APPENDIX A

Field Noise Measurement Data Sheets

DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT BEN CLARK TRAINING CENTER PROJECT # 13140
SITE ID
SITE ADDRESS OBSERVER(S) PETE VITAR
START DATE 1/6/21 END DATE
START TIME END TIME

METEOROLOGICAL CONDITIONS
TEMP 68 F HUMIDITY 20 % R.H. WIND (CALM) LIGHT MODERATE
WINDSPD MPH DIR. N NE E SE S SW W NW VARIABLE STEADY GUSTY
SKY (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT PICCOLO SLM P-3 TYPE 1 2 SERIAL # 136927646
CALIBRATOR BSWA CA 114 SERIAL # 490251
CALIBRATION CHECK PRE-TEST dBA SPL POST-TEST dBA SPL WINDSCRN YES

SETTINGS (A-WTD) (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
(ST1) 1-16	10:34	10:49							

COMMENTS
READING TAKEN IN FRONT OF 16888 BUNDY AVE (RESIDENTIAL/DORMS; SOME OFFICES)
PRIMARY NOISE SOURCE IS LIGHT TRAFFIC ON BUNDY AVE; DISTANT NOISE FROM HVAC UNITS FOR DORMS LOCATED APX 150' AWAY FROM METER;

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ASPHALT DIST. TO RDWY C/L OR EOP: APX 25' TO C/L ON BUNDY AVE
TRAFFIC COUNT DURATION: 15 MIN SPEED ___ MIN SPEED

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB	SB/WB	NB/EB	SB/WB	IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE	COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	NB/EB	SB/WB
AUTOS	19									
MED TRKS	0									
HVY TRKS	2									
BUSES	0									
MOTRCLS	0									

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS (BIRDS) DIST. INDUSTRIAL
DIST. KIDS PLAYING (DIST. CONVRSTNS / YELLING) DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: 10:49 - FIRE TRUCK IDLING IN FRONT OF METER, USING AIR BRAKES;

DESCRIPTION / SKETCH
TERRAIN HARD SOFT (MIXED) FLAT OTHER:
PHOTOS 9786; 9787; 9788; 9789; 9790; 9791; 9792
OTHER COMMENTS / SKETCH

DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT: BEN CLARK TRAINING CENTER — PROJECT #: 13140
SITE ID:
SITE ADDRESS: — OBSERVER(S): PETE VITAR
START DATE: 1/6/21 — END DATE:
START TIME: — END TIME:

METEOROLOGICAL CONDITIONS
TEMP: 70 F — HUMIDITY: 20 % R.H. — WIND: (CALM) LIGHT MODERATE
WINDSPD: MPH — DIR. N NE E SE S SW W NW — VARIABLE STEADY GUSTY
SKY: (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT: PICCOLO SLM P-3 — TYPE 1 2 — SERIAL #: 136927646
CALIBRATOR: BSWA CA 114 — SERIAL #: 490151
CALIBRATION CHECK — PRE-TEST: ____ dBA SPL — POST-TEST: ____ dBA SPL — WINDSCRN: YES

SETTINGS: (A-WTD) (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
(ST2) 17-32	11:03	11:18							

COMMENTS
READING TAKEN IN FRONT OF 16958 BUNDY AVE (RESIDENTIAL/DORMS); PRIMARY NOISE SOURCE IS DISTANT CONSTRUCTION NOISE [redacted] INTERMITTENT POWER SAW AUDIBLE);

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ASPHALT — DIST. TO RDWY C/L OR EOP: ADJ 45' to C/L on BUNDY AVE
TRAFFIC COUNT DURATION: 15 MIN

COUNT 1 (OR RDWY 1)	DIRECTION	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED
	AUTOS	1			
	MED TRKS	0			
	HVY TRKS	0			
	BUSES	0			
	MOTRCLS	0			

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ✓

COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS (BIRDS) DIST. INDUSTRIAL
DIST. KIDS PLAYING (DIST. CONVRSTNS / YELLING) DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: DISTANT NOISE OF FIRE DEPT. TRAINING CLASS;

DESCRIPTION / SKETCH
TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: 9794; 9795; 9796; 9797; 9798; 9799, 9800
OTHER COMMENTS / SKETCH

DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT: BEN CLARK TRAINING CENTER — PROJECT #: 13140
SITE ID:
SITE ADDRESS:
OBSERVER(S): PETE VITAR
START DATE: 1/6/21 — END DATE:
START TIME: — END TIME:

METEOROLOGICAL CONDITIONS
TEMP: 69 F — HUMIDITY: 20 % R.H. — WIND: CALM (LIGHT) MODERATE
WINDSPD: 5 MPH — DIR. N NE S SE S SW W NW — VARIABLE STEADY GUSTY
SKY: (SUNNY) (CLEAR) — OVRCAST PRTLY CLDY FOG — RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT: PICCOLO SLM P-3 — TYPE 1 2 — SERIAL #: 136927646
CALIBRATOR: BSWA CA 114 — SERIAL #: 490151
CALIBRATION CHECK — PRE-TEST: ____ dBA SPL — POST-TEST: ____ dBA SPL — WINDSCRN: YES

SETTINGS: (A-WTD) (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
(513) 33-48	11:43	11:58							

COMMENTS
READNG TAKEN AT SE CORNER OF FOULOIS AVE & RYAN ST, IN FRONT OF 2065 FOULOIS AVE (RESIDENTIAL)

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ASPHALT — DIST. TO RDWY C/L OR EOP: APX 12' TO EOP ON FOULOIS AVE
TRAFFIC COUNT DURATION: 15 MIN — SPEED

COUNT 1 (OR RDWY 1)	DIRECTION	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED
	AUTOS	1			
	MED TRKS	0			
	HVY TRKS	0			
	BUSES	0			
	MOTRCLS	1			

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ✓

COUNT 2 (OR RDWY 2)	MIN	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS (BIRDS) DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: PROPELLER PLANE FLYOVER AT 11:47AM;

DESCRIPTION / SKETCH
TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: 9802; 9803; 9804; 9805; 9806; 9807
OTHER COMMENTS / SKETCH

DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT: BEN CLARK TRAINING CENTER — PROJECT #: 13140
SITE ID:
SITE ADDRESS:
OBSERVER(S): PETE VITAR
START DATE: 1/6/21 — END DATE:
START TIME: — END TIME:

METEOROLOGICAL CONDITIONS
TEMP: 73 F — HUMIDITY: 15 % R.H. — WIND: CALM (LIGHT) MODERATE
WINDSPD: 3 MPH — DIR. N NE S SE S SW W NW — VARIABLE STEADY GUSTY
SKY: (SUNNY) (CLEAR) OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS
MEAS. INSTRUMENT: PICCOLO SLM P-3 — TYPE 1 2 — SERIAL #: 136927646
CALIBRATOR: B&W A CA 114 — SERIAL #: 490151
CALIBRATION CHECK — PRE-TEST: ____ dBA SPL — POST-TEST: ____ dBA SPL — WINDSCRN: YES

SETTINGS: (A-WTD) (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC. #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
(ST 4) 49-64	12:17	12:32							

COMMENTS: READING TAKEN ALONG 11TH ST, AT NW CORNR. WITH DALIA ALE; PRIMARY NOISE SOURCE IS TRAFFIC ON 11TH ST; IN FRONT OF MODULAR TRAILER OFFICES

SOURCE INFO AND TRAFFIC COUNTS
PRIMARY NOISE SOURCE: (TRAFFIC) AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: ASPHALT — DIST. TO RDWY C/L OR EOP: APX 60' TO C/L ON 11TH ST

TRAFFIC COUNT DURATION: 15 MIN — SPEED ____ MIN

COUNT 1 (OR RDWY 1)	DIRECTION	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED
	AUTOS	20			
	MED TRKS	0			
	HVY TRKS	0			
	BUSES	0			
	MOTRCLS	1			

IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ✓

COUNT 2 (OR RDWY 2)	NB/EB	SB/WB	NB/EB SPEED	SB/WB SPEED

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): (DIST. AIRCRAFT) RUSTLING LEAVES DIST. BARKING DOGS BIRDS DIST. INDUSTRIAL
DIST. KIDS PLAYING (DIST. CONVRSTNS / YELLING) DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: OCCASIONAL DISTANT SOUND OF VEHICLE BACK-UP ALARMS;

DESCRIPTION / SKETCH
TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: 9809; 9810; 9811; 9812;
OTHER COMMENTS / SKETCH

DUDEK

FIELD NOISE MEASUREMENT DATA

PROJECT: BEN CLARK TRAINING CENTER — PROJECT #: 13140
SITE ID:
SITE ADDRESS: — OBSERVER(S): PETE VITAR
START DATE: 1/6/21 — END DATE:
START TIME: — END TIME:

METEOROLOGICAL CONDITIONS

TEMP: 73 F — HUMIDITY: 15 % R.H. — WIND: CALM (LIGHT) MODERATE
WINDSPD: 3 MPH — DIR. N NE S SE S SW W NW — VARIABLE STEADY GUSTY
SKY: (SUNNY) (CLEAR) — OVRCAST PRTLY CLDY FOG RAIN

ACOUSTIC MEASUREMENTS

MEAS. INSTRUMENT: PICCOLO SLM P-3 — TYPE 1 2 — SERIAL #: 136927646
CALIBRATOR: BSWA CA 114 — SERIAL #: 490151
CALIBRATION CHECK — PRE-TEST: ____ dBA SPL — POST-TEST: ____ dBA SPL — WINDSCRN: YES

SETTINGS: (A-WTD) (SLOW) FAST FRONTAL RANDOM ANSI OTHER:

REC #	BEGIN	END	Leq	Lmax	Lmin	L90	L50	L10	OTHER (SPECIFY METRIC
(STS) 65-80	12:39	12:54							

COMMENTS: READING TAKEN AT SW CORNER OF 12TH ST & DAVIS AVE; PRIMARY NOISE SOURCE IS DISTANT TRAFFIC FROM 11TH ST TO THE SOUTH;

SOURCE INFO AND TRAFFIC COUNTS

PRIMARY NOISE SOURCE: TRAFFIC AIRCRAFT RAIL INDUSTRIAL OTHER:
ROADWAY TYPE: DIRT & GRAVEL — DIST. TO RDWY C/L OR EOP:

TRAFFIC COUNT DURATION: 15 MIN — SPEED: ___ MIN

COUNT 1 (OR RDWY 1) DIRECTION	NB/EB	SB/WB	NB/EB	SB/WB	COUNT 2 (OR RDWY 2) NB/EB	SB/WB	NB/EB	SB/WB
AUTOS								
MED TRKS								
HVY TRKS								
BUSES								
MOTRCLS								

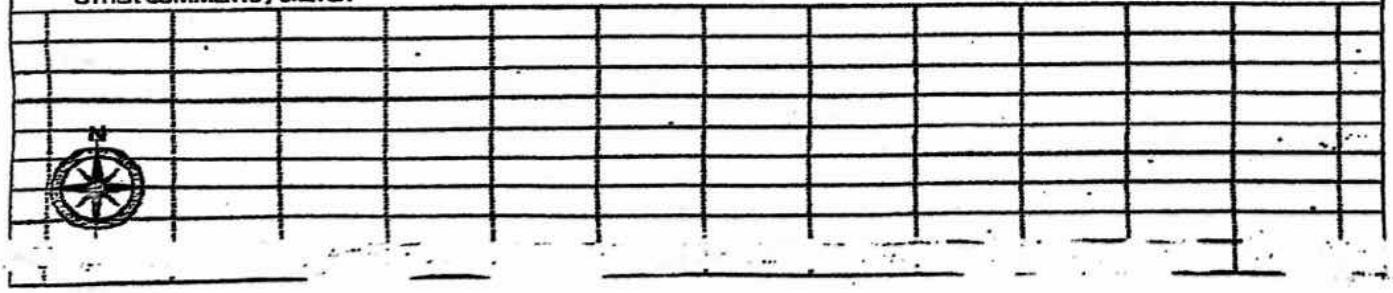
IF COUNTING BOTH DIRECTIONS AS ONE, CHECK HERE ✓

SPEEDS ESTIMATED BY: RADAR / DRIVING THE PACE
POSTED SPEED LIMIT SIGNS SAY:

OTHER NOISE SOURCES (BACKGROUND): DIST. AIRCRAFT RUSTLING LEAVES DIST. BARKING DOGS (BIRDS) DIST. INDUSTRIAL
DIST. KIDS PLAYING DIST. CONVRSTNS / YELLING DIST. TRAFFIC (LIST RDWYS BELOW) DISTD GARDENERS/LANDSCAPING NOISE
OTHER: OCCASIONAL DISTANT SOUND OF VEHICLE BACK-UP ALARMS;

DESCRIPTION / SKETCH

TERRAIN: HARD SOFT (MIXED) FLAT OTHER:
PHOTOS: 9814; 9815; 9816; 9817
OTHER COMMENTS / SKETCH



APPENDIX B

Traffic Noise Modeling
Input and Output

Dudek					**23 February 2021**							
David O					**TNM 2.5**							
INPUT: ROADWAYS							**Average pavement type shall be used unless**					
PROJECT/CONTRACT:	**13140**						**a State highway agency substantiates the use**					
RUN:	**BCTC Existing**						**of a different type with the approval of FHWA**					
Roadway		**Points**										
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**		
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**	
	ft			ft	ft	ft		mph	%			
11 St - West of Bundy Ave	25.0	point11	11	61.3	1,991.6	100.00				Average		
		point8	8	1,686.7	1,984.5	100.00						
11 St - East of Bundy Ave	25.0	point13	13	1,742.2	1,986.6	100.00				Average		
		point2	2	1,977.5	1,982.2	100.00						
Bundy Ave South of 11th St	25.0	point14	14	1,718.3	1,966.6	100.00				Average		
		point6	6	1,708.4	786.3	100.00						
Bundy Ave North of 11th St	50.0	point1	1	2,185.2	2,507.8	100.00				Average		
		point3	3	1,800.3	2,216.9	100.00				Average		
		point4	4	1,739.0	2,133.7	100.00				Average		
		point15	15	1,719.3	2,057.2	100.00				Average		
		point16	16	1,718.4	1,992.8	100.00						

Dudek
David O

23 February 2
TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Percentages

PROJECT/CONTRACT: 13140
RUN: BCTC Existing

Roadway	Points		Segment										
Name	Name	No.	Total	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			Volume	P	S	P	S	P	S	P	S	P	S
			veh/hr	%	mph	%	mph	%	mph	%	mph	%	mph
11 St - West of Bundy Ave	point11	11	86	97	20	2	20	1	20	0	0	0	0
	point8	8											
11 St - East of Bundy Ave	point13	13	53	97	20	2	20	1	20	0	0	0	0
	point2	2											
Bundy Ave South of 11th St	point14	14	86	97	20	2	20	1	20	0	0	0	0
	point6	6											
Bundy Ave North of 11th St	point1	1	165	97	20	2	20	1	20	0	0	0	0
	point3	3	165	97	20	2	20	1	20	0	0	0	0
	point4	4	165	97	20	2	20	1	20	0	0	0	0
	point15	15	165	97	20	2	20	1	20	0	0	0	0
	point16	16											

Dudek
David O

23 February 2021
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 13140
RUN: BCTC Existing

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	2,128.4	1,208.5	100.00	5.00	0.00	66	10.0	8.0	Y
Receiver2	2	1	1,736.8	954.7	100.00	5.00	0.00	66	10.0	8.0	Y

Dudek
David O

23 February 2021
TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: 13140
RUN: BCTC Existing

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per	$ per	Top	Run:Rise	$ per			X	Y	Z	at	Seg Ht	Perturbs		On	Important
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier1	W	0.00	99.99	0.00				0.00	point1	1	1,736.7	1,659.3	100.00	30.00	0.00	0	0		
									point3	3	1,736.7	1,619.4	100.00	30.00	0.00	0	0		
									point4	4	1,957.2	1,614.2	100.00	30.00	0.00	0	0		
									point5	5	1,953.7	1,654.1	100.00	30.00	0.00	0	0		
									point6	6	1,736.7	1,659.3	100.00	30.00					
Barrier1-2-2	W	0.00	99.99	0.00				0.00	point27	27	1,778.4	1,279.1	100.00	25.00	0.00	0	0		
									point13	13	1,781.8	1,161.0	100.00	25.00	0.00	0	0		
									point14	14	1,886.0	1,159.3	100.00	25.00	0.00	0	0		
									point15	15	1,886.0	1,185.3	100.00	25.00	0.00	0	0		
									point16	16	1,901.6	1,188.8	100.00	25.00	0.00	0	0		
									point17	17	1,903.4	1,166.2	100.00	25.00	0.00	0	0		
									point18	18	1,932.9	1,173.2	100.00	25.00	0.00	0	0		
									point19	19	1,929.4	1,240.9	100.00	25.00	0.00	0	0		
									point20	20	1,941.6	1,240.9	100.00	25.00	0.00	0	0		
									point21	21	1,939.8	1,287.8	100.00	25.00	0.00	0	0		
									point22	22	1,906.8	1,287.8	100.00	25.00	0.00	0	0		
									point23	23	1,905.1	1,247.8	100.00	25.00	0.00	0	0		
									point24	24	1,886.0	1,246.1	100.00	25.00	0.00	0	0		
									point25	25	1,886.0	1,280.8	100.00	25.00	0.00	0	0		
									point2	2	1,781.8	1,279.1	100.00	25.00					
Barrier1-2-2	W	0.00	99.99	0.00				0.00	point29	29	1,736.7	1,527.4	100.00	30.00	0.00	0	0		
									point8	8	1,735.0	1,490.9	100.00	30.00	0.00	0	0		
									point9	9	1,957.2	1,484.0	100.00	30.00	0.00	0	0		
									point10	10	1,955.4	1,522.2	100.00	30.00	0.00	0	0		
									point11	11	1,738.4	1,527.4	100.00	30.00					

Dudek
David O
23 February 2021
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 13140
RUN: BCTC Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	30.0	66	30.0	10	----	30.0	0.0	8	-8.0
Receiver2	2	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	2	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Dudek					**23 February 2021**							
David O					**TNM 2.5**							
INPUT: ROADWAYS							**Average pavement type shall be used unless**					
PROJECT/CONTRACT:	**13140**						**a State highway agency substantiates the use**					
RUN:	**BCTC Existing plus Project**						**of a different type with the approval of FHWA**					
Roadway		**Points**										
Name	**Width**	**Name**	**No.**	**Coordinates (pavement)**			**Flow Control**			**Segment**		
				X	**Y**	**Z**	**Control Device**	**Speed Constraint**	**Percent Vehicles Affected**	**Pvmt Type**	**On Struct?**	
	ft			ft	ft	ft		mph	%			
11 St - West of Bundy Ave	25.0	point11	11	61.3	1,991.6	100.00				Average		
		point8	8	1,686.7	1,984.5	100.00						
11 St - East of Bundy Ave	25.0	point13	13	1,742.2	1,986.6	100.00				Average		
		point2	2	1,977.5	1,982.2	100.00						
Bundy Ave South of 11th St	25.0	point14	14	1,718.3	1,966.6	100.00				Average		
		point6	6	1,708.4	786.3	100.00						
Bundy Ave North of 11th St	50.0	point1	1	2,185.2	2,507.8	100.00				Average		
		point3	3	1,800.3	2,216.9	100.00				Average		
		point4	4	1,739.0	2,133.7	100.00				Average		
		point15	15	1,719.3	2,057.2	100.00				Average		
		point16	16	1,718.4	1,992.8	100.00						

Dudek
David O

23 February 2
TNM 2.5

INPUT: TRAFFIC FOR LAeq1h Percentages

PROJECT/CONTRACT: 13140
RUN: BCTC Existing plus Project

Roadway	Points		Segment											
Name	Name	No.	Total	Autos		MTrucks		HTrucks		Buses		Motorcycles	
			Volume	P	S	P	S	P	S	P	S	P	S
			veh/hr	%	mph	%	mph	%	mph	%	mph	%	mph
11 St - West of Bundy Ave	point11	11	186	97	20	2	20	1	20	0	0	0	0
	point8	8											
11 St - East of Bundy Ave	point13	13	53	97	20	2	20	1	20	0	0	0	0
	point2	2											
Bundy Ave South of 11th St	point14	14	86	97	20	2	20	1	20	0	0	0	0
	point6	6											
Bundy Ave North of 11th St	point1	1	265	97	20	2	20	1	20	0	0	0	0
	point3	3	265	97	20	2	20	1	20	0	0	0	0
	point4	4	265	97	20	2	20	1	20	0	0	0	0
	point15	15	265	97	20	2	20	1	20	0	0	0	0
	point16	16											

Dudek
David O

23 February 2021
TNM 2.5

INPUT: RECEIVERS
PROJECT/CONTRACT: 13140
RUN: BCTC Existing plus Project

Receiver Name	No.	#DUs	Coordinates (ground) X	Y	Z	Height above Ground	Input Sound Levels and Criteria: Existing LAeq1h	Impact Criteria LAeq1h	Impact Criteria Sub'l	NR Goal	Active in Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
Receiver1	1	1	2,128.4	1,208.5	100.00	5.00	0.00	66	10.0	8.0	Y
Receiver2	2	1	1,736.8	954.7	100.00	5.00	0.00	66	10.0	8.0	Y

Dudek
David O

23 February 2021
TNM 2.5

INPUT: BARRIERS
PROJECT/CONTRACT: 13140
RUN: BCTC Existing plus Project

Barrier									Points										
Name	Type	Height		If Wall	If Berm			Add'tnl	Name	No.	Coordinates (bottom)			Height	Segment				
		Min	Max	$ per	$ per	Top	Run:Rise	$ per			X	Y	Z	at	Seg Ht	Perturbs		On	Important
				Unit	Unit	Width		Unit						Point	Incre-	#Up	#Dn	Struct?	Reflec-
				Area	Vol.			Length							ment				tions?
		ft	ft	$/sq ft	$/cu yd	ft	ft:ft	$/ft			ft	ft	ft	ft	ft				
Barrier1	W	0.00	99.99	0.00				0.00	point1	1	1,736.7	1,659.3	100.00	30.00	0.00	0	0		
									point3	3	1,736.7	1,619.4	100.00	30.00	0.00	0	0		
									point4	4	1,957.2	1,614.2	100.00	30.00	0.00	0	0		
									point5	5	1,953.7	1,654.1	100.00	30.00	0.00	0	0		
									point6	6	1,736.7	1,659.3	100.00	30.00					
Barrier1-2-2	W	0.00	99.99	0.00				0.00	point27	27	1,778.4	1,279.1	100.00	25.00	0.00	0	0		
									point13	13	1,781.8	1,161.0	100.00	25.00	0.00	0	0		
									point14	14	1,886.0	1,159.3	100.00	25.00	0.00	0	0		
									point15	15	1,886.0	1,185.3	100.00	25.00	0.00	0	0		
									point16	16	1,901.6	1,188.8	100.00	25.00	0.00	0	0		
									point17	17	1,903.4	1,166.2	100.00	25.00	0.00	0	0		
									point18	18	1,932.9	1,173.2	100.00	25.00	0.00	0	0		
									point19	19	1,929.4	1,240.9	100.00	25.00	0.00	0	0		
									point20	20	1,941.6	1,240.9	100.00	25.00	0.00	0	0		
									point21	21	1,939.8	1,287.8	100.00	25.00	0.00	0	0		
									point22	22	1,906.8	1,287.8	100.00	25.00	0.00	0	0		
									point23	23	1,905.1	1,247.8	100.00	25.00	0.00	0	0		
									point24	24	1,886.0	1,246.1	100.00	25.00	0.00	0	0		
									point25	25	1,886.0	1,280.8	100.00	25.00	0.00	0	0		
									point2	2	1,781.8	1,279.1	100.00	25.00					
Barrier1-2-2	W	0.00	99.99	0.00				0.00	point29	29	1,736.7	1,527.4	100.00	30.00	0.00	0	0		
									point8	8	1,735.0	1,490.9	100.00	30.00	0.00	0	0		
									point9	9	1,957.2	1,484.0	100.00	30.00	0.00	0	0		
									point10	10	1,955.4	1,522.2	100.00	30.00	0.00	0	0		
									point11	11	1,738.4	1,527.4	100.00	30.00					

Dudek
David O
23 February 2021
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 13140
RUN: BCTC Existing plus Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Increase over existing Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Noise Reduction Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	30.8	66	30.8	10	----	30.8	0.0	8	-8.0
Receiver2	2	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min dB	Avg dB	Max dB
All Selected	2	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

APPENDIX C

Construction Noise Modeling Input and Output

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase, per FTA = 80
allowable hours over which Leq is to be averaged (example: 8 for County of San Diego, FTA guidance) = 8

Construction Phase	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq
Demolition	Concrete Saw	1	20	90		1335	61.5	8	480	54
	Dozer	2	40	82		1335	53.5	8	480	53
	Excavator	3	40	81		1335	52.5	8	480	53
							Total for Demolition Phase:			**58.3**
Site Preparation	Front End Loader	4	40	79		1025	52.8	8	480	55
	Dozer	3	40	82		1025	55.8	8	480	57
							Total for Site Preparation Phase:			**58.8**
Grading	Excavator	1	40	81		1025	54.8	8	480	51
	Dozer	1	40	82		1025	55.8	8	480	52
	Front End Loader	3	40	79		1025	52.8	8	480	54
	Grader	1	40	85		1025	58.8	8	480	55
							Total for Grading Phase:			**59.0**
Building Construction	Generator	1	50	72		1155	44.7	8	480	42
	Crane	1	16	81		1155	53.7	7	420	45
	Gradall	3	40	83		1155	55.7	8	480	57
	Backhoe	3	40	78		1155	50.7	7	420	51
	Welder / Torch	1	40	73		1155	45.7	8	480	42
							Total for Building Construction Phase:			**58.0**
Paving	Concrete Mixer Truck	2	40	79		1110	52.1	6	360	50
	Paver	1	50	77		1110	50.1	8	480	47
	Roller	2	20	80		1110	53.1	6	360	48
	Backhoe	1	40	78		1110	51.1	8	480	47
	Dump Truck	2	40	76		1110	49.1	6	360	47
							Total for Paving Phase:			**54.9**
Architectural Coating	Compressor (air)	1	40	78		1155	50.7	6	360	45
							Total for Architectural Coating Phase:			**45.5**

To User: bordered cells are inputs, unbordered cells have formulae

noise level limit for construction phase, per FTA = 80
allowable hours over which Leq is to be averaged (example: 8 for County of San Diego, FTA guidance) = 8

Construction Phase	Equipment	Total Equipment Qty	AUF % (from FHWA RCNM)	Reference Lmax @ 50 ft. from FHWA RCNM	Client Equipment Description, Data Source and/or Notes	Source to NSR Distance (ft.)	Distance-Adjusted Lmax	Allowable Operation Time (hours)	Allowable Operation Time (minutes)	Predicted 8-hour Leq
Demolition	Concrete Saw	1	20	90		620	68.1	8	480	61
	Dozer	2	40	82		620	60.1	8	480	59
	Excavator	3	40	81		620	59.1	8	480	60
							Total for Demolition Phase:			**64.9**
Site Preparation	Front End Loader	4	40	79		620	57.1	8	480	59
	Dozer	3	40	82		620	60.1	8	480	61
							Total for Site Preparation Phase:			**63.1**
Grading	Excavator	1	40	81		620	59.1	8	480	55
	Dozer	1	40	82		620	60.1	8	480	56
	Front End Loader	3	40	79		620	57.1	8	480	58
	Grader	1	40	85		620	63.1	8	480	59
							Total for Grading Phase:			**63.4**
Building Construction	Generator	1	50	72		1075	45.4	8	480	42
	Crane	1	16	81		1075	54.4	7	420	46
	Gradall	3	40	83		1075	56.4	8	480	57
	Backhoe	3	40	78		1075	51.4	7	420	52
	Welder / Torch	1	40	73		1075	46.4	8	480	42
							Total for Building Construction Phase:			**58.7**
Paving	Concrete Mixer Truck	2	40	79		710	56.0	6	360	54
	Paver	1	50	77		710	54.0	8	480	51
	Roller	2	20	80		710	57.0	6	360	52
	Backhoe	1	40	78		710	55.0	8	480	51
	Dump Truck	2	40	76		710	53.0	6	360	51
							Total for Paving Phase:			**58.8**
Architectural Coating	Compressor (air)	1	40	78		1075	51.4	6	360	46
							Total for Architectural Coating Phase:			**46.1**

APPENDIX D

Mechanical Noise Data

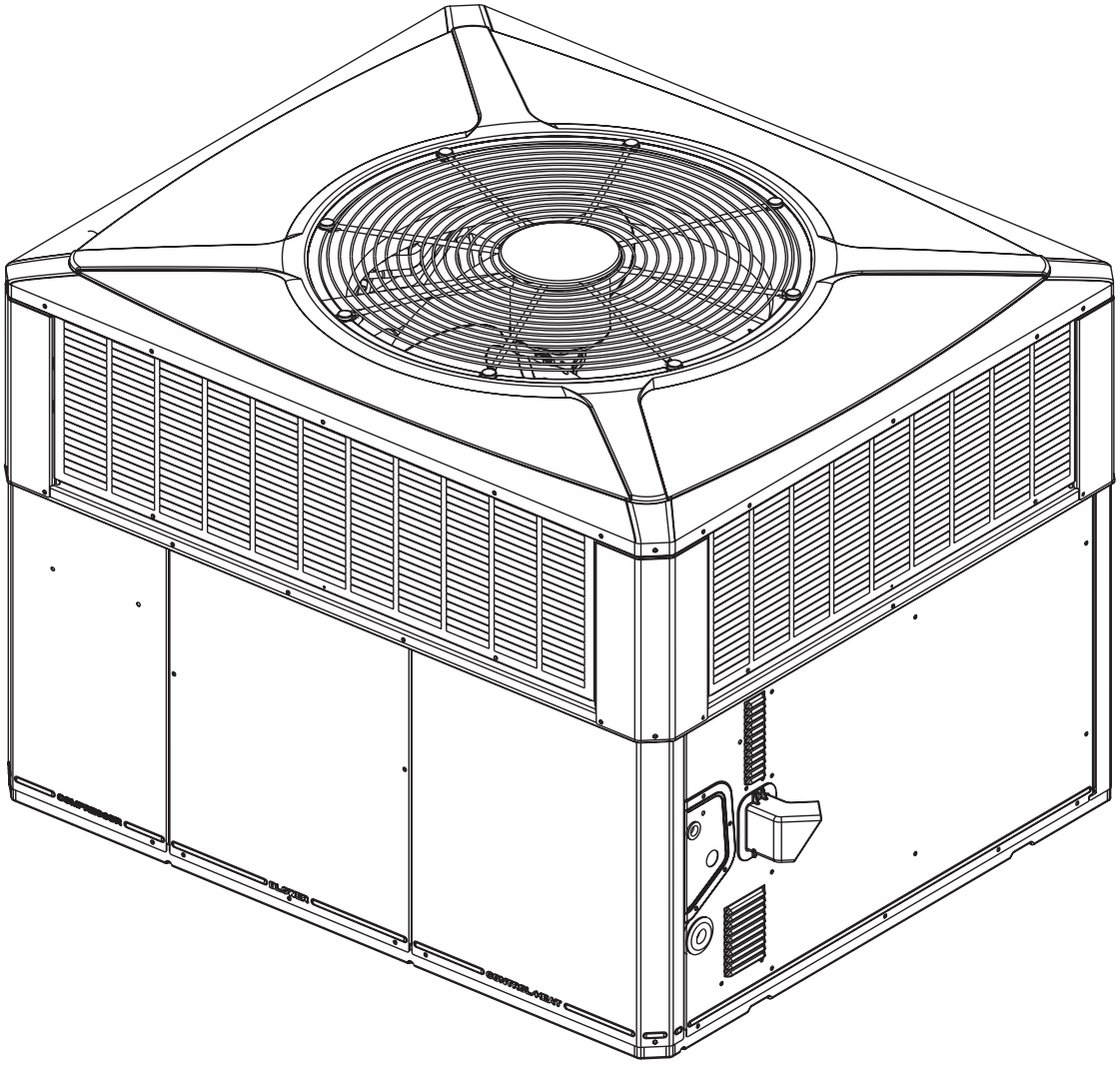
TRANE®

22-1799-17

Product Data

4DCY4024 through 4DCY4060

Single Packaged Convertible Dual Fuel
14 SEER
2 - 5 Ton, 40 - 120 MBTU
R-410A



Pub. No. 22-1799-17

General Data

MODEL	4DCY4024A1064B	4DCY4030A1075B	4DCY4036C1075A
RATED Volts/PH/Hz	208-230/1/60	208-230/1/60	208-230/1/60
Performance Cooling BTUH①	23600	30000	37000
Indoor Airflow (CFM)	760	880	1150
Power Input (KW)	2.162	2.15	3.11
EER/SEER(BTU/Watt-Hr.)⑤	12/14.0	12.0 / 14.25	12.0 / 14.0
Sound Power Rating [dB(A)]⑦	68	71	69
HP Heating Performance			
(High Temp.)BTUH / COP	22400 / 3.7	28000 / 3.9	33200 / 3.6
Power Input (KW)	1.77	2.15	2.7
(Low Temp.) BTUH / COP	11600 / 2.38	15400 / 2.48	22400 / 2.4
Power Input (KW)	1.24	1.81	2.5
HSPF (BTU / Watt-Hr.)	8.0	8.0	8.0
Gas Heating Performance②			
(High) Input BTUH	64000	75000	75000
Capacity BTUH	51500	60500	60500
Temp. Rise — Min/Max (°F)	35 / 65	30 / 60	30 / 60
(Low) Input BTUH	48000	56250	56250
Capacity BTUH	41200	48400	48400
AFUE	79	79.5	79.5
Type of Gas ③	NATURAL	NATURAL/LP	NATURAL
Gas Pipe Size (in.)	1/2	1/2	1/2
POWER CONN.—V/PH/HZ	208-230/1/60	208-230/1/60	208-230/1/60
Min. Brch. Cir. Ampacity④	16.1	19.1	26.2
Fuse Size — Max. (amps)	25	30	40
Fuse Size — Recmd. (amps)	25	30	40
COMPRESSOR	RECIPROCATING	RECIPROCATING	SCROLL
Volts/Ph/Hz	208-230/1/60	200-230/1/60	208-230/1/60
R.L. Amps — L.R. Amps	8.3 / 57.8	11.1 / 63	16.7 / 79
OUTDOOR COIL — TYPE	SPINE-FIN	SPINE-FIN	SPINE-FIN
Rows/F.P.I.	2 / 24	2 / 24	2 / 24
Face Area (sq.ft.)	13.32	13.32	15.49
Tube Size (in.)	3/8	3/8	3/8
Refrigerant Control	EXPANSION VALVE	EXPANSION VALVE	EXPANSION VALVE
INDOOR COIL — TYPE	PLATE FIN	PLATE FIN	PLATE FIN
Rows/F.P.I.	3 / 15	4 / 15	4 / 15
Face Area (sq.ft.)	3.54	3.54	3.54
Tube Size (in.)	3/8	3/8	3/8
Refrigerant Control	EXPANSION VALVE	EXPANSION VALVE	EXPANSION VALVE
Drain Conn. Size (in.)	3/4 FEMALE NPT	3/4 FEMALE NPT	3/4 FEMALE NPT
OUTDOOR FAN — TYPE	PROPELLER	PROPELLER	PROPELLER
Dia. (in.)	23.4	23.4	23.4
Drive/No. Speeds	DIRECT / 1	DIRECT / 1	DIRECT / 1
CFM @ 0.0 in. w.g. ⑦	2590	3250	3310
Motor — HP/R.P.M.	1/12 / 810	1/6 / 830	1/5 / 830
Volts/Ph/Hz	208-230/1/60	208-230/1/60	208-230/1/60
F.L. Amps/L.R. Amps	0.54 / 0.95	1.0 / 1.7	1.1 / 1.9
INDOOR FAN — TYPE	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL
Dia x Width (in.)	10 X 10	10 X 10	10 X 10
Drive/No. Speeds	DIRECT / VARIABLE	DIRECT / VARIABLE	DIRECT / VARIABLE
CFM @ 0.0 in. w.g.⑤	SEE FAN PERFORMANCE TABLE	SEE FAN PERFORMANCE TABLE	SEE FAN PERFORMANCE TABLE
Motor — HP/R.P.M.	1/2 / VARIABLE	1/2 / VARIABLE	1/2 / VARIABLE
Volts/Ph/Hz	200-230/1/60	208-230/1/60	200-230/1/60
F.L. Amps/L.R. Amps	4.3 / 4.3	4.3 / 4.3	4.3 / 4.3
COMBUSTION FAN — TYPE	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL
Drive/No. Speeds	DIRECT / 2	DIRECT / 2	DIRECT / 2
Motor — HP/R.P.M. (High/Low)	1/45 / 2800/1500	1/45 / 2800/1500	1/45 / 2800/1500
Volts/Ph/Hz	208-230/1/60	208-230/1/60	208-230/1/60
FLA	0.34	0.34	0.34
FILTER / FURNISHED	NO	NO	NO
Type Recommended	THROWAWAY	THROWAWAY	THROWAWAY
Recmd. Face Area (sq. ft.)⑥	4	4	4
REFRIGERANT / Charge (lbs.)	R410A / 6.5	R410A / 6.56	R410A / 7.5
DIMENSIONS	H X W X L	H X W X L	H X W X L
Crated (in.)	45.86 / 44.5 / 52.03	45.86 / 44.5 / 52.03	47.86 / 44.5 / 52.03
WEIGHT / Shipping / Net (lbs.)	481 / 385	481 / 385	488 / 392

① Certified in accordance with the Unitary Air-Conditioner Equipment certification program, which is based on AHRI Standard 210/240.

② All models are U L Listed. Ratings shown are for elevations up to 2000 ft. For higher elevations reduce ratings at a rate of 4% per 1000 ft. elevation.

③ Convertible to LPG.

④ This value is approximate. For more precise value, see Unit Nameplate.

⑤ Based on U.S. Government Standard Tests.

⑥ Filters must be installed in return air stream. Square footages listed are based on 300 f.p.m. face velocity. If permanent filters are used size per manufacturer's recommendation with a clean resistance of 0.05" W.C.

⑦ Sound Power values are not adjusted for AHRI 270-95 tonal corrections.

⑧ Standard Air — Dry Coil — Outdoor.

General Data

MODEL	4DCY4036B3075A	4DCY4042A1096B	4DCY4048B1096B
RATED Volts/PH/Hz	208-230/3/60	208-230/1/60	208-230/1/60
Performance Cooling BTUH①	36000	42000	47500
Indoor Airflow (CFM)	1185	1370	1470
Power Input (KW)	3.28	3.27	3.96
EER/SEER(BTU/Watt-Hr.)⑤	11.4 / 14.0	12.0 / 14.25	12.0 / 14.0
Sound Power Rating [dB(A)]⑦	69	74	73
HP Heating Performance			
(High Temp.)BTUH / COP	32400 / 3.5	39500 / 3.6	45000 / 3.5
Power Input (KW)	2.7	3.27	3.77
(Low Temp.) BTUH / COP	20600 / 2.36	23600 / 2.26	26800 / 2.3
Power Input (KW)	2.6	3.06	3.44
HSPF (BTU / Watt-Hr.)	8.0	8.0	8.0
Gas Heating Performance②			
(High) Input BTUH	75000	96000	96000
Capacity BTUH	60500	77500	77500
Temp. Rise — Min/Max (°F)	30 / 60	30 / 60	30 / 60
(Low) Input BTUH	56250	72000	72000
Capacity BTUH	48400	62000	62000
AFUE	80.0	80	80
Type of Gas ③	NATURAL	NATURAL/LP	NATURAL
Gas Pipe Size (in.)	1/2	1/2	1/2
POWER CONN.—V/PH/HZ	208-230/3/60	208-230/1/60	208-230/1/60
Min. Brch. Cir. Ampacity④	18.5	31.5	33.9
Fuse Size — Max. (amps)	25	50	50
Fuse Size — Recmd. (amps)	25	50	50
COMPRESSOR	SCROLL	SCROLL	SCROLL
Volts/Ph/Hz	208-230/3/60	208-230/1/60	208-230/1/60
R.L. Amps — L.R. Amps	10.4 / 73	18.6 / 105	20.5 / 109
OUTDOOR COIL — TYPE	SPINE-FIN	SPINE-FIN	SPINE-FIN
Rows/F.P.I.	2 / 24	2 / 24	2 / 24
Face Area (sq.ft.)	15.49	18.01	18.01
Tube Size (in.)	3/8	3/8	3/8
Refrigerant Control	EXPANSION VALVE	EXPANSION VALVE	EXPANSION VALVE
INDOOR COIL — TYPE	PLATE FIN	PLATE FIN	PLATE FIN
Rows/F.P.I.	4 / 15	3 / 15	3 / 15
Face Area (sq.ft.)	3.54	5	5.0
Tube Size (in.)	3/8	3/8	3/8
Refrigerant Control	EXPANSION VALVE	EXPANSION VALVE	EXPANSION VALVE
Drain Conn. Size (in.)	3/4 FEMALE NPT	3/4 FEMALE NPT	3/4 FEMALE NPT
OUTDOOR FAN — TYPE	PROPELLER	PROPELLER	PROPELLER
Dia. (in.)	23.4	28.2	28.2
Drive/No. Speeds	DIRECT / 1	DIRECT / 1	DIRECT / 1
CFM @ 0.0 in. w.g. ⑦	3270	4440	4450
Motor — HP/R.P.M.	1/5 / 830	1/4 / 825	1/4 / 825
Volts/Ph/Hz	208-230/1/60	208-230/1/60	208-230/1/60
F.L. Amps/L.R. Amps	1.1 / 1.9	1.5 / 3.4	1.4 / 3.5
INDOOR FAN — TYPE	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL
Dia x Width (in.)	10 X 10	11 X 10	11 X 10
Drive/No. Speeds	DIRECT / VARIABLE	DIRECT / VARIABLE	DIRECT / VARIABLE
CFM @ 0.0 in. w.g.⑤	SEE FAN PERFORMANCE TABLE	SEE FAN PERFORMANCE TABLE	SEE FAN PERFORMANCE TABLE
Motor — HP/R.P.M.	1/2 / VARIABLE	3/4 / VARIABLE	3/4 / VARIABLE
Volts/Ph/Hz	200-230/1/60	208-230/1/60	200-230/1/60
F.L. Amps/L.R. Amps	4.3 / 4.3	6.8 / 6.8	6.8 / 6.8
COMBUSTION FAN — TYPE	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL
Drive/No. Speeds	DIRECT / 2	DIRECT / 2	DIRECT / 2
Motor — HP/R.P.M. (High/Low)	1/45 / 2800/1500	1/45 / 2800/1500	1/45 / 2800/1500
Volts/Ph/Hz	208-230/1/60	208-230/1/60	208-230/1/60
FLA	0.34	0.34	0.34
FILTER / FURNISHED	NO	NO	NO
Type Recommended	THROWAWAY	THROWAWAY	THROWAWAY
Recmd. Face Area (sq. ft.)⑥	4	5.3	5.3
REFRIGERANT / Charge (lbs.)	R410A / 7.4	R410A / 7.25	R410A / 7.75
DIMENSIONS	H X W X L	H X W X L	H X W X L
Crated (in.)	47.86 / 44.5 / 52.03	47.86 / 47.4 / 61.75	47.86 / 47.4 / 61.75
WEIGHT / Shipping / Net (lbs.)	488 / 392	653 / 525	653 / 525

① Certified in accordance with the Unitary Air-Conditioner Equipment certification program, which is based on AHRI Standard 210/240.

② All models are U L Listed. Ratings shown are for elevations up to 2000 ft. For higher elevations reduce ratings at a rate of 4% per 1000 ft. elevation.

③ Convertible to LPG.

④ This value is approximate. For more precise value, see Unit Nameplate.

⑤ Based on U.S. Government Standard Tests.

⑥ Filters must be installed in return air stream. Square footages listed are based on 300 f.p.m. face velocity. If permanent filters are used size per manufacturer's recommendation with a clean resistance of 0.05" W.C.

⑦ Sound Power values are not adjusted for AHRI 270-95 tonal corrections.

⑧ Standard Air — Dry Coil — Outdoor.

General Data

MODEL	4DCY4048A3096C	4DCY4060B1120C	4DCY4060A3120C
RATED Volts/PH/Hz	208-230/3/60	208-230/1/60	208-230/3/60
Performance Cooling BTUH①	47000	58000	57500
Indoor Airflow (CFM)	1470	1785	1745
Power Input (KW)	4.03	4.83	5.48
EER/SEER(BTU/Watt-Hr.)⑤	10.65 / 14.0	12.0 / 14.0	11.5 / 14.0
Sound Power Rating [dB(A)]⑦	73	76	76
HP Heating Performance			
(High Temp.)BTUH / COP	42500 / 3.5	55000 / 3.6	54500 / 3.5
Power Input (KW)	3.56	4.48	4.56
(Low Temp.) BTUH / COP	26800 / 2.3	35400 / 2.4	36400 / 2.48
Power Input (KW)	3.44	4.30	4.29
HSPF (BTU / Watt-Hr.)	8.0	8.0	8.0
Gas Heating Performance②			
(High) Input BTUH	96000	120000	120000
Capacity BTUH	77500	96000	96000
Temp. Rise — Min/Max (°F)	30 / 60	30 / 60	30 / 60
(Low) Input BTUH	72000	90000	90000
Capacity BTUH	62000	77500	77500
AFUE	80	80.0	80.0
Type of Gas ③	NATURAL	NATURAL	NATURAL
Gas Pipe Size (in.)	1/2	1/2	1/2
POWER CONN.—V/PH/HZ	208-230/3/60	208-230/1/60	208-230/3/60
Min. Brch. Cir. Ampacity④	25.3	39.9	28.6
Fuse Size — Max. (amps)	35	60	45
Fuse Size — Recmd. (amps)	35	60	45
COMPRESSOR	SCROLL	SCROLL	SCROLL
Volts/Ph/Hz	208-230/3/60	208-230/1/60	208-230/3/60
R.L. Amps — L.R. Amps	13.7 / 83.1	25 / 134	16.0 / 110
OUTDOOR COIL — TYPE	SPINE-FIN	SPINE-FIN	SPINE-FIN
Rows/F.P.I.	2 / 24	2 / 24	2 / 24
Face Area (sq.ft.)	18.01	23.07	23.57
Tube Size (in.)	3/8	3/8	3/8
Refrigerant Control	EXPANSION VALVE	EXPANSION VALVE	EXPANSION VALVE
INDOOR COIL — TYPE	PLATE FIN	PLATE FIN	PLATE FIN
Rows/F.P.I.	3 / 15	4 / 15	4 / 15
Face Area (sq.ft.)	5.0	5.0	5.0
Tube Size (in.)	3/8	3/8	3/8
Refrigerant Control	EXPANSION VALVE	EXPANSION VALVE	EXPANSION VALVE
Drain Conn. Size (in.)	3/4 FEMALE NPT	3/4 FEMALE NPT	3/4 FEMALE NPT
OUTDOOR FAN — TYPE	PROPELLER	PROPELLER	PROPELLER
Dia. (in.)	28.2	28.2	28.2
Drive/No. Speeds	DIRECT / 1	DIRECT / 1	DIRECT / 1
CFM @ 0.0 in. w.g. ⑦	4450	5710	
Motor — HP/R.P.M.	1/4 / 825	1/3 / 830	1/3 / 830
Volts/Ph/Hz	208-230/1/60	208-230/1/60	208-230/1/60
F.L. Amps/L.R. Amps	1.4 / 3.5	1.7 / 3.5	1.7 / 3.5
INDOOR FAN — TYPE	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL
Dia x Width (in.)	11 X 10	11 X 10	11 X 10
Drive/No. Speeds	DIRECT / VARIABLE	DIRECT / VARIABLE	DIRECT / VARIABLE
CFM @ 0.0 in. w.g.⑤	SEE FAN PERFORMANCE TABLE	SEE FAN PERFORMANCE TABLE	SEE FAN PERFORMANCE TABLE
Motor — HP/R.P.M.	3/4 / VARIABLE	1 / VARIABLE	1 / VARIABLE
Volts/Ph/Hz	200-230/1/60	208-230/1/60	208-230/1/60
F.L. Amps/L.R. Amps	6.8 / 6.8	6.9 / 6.9	6.9 / 6.9
COMBUSTION FAN — TYPE	CENTRIFUGAL	CENTRIFUGAL	CENTRIFUGAL
Drive/No. Speeds	DIRECT / 2	DIRECT / 2	DIRECT / 2
Motor — HP/R.P.M. (High/Low)	1/45 / 2800/1500	1/45 / 2800/1500	1/45 / 2800/1500
Volts/Ph/Hz	208-230/1/60	208-230/1/60	208-230/1/60
FLA	0.34	0.34	0.34
FILTER / FURNISHED	NO	NO	NO
Type Recommended	THROWAWAY	THROWAWAY	THROWAWAY
Recmd. Face Area (sq. ft.)⑥	5.3	6.7	6.7
REFRIGERANT / Charge (lbs.)	R410A / 7.75	R410A / 11.94	R410A / 10.125
DIMENSIONS	H X W X L	H X W X L	H X W X L
Crated (in.)	47.86 / 47.4 / 61.75	51.86 / 47.4 / 61.75	51.86 / 47.4 / 61.75
WEIGHT / Shipping / Net (lbs.)	653 / 525	676 / 548	676 / 548

① Certified in accordance with the Unitary Air-Conditioner Equipment certification program, which is based on AHRI Standard 210/240.

② All models are U L Listed. Ratings shown are for elevations up to 2000 ft. For higher elevations reduce ratings at a rate of 4% per 1000 ft. elevation.

③ Convertible to LPG.

④ This value is approximate. For more precise value, see Unit Nameplate.

⑤ Based on U.S. Government Standard Tests.

⑥ Filters must be installed in return air stream. Square footages listed are based on 300 f.p.m. face velocity. If permanent filters are used size per manufacturer's recommendation with a clean resistance of 0.05" W.C.

⑦ Sound Power values are not adjusted for AHRI 270-95 tonal corrections.

⑧ Standard Air — Dry Coil — Outdoor.

TECHNICAL GUIDE

R-410A
ZE/ZF/ZR/XN/XP SERIES
3 - 6 TON
60 Hertz

Description

YORK® ZE/ZF/ZR/XN/XP Series units are convertible single package high efficiency rooftops with a common roof curb for the 3, 4, 5 and 6 Ton sizes (ZE, ZR, XN, XP not available in 6 Ton). Although the units are primarily designed for curb mounting on a roof, they can also be slab-mounted at ground level or set on steel beams above a finished roof.

All ZE/ZF/ZR/XN/XP Series units are self-contained and assembled on rigid full perimeter base rails allowing for overhead rigging. Every unit is completely charged, wired, piped and tested at the factory to provide a quick and easy field installation.

All models (including those with an economizer) are convertible between bottom and horizontal duct connections.

ZE/ZF/ZR Series units are available in the following configurations: cooling only, cooling with electric heat, and cooling with one or two stage gas heat. Electric heaters are available as factory-installed option or field installed accessory.

XN/XP Series units are available in the following configurations: cooling and heating only and cooling and heating with electric heat.

Tested in accordance with:

AHRI CERTIFIED www.ahridirectory.org Unitary Small AC AHRI Standard 210/240

AHRI CERTIFIED www.ahridirectory.org Unitary Small HP AHRI Standard 210/240

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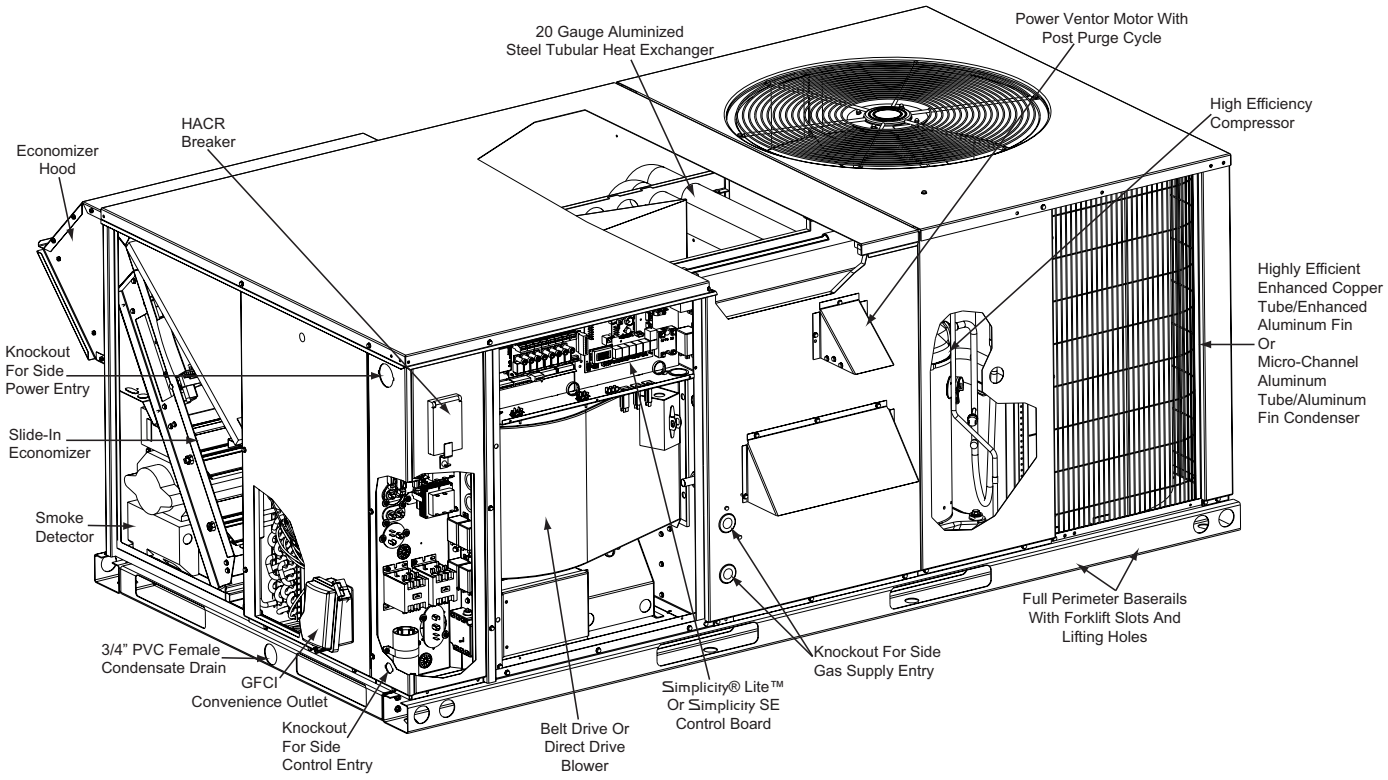
Component Location

Gas/Electric



Sound Performance

ZF/ZR/XP Indoor Sound Power Levels

Size (Tons)	CFM	ESP (IWG)	Blower		Sound Power, dB (10^{-12}) Watts							
					Sound Rating[1] dB (A)	Octave Band Centerline Frequency (Hz)						
			RPM	BHP		63	125	250	500	1000	2000	4000	8000
036 (3.0)	1200	0.2	630	0.41	63	82	77	59	50	43	42	40	45
048 (4.0)	1600	0.2	791	0.54	72	95	84	58	54	46	44	45	44
060 (5.0)	2000	0.2	840	0.67	62	84	71	58	53	50	49	49	49
072 (6.0)	2200	0.3	920	1.45	76	61	71	68	67	72	66	61	54

1. These values have been accessed using a model of sound propagation from a point source into the hemispheric/free field. The dBA values provided are to be used for reference only. Calculation of dBA values cover matters of system design and the fan manufacture has no way of knowing the details of each system. This constitutes an exception to any specification or guarantee requiring a dBA value of sound data in any other form than sound power level ratings.

ZE/ZF/ZR Outdoor Sound Power Levels

Size (Tons)	Sound Rating[1] dB (A)	Octave Band Centerline Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
036 (3.0)	81	87.5	86.0	81.0	77.0	75.0	69.5	65.5	70.5
048 (4.0)	80	84.5	81.0	80.0	78.0	75.0	70.0	67.0	70.5
060 (5.0)	82	86.5	87.5	81.5	77.5	75.0	71.5	68.0	70.5
072 (6.0)	83	-	84.0	85.0	79.0	80.0	72.0	67.5	62.5

1. Rated in accordance with AHRI 270 standard.

XN/XP Outdoor Sound Power Levels

Size (Tons)	Sound Rating[1] dB (A)	Octave Band Centerline Frequency (Hz)							
		63	125	250	500	1000	2000	4000	8000
036 (3.0)	76	83.5	84.5	76.5	72.0	68.0	66.0	60.0	56.0
048 (4.0)	80	85.0	83.0	81.0	77.5	75.5	71.5	67.5	61.5
060 (5.0)	80	86.0	84.0	81.0	77.0	75.5	71.0	66.5	60.5

1. Rated in accordance with AHRI 270 standard.

TECHNICAL GUIDE
R-410A
ZF SERIES
6.5 - 12.5 TON
60 Hertz

ZF 6.5 THROUGH 10 TON

ZF12.5 TON

Description

ASHRAE 90.1 COMPLIANT

YORK® Predator® units are convertible single packages with a common footprint cabinet and common roof curb for all 6.5 through 12.5 ton models. All units have two compressors with independent refrigeration circuits to provide 2 stages of cooling. The units were designed for light commercial applications and can be easily installed on a roof curb, slab, or frame.

All Predator® units are self-contained and assembled on rigid full perimeter base rails allowing for 3-way forklift access and overhead rigging. Every unit is completely charged, wired, piped, and tested at the factory to provide a quick and easy field installation.

Predator® units in all tonnage sizes are convertible between side airflow and down airflow, with corresponding economizer if economizer option is desired.

Predator® units are available in the following configurations: cooling only, cooling with electric heat, and cooling with gas heat. Electric heaters are available as factory-installed options or field-installed accessories.

All units provide constant supply air volume. A variable air volume (VAV) option, which features a variable frequency drive (VFD), is available on 6.5 through 12.5 ton models.

SMART EQUIPMENT

Tested in accordance with:

DESIGN CERTIFIED

C SA US

AHRI CERTIFIED
www.ahridirectory.org
Unitary Large AC
AHRI Standard 340/360

CERTIFIED

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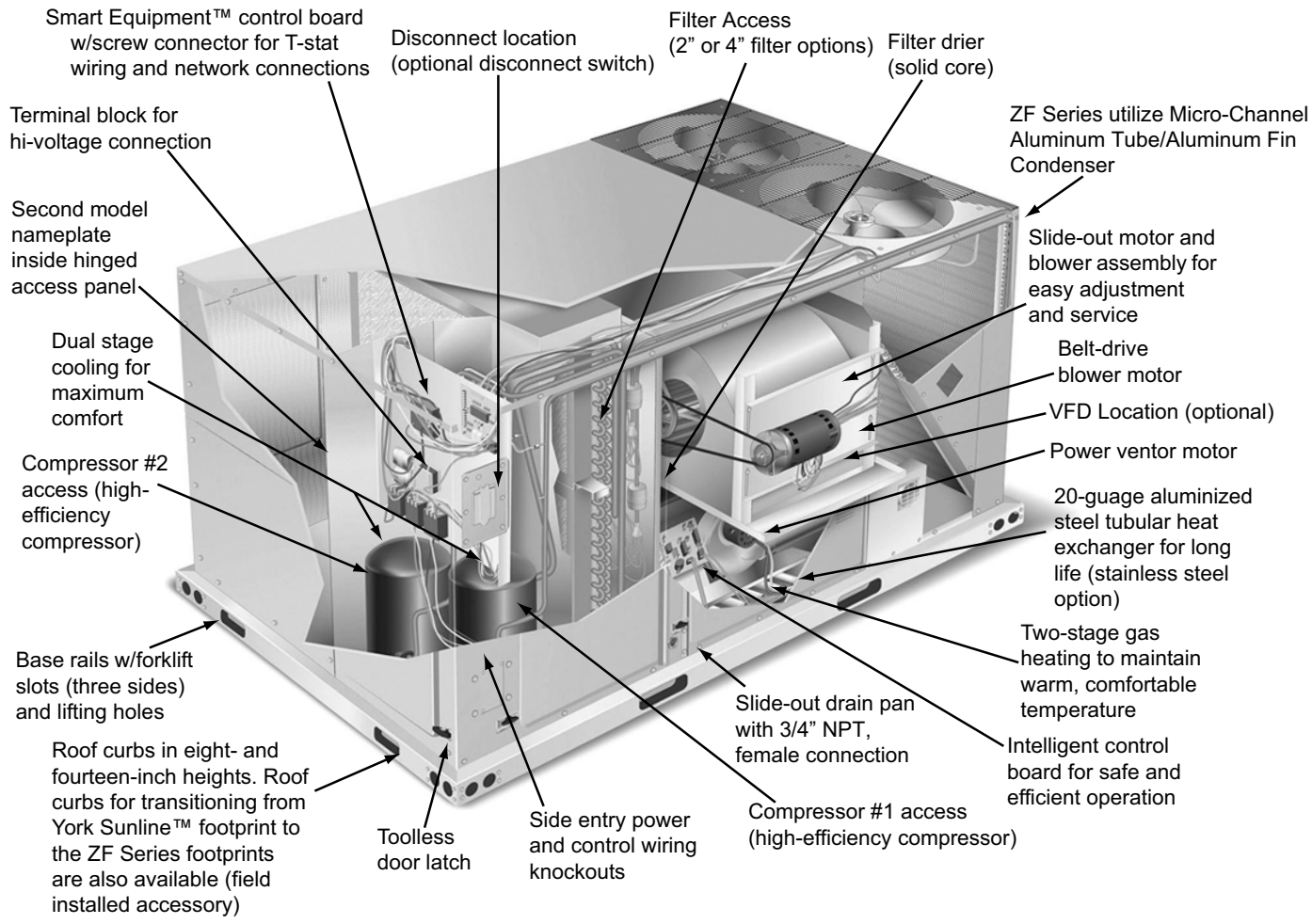
Component Location

Cooling With Gas Heat



Electric Heat Multipliers

Voltage		kW Capacity Multipliers[1]
Nominal	Applied	
240	208	0.75
	230	0.92
480	460	0.92
600	575	0.92

1. Electric heaters are rated at nominal voltage. Use this table to determine the electric heat capacity for heaters applied at lower voltages.

Sound Performance

Indoor Sound Power Levels

Size (Tons)	Model	CFM	ESP (IWG)	Blower		Sound Power, dB (10^{-12}) Watts								
						Sound Rating[1] dB (A)	Octave Band Centerline Frequency (Hz)							
				RPM	BHP		63	125	250	500	1000	2000	4000	8000
078 (6.5)	ZF	2600	0.6	812	1.14	74	71	73	73	71	69	65	65	60
090 (7.5)	ZF	3000	0.6	854	1.47	77	74	76	76	74	72	68	68	63
102 (8.5)	ZF	3400	0.6	872	1.65	80	77	79	79	77	75	71	71	66
120 (10)	ZF	4000	0.6	959	2.29	83	80	82	82	80	78	74	74	69
150 (12.5)	ZF	5000	0.6	1132	3.74	87	84	86	86	84	82	78	78	73

1. These values have been accessed using a model of sound propagation from a point source into the hemispheric/free field. The dBA values provided are to be used for reference only. Calculation of dBA values cover matters of system design and the fan manufacture has no way of knowing the details of each system. This constitutes an exception to any specification or guarantee requiring a dBA value of sound data in any other form than sound power level ratings.

Outdoor Sound Power Levels

ZF078-150

Size (Tons)	Model	Sound Rating[1] dB (A)	Octave Band Centerline Frequency (Hz)							
			63	125	250	500	1000	2000	4000	8000
078 (6.5)	ZF	84	86.0	87.5	86.0	82.5	79.0	73.5	68.5	62.0
090 (7.5)	ZF	89	89.5	92.0	89.0	87.5	84.0	78.5	73.5	66.5
102 (8.5)	ZF	91	91.5	93.5	92.5	89.0	85.5	80.5	76.0	71.0
120 (10)	ZF	92	99.5	94.5	92.0	90.0	87.0	81.0	76.0	70.0
150 (12.5)	ZF	88	91.0	92.5	90.0	85.0	81.5	77.0	73.0	66.5

1. Rated in accordance with AHRI 270 standard.