

March 13, 2023

WORLEY TERRACE HVAC REPLACEMENT

We are requesting your proposal to replace 77 existing heat pumps, air handling and thermostats

EXISTING SYSTEM DESCRIPTION

The existing heat pump units are located on rails located on the roof and are bolted down to the rails. The refrigerant lines are in good condition and will need to be flushed and pressure tested.

The air handling units are located in each tenant space and will need to be scheduled with the property management for replacement.

PROPOSED EQUIPMENT

See attached specifications for equipment details. See attached matrix for units to be replaced. See below for equipment parameters:

Heat Pump:

Basis of design: Bryant

Model # 215BNA018

Size 1.5 Ton

Provide equipment identification label on unit per specifications

R410a refrigerant

Energy star ≥ 8.5 HSPF/ ≥ 15 SEER/ ≥ 12.5 EER

Air Handling Unit

Bryant FX4DNF019L

Provide with 6 kw strip heat

(5kw if 6 is not available)

Provide new TXV

Provide with delay timer per specifications

Digital 7-day programmable heat pump thermostat

SCOPE OF WORK

1. Furnish all labor, materials, tools, incidentals and details necessary to replace the systems noted above in Proposed equipment.
3. The contractor shall maintain a clean work environment to minimize disruption.
4. Any removed items shall be disposed of offsite by the contractor.
5. The mechanical contractor is responsible for all defects, repairs and replacements in materials,

- parts and workmanship, for a period of one (1) year after final payment is approved. All new equipment shall be warranted by the factory for a minimum of 5 years.
6. Provide start-up and functional testing of each piece of equipment. The unit manufacturers shall provide training for the building's maintenance staff by specially qualified personnel.
 7. All existing refrigerant lines bus be flushed with RX11 flushing kit by Nu-Calgon.
 8. Pressure test existing refrigerant lines with nitrogen at 375 PSI but not more than 400 psi. must hold for 30 minutes with zero pressure drop.
 9. Labels for heat pumps shall be 1/16" thick laminated plastic nameplates or 0.020" thick aluminum nameplates. Background shall be black with 3/16" letters engraved on the face. Letters shall be white. Labels to be approved by A/E.
 10. Replace existing circuit breaker/fuse with new circuit breaker/fuse to protect new heat pump. Circuit breaker/fuse sizes per manufacturer.
 11. See attached specifications for heat pump, evaporator coil and accessories.
 12. Protection of roof to be per means and methods of contractor to protect roof from any damage during construction.
 13. Phasing to be coordinated with owner for installation of heat pump and air handling unit assembly in apartment units.
 14. Provide submittals for heat pump, air handling unit, thermostat and circuit breaker/fuse to A/E for review and approval.
 15. For all 77 units at Worley Terrace: Supply air and Return air ductwork shall be cleaned by a NADCA member using a source removal method of cleaning to place the system under negative pressure to remove all dust and debris in the interior surfaces of the ductwork. Cut a hole in the plenum for suction, cover opening with 10"x10" sheet metal and write on cover "Duct Cleaned" also write date duct was cleaned on cover. When repairing any ductwork, clean outside of ductwork for proper caulking adhesion. NADCA Member must have a minimum of 5 years experience.

END OF REQUEST FOR PROPOSAL

Attached specifications:

07 01 50 Maintenance of Membrane Roofing

23 54 13 Split System Air Handling Units

23 62 14 Air cooled Heat Pumps

Matrix for proposed replacement units:

SECTION 07 01 50

MAINTENANCE OF MEMBRANE ROOFING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Provide elastomeric sheet roofing modifications as required to flash new roof mounted equipment curbs as shown and specified. Work includes:
 - 1. EPDM sheet roofing.
 - 2. Insulation.
 - 3. Wood blocking.
 - 4. Flashing and roofing accessories.
- B. Protect building and existing roofing to remain from damage or soiling from reroofing operations.
- C. Limit construction loads on existing roof areas to remain, and existing roof areas scheduled to be modified for rooftop equipment wheel loads and for uniformly distributed loads.

1.02 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced roofing installer approved or licensed by roofing materials manufacturer and with not less than five (5) years of successful experience installing elastomeric sheet roofing systems similar to those required for this project.
- B. All work and materials must be coordinated with the Owners roofing Representative to retain the current warranty. The Owner can provide information regarding the existing roof warranty.
- C. Preliminary Roofing Conference: Before starting removal Work, conduct conference at Project site. Meet with Owner, Architect, Owner's representative, roofing Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
 - 1. Review methods and procedures related to roofing modifications
 - 2. Review methods and materials protection of building and existing roofing to remain from damage or soiling from reroofing operations.
- D. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit Work to proceed without water entering existing roofing system or building.

1.03 SUBMITTALS

- A. Product Data: Submit for all items.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in manufacturer's original, unopened, undamaged, labeled bundles or containers.
- B. Store roofing materials, insulation and accessories at the site in storage trailers or the building in a dry, well-ventilated, weather tight place. Exterior storage not permitted. Comply with manufacturer's recommendations for handling and protection during installation.
 - 1. Handle rolled goods to prevent damage to edge or ends.
 - 2. Do not apply roofing materials to damp, frozen, dirty or dusty substrate surfaces.
- C. Protection
 - 1. Protect adjacent materials and surfaces from damage and soiling during roofing system installation.
 - 2. Provide special protection or avoid heavy traffic on completed roofing work.
 - 3. Protect paving and structure walls adjacent to hoists before starting work.
 - 4. Do not overload the building structure with storage of materials or installation equipment on the substrate decking.
 - 5. Handle and store materials and equipment to avoid damage to substrate decking.
- D. Insulation Compatibility: Types of roof membrane and roof insulation selected for use shall be compatible as determined by roof membrane manufacturer. If a separation board or sheet is required, the cost shall be included in the bid.

1.05 PROJECT CONDITIONS

- A. Environmental Conditions: Install roofing only when satisfactory conditions prevail.

1.06 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during roofing modifications, by methods and with materials so as not to void existing roofing system warranty issued.
 - 1. Notify warrantor before proceeding with the Work.
 - 2. Notify warrantor of existing roofing system on completion of reroofing, and obtain documentation verifying that existing roofing system has been inspected and warranty remains in effect.

PART 2 PRODUCTS

2.01 MEMBRANE ROOFING

- A. Manufacturers: GENFLEX; CARLISLE SYNTEC SYSTEMS; VERSICO INC., FIRESTONE: GAF; MULE HIDE.
- B. Materials and Components
 - 1. Elastomeric Sheet Roofing System: Elastomeric, EPDM, single-ply membrane.
 - 2. Elastomeric Sheet Membrane: EPDM, single-ply membrane formed into flexible sheets, not less than 60 mils (.060") thick, complying with the manufacturer's published properties.
 - 3. Flashing: 60 mil (.060") thick uncured neoprene sheet flashing of required shapes and sizes to suit project conditions; furnished by the manufacturer of the sheet roofing membrane.
 - 4. Bonding Adhesive: Type recommended by sheet material manufacturer for membrane, substrate and project conditions indicated. Compatible with membrane and substrate and formulated to withstand minimum 60 psf uplift force.
 - 5. Splicing Cement, Splice Wash, Lap Sealant and Waterstop Mastic: Sheet material manufacturer's recommended materials for waterproof sealing of seams in membrane and waterproof sealing of joints between flashings and roofing membrane, adjoining surfaces, projections and penetrations through the roofing membrane. Compatible with materials with which it is used.
 - 6. Pipe Seals: Site fabricated pipe seals.
 - 7. Roofing Nails: Galvanized or non-ferrous type, size required to suit application. Provide industry standard type for single-ply elastomeric sheet roofing system work, compatible with deck type and roofing products used.
 - 8. Auxiliary Roofing Materials: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

2.02 INSULATION

- A. Type: Extruded polystyrene conforming to ASTM C578-87, Type IV, 25 psi, 1.6 pounds pcf.
- B. Manufacturer: DOW CHEMICAL; OWENS CORNING; DIVERSIFOAM PRODUCTS.
- C. Thickness: Match existing.
- D. Mechanical Fasteners or Adhesive: As recommended by roofing manufacturer.

2.03 MISCELLENEOUS

- A. Coverboard: Provide one of the following:
 - 1. ½” glass-mat, water-resistant gypsum substrate, primed surface; ASTM C1177,. Dens-Deck by GEORGIA-PACIFIC, Secure Rock Roof Deck by USG, GlasRoc Roof Board by CERTAINTEED.
 - 2. ½” ASTM C 1289 Type II, Class 4, Grade 2, polyisocyanurate with coated glass facer. Minimum compressive strength of 120 psi. FIRESTONE Isogard or equal.
 - 3. Adhered Roofing and Parapet Walls: ½” ASTM C1177 with face mat enhancement to allow adhesives to bond uniformly.
 - a. Manufacturers GEORGIA-PACIFIC Dens-Deck Prime with EONIC Technology or equal by above coverboard manufacturers.
 - b. Water Absorption (ASTM C473): Less than 5 percent of weight.
 - c. Surface Water Absorption (ASTM C473): Nominal 1.0 grams.
- B. Provide adhesives as recommended by insulation manufacturer for substrates encountered.
- C. Mechanical fasteners for attachment of insulation to decking shall be approved by the insulation manufacturer for the system specified.
 - 1. The same brand fastener is to be used throughout the roof system.
 - 2. Number of fasteners and layout will be as recommended by the manufacturer and as per FM Approval Guide for the specified wind uplift.
 - 3. Length of fastener shall be determined by the thickness of the decking and any fill, and will vary in thickness of the insulation. Fasteners shall be of length to achieve a minimum of 1-inch penetration. Mechanical fasteners for attachment of Insulation
- D. Crickets (Tapered Insulation): Provide tapered insulation crickets sloped approximately ½” per foot. Locate and arrange as indicated on drawings or as required to divert water at rooftop equipment or vertical obstructions.

PART 3 EXECUTION

3.01 INSPECTION

- A. Examine substrates and installation conditions. Do not proceed with elastomeric sheet roofing work until unsatisfactory conditions have been corrected.
- B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.02 PREPARATION

- A. Examine substrate surfaces for adequate anchorage, foreign materials, moisture and unevenness that would prevent the execution of roofing system specified.
- B. Correct unsatisfactory conditions before starting roofing. Roof deck surface conditions shall comply with manufacturer's requirements and be acceptable to the

roofing system installer.

- C. Protect other work from spillage of roofing materials. Repair or replace other work damaged by installation of the elastomeric membrane roofing system work.

3.03 INSTALLATION

A. Insulation

1. Replace insulation at areas where roof openings are being cut and existing insulation is damaged.
2. Loose lay insulation on deck or use approved fasteners at spacings recommended by insulation and membrane manufacturers.
3. Tightly butt all insulation and joints. Fill joints wider than 1/8" as recommended by roofing manufacturer.

- B. Wood Blocking: Provide around entire perimeter of roof opening; full thickness of insulation. Blocking to be pressure treated.

- C. Existing Roof Membrane Tie-In: Existing roof membrane is an EPDM type.

1. Clean and prepare existing roof membrane as recommended by membrane manufacturer to receive membrane flashing.
2. Lap existing membrane with new membrane and flash for a water tight joint.

- D. General flashing details for roof penetrations, vertical projections and roof perimeters shall comply with roofing material manufacturer's standard details and recommendations for flashings.

3.04 CLEANING AND PROTECTION

- A. Patch installations by other trades and make all necessary repairs as required.
- B. Upon completion of roofing work, clean drains of foreign materials and aggregate and remove all debris and surplus materials.
- C. Protect finished roof areas from foot traffic and construction damage until final acceptance.

END OF SECTION

SECTION 23 54 13

SPLIT SYSTEM AIR HANDLING UNITS

PART 1 GENERAL

1.01 REFERENCE

1.02 SCOPE

- A. Units must comply with ASHRAE 90.1-2007 in regards to COP, EER, etc.
- B. Units shall meet all UL and NEC requirements and bear UL label.
- C. Units shall be AHRI certified and rated for operation with the outdoor heat pumps units.

PART 2 PRODUCTS

- 2.01 Air handling units shall be Bryant FMA4X as indicated on the drawings, complete with cooling coil, electric heating coil, condensate drain pan and centrifugal blower. Provide ductwork extension/transition for supply and return duct connections.
- 2.02 Blower wheels shall be centrifugal, forward curved, direct drive type and dynamically balanced for smooth, quiet operation. Motors shall be high efficiency, X13, electronic commutation type (ECM) motors with built-in overload protection and sleeve bearings. Motor speeds shall be easily selected via motor terminals.
- 2.03 Evaporator coils shall be high efficiency direct expansion type with rifled copper tubes and enhanced aluminum fins. Coils shall be designed for application with the air handling units and certified for use with the outdoor air cooled condensing units. Each coil shall be factory tested at 500 psig. Coils shall be leak tested, dehydrated and shipped with a refrigerant, helium or nitrogen holding charge. Liquid-line Schrader valves shall be provided.
- 2.04 All drain pans shall include both primary and secondary drain connections. Provide overflow switch for secondary drain to shut down unit if primary drain pan is clogged.
- 2.05 UL approved electric heat modules shall be furnished with each unit. Electric heater elements shall be constructed of heavy-duty nickel chromium elements internally connected on 208 volt, single phase. Each 208 volt heater shall have pilot duty with secondary backup fuse links for automatic reset of high limit controls.
- 2.06 Cabinets shall be manufactured of heavy gauge galvanized steel with painted panels. The interior of the cabinets shall be completely insulated with a minimum of ½" insulation for thermal and acoustical treatment. The maximum cabinet height for apartment unit air handling units shall not exceed 43.5".
- 2.07 Each unit shall have an integral filter rack capable of housing 1" thick filters.

- 2.09 Units shall be furnished with a single-point electric power connection and terminal strip connections. All units shall be furnished with a disconnect.
- 2.10 Provide a digital electronic, 7 day programmable, manual changeover, hard wired thermostat with backlit display and a built-in cycle protector. Thermostats shall be suitable for use with heat pump systems with backup electric resistance heat. Thermostats for common area systems shall have auto-changeover capability.
- 2.11 A non-bleed type thermal expansion valve for refrigerant R-410A shall be provided for each unit. TXVs may be factory or field installed kits. If field installed type TXVs are provided, the HVAC Contractor shall install the TXV kits per the manufacturer's instructions.
- 2.12 Provide a five-year limited parts warranty on the complete unit, including the electric heaters. Provide a one-year labor warranty for the complete unit.
- 2.13 Basis of design manufacturer is Bryant. Equivalent units by Trane, Comfortmaker, **Daikin** or York/Johnson Controls, meeting all specified requirements (including scheduled efficiencies) may be furnished at the Contractor's option.

PART 3 EXECUTION

- 3.01 The HVAC Contractor shall furnish and install 1" filters for each unit.
- 3.02 Provide necessary liquid and suction refrigerant piping connections between evaporator and heat pump units.
- 3.03 All existing refrigerant lines bus be flushed with RX11 flushing kit by Nu-Calgon.
- 3.04 Pressure test existing refrigerant lines with nitrogen at 375 PSI but not more than 400 psi. must hold for 30 minutes with zero pressure drop.
- 3.05 Breakers/fuses and power wiring by the Electrical Contractor. All control wiring and 120 volt wiring required for accessories shall be by this Contractor.
- 3.06 Replace existing circuit breaker/fuse with new circuit breaker/fuse to protect new air handling unit. Circuit breaker/fuse sizes per manufacturer.

END OF SECTION

SECTION 23 62 14

AIR COOLED HEAT PUMPS

PART 1 GENERAL

1.01 REFERENCE

1.02 SCOPE

- A. Furnish and install air-cooled heat pumps with arrangement and capacities as noted in proposed equipment documentation.
- B. Units shall be completely weatherproofed for installation outside.
- C. Units shall be AHRI certified and rated for operation with the split system air handling units.

PART 2 PRODUCTS

- 2.01 Units shall be Bryant Heat Pump model 215BNA018 15 SEER, Energy Star, designed for use with Refrigerant R-410A.
- 2.02 Compressor: Hermetically sealed scroll type with internal rubber vibration isolators, rubber-in-shear mounts and multi-state muffling. Compressor motor shall be provided with internal temperature and current sensitive overloads and a compressor terminal plug.
- 2.03 Condenser Coil: Copper tube, aluminum fin coils, mechanically bonded, sub-cooling circuit with liquid accumulator, coil guard.
- 2.04 Condenser Fans: Propeller fans, direct drive, vertical discharge, permanently lubricated motor bearings, zinc-plated steel fan blades and hub, fan guards. Fan blades shall be statically and dynamically balanced. Shafts shall be corrosion resistant. Condenser fan openings shall be equipped with coated steel wire safety guards.
- 2.05 Fan Motors: 1100 RPM, single phase, totally enclosed, built-in thermal overload protection, permanently lubricated motor bearings.
- 2.06 Casing: Fabricated of galvanized steel with unit drain holes. Zinc plated fan guard. All screws shall also be coated for a long lasting, rust resistant quality appearance. Cabinet shall be bonderized and coated with a powder coat paint. A heat pump style drain pan shall be provided for easy removal of water, dirt and leaves.
- 2.07 Refrigeration Components: Refrigeration circuit components shall include a refrigerant reversing valve, accumulator, liquid line shutoff valve with sweat connections, vapor line shutoff valve with sweat connections, system charge of Puron (R-410A) refrigerant, and compressor oil. Unit shall be equipped with a high pressure switch, low pressure switch and filter drier for Puron refrigerant.

- 2.08 General: Service valves shall be re-usable brass type with sweat connections. Valves shall be externally located so refrigerant tube connections can be made quickly and easily. Each valve shall have a service port for ease of checking operating refrigerant pressures. Provide a factory installed liquid line filter dryer.
- 2.09 Provide a five-year limited parts warranty on the complete unit, a five-year limited parts warranty for the compressor and a one-year labor warranty for the complete unit.
- 2.10 Furnish all units with hard start kit, low temperature cut out and crankcase heater.
- 2.11 If anti-short-cycle capabilities are not built-in to the thermostats, the condensing units must be furnished with a five-minute off-cycle timer.
- 2.12 Basis of design manufacturer is Bryant. Equivalent units by Comfortmaker, Trane, **Daikin**, or York/Johnson Controls, meeting all specified requirements (including scheduled efficiencies) may be furnished at the Contractor's option.

PART 3 EXECUTION

- 3.01 Install roof mounted units on existing rails, bolt heat pump to existing rails. Provide neoprene rubber bearing pads stacked between the rails and the condensing units at 4 locations. Minimum thickness per the neoprene pad manufacturer's recommendations. To level unit, provide additional neoprene pad thickness.
- 3.02 Provide necessary liquid and suction refrigerant piping between air handling unit and heat pumps required for final connections.
- 3.03 Labels for heat pumps shall be 1/16" thick laminated plastic nameplates or 0.020" thick aluminum nameplates. Background shall be black with 3/16" letters engraved on the face. Letters shall be white. Labels to be approved by A/E.
- 3.04 Breakers/fuses and power wiring by the Electrical Contractor. All control wiring and 120 volt wiring required for accessories shall be by this Contractor.
- 3.05 Replace existing circuit breaker/fuse with new circuit breaker/fuse to protect new heat pump. Circuit breaker/fuse sizes per manufacturer.

END OF SECTION 23 62 14

Worley Terrace

A/C Cond	Roof Area	Apt No,	Manuf	Year	Replacement
1	A	138	Lennox	2007	1
2	A	238	Lennox	2007	2
3	A	338	Lennox	2007	3
4	A	136	Lennox	2007	4
5	A	236	Lennox	2007	5
6	A	336	Lennox	2007	6
7	A	134	Payne	2018	
8	A	234	Payne	2022	
9	A	334	Lennox	2007	7
10	A	133	Lennox	2007	8
11	A	233	Lennox	2007	9
12	A	333	Lennox	2007	10
13	A	137	Payne	2018	
14	A	237	Lennox	2007	11
15	A	337	Lennox	2007	12
16	A	135	Goodman	2014	
17	A	235	Lennox	2007	13
18	A	335	Amana	2018	
19	B	329	Lennox	2007	14
20	B	229	Lennox	2007	15
21	B	129	Lennox	2007	16
22	B	327	Lennox	2007	17
23	B	227	Lennox	2007	18
24	B	-	Carrier	-	
25	B	331	Lennox	2007	19
26	B	231	Lennox	2007	20
27	B	131	Bryant	2020	
28	B	332	Lennox	2007	21
29	B	232	Lennox	2007	22
30	B	132	Bryant	2020	
31	C	126	Lennox	2007	23
32	C	226	Lennox	2007	24
33	C	326	Lennox	2007	25
34	C	122	Bryant	2020	
35	C	222	Lennox	2007	26
36	C	322	Lennox	2007	27
37	C	353	Lennox	2007	28
38	C	124	Lennox	2007	29
39	C	224	Bryant	2020	
40	C	324	Lennox	2007	30
41	C	220	Lennox	2007	31
42	C	320	Lennox	2007	32
43	C	125	Lennox	2007	33
44	C	225	Lennox	2007	34
45	C	325	Lennox	2007	35
46	C	123	Lennox	2007	36
47	C	223	Lennox	2007	37
48	C	323	Payne	2017	
49	C	351	Lennox	2007	38
50	C	319	Bryant	2021	

A/C Cond	Roof Area	Apt No,	Manuf	Year	Replacement
51	C	219	Lennox	2007	39
52	C	251	Lennox	2007	40
53	C	121	Lennox	2007	41
54	C	221	Lennox	2007	42
55	C	321	Bryant	2018	
56	D	166	Lennox	2007	43
57	D	163	Lennox	2007	44
58	E	102	Lennox	2007	45
59	E	202	Goodman	2014	
60	E	302	Payne	2021	
61	E	104	Bryant	2022	
62	E	204	Lennox	2007	46
63	E	304	Payne	2018	
64	E	106	Bryant	2020	
65	E	206	Bryant	2021	
66	E	306	Lennox	2007	47
67	E	201	Lennox	2007	48
68	E	303	Lennox	2007	49
69	E	203	Payne	2022	
70	E	105	Lennox	2007	50
71	E	205	Payne	2022	
72	E	305	Lennox	2007	51
73	E	103	Lennox	2007	52
74	E	301	Payne	2021	
75	E	101	Lennox	2007	53
76	F	-	Carrier	2007	
77	F	207	Payne	2018	
78	F	307	Lennox	2007	54
79	F	109	Lennox	2007	55
80	F	209	Lennox	2007	56
81	F	309	Lennox	2007	57
82	F	112	Lennox	2007	58
83	F	212	Payne	2018	
84	F	312	Lennox	2007	59
85	F	111	Lennox	2007	60
86	F	211	Lennox	2007	61
87	F	311	Payne	2018	
88	G	118	Payne	2018	
89	G	218	Lennox	2007	62
90	G	318	Bryant	2020	
91	G	116	Lennox	2007	63
92	G	216	Lennox	2007	64
93	G	316	Lennox	2007	65
94	G	114	Lennox	2007	66
95	G	214	Payne	2017	
96	G	314	Bryant	2020	
97	G	113	Payne	2018	
98	G	213	Lennox	2007	67
99	G	313	Lennox	2007	68
100	G	117	Payne	2022	

A/C Cond	Roof Area	Apt No,	Manuf	Year	Replacement
101	G	217	Lennox	2007	69
102	G	317	Lennox	2007	70
103	G	115	Lennox	2007	71
104	G	215	Lennox	2007	72
105	G	315	Lennox	2007	73
106	Outside	293/393	United Tech	2007	
107	Outside	150	Lennox	2007	74
108	Outside	154	Lennox	2007	75
109	Outside	159	Payne	2018	
110	Outside	150	Lennox	2007	76
111	Outside	165	Lennox	2007	77
112	Outside	163	Carrier	2018	
113	Outside	166	Carrier	2018	
114	Outside	283/383	United Tech	2007	