

Docket Item # 12
BAR CASE # 2009-0151

BAR Meeting
July 29, 2009

ISSUE: Alterations
APPLICANT: James McNeil
LOCATION: 1 Wharf Street
ZONE: W-1/Residential

STAFF RECOMMENDATION: Staff recommends approval of the application as submitted.

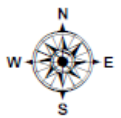
****EXPIRATION OF APPROVALS NOTE:** In accordance with Sections 10-106(B) and 10-206(B) of the Zoning Ordinance, any official Board of Architectural Review approval will expire 12 months from the date of issuance if the work is not commenced and diligently and substantially pursued by the end of that 12-month period.

****BUILDING PERMIT NOTE:** Most projects approved by the Board of Architectural Review require the issuance of one or more construction permits by Building and Fire Code Administration (including signs). The applicant is responsible for obtaining all necessary construction permits after receiving Board of Architectural Review approval. Contact Code Administration, Room 4200, City Hall, 703-838-4360 for further information.



BAR CASE #2009-0151

7/29/2009



I. ISSUE:

The applicant is requesting approval of a Certificate of Appropriateness for four replacement, ground mounted HVAC condensers units to replace four through-the-wall units, at 1 Wharf Street, within the Ford's Landing development. Staff conducted a site visit as part of the analysis and discovered that the units and associated landscaping have already been installed. The previous through-the-wall HVAC units were replaced because three of the four units failed and could not be repaired.

The four new ground mounted units (stacked two high) sit on a concrete slab measuring approximately 14 inches wide by 6 feet long in the same general location as the wall mounted units. Each Carrier Performance Series horizontal condenser measures 1 foot 11 inches by 3 feet 6 inches. The resulting void where the through-the-wall units were located was infilled with a matching brick. Evergreen shrubs have been installed to screen the condensers.

The HVAC units are partially visible from Wharf Street with the development, as well as from the boardwalk which runs adjacent to the Potomac River. The boardwalk is approximately six feet below the subject property in this location.

The applicant has received support from the Ford's Landing Home Owners' Association for this application. A letter of support was provided by the applicant.

II. HISTORY:

The brick townhouse at 1 Wharf Street is located within the Ford's Landing Development, which was approved by the Board in a series of meetings in 1996 (BAR Case #1996-0030).

The Board approved a similar request for replacement HVAC condensers at 19 Keith's Lane on April 1, 2009 (BAR Case #2009-0036).

III. ANALYSIS:

The proposed alterations comply with the Zoning Ordinance.

On September 5, 2007, the Board approved a matrix of materials that are appropriate for replacement on exterior features within Ford's Landing, to allow administrative review for items that were in conformance with the approved matrix. Since the matrix was adopted, seven applications have been approved by Staff administratively. Replacement HVAC units are not included in the approved materials matrix; therefore the applicant is before the Board for approval of the replacement HVAC condensers.

Since the summer of 2008, Staff has been working with the Ford's Landing Homeowners' Association to seek solutions for the replacement of the through-the-wall HVAC systems currently found on all the units in Ford's Landing. Over the years, many owners have had to replace their units, as a result of how the HVAC units were installed and the high rate of failure. There are a variety of locations on the townhouses where the through-the-wall units were installed, and no two residences appear to be exactly the same. Therefore, the location of HVAC replacement units are being reviewed on a case by case basis. Fortunately, the applicant has adjacent open space to allow for a ground

mounted HVAC units. In Staff's opinion, the new HVAC condensers are located in an ideal location and will be minimally visible from the public right-of-way. While Staff would have preferred that the applicant wait until the BAR approved the project, the end result is acceptable.

IV. STAFF RECOMMENDATION: Staff recommends approval of the application as submitted.

V. CITY DEPARTMENT COMMENTS

Legend: C - code requirement R - recommendation S - suggestion F- finding

Code Administration:

No comments received.

Historic Alexandria:

No comments received.

Transportation and Environmental Services:

F-1 The subject property is located in the 100-year floodplain. The floodplain ordinance requires that all mechanical and electrical equipment be elevated above the Base Flood Elevation (BFE). As-built drawings of Ford's Landing indicate that the lowest floor of the subject property is elevated above the BFE. Therefore, installation of replacement compressor units at an elevation at or above the lowest floor (garage floor) would be in compliance with the floodplain ordinance.

VI. IMAGES

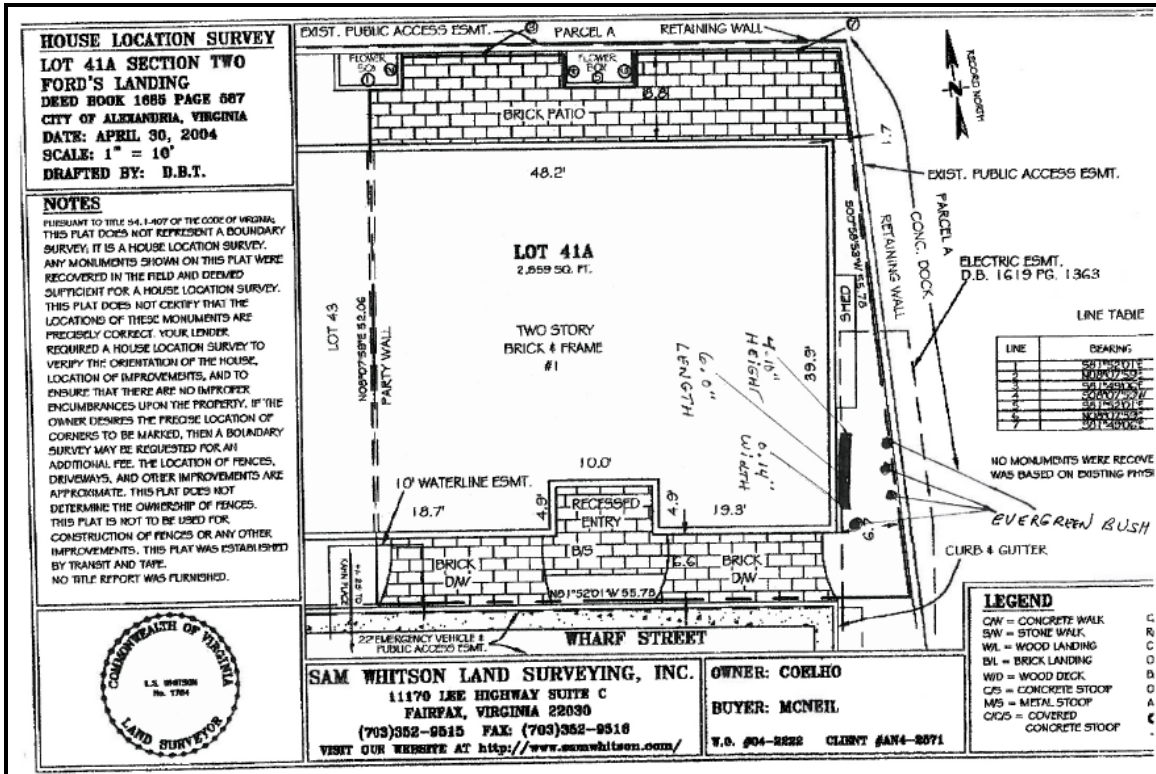


Figure 1: Plat showing HVAC condensers and landscape screening.

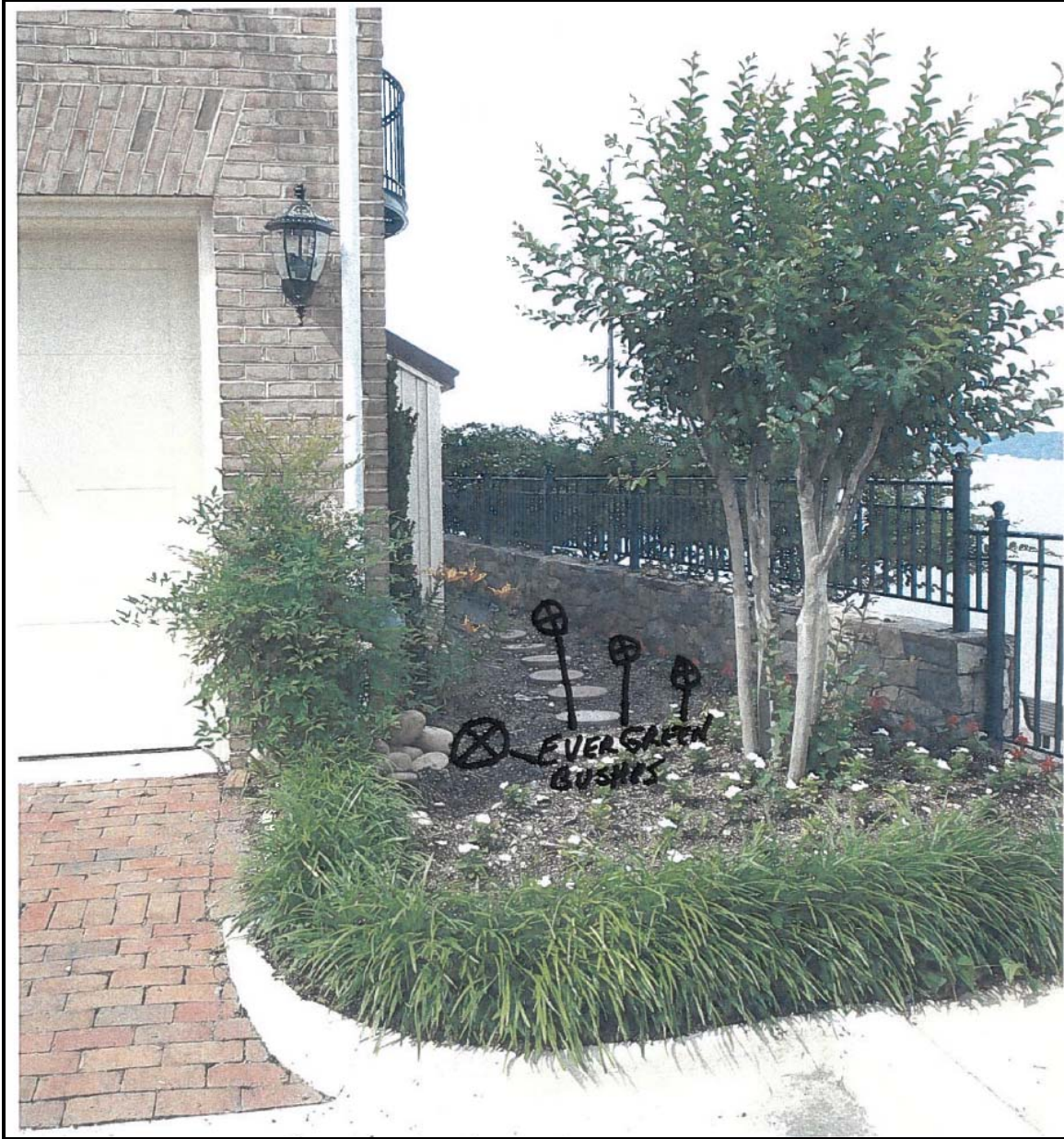


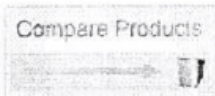
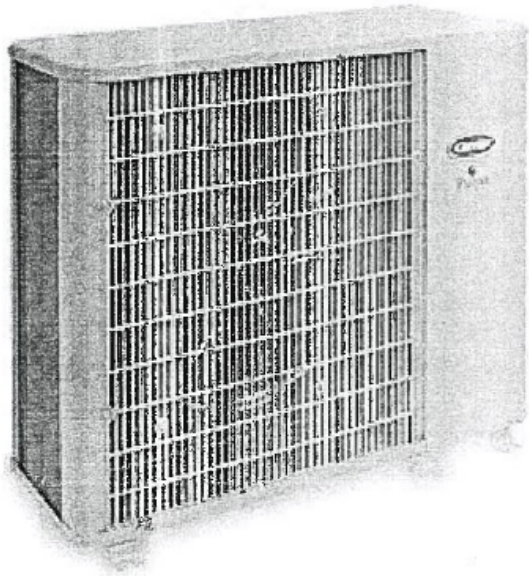
Figure 2: Photo showing location of landscaping prior to installation.



Figure 3: Photo taken from the boardwalk below showing the through-the-wall HVAC units.

Performance Series Compact Air Conditioner

Models: 38HDR



Compact Unit Fits Tight Spaces For Many Installation Options

The small footprint of the Compact Central Air Conditioner lets you install it as close as six inches away from your home, or place it on a roof or deck. And we engineered it with the advanced efficiency you expect, with up to 15 SEER rating.

- Ratings
- [Redacted] Energy Efficiency
- [Redacted] Quiet Level
- [Redacted] Durability

Figure 4: HVAC condenser specifications.

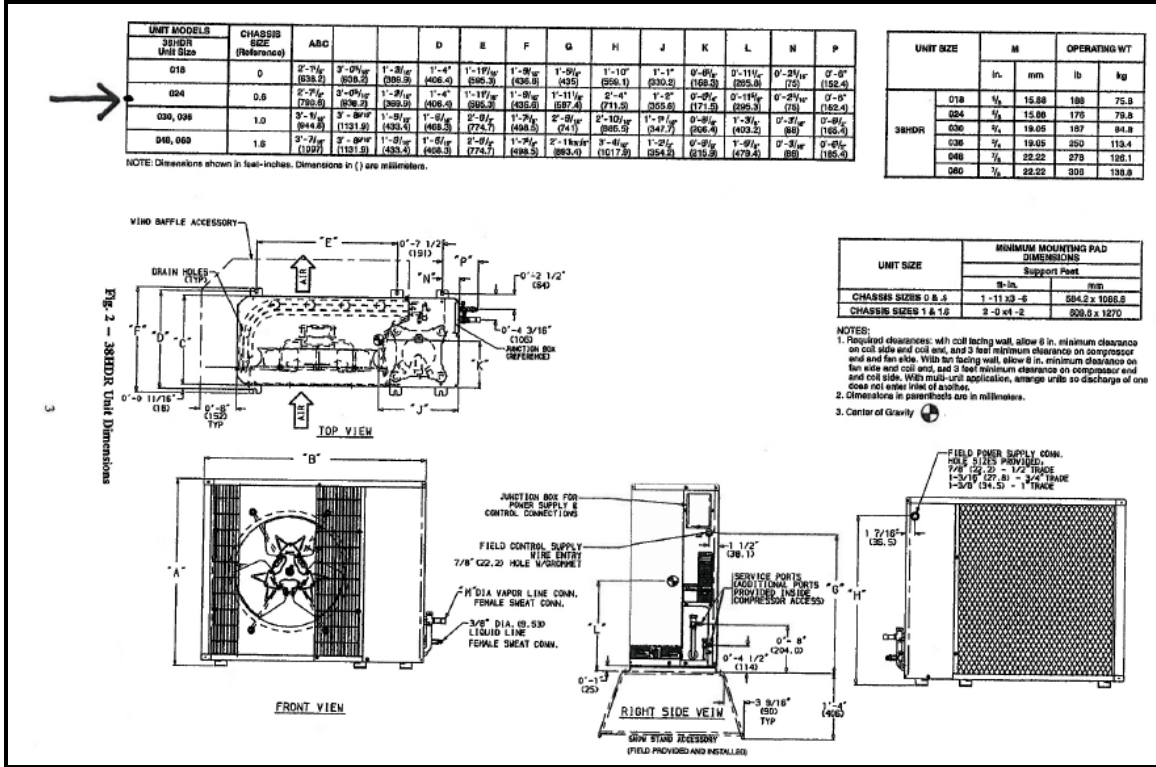


Figure 5: HVAC condenser specifications.

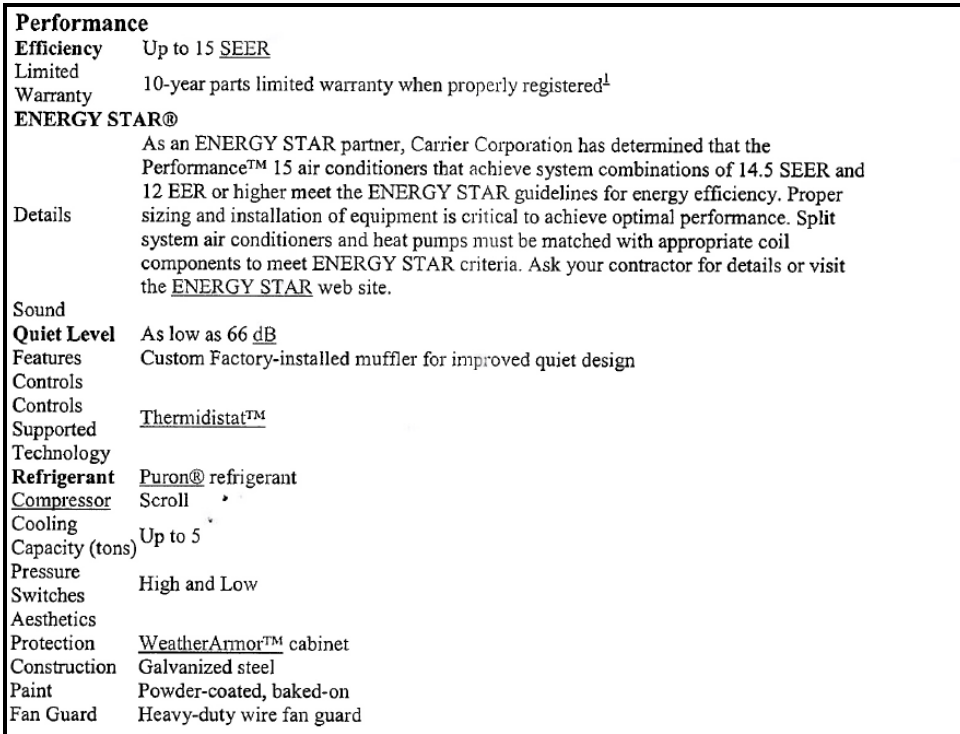


Figure 6: HVAC condenser specifications.

Table 3 — 38HDR Electrical Data

38HDR UNIT SIZE	V-PH-Hz	VOLTAGE RANGE*		COMPRESSOR		OUTDOOR FAN MOTOR			MIN CKT AMPS	FUSE/HACR BKR AMPS
		Min	Max	RLA	LRA	FLA	NEC Hp	kW Out		
018	208/230-1-60	187	253	10.0	48.0	0.80	0.125	0.09	13.3	20
024	208/230-1-60	187	253	14.3	58.3	0.80	0.125	0.09	18.7	30
030	208/230-1-60	187	253	15.7	64.0	1.45	0.25	0.19	21.1	35
	208/230-1-60	187	253	15.7	77.0	1.45	0.25	0.19	21.1	35
036	208/230-3-60	187	253	10.4	88.0	1.45	0.25	0.19	14.5	20
	460-3-60	414	506	6.3	38.0	0.80	0.25	0.19	8.7	15
048	208/230-1-60	187	253	24.3	117.0	1.45	0.25	0.19	31.8	55
	208/230-3-60	187	253	15.6	83.1	1.45	0.25	0.19	21.0	35
	460-3-60	414	506	6.9	41.0	0.80	0.25	0.19	9.4	15
060	208/230-1-60	187	253	29.4	134.0	1.45	0.25	0.19	38.2	65
	208/230-3-60	187	253	17.8	110.0	1.45	0.25	0.19	23.7	40
	460-3-60	414	506	8.6	52.0	0.80	0.25	0.19	11.6	20

LEGEND

- FLA — Full Load Amps
- HACR — Heating, Air Conditioning, Refrigeration
- LRA — Locked Rotor Amps
- NEC — National Electrical Code
- RLA — Rated Load Amps (Compressor)

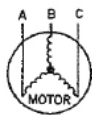
*Permissible limits of the voltage range at which unit will operate satisfactorily.

NOTES:

1. Control circuit is 24 v on all units and requires an external power source.
2. All motors and compressors contain internal overload protection.
3. In compliance with NEC (U.S.A. Standard) requirements for multi-motor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker.
4. Motor RLA values are established in accordance with UL (Underwriters' Laboratories) Standard 465 (U.S.A. Standard).
5. 38HDF,HDR018-030 units are only available in single-phase voltage.
6. **Unbalanced 3-Phase Supply Voltage**
Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percentage of voltage imbalance:

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

EXAMPLE: Supply voltage is 460-3-60.



AB = 452 v
BC = 464 v
AC = 455 v

$$\begin{aligned} \text{Average Voltage} &= \frac{452 + 464 + 455}{3} \\ &= \frac{1371}{3} \\ &= 457 \end{aligned}$$

Determine maximum deviation from average voltage:

- (AB) 457 - 452 = 5 v
- (BC) 464 - 457 = 7 v
- (AC) 457 - 455 = 2 v

Maximum deviation is 7 v.

Determine percentage of voltage imbalance:

$$\begin{aligned} \% \text{ Voltage Imbalance} &= 100 \times \frac{7}{457} \\ &= 1.53\% \end{aligned}$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable of 2%.

IMPORTANT: Contact your local electric utility company immediately if the supply voltage phase imbalance is more than 2%.



Figure 7: HVAC condenser specifications.

Only use factory specified liquid-line filter driers with rated working pressures less than 600 psig.

NOTE: Do not install a suction-line filter drier in liquid line.

MAKE PIPING SWEAT CONNECTIONS — Remove plastic caps from liquid and suction service valves. Use refrigerant grade tubing. Service valves are closed from the factory and are ready for brazing. After wrapping the service valve with a wet cloth, the tubing set can be brazed to the service valve using either silver bearing or non-silver bearing brazing material. Consult local code requirements. Refrigerant tubing and the indoor coil are now ready for leak testing.

NOTE: Unit is shipped with R-410A factory charge indicated on nameplate.

Pass nitrogen or other inert gas through piping while brazing to prevent formation of copper oxide.

⚠ CAUTION

To avoid damage while brazing, service valves should be wrapped with a heat-sinking material such as a wet cloth.

⚠ CAUTION

When brazing tubing sets to the service valves, a brazing shield **MUST** be used to prevent damage to the painted unit surface.

PROVIDE SAFETY RELIEF — A fusible plug is located in unit suction line; do not cap this plug. If local code requires additional safety devices, install as directed.

Table 1A — 38HDF018-036 Physical Data

UNIT 38HDF	018	024	030	036
NOMINAL CAPACITY (Tons)	1.5	2.0	2.50	3.0
OPERATING WEIGHT (lb)	166	176	187	250
REFRIGERANT TYPE	R-410A			
METERING DEVICE	AccuRater (Located at Fan Coil)			
CHARGE (lb)*	4.8	5.3	5.0	7.1
OUTDOOR FAN				
Rpm/Cfm	840/1720	840/1720	840/1720	850/1720
Diameter (in.)	18	18	18	24
No. Blades	3	3	3	3
Motor (hp)	1/8	1/8	1/8	1/4
OUTDOOR COIL				
Face Area (sq ft)	5.82	7.27	7.27	12.1
No. Rows	2	3	3	2
FPI	20	20	20	20
HIGH PRESSURE SWITCH				
Cut-In (psig)	420 ± 25	420 ± 25	420 ± 25	420 ± 25
Cutout (psig)	650 ± 10	650 ± 10	650 ± 10	650 ± 10
LOW PRESSURE SWITCH				
Cut-In (psig)	45 ± 25	45 ± 25	45 ± 25	45 ± 25
Cutout (psig)	20 ± 5	20 ± 5	20 ± 5	20 ± 5
REFRIGERANT LINES				
Connection Type			Sweat	
Liquid Line (in.) OD	3/8	3/8	3/8	3/8
Vapor Line (in.) OD	5/8	5/8	3/4	3/4
Max Length (ft)	200	200	200	200
Max Lift (ft)	85	65	65	65
Max Drop (ft)	150	150	150	150
COMPRESSOR				
Type			Scroll	
Model	ZP16K5E-PFV	ZP21K5E-PFV	ZP25K5E-PFV	ZP34K5P-PFV
Oil Charge (POE - oz)	25.0	25.0	25.0	42.0
Accumulator			Yes	
CONTROLS				
Fusible Plug (F)			210	
Control Voltage†			24 vac	
System Voltage	208/230 v	208/230 v	208/230 v	208/230 v, Single and 3 Phase, 460 v, 3 Phase
FINISH	Gray			

LEGEND
FPI — Fins Per Inch
POE — Polyol Ester



*Unit shipped with full factory charge. See ARI (Air Conditioning and Refrigeration Institute) capacity table for proper charge and piston for each fan coil type.
†24 v and a minimum of 40 va is provided in the fan coil unit.

Figure 8: HVAC condenser specifications.

Efficiency

Seasonal Energy Efficiency Ratio or SEER number and Heating Seasonal Performance Factor or HSPF are like gas mileage. The higher the rating, the more efficient the automobile or system is.

- The Performance™ Series Horizontal air conditioner and heat pump are available with efficiency ratings starting at 13.0 SEER.
- The Performance™ Series Horizontal heat pump also delivers an efficiency rating starting at 7.7 HSPF.

UP TO
150
SEER
RATING

As an ENERGY STAR® partner, Carrier Corporation has determined that the Performance™ Series Horizontal air conditioners and heat pumps that achieve 14.0 SEER, 11.5 EER and 8.2 HSPF or higher meet the ENERGY STAR guidelines for energy efficiency.



Things to Consider Before You Buy

Puron® Refrigerant

Puron® refrigerant is environmentally sound and won't deplete the ozone layer. Carrier introduced Puron® refrigerant a full six years ahead of the competition, paving the way for the future. The Clean Air Act of 1990 prohibits the production of HCFC-based air conditioners and heat pumps by 2010, and bans Freon®-22* production by 2020. As Freon® production reduces, its cost is predicted to increase. Freon®-12 in



the automotive industry increased by a whopping 800% in a short seven years! Ensure your cooling costs by investing in systems with Puron® refrigerant — the environmentally sound, efficient and dependable refrigerant designed for the future. Carrier's Performance™ Series Horizontal air conditioner and heat pump deliver excellent efficiency, reliability and proven performance.

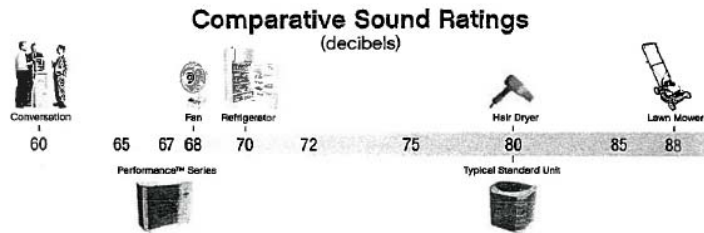
Space-Saving Design

Carrier specializes in creating a customized home comfort system tailored to your needs with our broad selection of residential heating and cooling products. Your Carrier dealer can help you choose the best system for your home including Carrier-exclusive features that further enhance your indoor environment. When installation space is limited and quiet operation is a must, Carrier's Performance™ Series Horizontal air conditioner or heat pump is a perfect fit for your comfort.

- The Performance Series Horizontal offers a unique front-to-back airflow design that allows us to make the product more compact so it takes up less space in your yard than any other whole-house air conditioner or heat pump.
- For larger living spaces or zoned comfort, the Performance Series Horizontal can be stacked with a second unit while still maintaining a compact footprint and taking minimal space outside your home.
- Our unique airflow design and compact size allows this product to be installed on a roof, under a deck, on a balcony, on an outside wall or other locations. It can be installed as close as six inches to your home without disturbing shrubs or blowing across property lines.
- 13.0 SEER cooling performance easily provides exceptional efficiency compared to older, less efficient models you may be replacing.

Sound

When you're at home, there's nothing like a little peace and quiet to help you relax and enjoy the comfort. Carrier's Performance™ Series Horizontal air conditioner and heat pump offers extra-quiet comfort as low as 67dBA.



* Freon is a registered trademark of E. I. DuPont de Nemours & Co.

Figure 9: HVAC condenser specifications.