE SPECIFICATIONS AND QUANTITIES NOTED HEREON. CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ALL FIELD CONDITIONS AND COMPLIANCE WITH BUILDING CODE ISSUES.

THE TAPERED LAYOUT ILLUSTRATED ON THIS DRAWING REQUIRES THE INSTALLER TO REUSE PARTIAL PIECES OF INSULATION. THEREFORE, DISCARDING MORE THAN HALF OF A USABLE PIECE OF TAPERED INSULATION AND/OR ONE QUARTER PIECE OF FLAT INSULATION WILL RESULT IN A SHORTAGE OF MATERIAL FOR YOUR SYSTEM.

SPECIFICATIONS	
TAPERED MATERIAL:	POLYISO
FILL MATERIAL:	POLYISO
SLOPE:	1/8"
CRICKET SLOPE:	1/4"
MIN. THK.	.5"
MAX. THK.	1.50"
AVG R VALUE:	5.48
BASE LAYER:	

NOTES:

DISCLAIMER:
NORTHCOAST DID NOT PERFORM AND/OR CONDUCT ANY DESIGN OR ENGINEERING ANALYSIS IN CONJUNCTION WITH THE PREPARATION OF THESE DRAWINGS. THESE DRAWINGS REPRESENT A RECITATION AND GRAPHIC DEPICTION OF THE MANUFACTURER'S SPECIFICATIONS AND THE DESIGN DETAILS ONLY. THESE DRAWINGS SHOULD NOT AND ARE NOT TO BE CONSTRUED AS CONSTITUTING DESIGN ERECTION DRAWINGS. SPECIFICATIONS OR DESIGN DETAILS PREPARED OR APPROVED BY NORTH COAST. THE ARCHITECT'S/ENGINEER'S APPROVED DESIGN OF THE ROOF IS THE CONTROLLING DOCUMENT. CONTRACTOR REMAINS RESPONSIBLE FOR THE INSTALLATION IN COMPLIANCE WITH THAT APPROVED DESIGN.

TAPERED ROOF PLAN
1/16" = 1'-0"

TAPERED PANELS 4'X4'		SLOPE PER FT
PANEL	DIMENSIONS	
AA	.5" - 1"	1/8"
A	1" - 1.5"	1/8"
B	1.5" - 2"	1/8"
C	2" - 2.5"	1/8"
X	.5" - 1.5"	1/4"
Y	1.5" - 2.5"	1/4"

TAPERED SECTIONS
NOT TO SCALE

REV. #	DR.	CHK.	APP.	DATE
				02/24/10

NORTH COAST COMMERCIAL ROOFING SYSTEMS

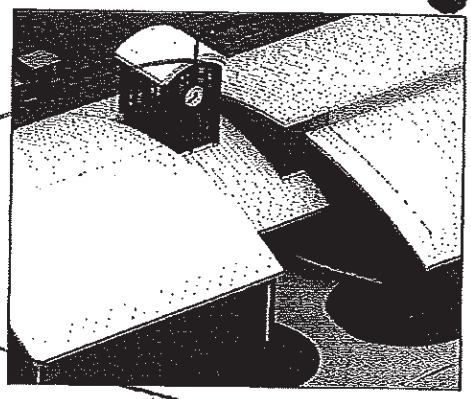
DRAWN BY: JRM	United Way
CHECKED BY:	Ohio
APPROVED BY:	Wm. Kramer & Son, Inc
CAD REFERENCE NO.: F10-0146-R2	DRAWING SCALE: 1/16" = 1'-0" / SIZE: D / DWG. NO.: F10-0146 / REV. NO.:

METAL
Panel Systems, Incorporated
Architectural Sheet Metal

MPS Sure-Lok Panel

The Sure-Lok Panel has a traditional look with a time proven seam profile. This versatile panel allows designers esthetic flexibility without compromising the integrity of the roof system. From low to steep slope, straight to curved, structural to architectural applications, the Sure-Lok Panel is the perfect choice for a multifaceted project.


Striated Profile



Panel Profile

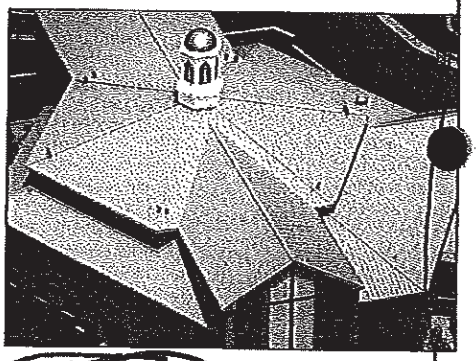
- Architectural (solid substrate) or structural applications
- Mechanically seamed sidelap with option of single or double lock
- Low to high sloped roof application
- Continuous panel lengths. Field forming available.
- ASTM E-1680-95 air infiltration tested
- ASTM E-1646-95 water penetration tested
- ASTM E-1592 tested for structural performance
- UL-90 uplift resistance classified assemblies
- CURVING: Sure-Lok panel can be curved to a minimum radius of 0'-0" in steel and 4'-0" in aluminum and copper

Material	Standard Width	Optional Widths
24 ga. Steel	16"	12", 18", 20"
.032" Aluminum	12"	20"
16 oz. Copper	16"	14", 20"

MP-175 Panel

The MP-175 Panel is one of the industry's most popular panel profile options. The snap lock seam provides to the installer a faster installation without compromising seam integrity and strength. This is due to the modest seam height and anti-siphoning design unlike that of other snap seam products.


Striated Profile



Panel Profile

- Architectural (solid substrate) or structural applications
- Integral snap-lock design provides continuous interlock at sidelap
- Roof slopes as low as 3:12. Vertical walls and fascia systems
- Continuous panel lengths. Field forming available.
- Panels expand and contract freely
- ASTM E-1680-95 air infiltration tested
- ASTM E-1646-95 water penetration tested
- ASTM E-1592 tested for structural performance
- UL-90 uplift resistance classified assemblies

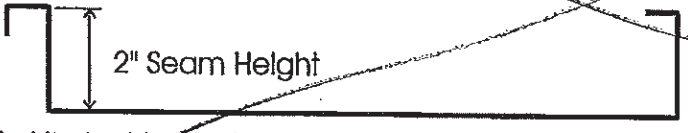
Material	Standard Width	Optional Widths
24 ga. Steel	18"	14", 15", 16"
.032" Aluminum	18"	12", 16"
16 oz. Copper	14"	12", 18"

MP-200 Panel

The MP-200 Panel is the preferred panel for low sloped and/or structural applications. This panel has been designed and tested to meet the most demanding of performance requirements. Superior wind uplift resistance can be achieved with the double lock seam profile.


Striated Profile

Panel Profile



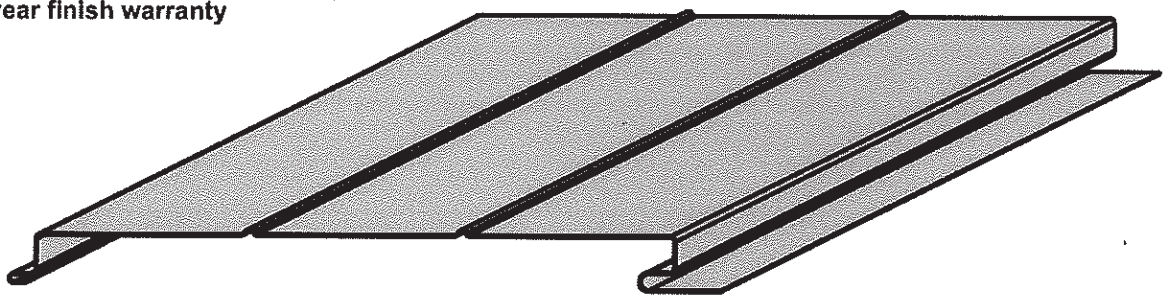
- Architectural (solid substrate) or structural applications
- Mechanically seamed sidelap with option of single or double lock
- Low to high sloped roof applications
- Concealed clip (fixed or expansion)
- ASTM E-1680-95 air infiltration tested
- ASTM E-1646-95 water penetration tested
- ASTM E-1592 tested for structural performance
- UL-90 uplift resistance classified assemblies

Material	Standard Width	Optional Widths
24 ga. Steel	16", 18"	12", 14"
22 ga. Steel	16"	

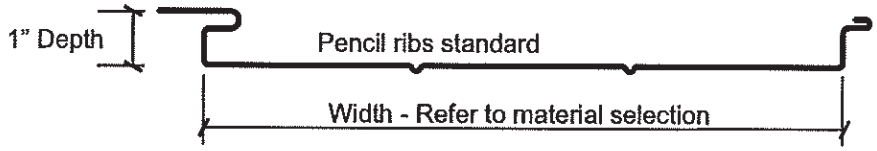
Product Data Sheet

FP-100 Soffit & Wall Panel

- **Versatile panel for soffit, fascia, facade, and walls**
- **Install over solid substrate of open framing (up to 24"o.c.)**
- **Available flat or with pencil ribs**
- **Venting: 2 rows of perforations for soffit venting**
- **Panels expand and contract freely**
- **Flush seam connection with hidden fasteners**
- **Roll-formed to exact lengths**
- **Standard finish is PVDF fluoropolymer coating in 29 standard colors (Custom colors available)**
- **20 year finish warranty**



Panel Profile



Material	Standard Width	Optional Widths
24 Ga. Steel	12"	16", 18"
22 Ga. Steel		
0.032" Aluminum	12"	

Optional widths require minimum quantities and slightly longer lead times. Other materials and gauges are available. Minimum quantities apply. Custom widths are available. Consult MPSI for costs and lead times.

Oil canning: Metal Panel Systems, Inc. purchases prime commercial grade light gauge metal which is manufactured to all industry accepted tolerances. "Oil canning" is an inherent part of light gauge cold formed panels and is not cause for rejection.

Vented Profile Options

VENTING: Net free vent area for vented panels (2 rows of perforations) is 6.04 square inches per lineal foot. Option of 3 rows of vents for 9.07 square inches per lineal foot of net free area (aluminum only).

METAL Panel Systems, Incorporated Architectural Sheet Metal

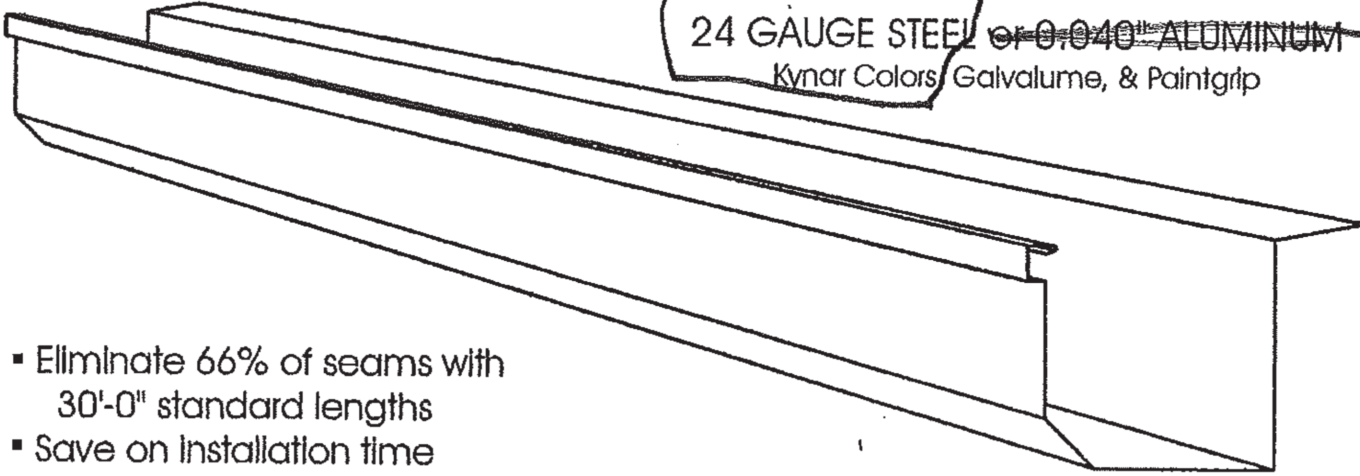
10346 Evendale Drive, Cincinnati, Ohio 45241-2512

Tel: 800-554-6126, 513-554-6120 Fax: 513-554-6121

www.metalpanelsystems.com

Mig7

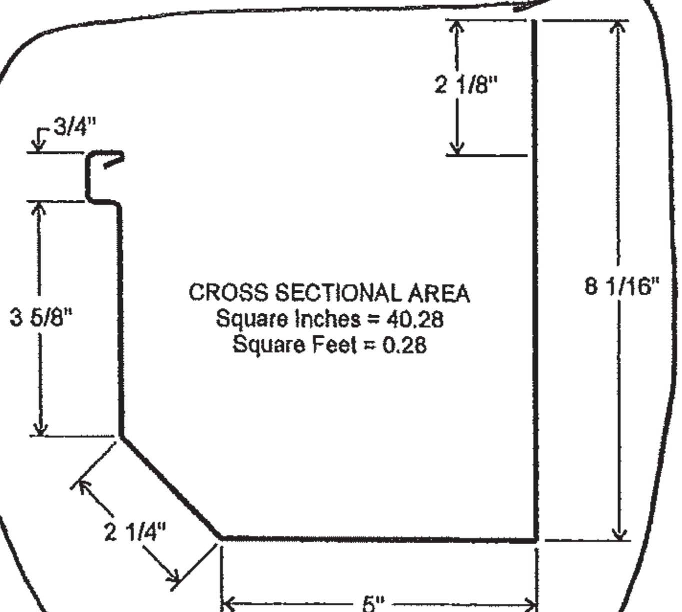
CONTINUOUS COMMERCIAL GUTTER



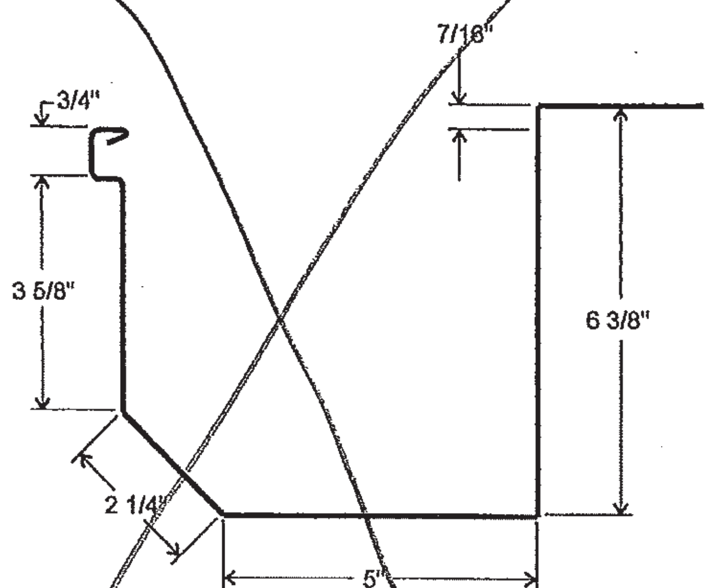
24 GAUGE STEEL ~~or 0.040" ALUMINUM~~
Kynar Colors, Galvalume, & Paintgrip

- Eliminate 66% of seams with 30'-0" standard lengths
- Save on installation time
- Optional roof flange
- Various material options
- Factory end cuts to ensure perfect fit
- Beveled front to reduce damage from ice expansion in bottom
- Custom lengths available

Also available:
4"x5" [redacted]" Rectangular Corrugated Downspout and Elbows



Straight Back

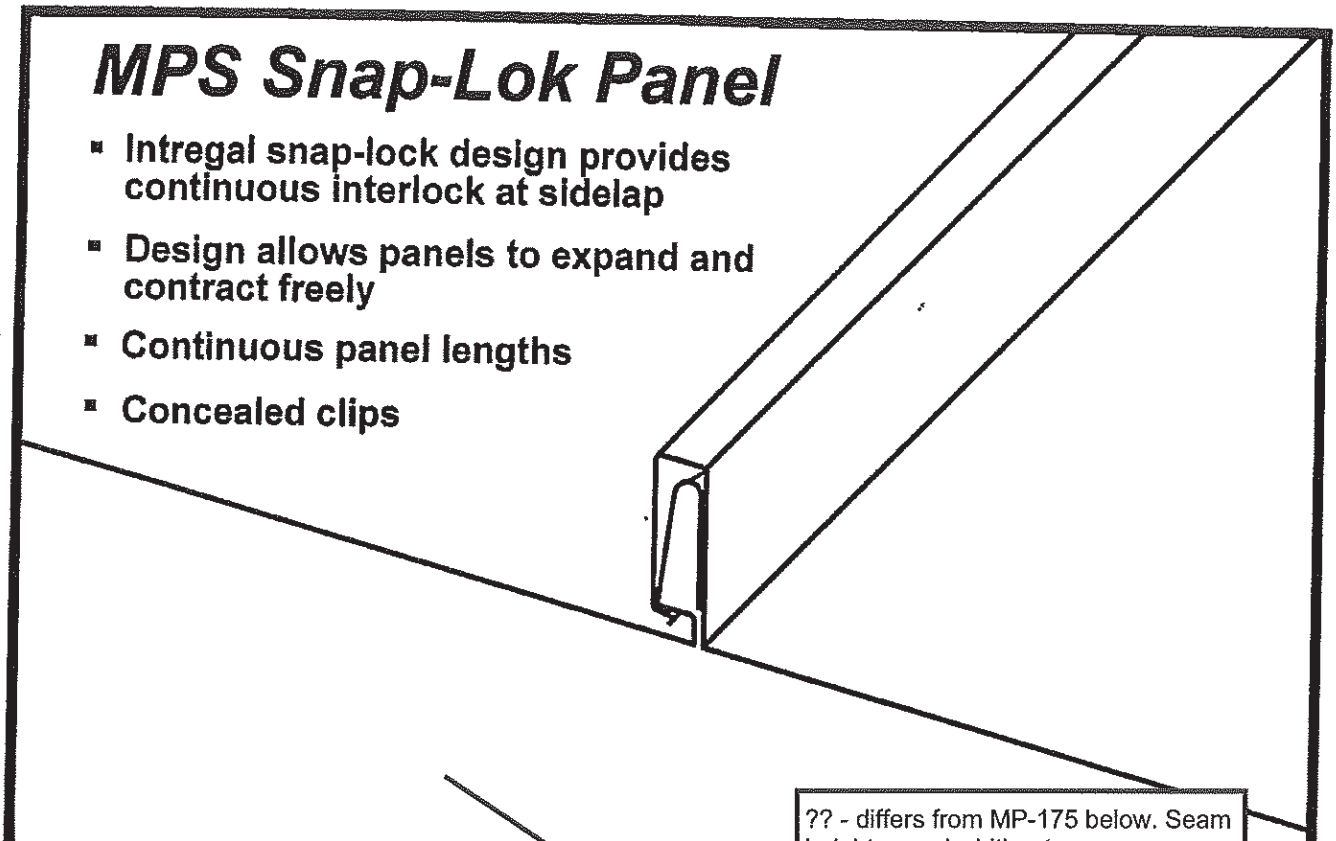


Flanged Back

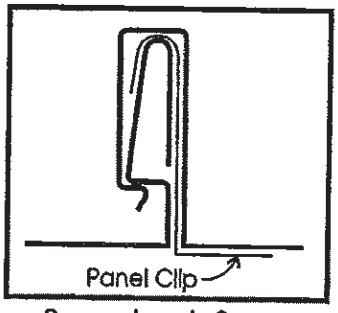
TOLL-FREE 800-554-6126 513-554-6120 FAX 513-554-6121	**Metal Panel Systems, Inc.** 11506 READING ROAD, CINCINNATI, OHIO 45241	STANDING SEAM ROOFING WALL & SOFFIT PANELS SHEET METAL FABRICATION SNOW GUARDS

MPS Snap-Lok Panel

- Intregal snap-lock design provides continuous interlock at sidelap
- Design allows panels to expand and contract freely
- Continuous panel lengths
- Concealed clips

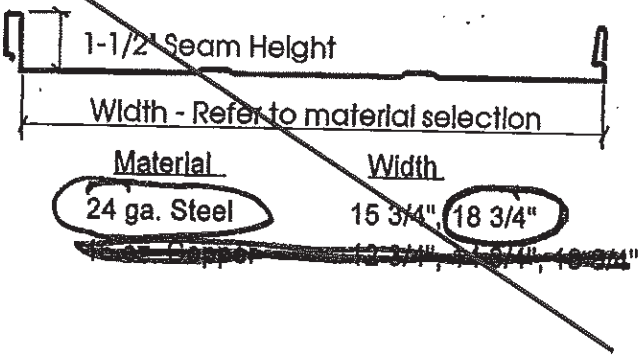


?? - differs from MP-175 below. Seam height, panel width, etc



Snap-Lock Seam

Panel Profile



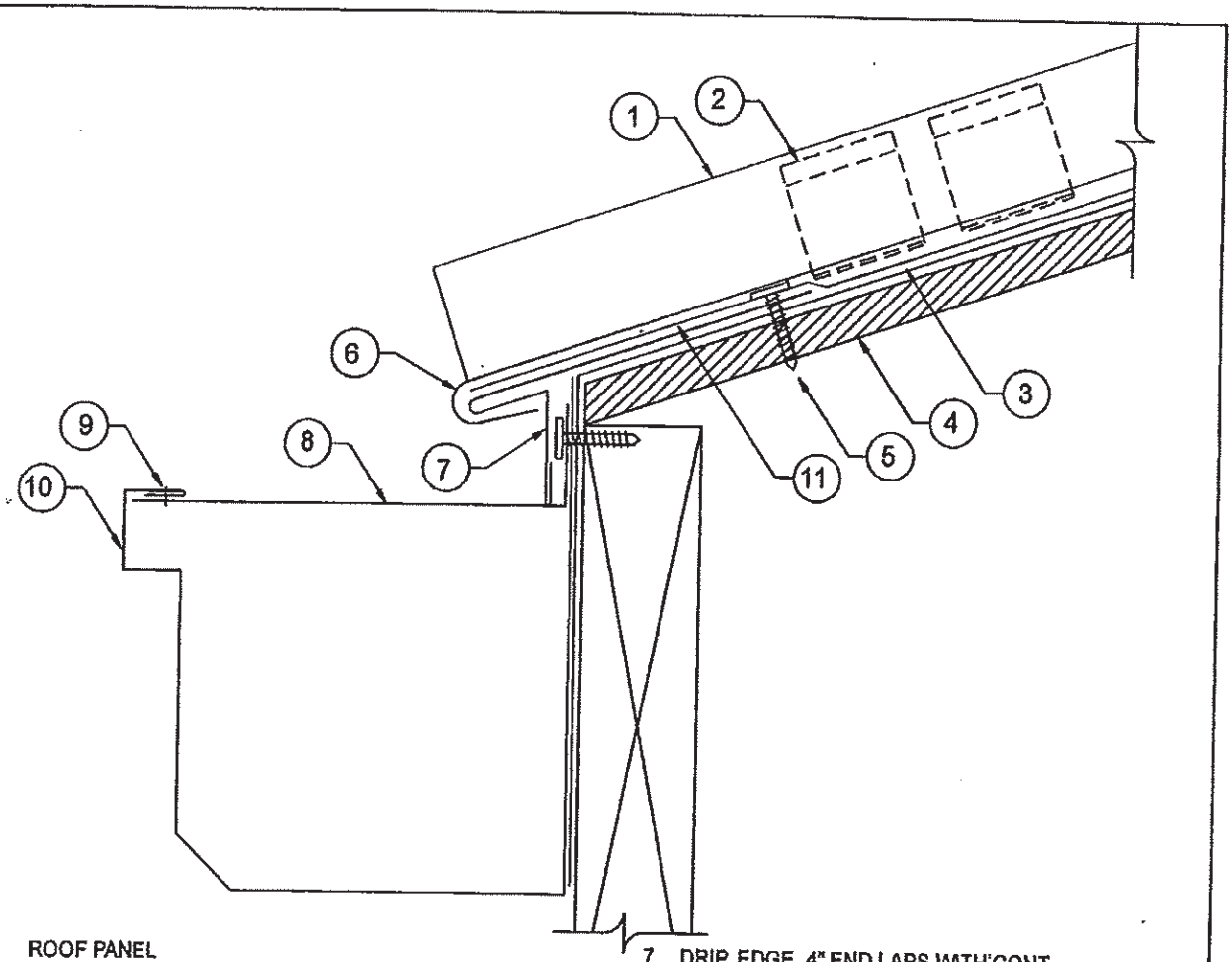
PRODUCT: MPS Snap-Lok Panel is an integral snap lock panel which allows for easy installation at side seams.
APPLICATION: Roofing with a minimum slope of 3:12, wall panel, vertical fascia, equipment screen, and mansards.
ASSEMBLY OPTIONS: Open framing, plywood substrate, metal decking, or rigid insulation with bearing plates over 22 gauge corrugated steel decking.
CLIPS: Stationary clip. Snap lock design allows panels to expand and contract freely.

STIFFENING RIBS: MPS Snap-Lok Panel comes standard with ribs. Panels are available without if requested.
CONTINUOUS PANEL LENGTHS: Panels may be site roll formed in continuous lengths to eliminate end lap joints.
CUSTOM PANEL WIDTHS: Please consult Metal Panel Systems, Inc. for additional information on non-standard widths and materials.

TOLL-FREE
800-554-6126
513-554-6120
FAX 513-554-6121

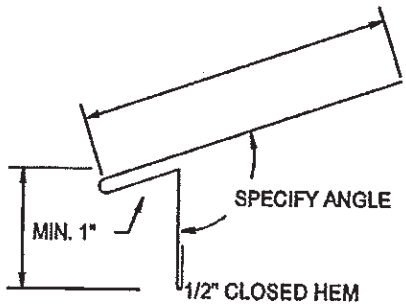
Metal Panel Systems, Inc.
11506 READING ROAD, CINCINNATI, OHIO 45241

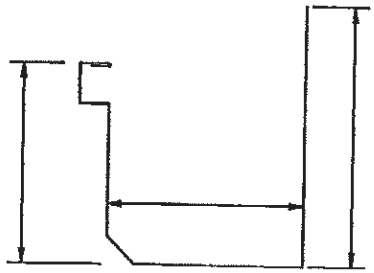
Date 05/98



1 ROOF PANEL
2 PANEL CLIP, INSTALL 2 AT EAVE TYPICAL
3 ONE LAYER OF 30 LB. FELT
4 SUBSTRUCTURE
5 10x1" PANCAKE HEAD WOOD SCREW, 20" O.C. MAX.
6 CUT BACK VERTICAL LEG AND FIELD FORM PANEL AROUND DRIP EDGE
7 DRIP, EDGE, 4" END LAPS WITH CONT. CAULK AT LAPS
8 GUTTER STRAP, INSTALL AT 24" O.C. MAX.
9 POP RIVET
10 GUTTER, RIVET AND SEAL JOINTS
11 STRIP IN DRIP EDGE WITH ADDITIONAL LAYER OF 30 LB. FELT

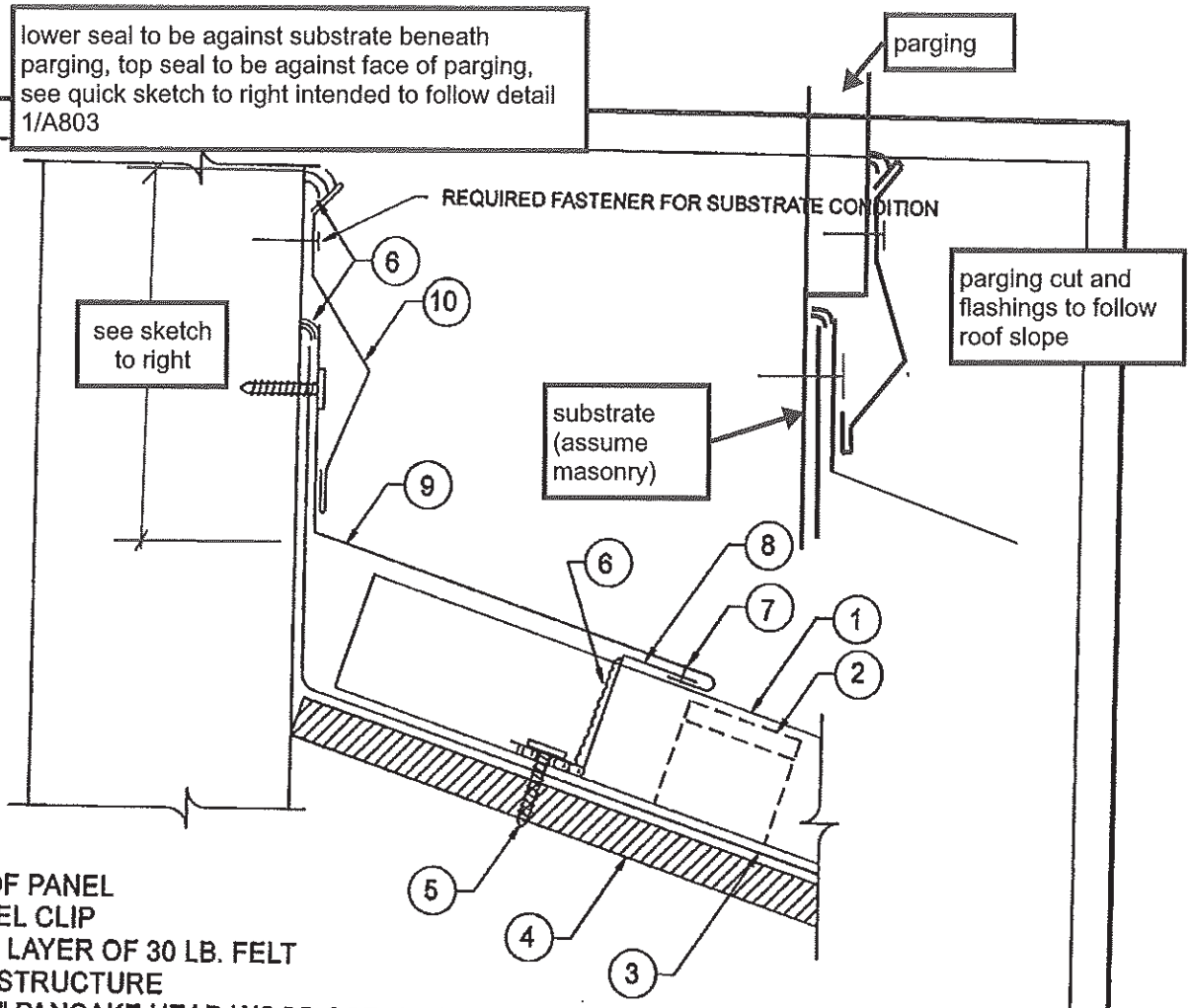
FLASHING PROFILES





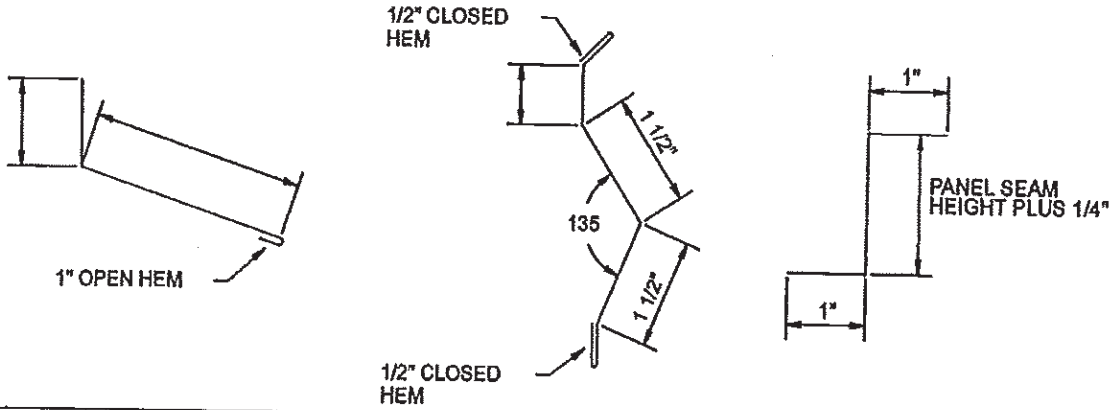
DATE: 05/00/98	EXTENDED EAVE WITH GUTTER	DETAIL: GEN06
PANEL:		
SEAM HGT.:	METAL PANEL SYSTEMS, INC.	LINEAL FEET:

lower seal to be against substrate beneath parging, top seal to be against face of parging, see quick sketch to right intended to follow detail 1/A803

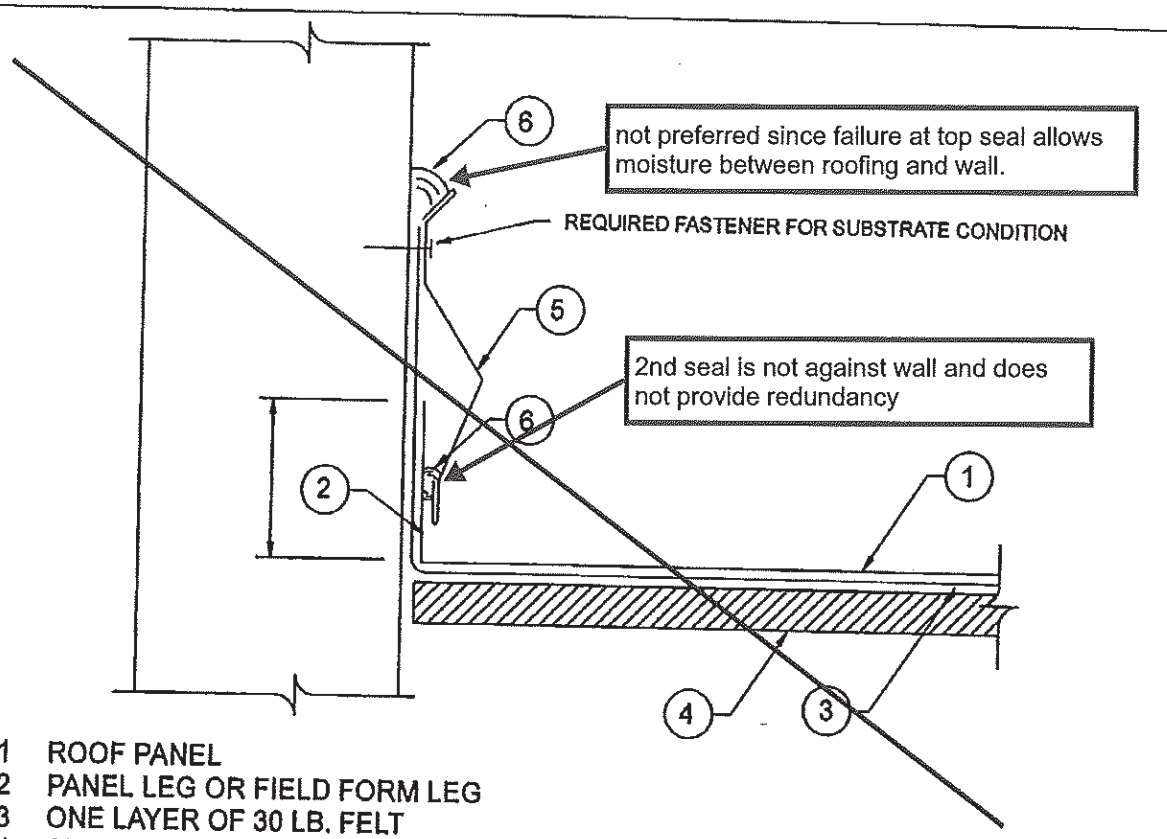


1 ROOF PANEL
2 PANEL CLIP
3 ONE LAYER OF 30 LB. FELT
4 SUBSTRUCTURE
5 10x1" PANCAKE HEAD WOOD SCREW, USE 2 PER ZEE CLOSURE
6 CONTINUOUS BEAD OF SEALANT
7 PAINTED POP RIVET, 40" O.C. TYPICAL
8 ZEE CLOSURE BETWEEN PANEL LEGS SET IN CONT. BEAD OF SEALANT
9 HIGHWALL FLASHING, 4" END LAPS WITH CONT. CAULK AT LAPS
10 COUNTER FLASHING, 4" END LAPS WITH CONT. CAULK AT LAPS

FLASHING PROFILES

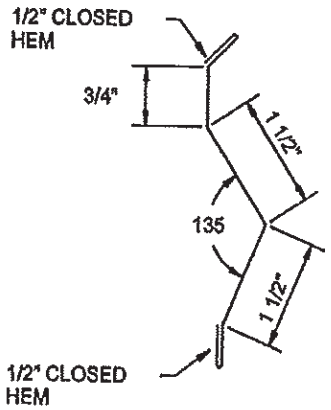


DATE: 05/00/98	HIGHWALL COUNTER DETAIL	DETAIL: GEN11
PANEL:		
SEAM HGT.:	METAL PANEL SYSTEMS, INC.	LINEAL FEET:

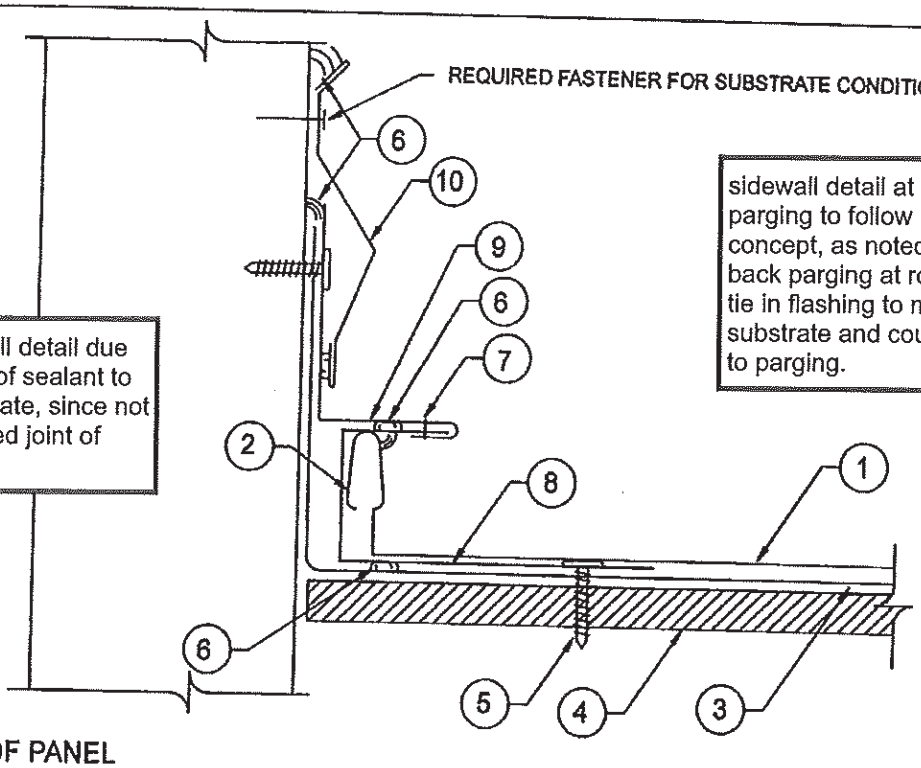


1 ROOF PANEL
2 PANEL LEG OR FIELD FORM LEG
3 ONE LAYER OF 30 LB. FELT
4 SUBSTRUCTURE
5 COUNTER FLASHING, 4" END LAPS WITH CONT. CAULK AT LAPS
6 CONTINUOUS BEAD OF SEALANT

FLASHING PROFILES



DATE: 05/00/98	SIDEWALL COUNTER DETAIL	DETAIL: GEN16
PANEL:		
SEAM HGT.:	METAL PANEL SYSTEMS, INC.	LINEAL FEET:

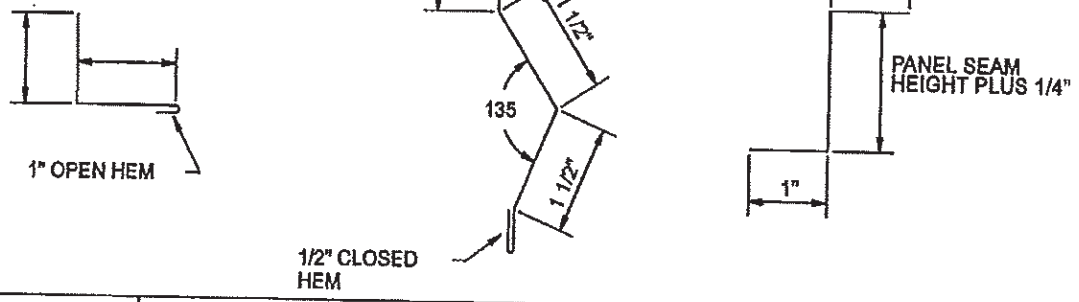


use this sidewall detail due to redundancy of sealant to masonry substrate, since not stepping into bed joint of masonry

sidewall detail at elevator shaft parging to follow 1/A803 concept, as noted above - cut back parging at roof angle and tie in flashing to masonry substrate and counter flashing to parging.

1 ROOF PANEL
2 PANEL LEG OR FIELD FORM LEG. PANEL TO BE CONTINUOUS
3 ONE LAYER OF 30 LB. FELT
4 SUBSTRUCTURE
5 10x1" PANCAKE HEAD WOOD SCREW, 20" O.C.
6 CONTINUOUS BEAD OF SEALANT
7 PAINTED POP RIVET, 40" O.C. TYPICAL
8 J-CHANNEL, 4" END LAPS WITH CONTINUOUS CAULK AT LAPS
9 SIDEWALL FLASHING, 4" END LAPS WITH CONTINUOUS CAULK AT LAPS
10 COUNTER FLASHING, 4" END LAPS WITH CONT. CAULK AT LAPS

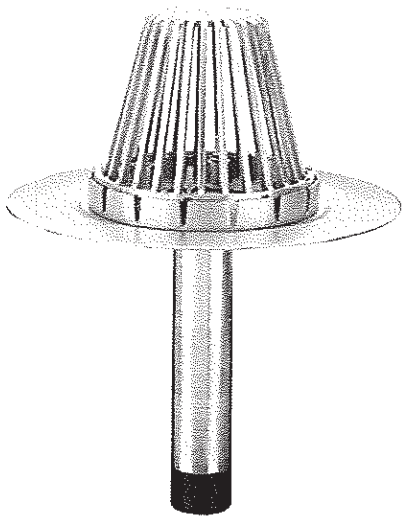
FLASHING PROFILES



DATE: 05/00/98	SIDEWALL COUNTER DETAIL	DETAIL: GEN16a
PANEL:		
SEAM HGT.:	METAL PANEL SYSTEMS, INC.	LINEAL FEET:

Hercules® RetroDrain

PRODUCT DATA SPECIFICATIONS



PRODUCT DESCRIPTION

One-piece spun aluminum body and heavy duty cast aluminum strainer dome and clamping ring provide strength and durability. The drain flange has a depressed sump area to facilitate water drainage from the roof surface. The original U-Flow® Seal provides a mechanical watertight connection to PVC or cast iron pipes to prevent water from backup damage.

FEATURES & BENEFITS

- One piece seamless body provides strength and durability without separation of the flange from the stem.
- Extra large flange allows positive attachment of roof flashing membrane while the sump area facilitates drainage.
- Simple and easy to install from rooftop in 15 to 30 minutes.
- Cast aluminum strainer dome and clamping ring.
- 12-in. long drain stem accommodates most existing field conditions with longer lengths available.
- Incorporates the original U-Flow Seal.
- Also available with a plastic dome or the cast-aluminum SuperDome.
- Saves time and money by allowing easy installation from the rooftop without disturbing occupants.

APPROVALS & STANDARDS

ANSI/SPRI RD-1 – developed by SPRI (Sheet membrane and component suppliers to the commercial roofing industry), a certified canvasser of ANSI (American National Standards Institute), and features a test protocol designed to assure a leak-free connection to existing plumbing.

ULC/ORD-C790.4 – developed by Underwriters' Laboratories of Canada and features a test protocol designed to assure a leak-free connection to existing plumbing and impact testing to provide strength.

PHYSICAL DATA

The data below is constant for each Hercules RetroDrain.

DRAIN BODY	SEAL
11 gauge (.125") spun aluminum	Watertight U-Flow mechanical seal requires U-Flow screwdriver
FLANGE	**STRAINER DOME**
17½" diameter with sump area	Cast aluminum, plastic or aluminum SuperDome
STEM	**CLAMP RING**
12" length	Cast aluminum

ORDERING INFORMATION

CAT. NO.	SIZE	DOME TYPE	PKG	WEIGHT
HDAL3A	3"	Aluminum	Each	27 lbs.
HDAL4A	4"	Aluminum	Each	27 lbs.
HDAL5A	5"	Aluminum	Each	27 lbs.
HDAL6A	6"	Aluminum	Each	27 lbs.

RP10130A

OMG ROOFING PRODUCTS
153 BOWLES ROAD, AGAWAM, MA 01001
800·633·3800 WWW.OLYFAST.COM INFO@OLYFAST.COM

Hercules® RetroDrain

INSTALLATION PROCEDURE

FOR USE WITH

All types of roof covers.

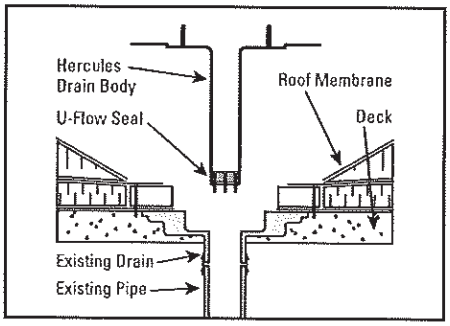
INSPECTION

Remove existing strainer dome and clamping ring. Remove other existing drain components as required to enable Hercules Drain flange to lie flush on roof membrane. Remove any debris or constricting materials in the existing drain pipe that interferes with proper installation.

JOB PREPARATION

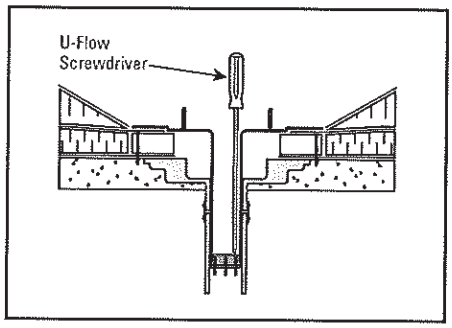
Remove existing strainer dome and clamping ring. Remove other existing drain components as required to enable Hercules Drain flange to lie flush on roof membrane. Remove any debris or constricting materials in the existing drain pipe that interferes with proper installation.

STEP 1



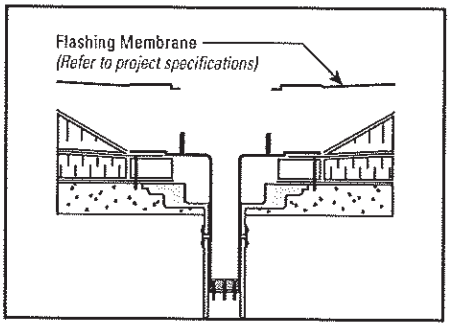
Examine the existing water leader to make sure there are no elbows that prevent the drain stem from being fully inserted into the pipe. Insert U-Flow® Seal into end of drain stem and tighten screws enough to hold the seal in place during installation. Insert assembled drain into existing leader pipe until flange lies flush on roof membrane.

STEP 2



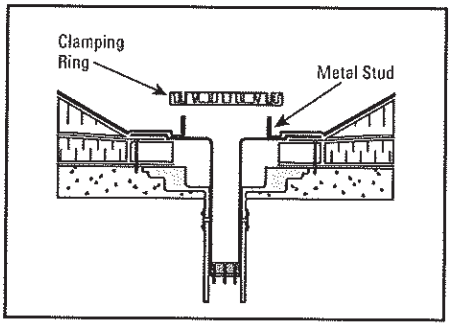
Alternately tighten seal compression ring screws with U-Flow Screwdriver until hand tight. Hercules Drain body is correctly installed when pressure placed on drain body results in no vertical movement. Do not overtighten the screws.

STEP 3



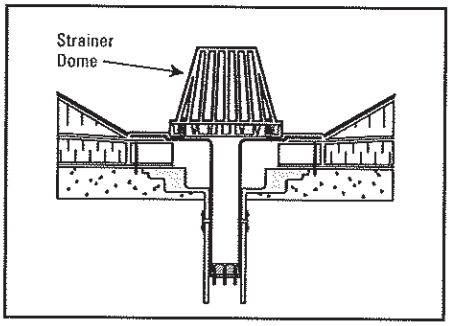
Secure the drain flange to the roof deck/nailer using a minimum of three pan-head fasteners, evenly spaced around the flange. The flashing membrane must cover and extend past the fastener head. Flashing membrane must be installed per roof membrane manufacturer's detail.

STEP 4



Place clamping ring over metal studs. Install stainless steel nut and lock washers tightening clamping ring against membrane flashing until secure.

STEP 5



Install strainer dome by aligning screw holes with the holes in the clamping ring. Secure with screws provided.

For technical assistance contact OMG at 800·633·3800.

OMG
ROOFING PRODUCTS
153 BOWLES ROAD, AGAWAM, MA 01001
800·633·3800 WWW.OLYFAST.COM INFO@OLYFAST.COM

PRODUCT SPECIFICATION

1. PRODUCT NAME

ICYNENE LD-C-50

ICYNENE LD-C-50® is a trademark for light density, open celled, flexible, 100% water-blown polyurethane foam insulation manufactured by Icynene Inc. ICYNENE LD-C-50® spray formula is a nominal 0.5 lbs/ft³ density, free rise material.

2. MANUFACTURER

ICYNENE LD-C-50® is made on-site from liquid components manufactured by Icynene Inc. Installation and on-site manufacturing is supplied by independent Icynene Licensed Dealers.

3. PRODUCT DESCRIPTION

ICYNENE LD-C-50®, the "classic" light density formulation of Icynene has been installed in buildings since 1986. Icynene is the pioneer of high yield, 100% water-blown polyurethane foam technology for air-sealing and insulating buildings.

ICYNENE LD-C-50® insulates and air-seals in one step for maximum energy conservation while minimizing the environmental impact during manufacturing and construction. Significantly reducing air leakage means ICYNENE LD-C-50® contributes to a healthier, quieter and more comfortable indoor environment, while reducing energy consumption and related greenhouse gas emissions by as much as 50%.

ICYNENE LD-C-50® is an effective vapor permeable air barrier material that can move with the building to maintain the air barrier characteristic against energy-robbing air leakage for the life of the building. Convective air movement inside wall cavities is virtually eliminated, providing more uniform temperatures throughout the building.

The result is superior quality construction, with higher comfort levels and lower heating and/or cooling costs. Energy savings will vary depending on building design, location, etc.

ICYNENE LD-C-50® is applied by spraying liquid components onto an open wall, crawlspace, ceiling surface or cathedral ceiling. There it expands approximately 100:1 in seconds to provide a flexible foam blanket of millions of tiny air cells, filling building cavities, cracks and crevices in the process. It adheres to most construction materials, sealing out air infiltration.

Excess material is easily trimmed off, leaving a surface ready for drywall or other code-compliant finish.

4. TECHNICAL DATA

(Based on Core Samples)

Thermal Performance

Thermal resistance (ASTM C518)

- R/in = R3.7 hr. ft² °F/BTU

Average insulation contribution in a full fill stud wall:

- 2" x 4" = R13
- 2" x 6" = R20

ICYNENE LD-C-50® provides more effective performance than the equivalent R-value of air permeable insulation materials. ICYNENE LD-C-50® is not subject to loss of R-value due to aging, windy conditions, settling, convection or air infiltration; nor will it be prone to traditional moisture intrusion via air leakage.

A FACT SHEET with R-value data is available upon request.

Air Permeance/Air Barrier /Air-Seal

ICYNENE LD-C-50® fills any shaped cavity, and adheres most construction materials, creating assemblies with very low air permeance. Additional interior or exterior air infiltration protection is subject to applicable codes.

Air permeability of core foam:

ASTM E283 data

- 0.009 L/s·m² @ 75 Pa for 3.5"

Air permeability of a 2" x 6" wood framed wall assembly:

ASTM E 2178 data

- 0.01 L/s·m² @ 75 Pa for 5.5"

All buildings insulated and air-sealed with ICYNENE LD-C-50® must be designed to include adequate mechanical ventilation/ outdoor air supply. See ASHRAE Standard 62 – Ventilation for Acceptable Indoor Air Quality.

Water Vapor Permeance

ICYNENE LD-C-50® is water vapor permeable and allows moisture to diffuse through the insulation and dissipate from the building envelope.

Water vapor transmission properties:

(ASTM E96 Desiccant Method)

- 11 perms @ 5.5"

In those situations that warrant a vapor retarder, a supplemental layer of polyethylene may be used. Alternately, low vapor permeance paint either directly on the foam or as a primer for the interior drywall may be used.

Water Absorption Properties

Water can be forced into the foam under pressure because it is open celled. Water will drain by gravity, given favorable drying potential, and upon drying all chemical and physical properties are fully restored.

Acoustical Properties

Performance in a 2" x 4" wood stud wall:

STC Sound Transmission Class - 37

Hz. Freq.	125	250	500	1000	2000	4000
ASTM E90	19	30	31	42	38	46

NRC Noise Reduction Coefficient - 70

Hz. Freq.	125	250	500	1000	2000	4000
ASTM C423	.11	.43	.89	.72	.71	.67

Burn Characteristics

ICYNENE LD-C-50® is a combustible product and is therefore, consumed by flame, but will not sustain flame upon removal of the flame source. It leaves a charred foam residue. It will not melt or drip. ICYNENE LD-C-50® is subject to all applicable National/State and County building codes regarding fire prevention. Requirements for Thermal Barrier and Ignition Barrier coverings must be met as per the applicable building code having jurisdiction.

U.S. Fire Testing

Surface Burning Characteristics of (ASTM E84) @ 5" Thickness

Flame Spread	≤25
Smoke Development	≤450

*Flame spread rating not intended to reflect hazards under actual fire conditions.

Electrical Wiring

ICYNENE LD-C-50® has been evaluated with energized 14/3 and 12/2 residential wiring (max. 122°F). It is chemically compatible with typical electrical wiring coverings.

Note: For any insulation of knob and tube wiring, please reference local electrical code.

Corrosion

ICYNENE LD-C-50® did not cause corrosion when evaluated in contact with steel at 120°F and 85% relative humidity conditions.

Plastic Piping

ICYNENE LD-C-50® is compatible in direct contact with CPVC piping systems, as per Paschal Engineering Study for the Spray Polyurethane Foam Alliance (SPFA).

Bacterial or Fungal Growth and Food Value

Independent testing conducted by Texas Tech University has confirmed that ICYNENE LD-C-50® is not a source of food for mold; and as an air barrier material, it resists the airborne introduction of moisture, nutrients, and mold spores into the building envelope.

Environmental / Health / Safety

ICYNENE LD-C-50® is 100% water-blown and therefore contains no ozone-depleting blowing agents. It is also PBDE-free. It has been thoroughly evaluated for in-situ emissions by industry and government experts. VOC emissions are below 1/100th of the safe concentration level (TLV) within hours following the application of ICYNENE LD-C-50®.

Proper handling and use is required to avoid exposure to reactive chemicals in their unreacted state. For more information, contact the Spray Polyurethane Foam Alliance or the American Chemistry Council. Newly insulated areas have been shown to be safe for occupancy 24 hours after installation is complete.

ICYNENE LD-C-50® is CHPS E.Q. 2.2/Section 01350 Compliant and listed as such in the Collaborative for High Performance Schools (CHPS) Low Emitting Materials (LEM) Table.

Under LEED guidelines, products that are CHPS E.Q. 2.2/Section 01350 Compliant are considered Environmentally Preferable Products.

The reaction used to create ICYNENE LD-C-50® generates Carbon Dioxide to expand the foam. Carbon Dioxide has a very low Global Warming Potential (GWP of 1).

Not intended for exterior use. Not to be installed within 3" of heat emitting devices or where the temperature is in excess of 200°F, as per ASTM C411 or in accordance with applicable codes.

5. INSTALLATION

ICYNENE LD-C-50® is installed by a network of Licensed Dealers, trained in the installation of ICYNENE LD-C-50®.

Installation is generally independent of environmental conditions. It can be installed in hot, humid or freezing conditions. Surface preparation is generally not necessary. Within seconds, the foaming process is complete.

For information on Health and Safety, refer to the Spray Polyurethane Foam Alliance Health and Safety guidance documents at www.spraypolyurethane.com

6. AVAILABILITY

Check regional Yellow Pages™ or contact Icynene Inc. at 800-758-7325 or our website at www.icynene.com for a local Icynene Licensed Dealer.

7. WARRANTY

WHEN INSTALLED PROPERLY IN ACCORDANCE WITH INSTRUCTIONS, THE COMPANY WARRANTS THAT THE PROPERTIES OF THE PRODUCT MEET PRODUCT SPECIFICATIONS AS OUTLINED IN THIS PRODUCT SPECIFICATION SHEET. SAVE AND EXCEPT ANY EXCLUSIONS REFERENCED IN THE WARRANTY.

8. TECHNICAL

Icynene Licensed Dealers and Icynene Inc. provide support on both technical and regulatory issues. Architectural specifications in CSI 3-Part format and design details are available upon request.

9. REGULATORY

ICYNENE LD-C-50® has been tested as per the requirements of the International Code Council – Evaluation Service's AC377 Acceptance Criteria (June 2009).

The following evaluation reports apply to this product:

- ICC ESR-1826

Based on the 3rd party test evidence submitted, this product was found to comply with:

- IRC – 2006 – 2009
- IBC – 2006 – 2009
- IECC – 2006 – 2009

10. RELATED REFERENCES

All physical properties were determined through testing by accredited third-party agencies. Icynene Inc. reserves the right to change specifications in its effort of continuous improvement. Please confirm that technical data literature is current.

11. PACKAGING AND STORAGE

Packaging	55 U.S. gallon steel drums
Component 'A'	550 lb. per drum
	Base Seal® MDI
Component 'B'	500 lb. per drum
	ICYNENE LD-C-50® (Gold Seal®) Resin

Storage

Component A, Base Seal® MDI and Component B, ICYNENE LD-C-50® Resin ideally should be stored between 60°F and 90°F.

Component A, Base Seal®, should be protected from freezing.

Component B, ICYNENE LD-C-50® (Gold Seal®) Resin, can be frozen but must be protected from overheating 120°F and prolonged storage above 100°F.

Component B, ICYNENE LD-C-50® (Gold Seal®) Resin, may separate during storage and should be mixed thoroughly prior to use.

12. INSTALLATION SPECIFICATIONS

Must be installed by Icynene Licensed Dealers. Refer to the Icynene Installer's Manual for expanded information.

ICYNENE®

Telephone: 905.363.4040
Toll Free: 800.758.7325
Facsimile: 905.363.0102
Website: www.icynene.com
E-mail: inquiry@icynene.com

Description

1/2-500HP
E7/3-Contactor Bypass
NEMA 1/12 FVFF

E7B

The E7/Bypass package is a 3-contactor style bypass, allowing motor operation from either the drive or across the line. This facilitates drive maintenance while the motor continues to operate. The E7 and E7/Bypass have been designed for flexibility in providing the features and options commonly specified by facility designers.

The E7 Drive is a variable torque AC drive, designed specifically for HVAC applications in building automation. A new benchmark for size, cost, performance, benefits, and quality, the E7 includes numerous built-in features such as Network Communications, H/O/A, PI control and energy savings functions.

The E7 has embedded communications for the popular building automation protocols, Johnson Controls Metasys N2 and Siemens APOGEE FLN, as well as Modbus. An optional LonWorks, EtherNet/IP or BACnet interface card is available.

Image Displayed with Motor Control Option **(0)**, 22 mm LEDs and Switches

Bypass Features

- Input, output, and bypass contactors
- Circuit breaker disconnect (MCP), with interlocked, through-the-door operating mechanism
- Thermal motor overload relay, class 20
- 115 VAC control transformer, fused
- Drive/Bypass selector
- Hand/Off/Auto selector
- Normal/Test selector
- LED's, for Control: Power, Drive Run, Drive Fault, Bypass Run, Motor OL/Safety Fault and Smoke Purge
- Selectable auto transfer to bypass on drive fault
- Selectable remote transfer to bypass via contact closure
- Selectable smoke purge function
- Run mode and Fault contacts
- Control and safety circuit terminal strip
- Damper circuit safety interlock

Bypass Options

- NEMA 12 FVFF enclosure
- 22mm LEDs & switches
- Twelve-pulse rectification with input transformer: 25 -150 HP, 208 VAC; 30-150 HP, 230/240 VAC; 40-500 HP, 480 VAC
- LCD display: 5 lines, 16 characters each
- Communication: LonWorks, BACnet and EtherNet/IP
- RFI/EMI filter
- Pressure/electrical transducer
- Multiple motor operation logic:
  2 Motor "OR"
  2 Motor "AND"
- Speed potentiometer
- Engraved nameplates
- DriveWizard upload/download and monitoring/graphing software
- Drive input fusing
- 4-20mA output, 2 programmable
- Output impedance
- Input impedance

Service Conditions

- Ambient Temperature:
  -10°C to 40°C(14°F to 104°F) NEMA 1
- Humidity: 95% RH, non-condensing
- Altitude: 3300 ft; higher by derate
- Input voltage: +10%/-15%
- Input frequency: 50/60 Hz ± 5%
- 3-phase, 3-wire, phase sequence insensitive

Performance Features

- VT Ratings: 1/2-150 HP, 208 VAC
  1/2-150 HP, 230/240 VAC
  1/2- 500 HP, 480 VAC
- Overload capacity: 110% for 60 sec. (150% peak)
- Starting torque: 100% at 3 Hz
- DC injection braking: at start or stop, adjustable, current limited (anti-windmilling)
- Motor preheat function
- Adjustable accel/decel: 0.1 to 6000 sec.
- Controlled speed range: 40:1
- Critical frequency rejection: 3 selectable, adjustable bands
- Torque limiting: 30-180%
- Energy $aving control
- Torque boost: full range, auto
- Power loss ride-thru: 2 sec.
- Inertia ride-thru
- Auto restart after power loss or resettable fault, selectable, programmable
- Feedback signal loss detection
- Serial communications loss detection
- "Up/Down" floating point control capability
- Stationary motor auto-tuning
- Customizable monitor display
- Sleep function
- Run permissive input
- Ramp-to-stop or coast-to-stop selection
- Runtime changes in control and display
- Project-specific parameter reinitialization

Protective Features

- Current limited stall prevention
- Heat sink over-temperature, speed fold-back
- Cooling fan operating hours recorded
- Bi-directional start into rotating motor at synchronized speed
- DC bus charge indicator
- Current limiting DC bus fuse
- Optically-Isolated controls
- Short circuit protection: Phase-phase and phase-neutral
- Ground fault protection
- Electronic motor overload: UL
- Current and torque limit
- Fault display: last 10 faults
- Fault circuit: OC, OV, OT
- Over torque and under torque protection
- Program security code
- "Hunting" prevention logic
- Reverse prohibit selectability

Design Features

- 32-bit microprocessor logic
- Flash upgradeable firmware
- Non-volatile memory, program retention
- Surface-mount devices
- Displacement power factor: 0.98
- Output frequency: 0.1 to 120 Hz
- Frequency resolution: 0.06 Hz
- Frequency regulation: 0.1%
- Control Terminal Board: Quick disconnect, removable
- Carrier frequency: selectable to 15 kHz
- 3% DC bus reactor: 30-150 HP, 208 VAC; 30-150 HP, 240 VAC; 40-500 HP, 480 VAC; optional on lower ratings
- Keypad Operator: Hand/Off/Auto, built-in copy feature, 7 languages
- 24 VDC control logic
- Transmitter/Option power supply
- Output contacts: One form C and two programmable form A
- Input/output terminal status
- Input terminals: 5 programmable multi-function input terminals
- Fault input: Programmable
- Diagnostic fault indication in selected language
- Timer function: Elapsed time, Delay on start, Delay on stop
- RS-422/485 port: Embedded Metasys N2, APOGEE FLN, and Modbus
- Volts/hertz ratio: Preset and programmable V/Hz patterns
- Multi-speed settings: 5 available
- Remote speed command: 0-10 VDC or 4-20 mA, direct or reverse-acting
- Setpoint (PI) control with inverse or square root input, differential control via two feedback capability
- Feedback signal: low pass filter
- Speed command: bias and gain
- Analog outputs: Programmable, two, 0-10 VDC
- Meter Functions: Volt, amp, kilowatt, elapsed run time, speed command
- Output Current Transformers, qty 3
- NEMA 1 or NEMA 12 enclosure
- UL, cUL listed; CE marked; IEC 146
- MTBF: exceeds 28 years

CA.E7.01, 7/1/08
Data subject to change without notice
Yaskawa Electric America

E7B

Description

1/2-500HP
E7/3-Contactor Bypass
NEMA 1/12 FVFF

Model Number Configuration & Pricing:

Step 1. First complete the Base Number for the required enclosure type, voltage and current rating.

Step 2. Add the Option code letter for each required option. If an option is not wanted, no character is inserted.

Step 3. Find the list price for the Base Number selected from the following pages. Add the list price of each selected option to this base price.

Example: E7 NEMA 1 Bypass package **(E7BV)** with a 96 Amp, 480V drive **(B096)**, with 22mm LEDs & switches **(0)**, a 3% input reactor **(R)**, door-mounted speed pot **(S)**, and LonWorks communications capability **(L)**, would be **E7BVB096RSL**.

E7BVB096RSL

BASE NUMBER	OPTIONS
E 7 B ___	___ ___ ___ ___ ___ ___ ___ ___

E7 3-Contactor Bypass

Enclosure	
V	NEMA 1
B	NEMA 12

Voltage	
D	208V
A	230/240V
B	480V

Current	
NEC Rated Amps (Ex.: "096" = 96A)	

Motor Control	
T	Touchpad & LED
Y	Touchpad & LCD
0	22mm Operators & LCD
D	2 Motor "OR" (4)
A	2 Motor "AND" (4)

Input Filter	
0	None (leave blank)
N	Cap Filter
E	RFI Filter

Input Fuses	
0	None (leave blank)
F	Fuses

Communications (3)	
0	Not Enabled (leave blank)
2	EtherNet/IP (6)
L	LonWorks
J	Enable METASYS N2
U	Enable APOGEE FLN
V	Enable Modbus
3	BACnet

4-20mA Output	
0	None (leave blank)
M	4-20 mA Output (5)

3-15 PSI Transducer (3)	
0	None (leave blank)
P	3-15 PSI Transducer

Speed Pot (3)	
0	None (leave blank)
S	Speed Pot (5)

Custom Nameplates	
0	None (leave blank)
W	Custom Nameplates

Load Reactor	
0	None (leave blank)
K	5% Load Reactor

Line Impedance	
0	None (leave blank)
X	3% Bus Reactor (1)
Z	5% Bus Reactor (1)
R	3% Input Reactor (2)

(1) 3% and 5% Bus Reactors are only available as an option on base numbers up to E7B_D074, A068, and B040; larger drives have a Bus Reactor as standard.

(2) 3% Input Reactor, when combined with the standard Bus Reactor (available on base numbers E7B_D088, A080, and B052 and above), yields a total of 5% input impedance.

(3) Serial Comm options (J), (L), (U) or (V) cannot be ordered if both (S) and (P) are combined.

(4) 2 Motor "OR" and 2 Motor "AND" options (D) and (A) are only available with 22mm operators option (0).

(5) Options (M) and (S) are not available with options (T) or (Y) - 4-20mA output is standard with options (T) or (Y).

(6) Not available with options (T) or (Y).

Bypass Option Descriptions:

(V, B) **Enclosure:** The drive and options are provided in either a NEMA Type 1 (V) ventilated or NEMA 12 FVFF (force ventilated fan filter) (B) enclosure, large enough to accommodate any or all of the package options. Enclosures for Base Numbers up to, and including, D114 (40HP, 208V), A104 (40HP, 240V),and B124 (100HP, 480V) are wall-mounted; larger drives are in floor-mount enclosures.

(T, Y, 0, D, A) **Motor Control:** The best-priced configuration, option (T) is for single motor operation with H/O/A Touchpad Control and an LED Drive Keypad. The (Y) option replaces the LED Drive Keypad with a backlit 5-line LCD Keypad Display. Option (0) provides 22mm LEDs & Switches and the LCD Drive Keypad Display. **For purposes of continuity with previous sales - if no Motor Control option is indicated, the standard configuration option (0) will be provided.** Either one of two motors can be controlled with the 'OR' configuration, option (D). Simultaneous control of two identical motors is possible with the 'AND' configuration, option (A). Both options (A) & (D) are only available with the 22mm LEDs & Switches.

(N, E) **Input Filter:** The standard configuration does not include a filter. The cap filter, option (N), is a delta-wye capacitive network, while the RFI filter (E) provides noise attenuation to help meet CE requirements. This option requires the addition of the add-on box - see Dimensions and Data.

(F) **Input Fuses:** The standard configuration, option (0), includes a circuit breaker disconnect with a door-interlocked operating mechanism. Option (F) provides high-speed semi-conductor drive input fuses, rated for 200,000 amp RMS symmetrical interrupting capacity.

(X, Z, R) **Line Impedance:** Drives above Base Numbers D074 (25HP, 208V), A068 (25HP, 240V) and B040 (30HP, 480V) include a 3% DC bus reactor in the standard package and do not provide any additional impedance. Option (X), 3% impedance, and option (Z), 5% impedance, are not available for ratings larger than these. To achieve a 5% total input impedance, select option (R) - this 3% input reactor is available only for the HP ratings greater than the HP's listed above, and combines with the drive's standard DC bus reactor. If this option is combined with a drive that includes a bus reactor, the add-on box is required - see Dimensions and Data.

(K) **Load Reactor:** No form of output impedance is normally required. A 5% load reactor, option (K), is available if additional output impedance is desired (usually for long lead-lengths or noise reduction). This option may require the add-on box for wall-mount enclosures - see Dimensions and Data.

(W) **Custom Nameplates:** Custom engraved nameplates with white lettering on black lamicoid are available with option (W), for special tagging purposes (Example: "AHU #1"). Note that this option requires the text to be specified by the customer. Leave this field blank if no special nameplates are required.

(S) **Speed Pot:** The drive's digital operator is always brought out to the front of the panel, so it is available for speed control - this is the standard configuration. A door-mounted 2.5K ohm speed potentiometer is available for manual speed control with option (S). This also includes a 2.5K ohm trim pot and is suitable for NEMA 1 and NEMA 12 installations.

(P) **3-15 PSI Transducer:** No transducer is provided with the standard configuration. To add an optional transducer that accepts a 3-15 PSI pneumatic signal and converts it to a 4-20mA signal that is sent to the drive, specify option (P).

(M) **4-20mA Output:** The standard Configured package provides two programmable 0-10VDC outputs. To convert these outputs to 4-20mA output signals, specify option (M).

(2, L, J, U, 3, V) **Communications:** All configurations provide the hardware and software required for Metasys N2, Siemens Apogee, and Modbus network communications, but these protocols are not enabled in the standard configuration. Options (J), (U), and (V) provide the programming and jumpers necessary to enable these protocols, at no additional cost. Lonworks option (L), BACnet option (3) and EtherNet/IP option (2) require the addition of an optional board.

E7/3-Contactor Bypass - 1/2-500HP, 208-230/240 and 480V, 3-phase input, NEMA 1 enclosure, with factory-installed and wired options

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP (1)	NEMA 1 Bypass		Motor Control					Input Filter		Input Fuses	Line Impedance		
					T="Touchpad & LED" Y="Touchpad & LED" 0="22mm Operators & LCD" D=2 Motor "OR" A=2 Motor "AND"					N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor		
			E7BV	Base	T	Y	0	D (3)	A (3)	N	E (2)	F	X	Z	R (2)
208V	2.4	1/2	D002												N/A
	3.5	3/4	D003												
	4.6	1	D004												
	7.5	2	D007												
	10.6	3	D010												
	16.7	5	D016												
	24.2	7.5	D024												
	30.8	10	D030												
	46.2	15	D046												
	59.4	20	D059												
	74.8	25	D074												
	88	30	D088										3% Bus Reactor is included as standard - select option (0)		
	114	40	D114												
	143	50	D143												
	169	60	D169												
	211	75	D211												
	273	100	D273												
	343	125	D343												
	396	150	D396												
240V	2.2	1/2	A002												N/A
	3.2	3/4	A003												
	4.0	1	A004												
	6.8	2	A006												
	9.6	3	A009												
	15.2	5	A015												
	22	7.5	A022												
	28	10	A028												
	42	15	A042												
	54	20	A054												
	68	25	A068												
	80	30	A080										3% Bus Reactor is included as standard - select option (0)		
	104	40	A104												
230V	130	50	A130												
	154	60	A154												
	192	75	A192												
	248	100	A248												
	312	125	A312												
	360	150	A360												

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT from all but one of these options

(3) When option D or A is selected, do not add for option 0.

E7/3-Contactor Bypass (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP (1)	Load Reactor	Custom Name-plates	Speed Pot	3-15 PSI Trans-ducer	4-20mA Output	Communications				Uses Drive Model Number CIMR-E7U
			K=5%	W=NP	S=Pot	P=3-15 PSI	M=4-20mA	2=EtherNet/IP, 3=BACnet L=LonWorks J=N2 U=APOGEE V=Modbus				
			K(2)	W	S	P	M	2	3	L	J, V, U (3)	
208V	2.4	1/2										22P21
	3.5	3/4										22P21
	4.6	1										22P21
	7.5	2										22P21
	10.6	3										22P21
	16.7	5										23P71
	24.2	7.5										27P51
	30.8	10										27P51
	46.2	15										20111
	59.4	20										20151
	74.8	25										20181
	88	30										20221
	114	40										20301
	143	50										20370
	169	60										20450
	211	75										20550
	273	100										20750
	343	125										20900
	396	150										21100
240V	2.2	1/2										22P21
	3.2	3/4										22P21
	4.0	1										22P21
	6.8	2										22P21
	9.6	3										22P21
	15.2	5										23P71
	22	7.5										25P51
	28	10										27P51
	42	15										20111
	54	20										20151
	68	25										20181
	80	30										20221
	104	40										20301
230V	130	50										20370
	154	60										20370
	192	75										20450
	248	100										20750
	312	125										20750
	360	150										20900

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT from all but one of these options

(3) Included in Base Price

E7/3-Contactor Bypass (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP (1)	NEMA 1 Bypass		Motor Control					Input Filter		Input Fuses	Line Impedance		
					T="Touchpad & LED" Y="Touchpad & LED" 0="22mm Operators & LCD" D=2 Motor "OR" A=2 Motor "AND"					N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor		
			E7BV	Base	T	Y	0	D	A	N	E (2)	F	X	Z	R (2)
480V	1.6	1/2 3/4	B001												N/A
	2.1	1	B002												
	3.4	2	B003												
	4.8	3	B004												
	7.6	5	B007												
	11	7.5	B011												
	14	10	B014												
	21	15	B021												
	27	20	B027												
	34	25	B034												
	40	30	B040												
	52	40	B052										3% Bus Reactor is included as standard - select option (0)		
	65	50	B065												
	77	60	B077												
	96	75	B096												
	124	100	B124												
	156	125	B156												
	180	150	B180												
	240	200	B240												
	302	250	B302												
	380	300	B380												
	414	350	B414												
	477	400	B477												
	515	450	B515												
	590	500	B590												

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT from all but one of these options

E7/3-Contactor Bypass (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP (1)	Load Reactor	Custom Name-plates	Speed Pot	3-15 PSI Trans-ducer	4-20mA Output	Communications				Uses Drive Model Number CIMR-E7U
			K=5%	W=NP	S=Pot	P=3-15 PSI	M=4-20mA	2=EtherNet/IP, 3=BACnet L=LonWorks J=N2 U=APOGEE V=Modbus				
			K(2)	W	S	P	M	2	3	L	J, V, U (3)	
480V	1.6	1/2										42P21
		3/4										42P21
	2.1	1										42P21
	3.4	2										42P21
	4.8	3										42P21
	7.6	5										43P71
	11	7.5										45P51
	14	10										47P51
	21	15										40111
	27	20										40111
	34	25										40151
	40	30										40181
	52	40										40301
	65	50										40301
	77	60										40371
	96	75										40451
	124	100										40551
	156	125										40750
	180	150										40900
	240	200										41100
	302	250										41600
	380	300										41850
	414	350										41850
	477	400										42200
	515	450										42200
	590	500										43000

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT from all but one of these options

(3) Included in Base Price

Bypass Drives and Options

NEMA 12 FVFF

E7/3-Contactor Bypass - 1/2-500HP, 208-230/460V, 3-phase input, NEMA 12 FVFF enclosure, with factory-installed and wired options

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP (1)	NEMA 12 Bypass		Motor Control					Input Filter		Input Fuses	Line Impedance		
					T="Touchpad & LED" Y="Touchpad & LED" 0="22mm Operators & LCD" D=2 Motor "OR" A=2 Motor "AND"					N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor		
			E7BB	Base	T	Y	0	D	A	N	E (2)	F	X	Z	R (2)
208V	2.4	1/2	D002												N/A
	3.5	3/4	D003												
	4.6	1	D004												
	7.5	2	D007												
	10.6	3	D010												
	16.7	5	D016												
	24.2	7.5	D024												
	30.8	10	D030												
	46.2	15	D046												
	59.4	20	D059												
	74.8	25	D074												
	88	30	D088										3% Bus Reactor is included as standard - select option (0)		
	114	40	D114												
	143	50	D143												
	169	60	D169												
	211	75	D211												
	273	100	D273												
	343	125	D343												
	396	150	D396												
240V	2.2	1/2	A002												N/A
	3.2	3/4	A003												
	4.0	1	A004												
	6.8	2	A006												
	9.6	3	A009												
	15.2	5	A015												
	22	7.5	A022												
	28	10	A028												
	42	15	A042												
	54	20	A054												
	68	25	A068												
	80	30	A080										3% Bus Reactor is included as standard - select option (0)		
	104	40	A104												
230V	130	50	A130												
	154	60	A154												
	192	75	A192												
	248	100	A248												
	312	125	A312												
	360	150	A360												

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT from all but one of these options

E7/3-Contactor Bypass (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP (1)	Load Reactor	Custom Name-plates	Speed Pot	3-15 PSI Trans-ducer	4-20mA Output	Communications				Uses Drive Model Number CIMR-E7U
			K=5%	W=NP	S=Pot	P=3-15 PSI	M=4-20mA	2=EtherNet/IP, 3=BACnet L=LonWorks J=N2 U=APOGEE V=Modbus				
			K(2)	W	S	P	M	2	3	L	J, V, U (3)	
208V	2.4	1/2										22P21
	3.5	3/4										22P21
	4.6	1										22P21
	7.5	2										22P21
	10.6	3										22P21
	16.7	5										23P71
	24.2	7.5										27P51
	30.8	10										27P51
	46.2	15										20111
	59.4	20										20151
	74.8	25										20181
	88	30										20221
	114	40										20301
	143	50										20370
	169	60										20450
	211	75										20550
	273	100										20750
	343	125										20900
	396	150										21100
240V	2.2	1/2										22P21
	3.2	3/4										22P21
	4.0	1										22P21
	6.8	2										22P21
	9.6	3										22P21
	15.2	5										23P71
	22	7.5										25P51
	28	10										27P51
	42	15										20111
	54	20										20151
	68	25										20181
	80	30										20221
	104	40										20301
230V	130	50										20370
	154	60										20370
	192	75										20450
	248	100										20750
	312	125										20750
	360	150										20900

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT from all but one of these options

(3) Included in Base Price

E7/3-Contactor Bypass (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP (1)	NEMA 12 Bypass		Motor Control					Input Filter		Input Fuses	Line Impedance		
					T="Touchpad & LED" Y="Touchpad & LED" 0="22mm Operators & LCD" D=2 Motor "OR" A=2 Motor "AND"					N=Cap E=RFI		F=Fuses	X=3% Bus Reactor Z=5% Bus Reactor R=3% Input Reactor		
			E7BB	Base	T	Y	0	D	A	N	E (2)	F	X	Z	R (2)
480V	1.6	1/2 3/4	B001												N/A
	2.1	1	B002												
	3.4	2	B003												
	4.8	3	B004												
	7.6	5	B007												
	11	7.5	B011												
	14	10	B014												
	21	15	B021												
	27	20	B027												
	34	25	B034												
	40	30	B040												
	52	40	B052										3% Bus Reactor is included as standard - select option (0)		
	65	50	B065												
	77	60	B077												
	96	75	B096												
	124	100	B124												
	156	125	B156												
	180	150	B180												
	240	200	B240												
	302	250	B302												
	380	300	B380												
	414	350	B414												
	477	400	B477												
	515	450	B515												
	590	500	B590												

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT from all but one of these options

E7/3-Contactor Bypass (Continued)

Rated Input Voltage	Rated Output Current (Amps)	Nominal HP (1)	Load Reactor	Custom Name-plates	Speed Pot	3-15 PSI Trans-ducer	4-20mA Output	Communications				Uses Drive Model Number CIMR-E7U
			K=5%	W=NP	S=Pot	P=3-15 PSI	M=4-20mA	2=EtherNet/IP, 3=BACnet L=LonWorks J=N2 U=APOGEE V=Modbus				
			K(2)	W	S	P	M	2	3	L	J, V, U (3)	
480V	1.6	1/2										42P21
		3/4										42P21
	2.1	1										42P21
	3.4	2										42P21
	4.8	3										42P21
	7.6	5										43P71
	11	7.5										45P51
	14	10										47P51
	21	15										40111
	27	20										40111
	34	25										40151
	40	30										40181
	52	40										40301
	65	50										40301
	77	60										40371
	96	75										40451
	124	100										40551
	156	125										40750
	180	150										40900
	240	200										41100
	302	250										41600
	380	300										41850
	414	350										41850
	477	400										42200
	515	450										42200
	590	500										43000

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) This price includes the add-on box, when required. If more than one of the following: RFI Filter, 3% Input Reactor, and 5% Load Reactor is selected, DEDUCT from all but one of these options

(3) Included in Base Price

E7B

Dimensions and Data

NEMA 1/12 FVFF

Rated Input Voltage	Bypass E7BV or E7BB	Rated Output Current (Amps)	Nominal HP [1]	Physical Dimensions (in.)[5]			Weight (lbs.)[2]	Dimension Drawing Number[6]	Dimension Drawing Number (w/ Add-on Box) [3], [6]
				H	W	D[4]			
208V	D002	2.4	1/2	29.48[3]	19.06	13.66	115	DD.AFD.087.01	DD.AFD.087.01.AO
	D003	3.5	3/4						
	D004	4.6	1						
	D007	7.5	2						
	D010	10.6	3						
	D016	16.7	5						
	D024	24.2	7.5						
	D030	30.8	10				127		
	D046	46.2	15						
	D059	59.4	20	40.48[3]	25.63	14.66	208	DD.AFD.088.01	DD.AFD.088.01.AO
	D074	74.8	25						
	D088	88.0	30				221		
	D114	114	40						
	D143	143	50	84.00	37.75[5]	26.00	847	DD.AFD.091.01	N/A
	D169	169	60				943		
	D211	211	75						
	D273	273	100				1214		
	D343	343	125	84.00	73.25	26.00	1330	DD.AFD.093.01	
	D396	396	150				1423		
240V	A002	2.2	1/2	29.48[3]	19.06	13.66	115	DD.AFD.087.01	DD.AFD.087.01.AO
	A003	3.2	3/4						
	A004	4.0	1						
	A006	6.8	2						
	A009	9.6	3						
	A015	15.2	5						
	A022	22.0	7.5						
	A028	28.0	10				127		
	A042	42.0	15						
	A054	54.0	20	40.48[3]	25.63	14.66	208	DD.AFD.088.01	DD.AFD.088.01.AO
	A068	68.0	25						
	A080	80.0	30				221		
	A104	104	40						
230V	A130	130	50	84.00	37.75[5]	26.00	847	DD.AFD.091.01	N/A
	A154	154	60				943		
	A192	192	75						
	A248	248	100				1214		
	A312	312	125	84.00	73.25	26.00	1330	DD.AFD.093.01	
	A360	360	150				1376		

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.

(3) Add-on box (required with specified options - see options description) adds up to 15" to 'H' dimension and 91 lbs. Max. to total drive weight.

(4) Add 2.37" for circuit breaker handle to depth.

(5) Some option combinations require the next size enclosure. Consult factory before providing mechanical submittal data.

(6) Operator Drawing Number, Options 0, D, A: DO.E7B.01
Operator Drawing Number, Option T: DO.E7B.02
Operator Drawing Number, Option Y: DO.E7B.03

Rated Input Voltage	Bypass E7BV or E7BB	Rated Output Current (Amps)	Nominal HP (1)	Physical Dimensions (in.)(5), (7)			Weight (lbs.)(2)	Dimension Drawing Number(6)	Dimension Drawing Number (w/ Add-on Box) (3), (6)
				H	W	D(4)			
480V	B001	1.1	1/2	29.48(3)	19.06	13.66	115	DD.AFD.087.01	DD.AFD.087.01.AO
		1.6	3/4						
	B002	2.1	1						
	B003	3.4	2						
	B004	4.8	3						
	B007	7.6	5						
	B011	11.0	7.5						
	B014	14.0	10				127		
	B021	21.0	15						
	B027	27.0	20				142		
	B034	34.0	25						
	B040	40.0	30						
	B052	52.0	40	40.48(3)	25.63	14.66	203	DD.AFD.088.01	DD.AFD.088.01.AO
	B065	65.0	50				232		
	B077	77.0	60						
	B096	96.0	75				241		
	B124	124	100						
	B156	156	125	84.00	37.75(5)	26.00	943	DD.AFD.091.01	N/A
	B180	180	150						
	B240	240	200				1240		
	B302	302	250				1352		
	B380	380	300	84.00	73.25	26.00	1740	DD.AFD.093.01	N/A
	B414	414	350				1800		
	B477	477	400				1854		
	B515	515	450	84.00	109.00	26.00	1900	TBD	N/A
	B590	590	500				2150		

(1) Horsepower rating is based on standard NEMA B 4-pole motor design as represented in NEC table 430.150 Full-Load Current, Three-Phase Alternating Current Motors

(2) Data represents the total approx. weight of the drive with all possible standard options, not shipping weight.

(3) Add-on box (required with specified options - see options description) adds up to 15" to 'H' dimension and 91 lbs. Max. to total drive weight.

(4) Add 2.37" for circuit breaker handle to depth.

(5) Some option combinations require the next size enclosure. Consult factory before providing mechanical submittal data.

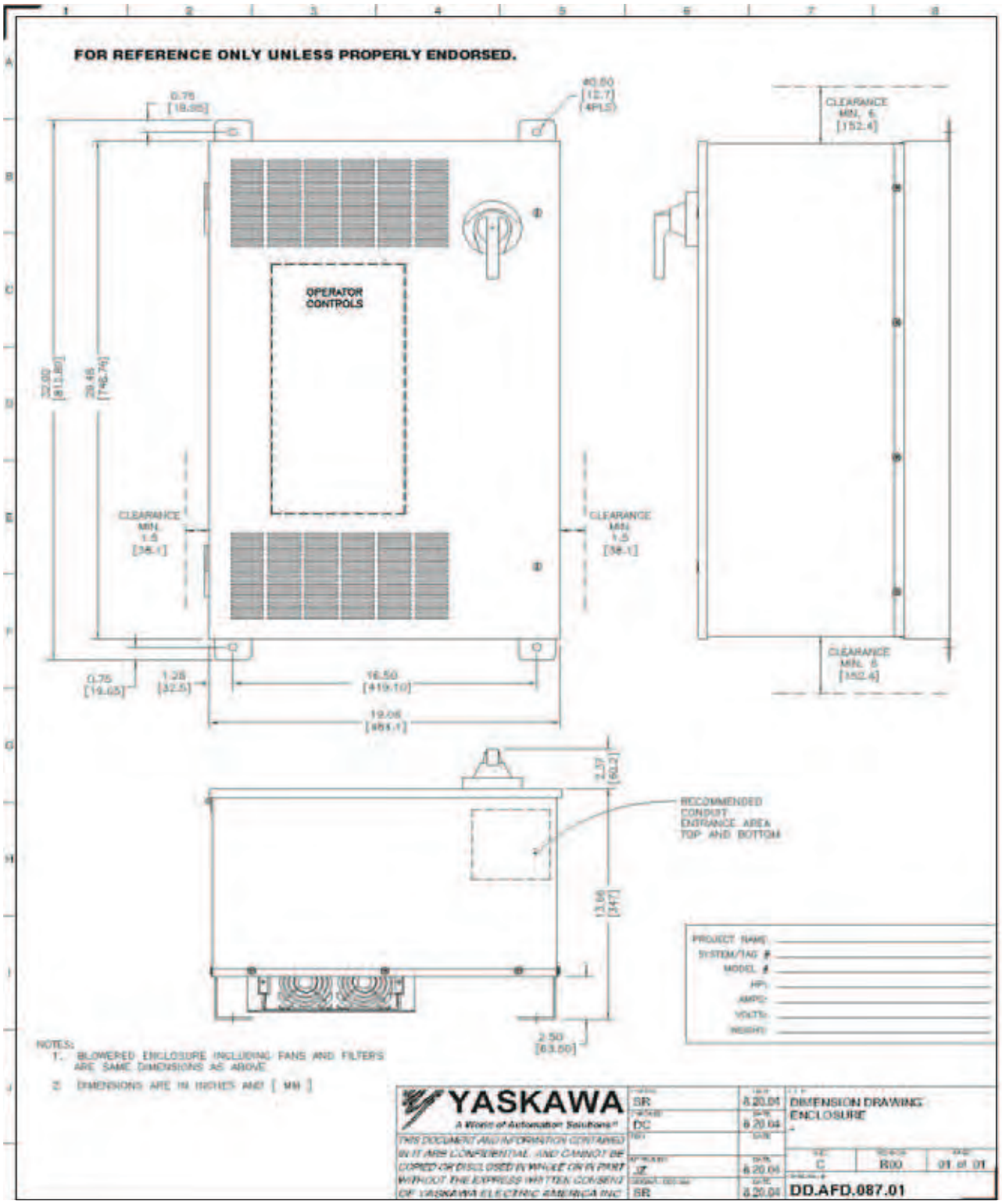
(6) Operator Drawing Number, Options 0, D, A: DO.E7B.01
Operator Drawing Number, Option T: DO.E7B.02
Operator Drawing Number, Option Y: DO.E7B.03

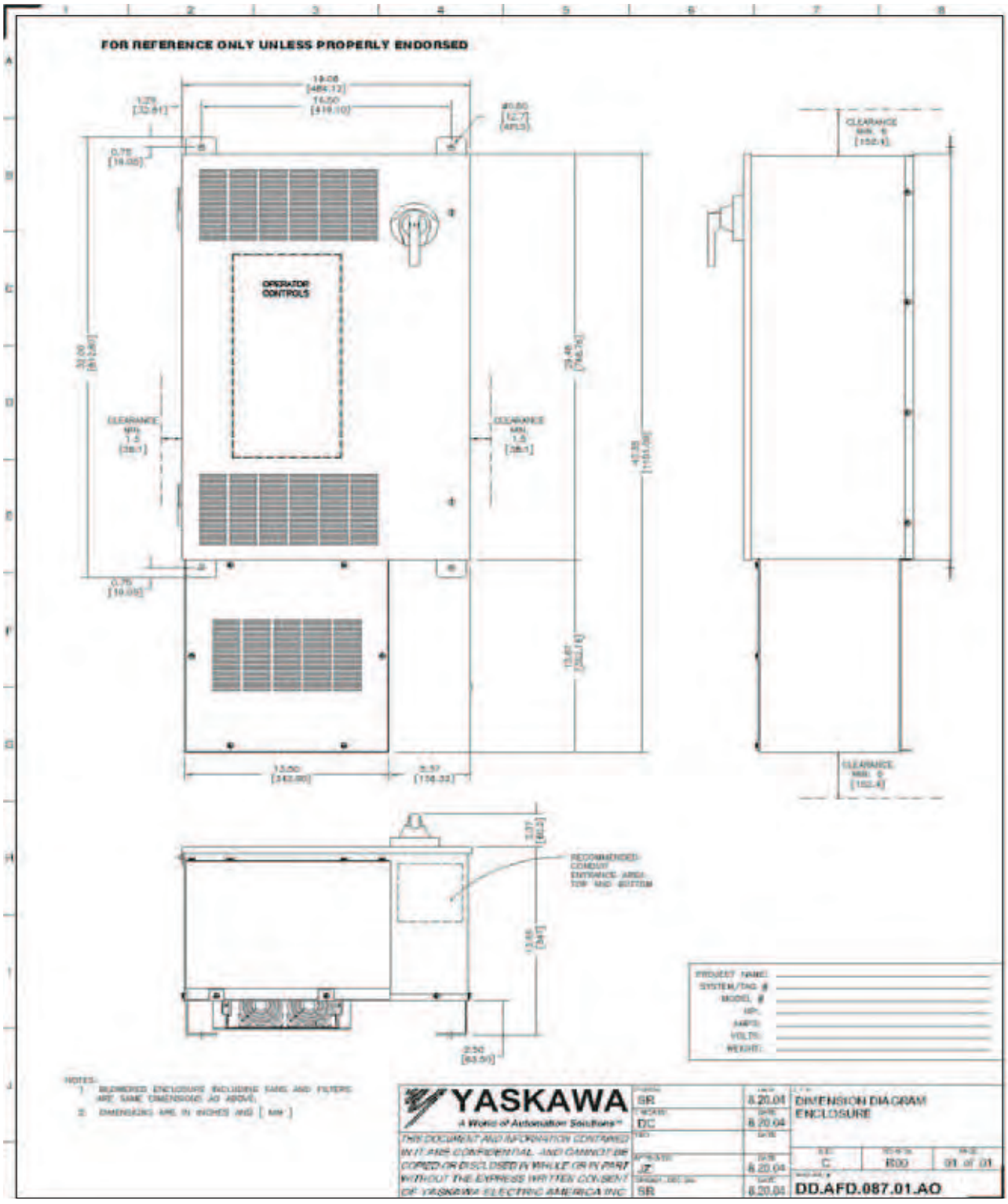
(7) If option D (2 motor "OR") or option A (2 motor "AND") is selected, consult factory for dimensions.

E7B

Dimension Drawing

DD.AFD.087.01
E7/Bypass
NEMA 1/12 FVFF




FOR REFERENCE ONLY UNLESS PROPERLY ENDORSED
OPERATOR CONTROLS
CLEARANCE MIN. 1.5 [38.1]
CLEARANCE MIN. 6 [152.4]
RECOMMENDED CONDUIT ENTRANCE AREA TOP AND BOTTOM
PROJECT NAME:
SYSTEM/TAG #
MODEL #
HP:
AMPS:
VOLTS:
WEIGHT:
YASKAWA
A World of Automation Solutions™
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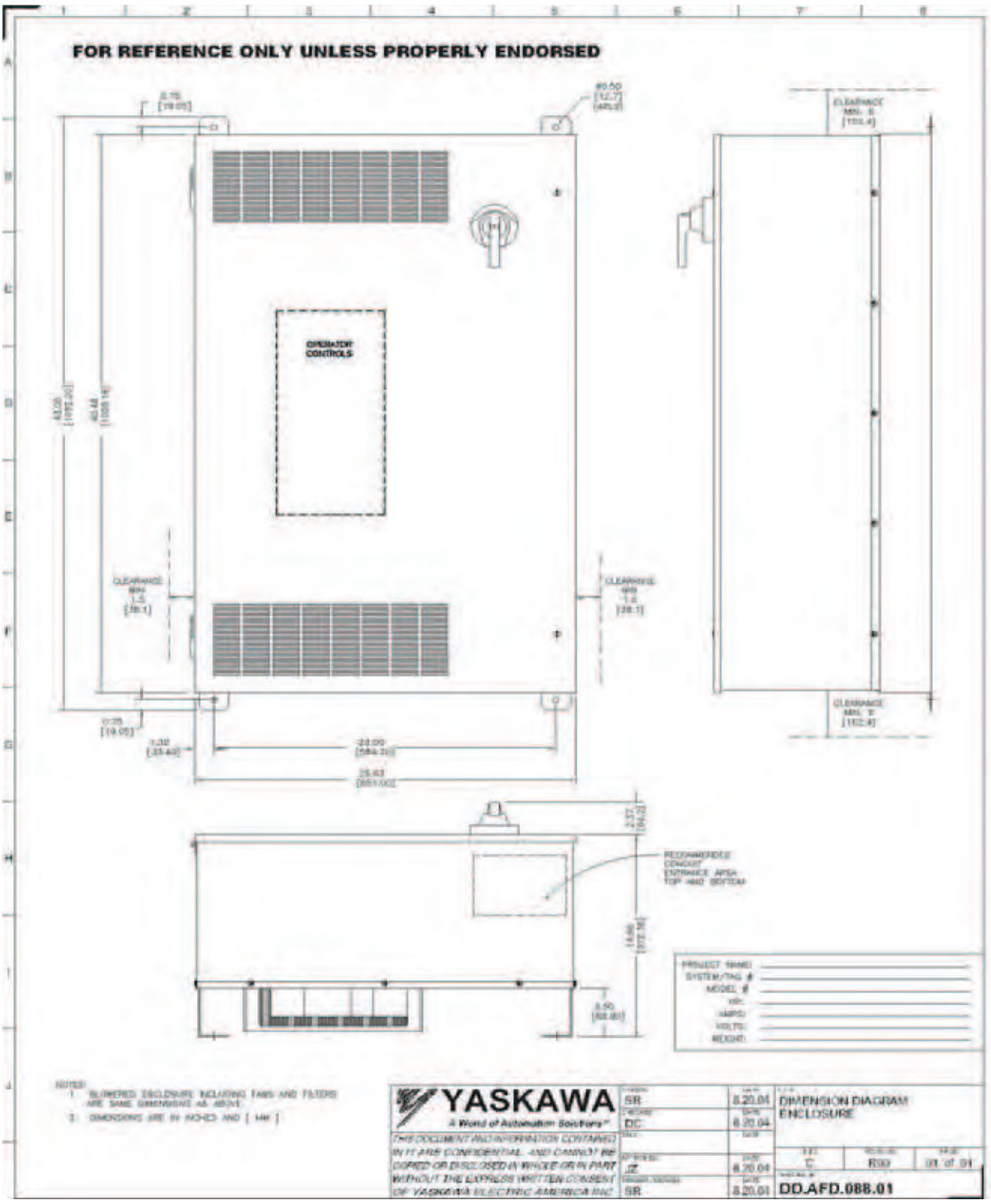
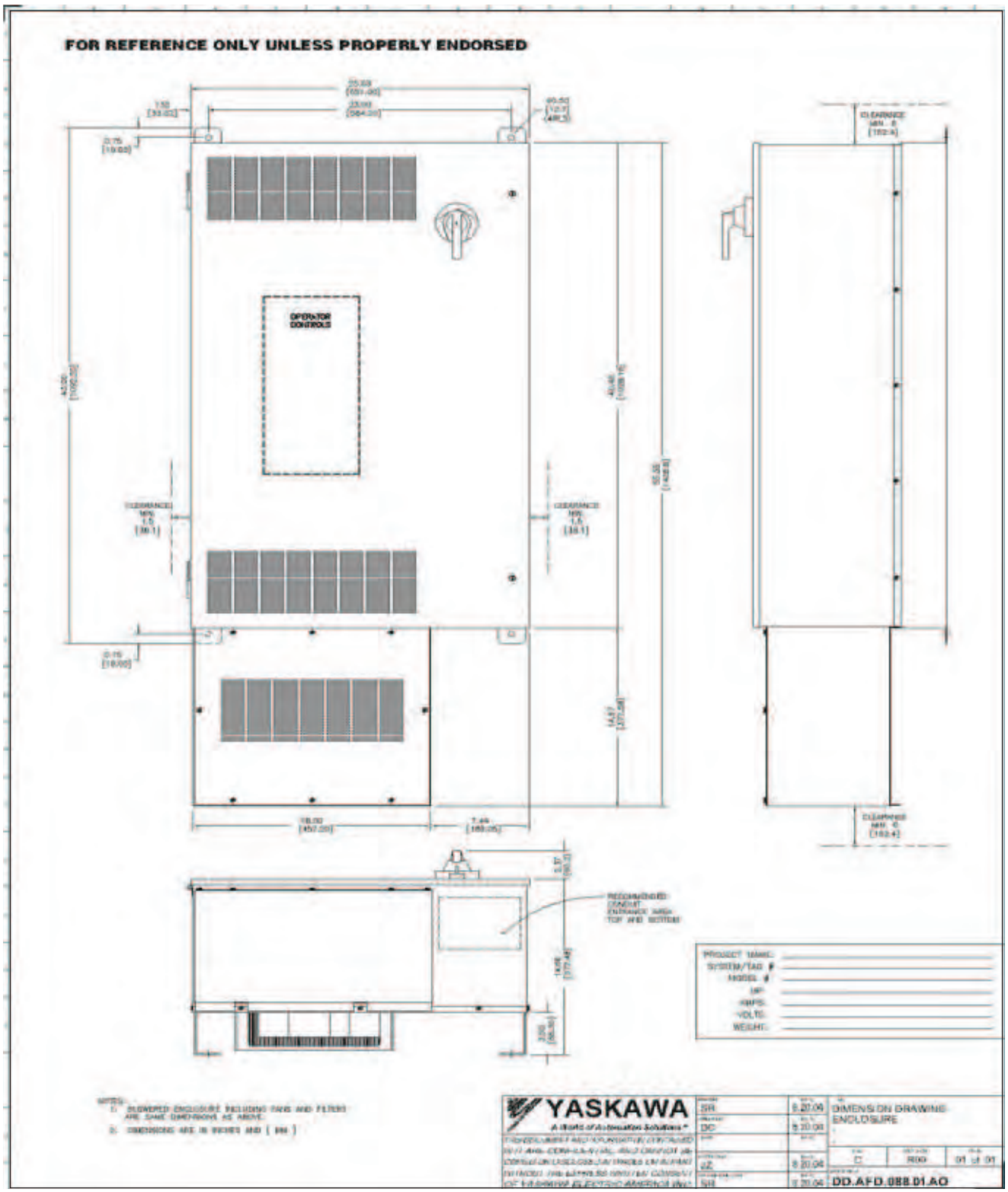
SR
DC
JZ
SR
8.20.04
DIMENSION DIAGRAM ENCLOSURE
C
R00
01 of 01
DD.AFD.087.01.AO

E7B

Dimension Drawing

DD.AFD.088.01
E7/Bypass
NEMA 1/12 FVFF

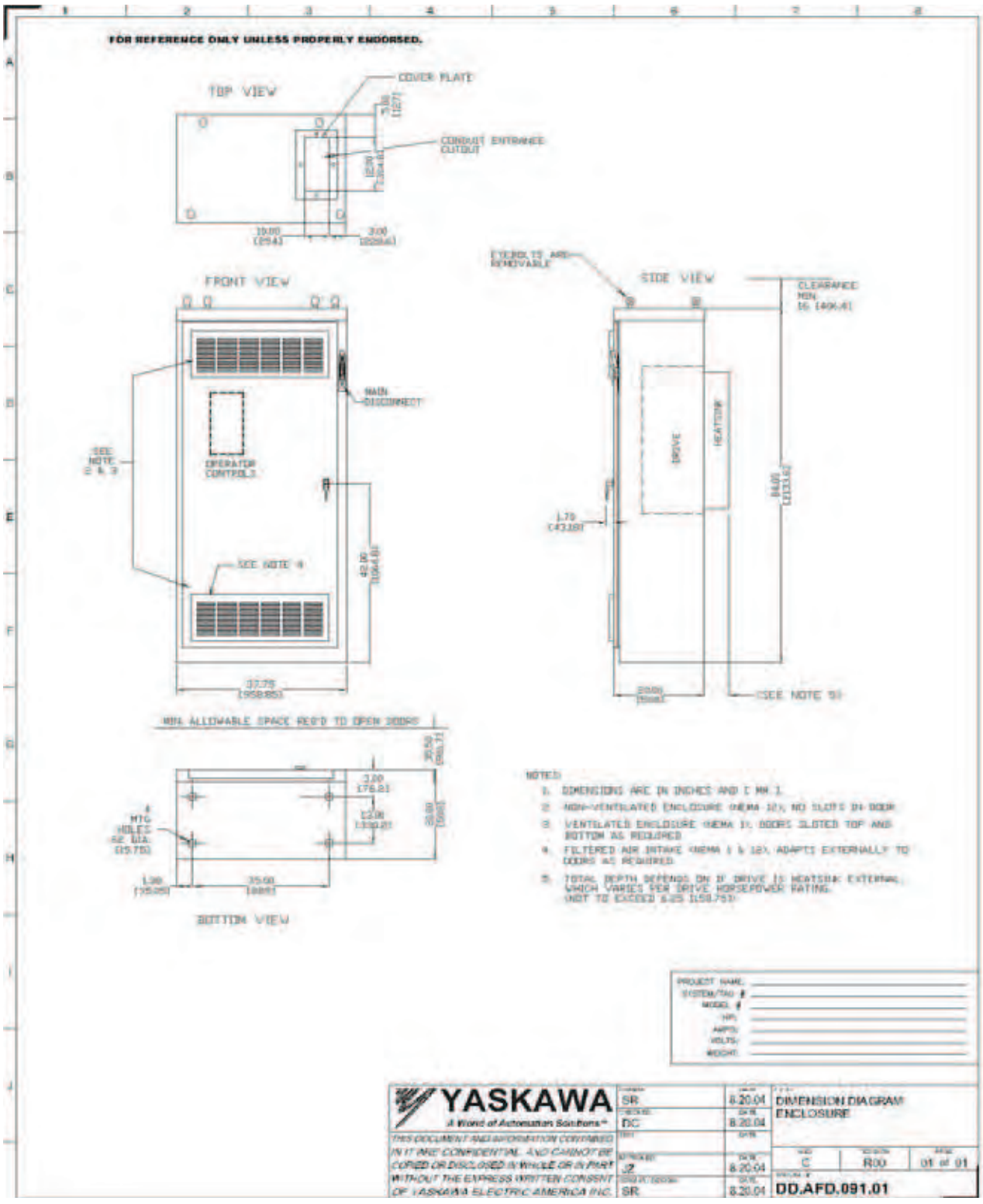



FOR REFERENCE ONLY UNLESS PROPERLY ENDORSED
OPERATOR CONTROLS
YASKAWA
DIMENSION DRAWING
ENCLOSURE
DD.AFD.088.01.AO

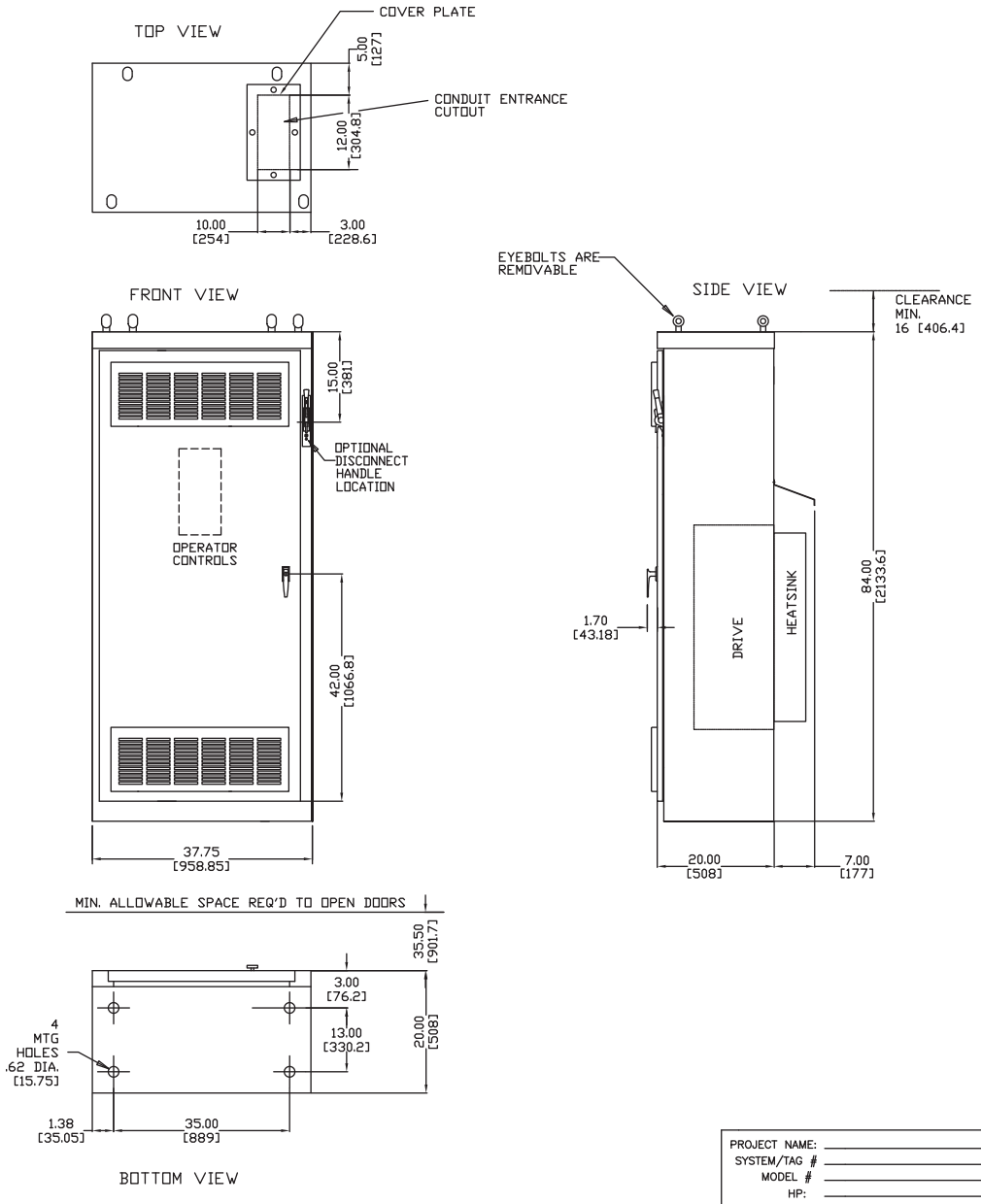
E7B

Dimension Drawing

DD.AFD.091.01
E7/Bypass Floor Mount
NEMA 1/12 FVFF



FOR REFERENCE ONLY UNLESS PROPERLY ENDORCED.



PROJECT NAME:	
SYSTEM/TAG #	
MODEL #	
HP:	
AMPS:	
VOLTS:	
WEIGHT:	

YASKAWA
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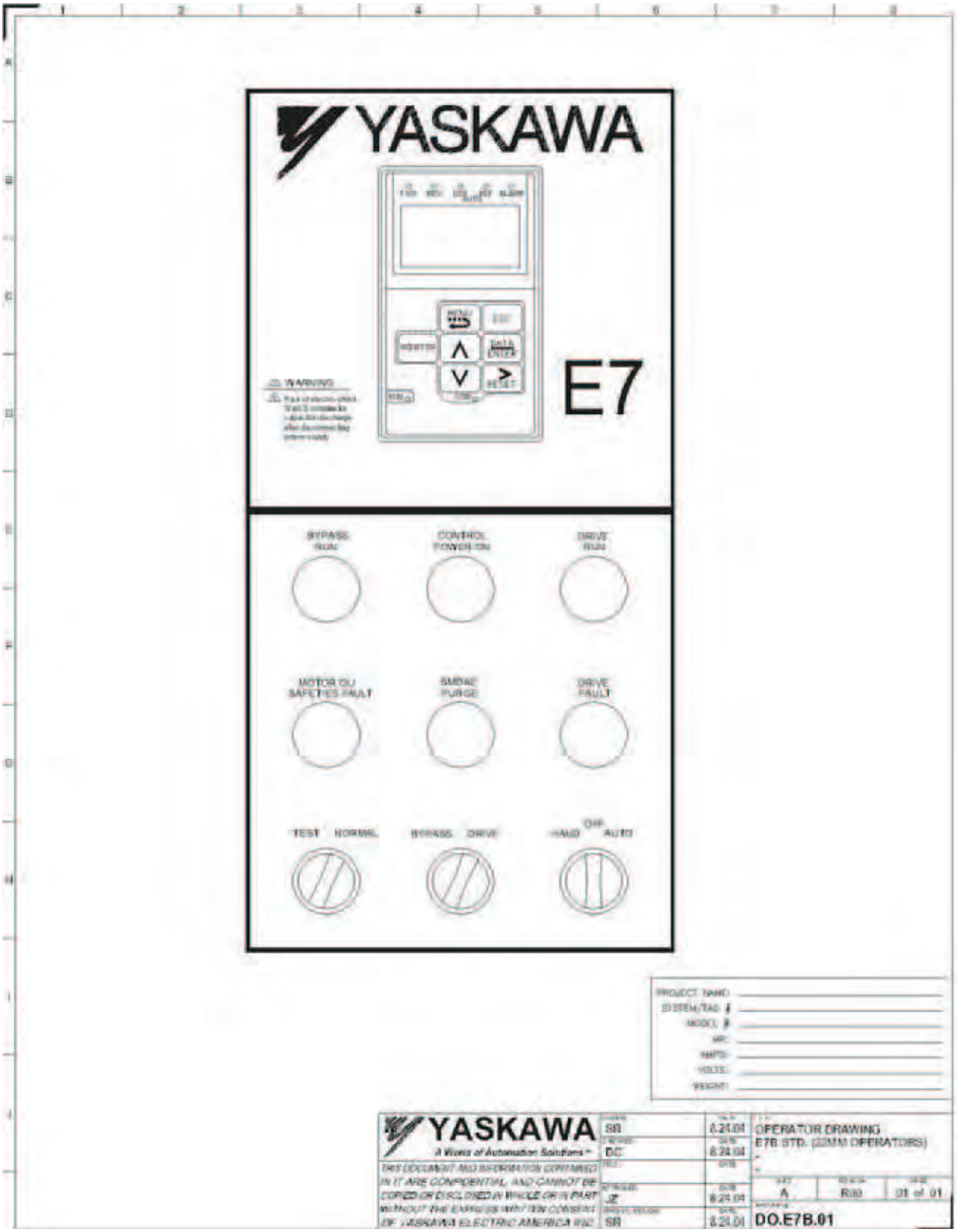
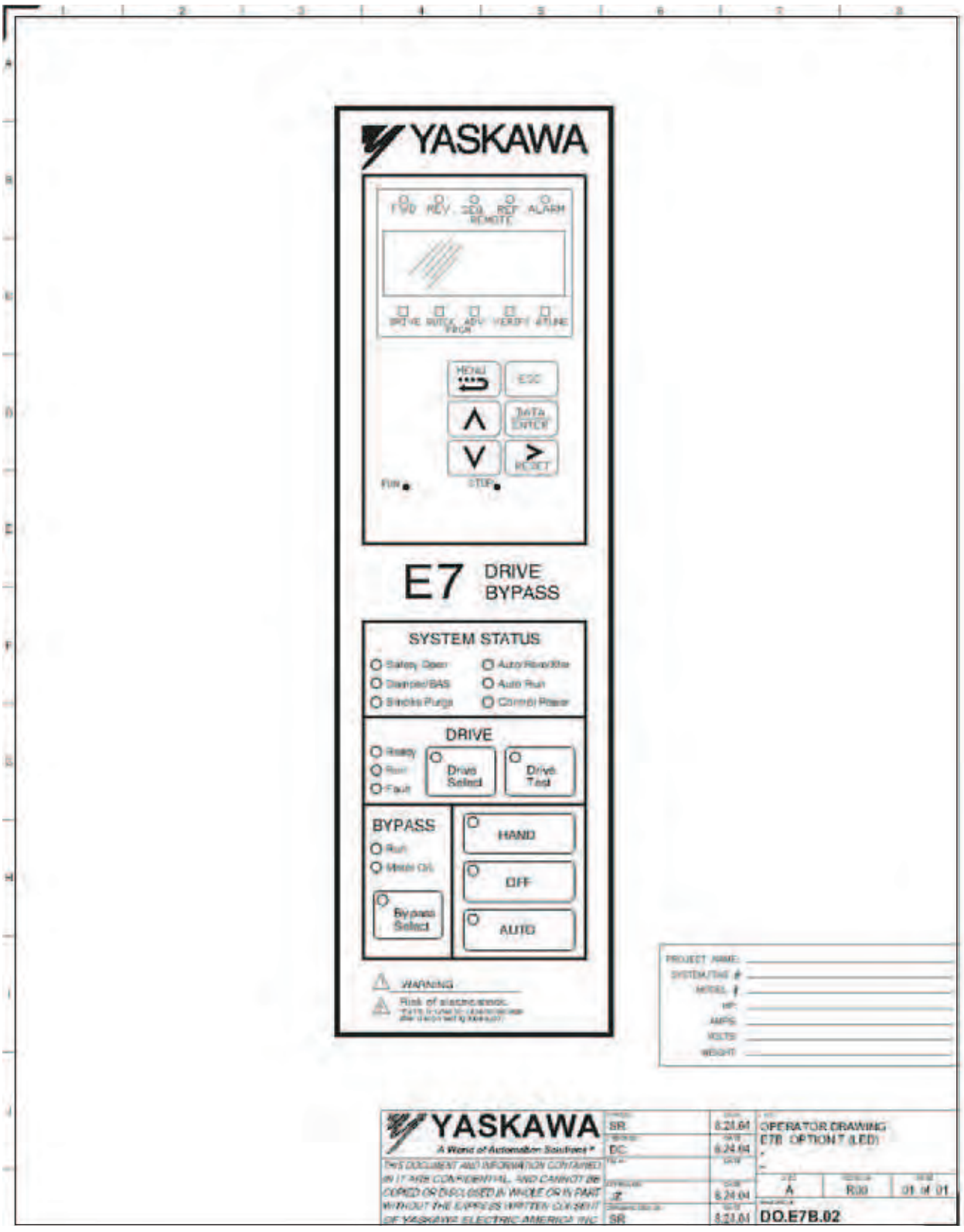
DRAWN: SR	DATE 4.6.04	TITLE: OUTLINE DIAGRAM ENCLOSURE F7	
CHECKED: MK	DATE 4.6.04		
TECH:	DATE	SIZE C	REVISION R00
APPROVED: JZ	DATE 4.6.04		PAGE 01 of 01
ORIGINAL DESIGN: SR	DATE 4.6.04	DRAWING #: DD.AFD.095.01	

Drawing

DO.E7B.01

22mm Operator & LCD Keypad




YASKAWA
FWD REV SEQ REF ALARM
REMOTE
DRIVE AUTO/L ADV VERIFY AUTUNE
PRGM
MENU
ESC
DATA ENTER
RESET
RUN
STOP
E7 DRIVE BYPASS
SYSTEM STATUS
Safety Open
Auto Restart
Startup/BAS
Auto Run
Smoke Purge
Comm Fault
DRIVE
Ready
Run
Fault
Drive Select
Drive Test
BYPASS
Run
Manual Ctrl
Bypass Select
HAND
OFF
AUTO
WARNING
Risk of electric shock.
PROJECT NAME:
SYSTEM/TAG #
MODEL #
HP:
AMPS:
VOLTS:
WEIGHT:
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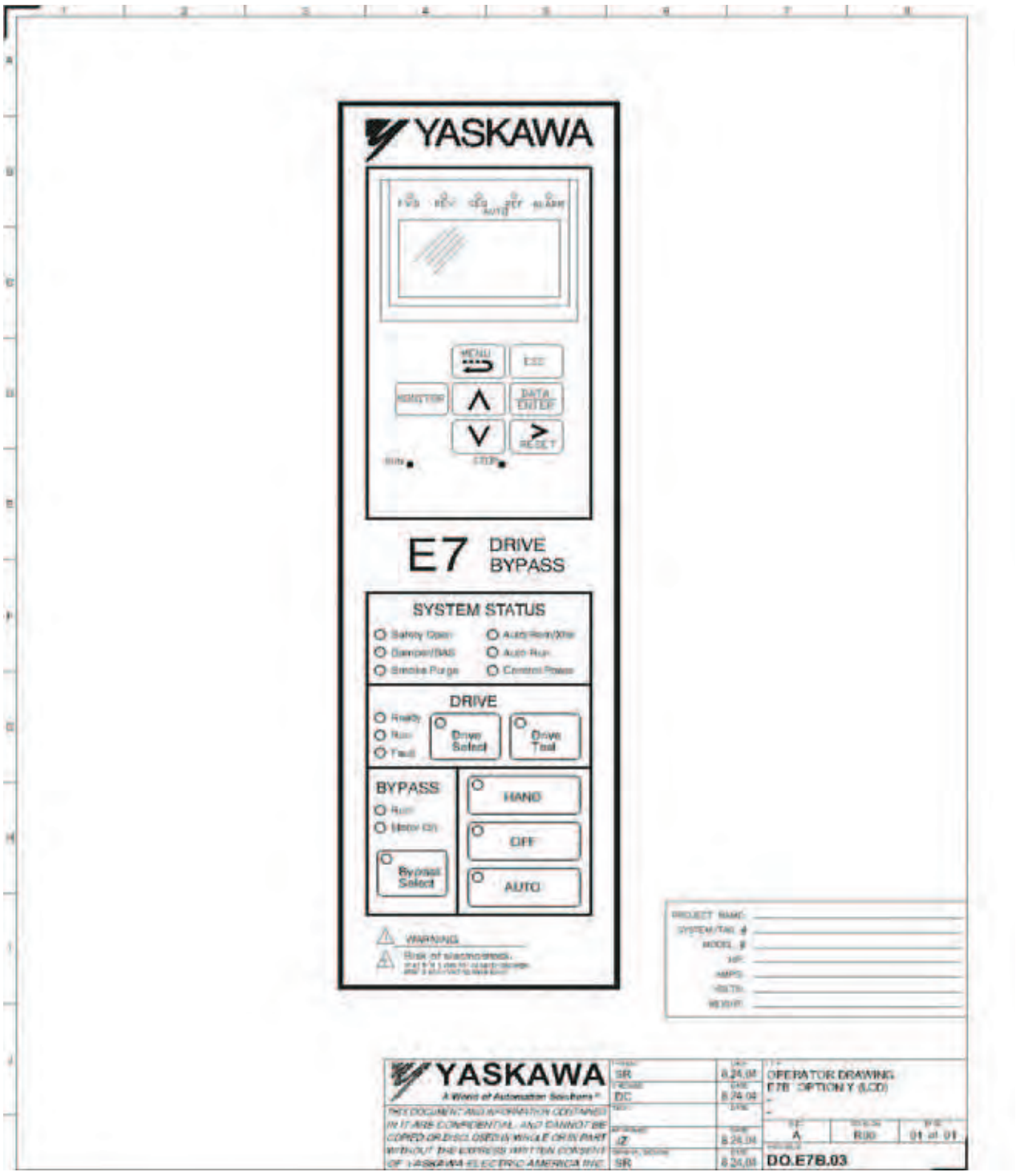
SR 6.21.04
DC 6.24.04
6.24.04
SR 6.21.04
OPERATOR DRAWING
E7B OPTION 7 (LED)
A
R00
01 M 01
DO.E7B.02

Drawing
DO.E7B.03
Touchpad Operator & LCD Keypad



United Way of Greater Cincinnati
Renovation and Addition
August 28, 2009
Triversity Group, LLC
Addendum #1

BID FORM - DOCUMENT 004100
All Blanks Shall Be Filled In

SC#- 06 Contractor Name Geiger Construction Products, Inc.

Subcontract Title Aluminum Windows

Bids Received: 2:00 p.m. local time
Date: September 23, 2009

TO: Triversity Group, LLC
3158 Fishwick Drive
Cincinnati, OH 45216
Construction Manager

In response to your request for bids and in compliance with the Contract Requirements, the undersigned proposes to furnish all labor, materials, and equipment, all supervision, coordination, all related incidentals necessary to perform the:

United Way of Greater Cincinnati
Renovation and Addition
BID PACKAGE # A EARTHWORK, UTILITIES, FRAME

In strict accordance with the Project Manual and the Drawings dated: August 28, 2009 including Addenda numbered 1, through 1, inclusive. Each Bidder, in submitting this proposal, the undersigned agrees that the Bid will not be withdrawn for a period of 60 consecutive calendar days following the date of Bid Opening; further, that if a Notice to Proceed or if a prepared Agreement provided by the Construction Manager is received at the business address identified below, within the above named 60 day period, the undersigned will, within two days of such receipt, acknowledge acceptance of the contract award and will execute and deliver the Agreement and will proceed in accordance with requirements of the Contract Documents for this project and have the Project at substantial completion on or before dates described in Construction Schedule, Section 013110.

This Subcontractor agrees to the provisions as set forth in the Bidding Documents, including the Instructions to Bidders and Description of Work & Subcontract, List of Drawings, the Contract Requirements, and Division 1 of General Requirements. The successful bidder will be required to enter into an agreement with Triversity utilizing the standard Triversity Construction Subcontract Agreement with addendum.

I BASE BID

Bidder agrees to perform all work for:
Subcontract SC#- 06 - Aluminum Windows (Fill in Subcontract No.)

All Labor, Material, Equipment, applicable taxes and Supervision for the sum of:

Three Hundred Five Thousand, One Hundred Three and 00/100 Dollars ($ 305,103.00)

Bid Breakdown:

Labor:	$ 104,000.00
Material:	$ 201,103.00
Sales Tax:	$ -0-
Total:	$ 305,103.00
Bond:	$ 9,153.00

1 of 5

United Way of Greater Cincinnati
Renovation and Addition
August 28, 2009
Triversity Group, LLC
Addendum #1

COMBINATION BID

	Subcontract #	Subcontract #	Subcontract #
Labor	$ N/A	$ N/A	$ N/A
Material	$	$	$
Sales Tax	$	$	$
TOTAL COMBINATION BID			$ N/A
Bond	$ N/A	$ N/A	$ N/A

II. QUALIFICATIONS

A. State any qualifications to Bidder's Proposal:

SEE ATTACHED

B Minority and Women Owned Business Participation (20% minimum):

MBE / WBE (Circle One) Company Name:

Work Scope:

Contract Amt:

MBE / WBE participation of bid amount 0 %

C. Suppliers and Subcontractors

List all major suppliers and subcontractors included in Base Bid:

Structural Steel Erector: N/A

Metal Deck Erector: N/A

Structural Steel Fabricator: N/A

Metal Deck Manufacturer: N/A

D Safety

List Erector's EMR (Experience Modification Rate) for 2009: .24

List Metal Deck Erector's EMR (Experience Modification Rate) for 2009:

III. SUBSTITUTIONS

All substitutions shall be submitted on the Substitution Request Form in Section 01 6000 Product Requirements and be submitted with the Bid Form on the Bid due date.

IV. VALUE ENGINEERING

Base bid must be per plans and specifications without modification. However, value engineering is encouraged and will be considered for award. List any value engineering ideas and impact on base bid:

SEE ATTACHED

2 of 5

V. BONDS

A. To supply a 100% Performance Bond and a Labor and Material Payment Bond:

Add $ $,153.00 to Base Bid

B Name of Surety Cincinnati Insurance

VI. LEAD TIMES

List the steel lead times required for fabricated material from time of approved SD's to delivery FOB site:

Aluminum Windows 6-8 Weeks
Structural Steel -- Weeks
Steel Decking -- Weeks
Generator -- Weeks

VII. ALTERNATE

Alternate #1 Curved Window Replacement Base Bid $24 $52.00 (Add to Base Bid)
Alternate #2 Segmented Window Replacement Base Bid ($536.00) (Deduct to Base Bid)
Alternate #3 SC-06 Aluminum Windows – deduct installation labor $ ($100,415.00)
Voluntary Alternate see attached Base Bid see attached

VIII. GENERAL

This Contractor / Subcontractor agrees to provisions as set forth in the Bidding Documents, including; the Instructions to Bidders, Description of Work Bid Categories, List of Drawings, General Conditions, and the Division 1 of the General Requirements. The successful bidder will be required to enter into an agreement with Triversity Refer to Section 002113 Instructions to Bidders for Basis of Award.

IX. NAME OF BIDDER

Firm Name Geiger Construction Products, Inc.

Address 869 North Bend Road
Cincinnati OH 45224

Telephone (513) 242-5106 Fax (513) 242-7933

By Chris Geiger

Signature

Title President

Date 9/23/09

State Whether a

- ☒ Corporation
- ☐ Partnership
- ☐ Sole Proprietorship

END OF SECTION

geiger CONSTRUCTION PRODUCTS

869 North Bend Road
Cincinnati, OH 45224
geigerconstructionproducts.com
P 513.242.5106 F 513.242.7933

Qualifications

To: Messer
Attn: Bruce Tumlin

Date: 9 23 09
Re: United Way

RE: SC-06 Aluminum Windows

We have reviewed Addendums No. 1

Includes *Spec Sections*: 0017329 Cutting and Patching (partial)
088000 Glazing
085100 Aluminum Windows

BASE BID

Inclusions:

1). Spec Sect 088000: All glass per Architectural Drawings and Specifications. Window Glazing is to be 1" Insulated Units = (2) ¼" clear annealed lites with Low-E coating on No 2 surface.
Note: A Thermal Stress Analysis can be performed if needed to determine if heat strengthened glass is required.
2). Spec Sect 088000: All Storm Window Glass to be curved ¼" clear heat strengthened glass. Storm Windows do not have "Lift Out Sash" as specified.
3). Spec Sect 085100: All Window Units per Architectural Drawings and Specifications. Windows are to be finished in 2-coat Kynar color selected from MFG's standard colors.
4). Spec Sect 085100: We include Water Hose Test per scope. Tests to be performed by Geiger employees. Pricing does not include independent testing agency.
5). Spec Sect 085100: Cleaning of Interior & Exterior of windows is included.
6). Spec Sect 085100: Applied Muntins on both exterior and interior of windows is included.
7). Spec Sect 085100: Wood Blocking is included.
8). Spec Sect 085100: Curved Window Units are Kawneer Encore Series. Windows are to be finished in 2-coat Kynar paint selected from standard Kawneer colors.

Exclusions:

1). All Protection.
2). Spec Sect 085100: Insulation in Windows.
3). Spec Sect 085100: All Demolition of existing windows/other building materials.
4). Spec Sect 085100: Custom Color.
5). Spec Sect 085100: Stamped PE Calculations.
6). Spec Sect 085100: Air Infiltration Testing of windows in field. Test reports will be provided.
7). Ohio State Sales tax.
8). All interior trim.

4 of 5

Qualifications continued

Voluntary Alternate A

Qualifications:

1). Added cost to Base Bid to furnish a "custom color" in lieu of standard color.
ADD to Base Bid: $3563.00

Alternate #1

Qualifications:

1). Kawneer "Encore Framing" radiused per the Architectural Drawings in lieu of the Window System specified.
2). 1" Insulated Glass to be radiused per plans. The "Low E" is a hard-coat in lieu of soft coat.
3). Price includes MFG's standard color painted finish.

Voluntary Alternate B

Qualifications:

1). Added cost to Alternate #1 to furnish a "custom color" in lieu of standard color.
ADD to Alternate #1: $535.00

Alternate #2

Qualifications:

1). All glass per Architectural Drawings and Specifications. Window Glazing is to be 1" Insulated Units = (2) ¼" clear heat strengthened lites with Low-E coating on No 2 surface.
2). All Window Units per Architectural Drawings and Specifications. Windows are to be finished in 2-coat Kynar color selected from MFG's standard colors.

Sincerely,
GEIGER CONSTRUCTION PRODUCTS, INC.

Chris Geiger

TERMS AND CONDITIONS:

This proposal is not effective 30 days from above date. We do not replace breakage or damaged material unless directly caused by our employees. Material quotation we require net cash within 30 days from date of invoice, with out deductions of any kind. In cases where product correction is required in the field, you must contact Geiger Construction Products, Inc. prior to any rework. Once we have this information; an evaluation of the problem cost of any options will be determined. No credit or reimbursement will be made, nor will any claim be considered valid if the above procedures are not followed.

5 of 5

WINDOW TYPE	WINDOW WIDTH	WINDOW HEIGHT	R. O. WIDTH	R. O. HEIGHT	R. JAMB PAN "A"	L. JAMB PAN "B"	HEAD PAN "C"	SILL PAN "D"	WINDOW QTY.	EACH WIDTH
A	37 7/8"	73 5/8"	38 7/8"	74 1/2"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	16	
A-1	37 1/2"	73 1/8"	38 1/2"	74"	1 3/4"	1 3/4"	2"	1 3/4"	4	
B-1	37 1/2"	85 9/16"	38 1/2"	86 7/16"	1 3/4"	1 3/4"	2"	1 3/4"	6	
B-2	39 7/8"	85 9/16"	40 7/8"	86 7/16"	1 3/4"	1 3/4"	2"	1 3/4"	6	
B-3	43 3/16"	85 9/16"	44 3/16"	86 7/16"	9/16"	1 3/4"	1 3/4"	1 3/4"	3	
B-3a	43 3/16"	85 9/16"	44 3/16"	86 7/16"	1 3/4"	9/16"	1 3/4"	1 3/4"	3	
B-4	42 3/8"	85 9/16"	43 3/8"	86 7/16"	1 1/2"	1 1/2"	1 3/4"	1 3/4"	28	
B2	39 1/4"	28 1/2"	39 3/4"	29 3/8"					2	
B2a	39 1/4"	49 7/8"	39 3/4"	50 3/4"					1	
C	37 7/8"	85 9/16"	38 7/8"	86 7/16"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	6	
D	46 7/8"	73 5/8"	47 7/8"	74 1/2"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	5	
E	46 7/8"	85 9/16"	47 7/8"	86 7/16"	1 1/2"	1 1/2"	1 3/4"	1 3/4"	15	
F	31 7/8"	63 5/8"	32 7/8"	64 1/2"	1 3/4"	1 3/4"	2"	1 3/4"	4	
F-1	31 7/8"	74 5/8"	32 7/8"	75 1/2"	1 3/4"	1 3/4"	2"	1 3/4"	4	
F-2	37 7/8"	63 5/8"	38 7/8"	64 1/2"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	2	
F3	31 7/8"	74 5/8"	32 7/8"	75 1/2"	1 3/4"	1 3/4"	2"	1 3/4"	1	
G	25 7/8"	85 9/16"	26 7/8"	86 7/16"	1 1/2"	1 1/2"	2"	1 3/4"	6	
G-1	39 1/2"	85 9/16"	40 1/2"	86 7/16"	1 1/2"	1 1/2"	2"	1 3/4"	2	
I	35 7/8"	67 9/16"	36 7/8"	68 7/16"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	3	
J	25 7/8"	37 9/16"	26 7/8"	38 7/16"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	3	
K	36 7/8"	85 9/16"	37 7/8"	86 7/16"	1 5/8"	1 5/8"	1 5/8"	1 3/4"	31	
K-1	46 1/2"	73 1/8"	47 1/2"	74"	2"	2"	2 1/2"	2"	1	
L	35 7/8"	67 9/16"	36 7/8"	68 7/16"	1 5/8"	1 5/8"	1 5/8"	1 3/4"	6	
L-1	35 7/8"	67 9/16"	36 7/8"	68 7/16"	1 3/4"	4 1/2"	1 1/2"	1 3/4"	1	
L-2	35 7/8"	67 9/16"	36 7/8"	68 7/16"	4 1/2"	1 3/4"	1 1/2"	1 3/4"	1	
L-3	35 7/8"	67 9/16"	36 7/8"	68 7/16"	1 3/4"	1 3/4"	1 1/2"	1 3/4"	8	
L-4	35 7/8"	67 9/16"	36 7/8"	68 7/16"	1 5/8"	4 3/8"	1 5/8"	1 3/4"	2	
L-5	35 7/8"	67 9/16"	36 7/8"	68 7/16"	4 3/8"	4 3/8"	1 5/8"	1 3/4"	2	
L-6	35 7/8"	67 9/16"	36 7/8"	68 7/16"	4 3/8"	1 5/8"	1 5/8"	1 3/4"	2	
M - LEFT	105 5/8"	76 5/8"	106 5/8"	77 1/2"	1 1/2"	2 5/8"	2"	1 3/4"	1	52 7/16"
M - RIGHT	105 5/8"	76 5/8"	106 5/8"	77 1/2"	2 5/8"	2 1/2"	2"	1 3/4"	1	52 7/16"
N - LEFT	107 1/4	81"	108 1/4"	81 7/8"	2"	2 5/8"	2"	1 3/4"	1	53 1/4"
N - RIGHT	107 1/4	81"	108 1/4"	81 7/8"	2 5/8"	2"	2"	1 3/4"	1	53 1/4"
N-1 - LEFT	107 5/8"	81"	108 5/8"	81 7/8"	2"	2 5/8"	2"	1 3/4"	1	53 7/16"
N-1 - RIGHT	107 5/8"	81"	108 5/8"	81 7/8"	2 5/8"	2"	2"	1 3/4"	1	53 7/16"
O	19 1/2"	63 3/8"	20 1/2"	64 1/4"	2"	2"	2 1/2"	1 3/4"	1	
O-1	31 1/2"	63 1/8"	32 1/2"	64"	2"	2"	2"	1 3/4"	2	
O-2	19 1/2"	63 3/8"	20 1/2"	64 1/4"	2"	2"	2"	1 3/4"	1	
P	43 7/16"	79 9/16"	44 3/16"	80 7/16"	2"	2"	2"	1 3/4"	15	
P-2	43 7/16"	79 1/16"	44 3/16"	80 15/16"	2"	2"	2"	1 3/4"	12	
Q	46 1/2"	73 1/8"	47 1/2"	74"	1 3/4"	1 3/4"	2"	2"	1	
Q-1	46 1/2"	73 1/8"	47 1/2"	74"	1 3/4"	1 3/4"	2"	1 3/4"	4	
Q-2	46 5/8"	73 1/2"	47 5/8"	74 3/8"	1 3/4"	1 3/4"	2"	1 3/4"	8	
R	46 3/8"	85 9/16"	47 3/8"	86 7/16"	1 3/4"	1 3/4"	1 3/4"	2"	3	
R-1	46 7/8"	85 9/16"	47 7/8"	86 7/16"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	23	
R-2	46 3/8"	85 9/16"	47 3/8"	86 7/16"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1	
R-3	46"	85 1/2"	47"	86 3/8"	1 3/4"	1 3/4"	1 3/4"	1 3/4"	1	
S	46 1/2"	51 1/8"	47 1/2"	52"	2"	2"	2 1/2"	2"	11	
T	19 9/16"	59 1/8"	20 9/16"	60"	2"	2"	2"	1 3/4"	1	

GENERAL NOTES:
ELEVATIONS ARE NOT TO SCALE
WINDOWS ARE VIEWED FROM EXTERIOR
STANDARD COLOR - VERIFY
CUSTOM FINISH - AAMA 2605
STANDARD HARDWARE - VERIFY
STANDARD HEAD & SILL FLASHING - VERIFY
GLAZING - VERIFY
COUNTS AND SIZES - VERIFY
QUOTING QUAKER'S STANDARD WARRANTY

Project Name:
UNITED WAY
CINCINNATI, OH

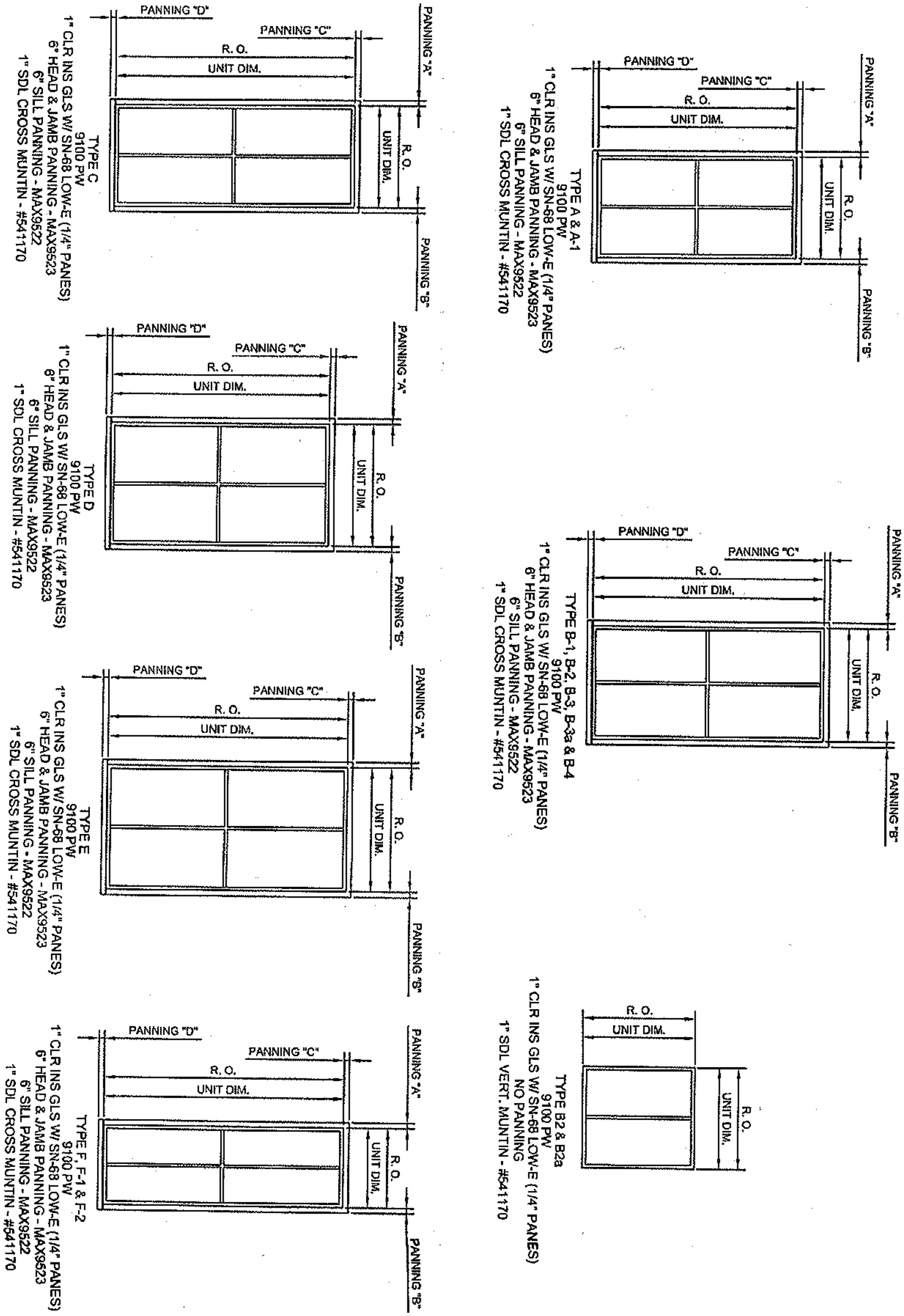
Description:
ELEVATIONS

Revisions		
NO.	DATE	DESCRIPTION
1		
2		
3		
4		

QUAKER WINDOW PRODUCTS WILL NOT BE RESPONSIBLE FOR FIELD MEASUREMENT, QUANTITIES, & INSTALLATION DISCREPANCIES. CONSTRUCTION MUST VERIFY ALL DIMENSIONS.

QUAKER
PHONE (573) 744-5211
FAX (573) 744-5598
COMMERCIAL
FAX (573) 744-5922
www.quakerwindows.com

Drawn By: P.A.T.
Date: 12-03-09
Scale: NONE
Sheet #: A2



QUAKER WINDOWS & DOORS

PHONE (573)-744-5211
FAX (573)-744-5686
COMMERCIAL
FAX (573)-744-5822
www.quakerwindows.com

Drawn By: P.A.T.
Date: 12-03-09

504 Highway 63 South
Freeburg, MO 65035
plynes@quakerwindows.com

Scale: NONE
Sheet #: A3

Description:

ELEVATIONS

QUAKER WINDOW PRODUCTS WILL NOT BE RESPONSIBLE FOR FIELD MEASUREMENT, QUANTITIES, & INSTALLATION DESIGN. CONTRACTOR MUST VERIFY ALL DIMENSIONS.

REVISIONS			
DATE	NO.	DESCRIPTION	REV BY
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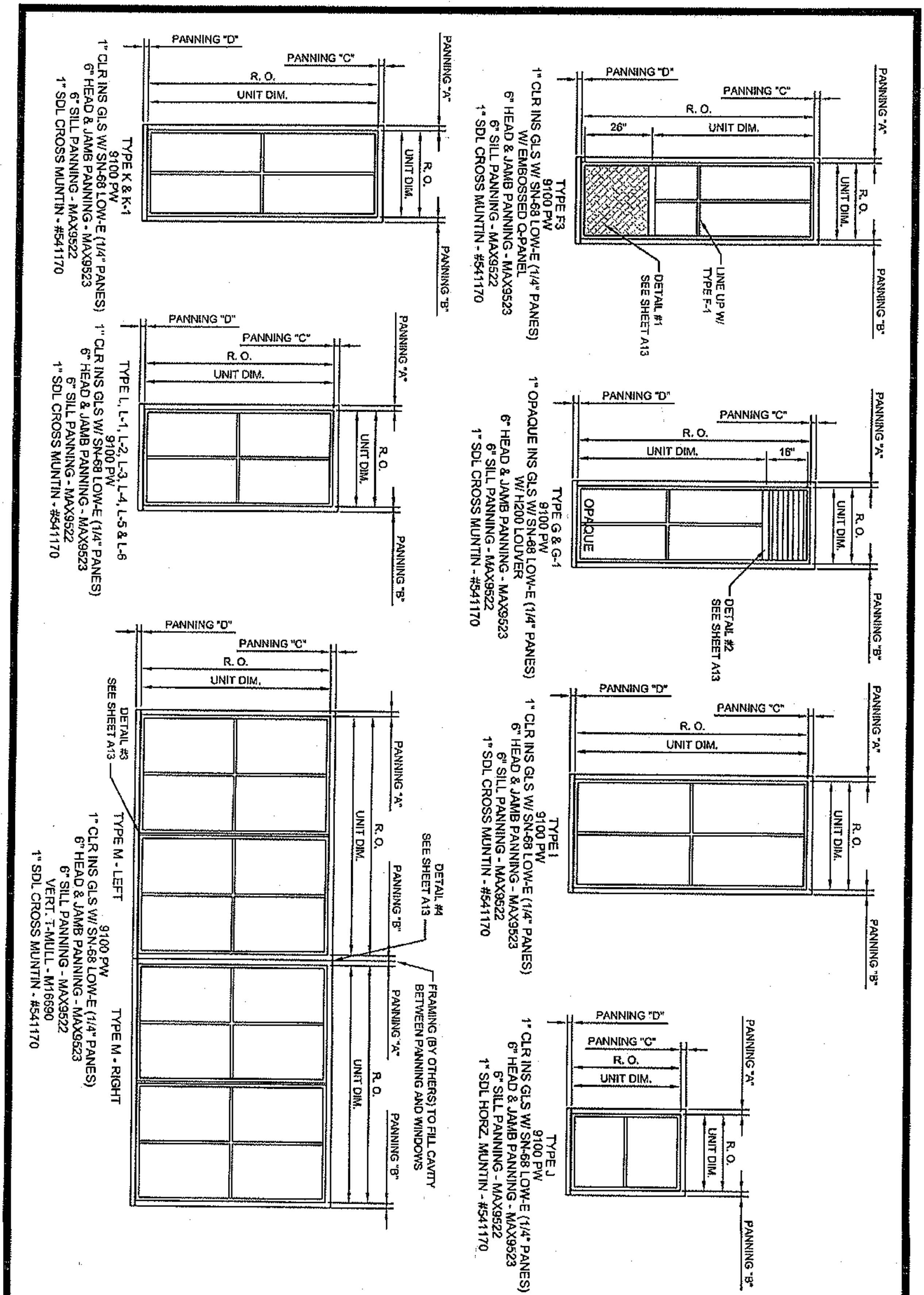
Project Name:

UNITED WAY CINCINNATI, OH



QUAKER WINDOWS & DOORS

PHONE (573)-744-5211
FAX (573)-744-5586
COMMERCIAL
FAX (573)-744-5822
www.quakerwindows.com

Drawn By: P.A.T. | 504 Highway 63 South | Scale: NONE
Date: 12-03-09 | Freeburg, MO 65035 | Sheet #: A4
pjynos@quakerwindows.com

Description: **ELEVATIONS**

QUAKER WINDOW PRODUCTS WILL NOT BE RESPONSIBLE FOR FIELD MEASUREMENT, QUANTITIES, & INSTALLATION DESIGN. CONTRACTOR MUST VERIFY ALL DIMENSIONS.

REVISIONS			
DATE	NO.	DESCRIPTION	REV BY
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	2		
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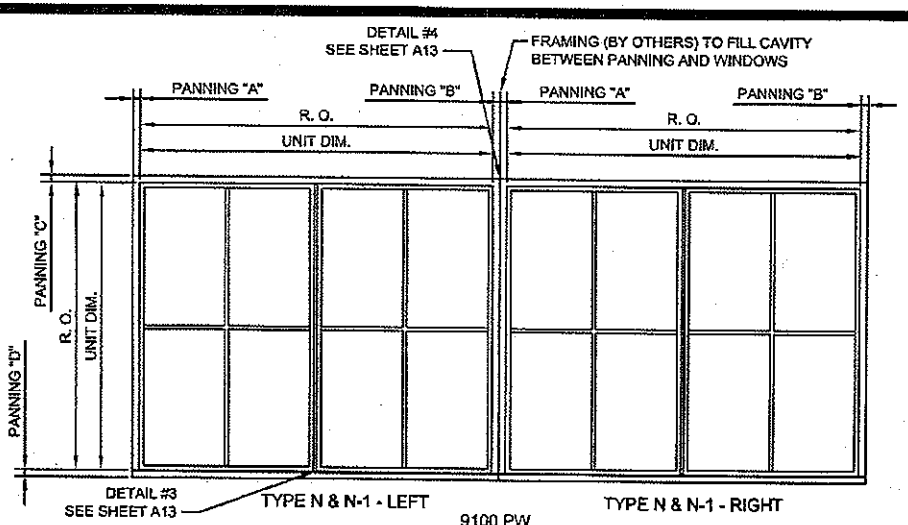
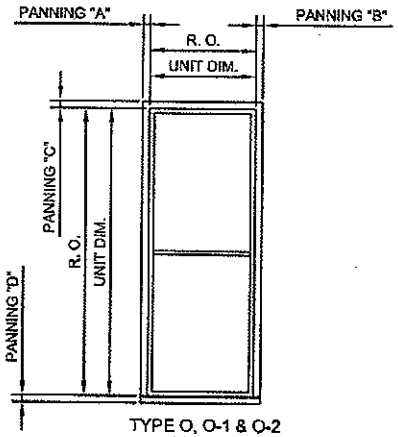
	4		

Project Name:

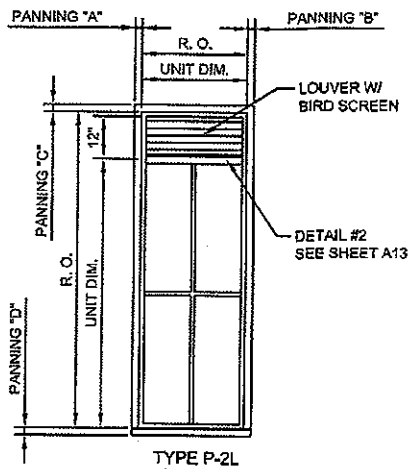
UNITED WAY CINCINNATI, OH



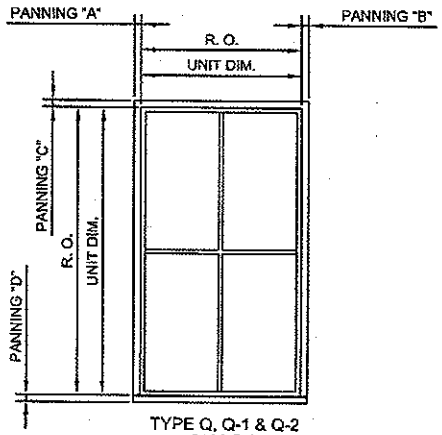
TYPE N & N-1 - LEFT — TYPE N & N-1 - RIGHT
9100 PW
1" CLR INS GLS W/ SN-68 LOW-E (1/4" PANES)
6" HEAD & JAMB PANNING - MAX9523
6" SILL PANNING - MAX9522
VERT. T-MULL - M16690
1" SDL CROSS MUNTIN - #541170



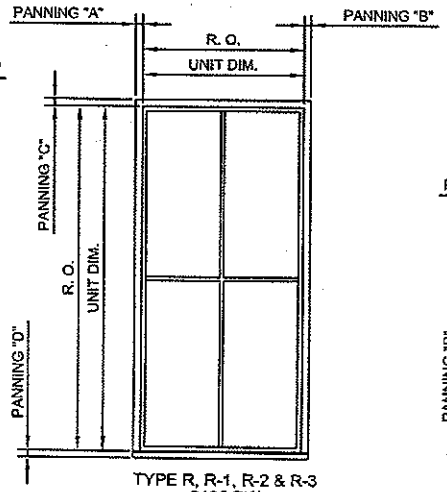
TYPE O, O-1 & O-2
9100 PW
1" CLR INS GLS W/ SN-68 LOW-E (1/4" PANES)
6" HEAD & JAMB PANNING - MAX9523
6" SILL PANNING - MAX9522
1" SDL HORZ. MUNTIN - #541170



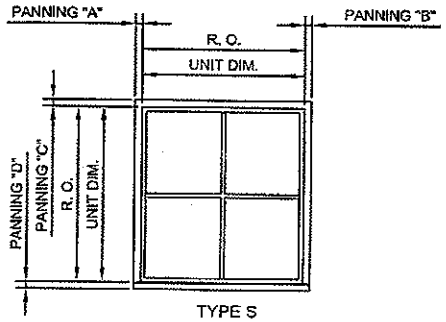
TYPE P-2L
9100 PW
1" CLR INS GLS W/ SN-68 LOW-E (1/4" PANES)
W/ H200 LOUVER
6" HEAD & JAMB PANNING - MAX9523
6" SILL PANNING - MAX9522
1" SDL CROSS MUNTIN - #541170



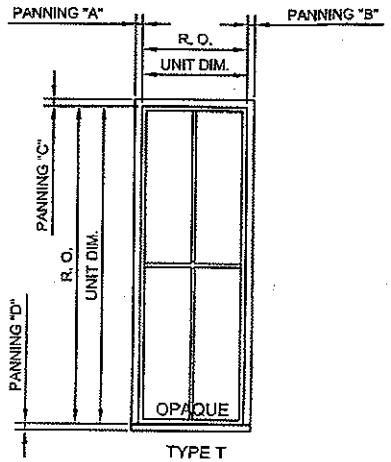
TYPE Q, Q-1 & Q-2
9100 PW
1" CLR INS GLS W/ SN-68 LOW-E (1/4" PANES)
6" HEAD & JAMB PANNING - MAX9523
6" SILL PANNING - MAX9522
1" SDL CROSS MUNTIN - #541170



TYPE R, R-1, R-2 & R-3
9100 PW
1" CLR INS GLS W/ SN-68 LOW-E (1/4" PANES)
6" HEAD & JAMB PANNING - MAX9523
6" SILL PANNING - MAX9522
1" SDL CROSS MUNTIN - #541170



TYPE S
9100 PW
1" CLR INS GLS W/ SN-68 LOW-E (1/4" PANES)
6" HEAD & JAMB PANNING - MAX9523
6" SILL PANNING - MAX9522
1" SDL CROSS MUNTIN - #541170



TYPE T
9100 PW
1" OPAQUE INS GLS W/ SN-68 LOW-E (1/4" PANES)
6" HEAD & JAMB PANNING - MAX9523
6" SILL PANNING - MAX9522
1" SDL CROSS MUNTIN - #541170

Project Name:
UNITED WAY
CINCINNATI, OH

Description:
ELEVATIONS

REVISIONS		
NO	DATE	DESCRIPTION
1		
2		
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QUAKER WINDOW PRODUCTS
WILL NOT BE RESPONSIBLE
FOR FIELD MEASUREMENT
QUANTITIES, & INSTALLATION
ISSUES. CONTRACTOR MUST
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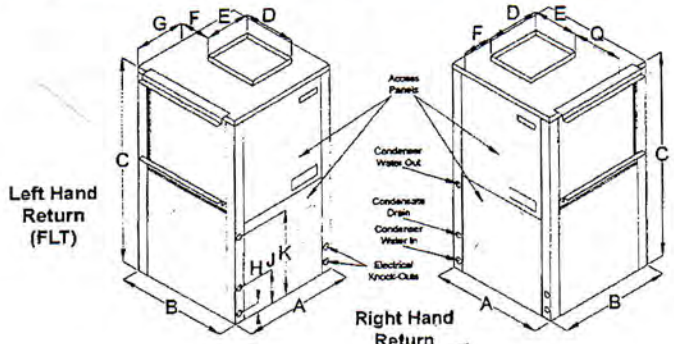
QUAKER
WINDOWS & DOORS
PHONE (573)-744-5211
FAX (573)-744-5886
COMMERCIAL
FAX (573)-741-3922
www.quakerwindows.com
504 Highway 63 South
Rolla, MO 65401
pjmay@quakerwindows.com

Drawn By: P.A.T.
Date: 12-03-09
Scale: NONE
Sheet #: A5

FHP Manufacturing Co.
601 N.W. 65th Court
Fort Lauderdale, FL 33309
Phone: (954) 776-5471
Fax: (800) 776-5529
http://www.fhp-mfg.com

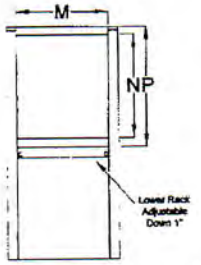
EC Series Vertical Dimensions

MODEL	A	B	C	D	E	F	G	H	J	K	M	N	P	Q	Condenser Water Connections	Recommended Replacement Nominal Filter Size
	Width	Depth	Height								R/A Duct Flg Width	R/A Duct Flg Height	Filter Rack Height			
EC007, 009	19.00	19.00	24.25	11.75	7.75	3.50	8.25	2.38	4.88	7.38	15.00	8.00	10.00	8.25	3/4" F.P.T.	10 X 16 X 1
EC012	19.00	19.00	24.25	11.75	7.75	3.50	9.75	2.38	4.88	7.38	15.00	8.00	10.00	5.00	3/4" F.P.T.	10 X 16 X 1
EC015	21.50	21.50	32.25	11.75	9.75	5.88	7.88	2.38	7.38	13.25	17.50	14.00	16.00	7.88	3/4" F.P.T.	16 X 20 X 1
EC018	21.50	21.50	32.25	16.25	13.75	1.75	5.62	2.38	7.38	13.25	17.50	14.00	16.00	5.62	3/4" F.P.T.	16 X 20 X 1
EC024	21.50	21.50	36.25	16.25	13.75	1.75	5.62	2.38	7.38	12.50	17.50	16.00	18.00	5.62	3/4" F.P.T.	18 X 20 X 1
EC030	21.50	21.50	39.25	16.25	13.75	1.75	5.62	2.38	7.38	12.50	17.50	18.00	20.00	5.62	3/4" F.P.T.	20 X 20 X 1
EC036	21.50	26.00	43.25	16.25	15.75	4.75	5.00	2.38	8.38	14.75	22.00	22.00	24.00	5.00	3/4" F.P.T.	24 X 24 X 1
EC041	21.50	21.50	39.25	16.25	13.75	1.75	5.62	2.38	8.38	14.75	17.50	18.00	20.00	5.62	3/4" F.P.T.	20 X 20 X 1
EC042	21.50	26.00	43.25	16.25	15.75	4.75	5.00	2.38	8.38	14.75	22.00	22.00	24.00	5.00	3/4" F.P.T.	24 X 24 X 1
EC048	24.00	32.50	45.25	17.75	17.75	7.38	5.12	2.63	8.38	14.75	28.00	22.00	24.00	5.12	1" F.P.T.	24 X 30 X 1
EC051	26.00	26.00	43.25	17.75	17.75	2.12	7.12	2.38	6.25	9.75	22.00	28.00	30.00	7.12	1" F.P.T.	24 X 30 X 1
EC060	24.00	32.50	45.25	17.75	17.75	7.38	5.12	3.00	9.63	16.63	28.00	22.00	24.00	5.12	1" F.P.T.	24 X 30 X 1
EC061	26.00	26.00	43.25	17.75	17.75	2.12	7.12	2.38	6.25	9.75	22.00	28.00	30.00	7.12	1" F.P.T.	24 X 30 X 1
EC070	26.00	33.25	56.25	17.75	17.75	9.50	6.50	3.38	8.38	17.38	28.00	30.00	32.00	6.50	1" F.P.T.	16X30X1 (2)



Left Hand Return (FLT)

Right Hand Return (FRT)



NOTES: All dimensions within +/- 0.125".
All condensate drain connections are 3/4" FPT.
EC051 and 061 only available in vertical configuration.
Specifications subject to change without notice.

ECVTSDIP FLA.P65 REV: 03-05

- 48

Email Greg.Dunn@us.Bosch.com

FLORIDA HEAT PUMP WATER SOURCE HEAT PUMPS

MODEL EC

- ARI Certified and cETL Safety Agency Listed (Water loop, Ground Water, Ground Loop)
- Vertical Floor Mounted as scheduled
- Standard Range
- R-410 Refrigerant
- Base construction of heavy gauge steel finished with Galvalume (1,000 hours salt spray test) plus and aluminum-zinc alloy with clear acrylic coating for additional corrosion protection
- 1/2" thick, 1 ½ lb glass fiber insulation
- Sealed refrigerant circuit consisting of:
  - Reversing valve with pilot operated sliding piston (one per circuit)
  - Cap tube expansion device (EC070 uses TXV)
  - Copper Tube, epoxy coated, aluminum finned air coil rated @ 450 psig
  - Copper/steel coaxial water-to-refrigerant. UL Listed heat exchanger rated at 600 psig on the refrigerant side and 400 psig on the water side.
  - High pressure switch, 600 psig cut-out
  - Low pressure switch, 20 psig cutout for loss of charge protection
  - High and low refrigerant service ports (shrader taps) for gauge connection.
  - Hermetic compressor with internal overload and internal spring mounts (recip)
  - Compressor is mounted on Rubber vibration isolators.
  - Liquid line filter drier (discharge muffler on 018-042)
- Forward curve centrifugal fan wheel with removable end ring
- Direct drive fan motor assembly - fan motor is three speed type PSC, permanently lubricated , complete with thermal overload protection
- Duct collar on supply fan opening
- 24 v Control system with 50 VA transformer
- 1" filter rack with duct collar and 1" thick fiberglass filter
- Insulated divider panel between fan section and compressor for maximum sound attenuation
- UPM Controller
- Stainless Steel Condensate Drain Pan
- Flush mounted, brass female threaded condensate drain connection
- Flush mounted brass female threaded inlet/outlet water connections
- Condensate overflow switch
- 1 Year Parts Warranty
- 5 Year Compressor Warranty

Accessories include:

- Stainless steel supply and return hose kits with fixed flow control valve
- DDC Temperature Controller with Sensor

TAG	QTY	MODEL	VOLTAGE
HP-306	1	EC009-2VTC	277/60/1
HP-409, 410	2	EC012-2VTC	277/60/1
HP-106,203, 208, 413	4	EC015-2VTC	277/60/1
HP-105, 202, 204, 207, 301, 305, 407	7	EC018-2VTC	277/60/1
HP-104, 200, 201, 211, 212, 302, 400	7	EC024-2VTC	277/60/1
HP-304, 312, 313, 404	4	EC024-4VTC	460/60/3
HP-109, 205, 300, 310, 411, 412	6	EC030-2VTC	277/60/1
HP-102, 103, 406	3	EC030-4VTC	460/60/3
HP-107, 405	2	EC036-2VTC	277/60/1
HP-001, 303, 403	3	EC036-4VTC	460/60/3
HP-108, 206, 209, 307, 308, 309, 311, 408, 414	9	EC048-4VTC	460/60/3
HP-210	1	EC060-4VTC	460/60/3
HP-100	1	EC072-4VTC	460/60/3
HP-110, 401, 402	3	EC096-4VTC	460/60/3
HP-111, 112	2	EC120-4VTC	460/60/3

SERIAL NUMBERS

Tag	Model-Config.	Air Flow (cfm)	ESP (in H20)	Cooling Total Cap. (MBtuh)	Cooling Sens. Cap. (MBtuh)	HOR (MBtuh)	EER	Cooling EADB (°F)	Cooling EAWB (°F)	Cooling LADB (°F)	Cooling LAWB (°F)	Cooling EFT (°F)	Cooling LFT (°F)	SHR	Heating Total Cap. (MBtuh)	HOA (MBtuh)	COP	Heating EADB (°F)	Heating LADB (°F)	Heating EFT (°F)	Heating LFT (°F)	Fluid Flow Rate (gpm)	Heating Fluid PD (ft H20)	Voltage/Hz/Phase	Min. Cir. Amp.	Compressor Quantity	Compressor RLA (ea)	Compressor LRA (ea)	Blower Quantity	Fan FLA (ea)	Fan Brake HP	
HP-001	EC036-4VTC	1346	0.5	31.65	26.98	41.85	10.6	75	63	56.4	54.9	90	101.6	0.86	47.36	38.82	4.41	68	100.6	70	59.8	7.2	6.1	460/3/60	6.8	1	5.4	40	1	2	0.5	
HP-100	EC072-4VTC	2340	0.62	62.67	50.02	83.46	10.2	75	63	55.2	53.7	90	101.6	0.8	95.05	72.88	4.29	68	105.6	70	59.9	14.4	11.6	460/3/60	14	2	5.4	40	1	1.6	1	
HP-102	EC030-4VTC	1000	0.5	25.41	20.79	33.82	10.6	75	63	55.8	54.2	90	101.2	0.82	36.3	27.8	4.17	68	101.6	70	60.6	6	10.3	460/3/60	7.6	1	4.5	30	1	2	0.5	
HP-103	EC030-4VTC	1000	0.5	25.41	20.79	33.82	10.6	75	63	55.8	54.2	90	101.2	0.82	36.3	27.8	4.17	68	101.6	70	60.6	6	10.3	460/3/60	7.6	1	4.5	30	1	2	0.5	
HP-104	EC024-2VTC	890	0.5	22	18.00	28.36	11.6	75	63	59.2	54.5	90	101.8	0.82	30.38	23.87	4.53	68	99.8	70	60.1	4.8	8.3	265/1/60	11.3	1	7.7	44	1	1.6	0.3	
HP-105	EC018-2VTC	640	0.43	15.52	12.44	20.64	10.3	75	63	57	54.7	90	101.5	0.8	23.97	17.89	4	68	102.7	70	60	3.6	11.3	265/1/60	10.5	1	7.1	44	1	1.6	0.3	
HP-106	EC015-2VTC	480	0.5	11.73	9.24	15.61	9.82	75	63	57.2	54.6	90	100.5	0.79	17.91	13.44	4	68	102.6	70	61	3	8.2	265/1/60	8.9	1	5.8	27	1	1.6	0.25	
HP-107	EC036-2VTC	1200	0.51	30.79	24.65	41.15	10.2	75	63	56	54.1	90	101.4	0.8	46.78	35.74	4.24	68	104.1	70	60.1	7.2	6.1	265/1/60	16.8	1	11.6	79	1	2.3	0.5	
HP-108	EC048-4VTC	1720	0.62	40.7	33.9	53.63	10.6	75	63	56.8	54.9	90	101.2	0.83	59.76	46.59	4.54	68	100.2	70	60.3	9.6	6.9	460/3/60	13	1	8.4	60	1	2.5	0.8	
HP-109	EC030-2VTC	1000	0.5	25.41	20.79	33.82	10.6	75	63	55.8	54.2	90	101.2	0.82	36.3	27.6	4.17	68	101.6	70	60.6	6	10.3	265/1/60	14.4	1	9.7	58	1	2.3	0.5	
HP-110	EC096-4VTC	3060	0.61	83.77	69.56	109.7	11	75	63	54	53.5	90	101.4	0.83	120.91	95.01	4.67	68	104.6	70	60.1	19.2	13.1	460/3/60	21.4	2	8.4	60	1	2.5	1.5	
HP-111	EC120-4VTC	4460	0.61	108.99	92.04	143.73	10.7	75	63	55.9	54.6	90	102	0.84	162.76	125.25	4.34	68	101.6	70	59.8	24	9.8	460/3/60	25.1	2	9.7	70	1	3.2	2	
HP-112	EC120-4VTC	4480	0.5	109.11	92.37	143.82	10.7	75	63	55.9	54.6	90	102	0.85	162.84	125.37	4.35	68	101.7	70	59.6	24	9.8	460/3/60	25.1	2	9.7	70	1	3.2	2	
HP-200	EC024-2VTC	830	0.5	21.6	17.07	28.06	11.4	75	63	56	54	90	101.7	0.79	30.19	23.33	4.4	68	101.7	70	60.3	4.8	8.3	265/1/60	11.9	1	7.7	44	1	2.3	0.5	
HP-201	EC024-2VTC	780	0.5	21.24	16.23	27.78	11.1	75	63	55.7	53.5	90	101.6	0.76	30.03	23.04	4.29	68	103.7	70	60.4	4.8	8.3	265/1/60	11.9	1	7.7	44	1	2.3	0.5	
HP-202	EC018-2VTC	700	0.2	15.95	13.43	20.92	11	75	63	57.2	55.2	90	101.6	0.84	24.12	18.33	4.17	68	99.9	70	59.8	3.6	11.3	265/1/60	10.5	1	7.1	44	1	1.6	0.3	
HP-203	EC015-2VTC	510	0.5	11.93	9.71	15.96	10.1	75	63	57.4	55	90	100.6	0.81	18	13.61	4.1	68	100.7	70	60.9	3	8.2	265/1/60	8.9	1	5.8	27	1	1.6	0.25	
HP-204	EC018-2VTC	650	0.4	15.58	12.59	20.69	10.4	75	63	57.1	54.8	90	101.5	0.81	24.01	18.04	4.02	68	102.2	70	60	3.6	11.3	265/1/60	10.5	1	7.1	44	1	1.6	0.3	
HP-205	EC030-2VTC	970	0.5	25.28	20.32	33.48	10.5	75	63	55.6	54	90	101.2	0.8	36.15	27.42	4.14	68	102.5	70	60.9	6	10.3	265/1/60	14.4	1	9.7	58	1	2.3	0.5	
HP-206	EC048-4VTC	1590	0.66	39.72	31.69	53.2	10.1	75	63	56.6	54.4	90	101.1	0.8	59.47	45.85	4.37	68	102.6	70	60.5	9.6	6.9	460/3/60	13	1	8.4	60	1	2.5	0.8	
HP-207	EC018-2VTC	720	0.17	16.2	13.69	21.18	11.1	75	63	57.4	55.3	90	101.8	0.75	24.14	18.66	4.4	68	99	70	59.6	3.6	11.3	265/1/60	10.5	1	7.1	44	1	1.6	0.3	
HP-208	EC015-2VTC	520	0.5	12	9.87	16.01	10.2	75	63	57.4	55.1	90	100.7	0.82	18.03	13.67	4.13	68	100.1	70	60.9	3	8.2	265/1/60	8.9	1	5.8	27	1	1.6	0.25	
HP-209	EC048-4VTC	1660	0.74	40.23	32.88	53.55	10.3	75	63	56.7	54.7	90	101.2	0.76	59.66	46.25	4.4	68	101.3	70	60.4	8.4	8	460/3/60	9.3	1	5.8	40	1	2	0.5	
HP-210	EC060-4VTC	2050	0.5	53.94	43.78	70.43	11.2	75	63	55.2	53.9	90	101.7	0.81	79.04	61	4.38	68	103.7	70	59.8	12	7.1	460/3/60	14.7	1	9.7	70	1	2.5	0.8	
HP-211	EC024-2VTC	780	0.5	21.45	16.19	28.03	11.1	75	63	55.8	53.4	90	101.7	0.8	29.62	22.47	4.42	68	103.2	70	60.6	4.8	8.3	265/1/60	11.9	1	7.7	44	1	2.3	0.5	
HP-212	EC024-2VTC	850	0.14	22.15	17.85	28.58	11.8	75	63	56.2	54.3	90	101.9	0.8	29.93	23.04	4.3	68	99.5	70	60.4	4.8	8.3	265/1/60	11.9	1	7.7	44	1	2.3	0.5	
HP-300	EC030-2VTC	1090	0.5	25.86	22.19	34.02	10.8	75	63	58.2	54.9	90	101.3	0.86	36.71	28.12	4.27	69	99.2	70	60.6	6	10.3	265/1/60	14.4	1	9.7	58	1	2.3	0.5	
HP-301	EC018-2VTC	680	0.3	15.78	13.06	20.83	10.7	75	63	57.2	55.1	90	101.6	0.83	24.1	18.22	4.1	68	100.8	70	59.9	3.6	11.3	265/1/60	10.5	1	7.1	44	1	1.6	0.3	
HP-302	EC024-2VTC	900	0.5	22.07	18.23	28.41	11.9	75	63	56.3	54.5	90	101.8	0.83	30.41	23.72	4.55	68	99.3	70	60.1	4.8	8.3	265/1/60	11.9	1	7.7	44	1	2.3	0.5	
HP-303	EC036-4VTC	1400	0.5	31.96	27.84	42.06	10.8	75	63	56.8	55.2	90	101.7	0.87	47.55	36.93	4.48	68	99.5	70	59.7	7.2	6.1	460/3/60	8.6	1	5.4	40	1	2	0.5	
HP-304	EC024-4VTC	770	0.5	21.17	16.08	27.72	11	75	63	55.7	53.4	90	101.6	0.76	30	22.98	4.27	68	104.1	70	60.4	4.8	8.3	460/3/60	6.5	1	3.9	30	1	2	0.5	
HP-305	EC018-2VTC	590	0.55	15.2	11.65	20.37	10	75	63	56.7	54.1	90	101.3	0.77	23.78	17.68	3.9	66	105.3	70	60.2	3.6	11.3	265/1/60	10.5	1	7.1	44	1	1.6	0.3	

HP-306	EC009-2VTC	210	0.6	5.8	3.58	8	9.02	75	63	59.2	53.4	90	98.9	0.82	10.5	7.88	4.01	68	114.3	68	59.3	1.8	4.1	265/1/60	5	1	3.3	16	1	0.9	0.1	
HP-307	EC048-4VTC	1825	0.5	41.48	35.88	54.28	11.1	75	63	56.9	55.2	90	101.3	0.86	59.95	47.17	4.69	68	98.4	70	60.2	9.6	6.9	460/3/60	13	1	8.4	60	1	2.5	0.8	
HP-308	EC048-4VTC	1450	0.9	40.74	30.84	54.28	10.3	75	63	56	53.6	90	99.1	0.78	60.12	46.37	4.4	68	105.1	70	62.3	12	10.3	460/3/60	16.8	1	11.6	79	1	2.3	0.5	
HP-309	EC048-4VTC	1530	0.88	39.43	30.81	52.87	10	75	63	56.4	54.1	90	101	0.78	59.15	45.6	4.33	68	103.8	70	60.5	9.6	6.9	460/3/60	13	1	8.4	60	1	2.5	0.8	
HP-310	EC030-2VTC	1110	0.5	25.99	22.51	34.1	10.9	75	63	56.2	55	90	101.4	0.87	38.76	28.23	4.31	68	98.7	70	60.6	6	10.3	265/1/60	14.4	1	9.7	58	1	2.3	0.5	
HP-311	EC048-4VTC	1560	0.87	39.58	31.25	53.04	10	75	63	56.5	54.2	90	101.1	0.79	59.31	45.67	4.35	68	103.2	70	60.5	9.6	6.9	460/3/60	13	1	8.4	60	1	2.5	0.8	
HP-312	EC024-4VTC	760	0.5	21.09	15.89	27.66	11	75	63	55.6	53.3	90	101.5	0.75	29.97	22.92	4.25	68	104.5	70	60.5	4.8	8.3	460/3/60	6.5	1	3.6	30	1	2	0.5	
HP-313	EC024-4VTC	760	0.5	21.09	15.89	27.66	11	75	63	55.6	53.3	90	101.5	0.75	29.97	22.92	4.25	68	104.5	70	60.5	4.8	8.3	460/3/60	6.5	1	3.6	30	1	2	0.5	
HP-400	EC024-2VTC	800	0.5	21.39	16.57	27.89	11.2	75	63	55.8	53.7	90	101.6	0.78	30.09	23.15	4.34	68	102.8	70	60.4	4.8	8.3	265/1/60	11.9	1	7.7	44	1	2.3	0.6	
HP-401	EC098-4VTC	3060	0.61	83.77	69.56	109.7	11	75	63	54	53.5	90	101.4	0.83	120.91	95.01	4.67	68	104.6	70	60.1	19.2	13.1	460/3/60	21.4	2	8.4	60	1	2.5	1.5	
HP-402	EC098-4VTC	3450	0.5	86.34	76.58	111.4	11.8	75	63	54.5	54.4	90	101.8	0.89	122.26	97.46	4.93	68	100.8	70	59.9	19.2	13.1	460/3/60	21.4	2	8.4	60	1	2.5	1.5	
HP-403	EC036-4VTC	1360	0.6	31.73	27.21	41.9	10.6	75	63	56.5	55	90	101.8	0.88	47.42	36.7	4.42	68	100.3	70	59.8	7.2	8.1	460/3/60	8.8	1	5.4	40	1	2	0.5	
HP-404	EC024-4VTC	740	0.5	20.95	15.55	27.63	10.9	75	63	55.5	53.1	90	101.5	0.74	29.89	22.8	4.22	68	105.4	70	60.5	4.8	8.3	460/3/60	6.6	1	3.6	30	1	2	0.5	
HP-405	EC038-2VTC	1260	0.6	31.15	25.62	41.45	10.3	75	63	56.2	54.6	90	101.5	0.82	47.03	36.11	4.31	68	102.6	70	60	7.2	6.1	265/1/60	18.8	1	11.8	79	1	2.3	0.5	
HP-406	EC030-4VTC	1130	0.5	26.11	22.84	34.18	11	75	63	56.3	55.1	90	101.4	0.88	36.82	28.34	4.34	68	98.2	70	60.6	6	10.3	460/3/60	7.6	1	4.5	30	1	2	0.5	
HP-407	EC018-2VTC	570	0.6	15.07	11.34	20.25	9.93	75	63	56.6	53.8	90	101.3	0.75	23.69	17.58	3.88	68	106.5	70	60.2	3.6	11.3	265/1/60	10.5	1	7.1	44	1	1.6	0.3	
HP-408	EC048-4VTC	1750	0.57	40.91	34.4	53.97	10.7	75	63	56.8	55	90	101.2	0.84	59.83	46.76	4.58	68	99.7	70	60.3	9.6	6.9	460/3/60	13	1	8.4	60	1	2.5	0.8	
HP-409	EC012-2VTC	320	0.62	8.83	6.33	12.07	9.7	75	63	56.7	53.3	90	100.1	0.71	14.34	10.97	4.26	68	109.5	70	60.9	2.4	7.4	265/1/60	5	1	3.3	16	1	0.9	0.1	
HP-410	EC012-2VTC	300	0.7	8.79	6.02	11.94	9.55	75	63	56.4	52.7	90	100	0.69	14.25	10.85	4.19	68	112	70	61	2.4	7.4	265/1/60	5	1	3.3	16	1	0.9	0.1	
HP-411	EC030-2VTC	1010	0.5	25.46	20.95	33.66	10.6	75	63	55.8	54.3	90	101.2	0.82	36.35	27.86	4.18	68	101.3	70	60.8	6	10.3	265/1/60	13.8	1	9.7	58	1	1.6	0.3	
HP-412	EC030-2VTC	1120	0.5	26.05	22.68	34.14	11	75	63	56.3	55	90	101.4	0.87	36.79	28.28	4.32	68	98.4	70	60.6	6	10.3	265/1/60	13.8	1	9.7	58	1	1.6	0.3	
HP-413	EC015-2VTC	450	0.5	11.54	8.77	15.65	9.58	75	63	57	54.1	90	100.4	0.76	17.6	13.28	3.92	68	104.6	70	61.2	3	8.2	265/1/60	8.1	1	5.8	27	1	0.9	0.1	
HP-414	EC048-4VTC	1730	0.8	40.78	34.08	53.88	10.6	75	63	56.8	54.9	90	101.2	0.84	59.78	46.64	4.55	68	100	70	60.3	9.6	6.9	460/3/60	13	1	8.4	60	1	2.5	0.8	