TCF
TWIN CITY FAN

Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

Submitted By:

Cole Ashmore
Ketchum & Walton Co.
2831 East Kemper Road
Cincinnati, OH 45241

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Fax:

SUBMITTAL

Job Name: BSI-GE

Tag: EF-10
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

HPF - Fiberglass High Pressure Blower, Radial Blade

Construction Features

Description	Qty	Model	Size	Width	Wt (lb.)
	1	HPF	22/10	SWSI	444

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	N/A	W/A	9	W/A	--	N/A

Performance	CFM	SP (in WC)	RPM	Oper. BHP
	200	0.390	357	0.02

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1	1,800	115/230V/1/60	TEFC	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	65	59	55	57	54	44	41	42	58	43	4.1

LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Fire Retardant Resin
Variable Speed V-Belt Drive, 1.2 SF
Mount TCF Motor

Job Name: BSI-GE

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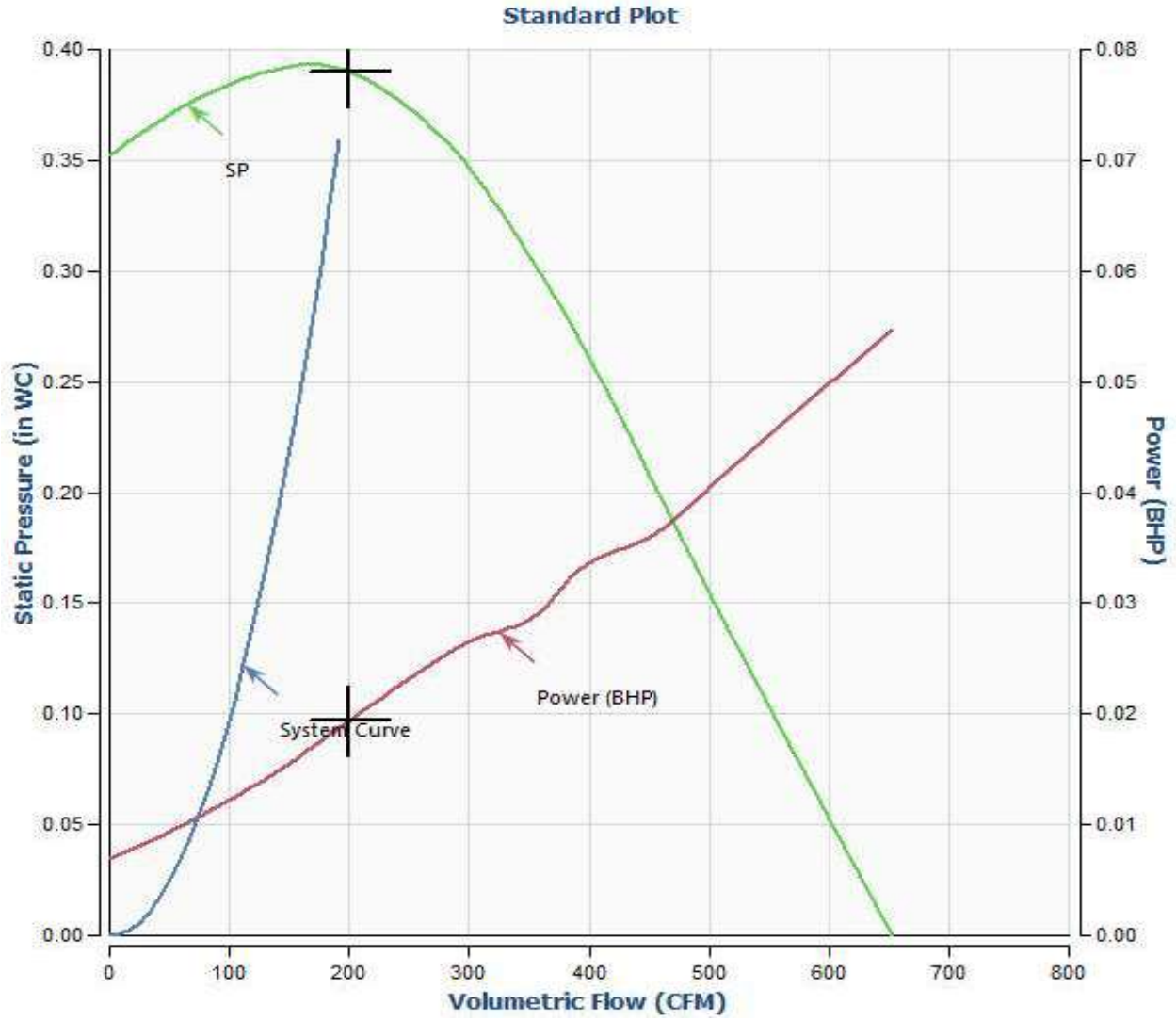

SUBMITTAL

Job Name: BSI-GE

Tag: EF-11-13
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

TFE - High Velocity Inline Centrifugal Exhaust Fan

Construction Features

• Incorporates a vertically mounted inline centrifugal fan, specially modified for laboratory fume hood exhaust.
• Discharge cap includes outlet venturi to meet require outlet velocity.
• Heavy-duty curb cap will permit optional stack extensions up to 10 feet total height from the roof line without the need for guy wires.

See Attached Fume Exhaust Drawing

Description	Qty	Model	Size	Wt (lb.)
	1	TFE	122C7	625

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	I	CW	9	VRM	--	N/A

Performance	CFM	SP (in WC)	RPM	Oper. BHP	Induced Flow (CFM)	Windband Ex. Flow (CFM)	Addl. Bypass (CFM)	Dilution Ratio	Plume Ht. (ft)
	800	1.090	1995	0.44	N/A	N/A	0	N/A	13.95

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1	1800	115/230V/1/60	EXPL	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	75	74	76	74	71	67	66	61	76	62	13.4
	Level at Outlet	80	76	75	72	71	68	65	63	76	62	13.7

LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Access Door - Bolted
Drain - 3/4"
Flanges - Inlet / Outlet, Punched
Belt Tube
Weather Cover - Std Type
Spark Resistant Fan Construction - Type B
Shaft Seal - Std Type
Discharge Cap W/ Venturi
Curb Cap

Extended Lube Lines
Hardware-316 Stainless Steel
Variable Speed V-Belt Drive, 2.0 SF
Mount TCF Motor

Job Name: BSI-GE

Tag: EF-11-13
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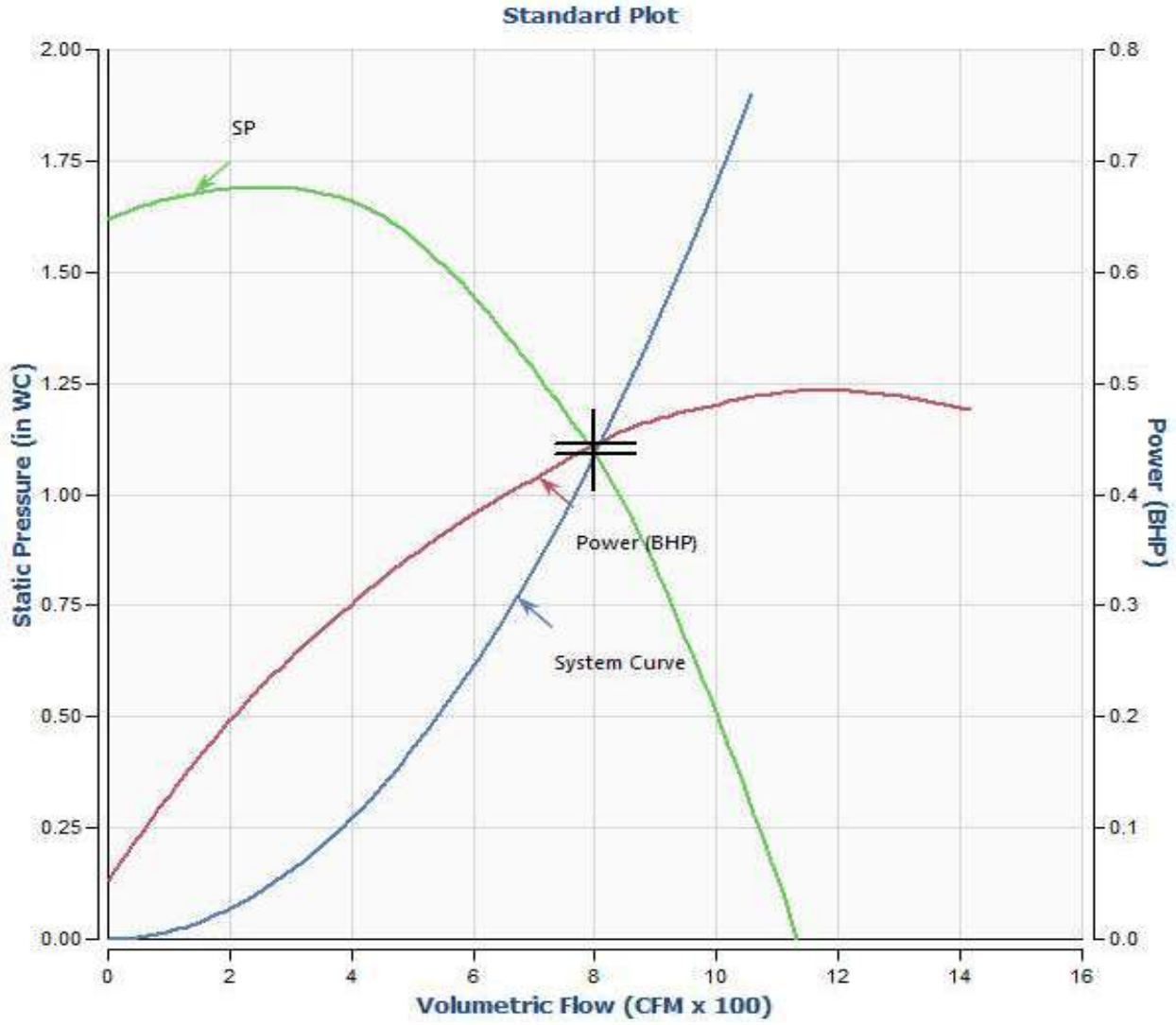
Date: August 29, 2025



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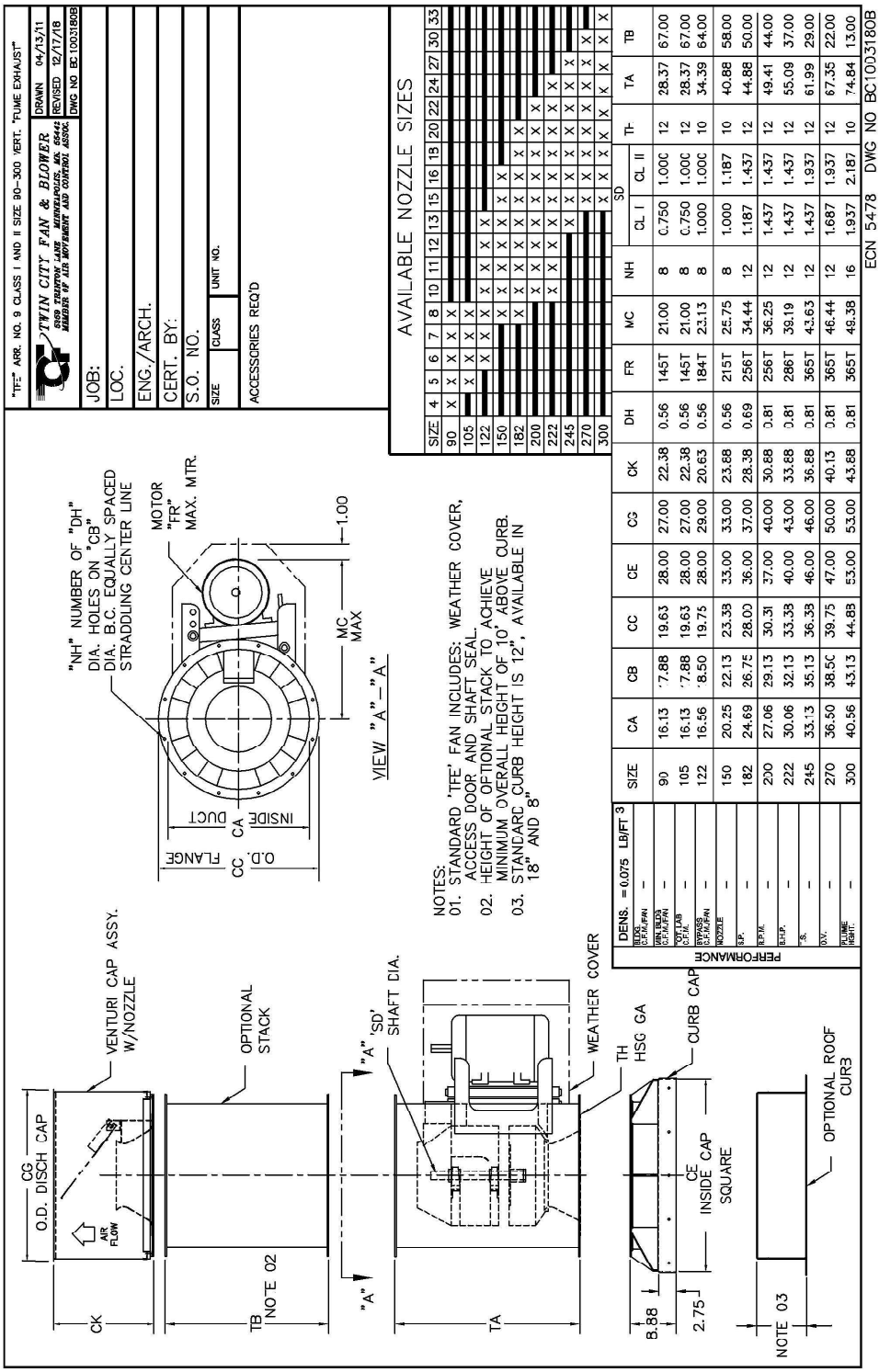

SIZE	4	5	6	7	8	10	11	12	13	15	16	18	20	22	24	27	30	33
90	X	X	X	X	X	X												
105		X	X	X	X	X												
122		X	X	X	X	X	X	X	X	X								
150				X	X	X	X	X	X	X	X	X	X	X				
182				X	X	X	X	X	X	X	X	X	X	X	X			
200						X	X	X	X	X	X	X	X	X	X	X		
222							X	X	X	X	X	X	X	X	X	X	X	X
245										X	X	X	X	X	X	X	X	X
270											X	X	X	X	X	X	X	X
300											X	X	X	X	X	X	X	X

SIZE	CA	CB	CC	CE	C3	CK	DH	FR	MC	NH	SD CL I	SD CL II	TF	TA	TB
90	16.13	7.88	19.63	28.00	27.00	22.38	0.56	145T	21.00	8	0.750	1.000	12	28.37	67.00
105	16.13	7.88	19.63	28.00	27.00	22.38	0.56	145T	21.00	8	0.750	1.000	12	28.37	67.00
122	16.56	8.50	19.75	28.00	29.00	20.63	0.56	184T	23.13	8	1.000	1.000	10	34.39	64.00
150	20.25	22.13	23.33	33.00	33.00	23.88	0.56	215T	25.75	8	1.000	1.187	10	40.88	58.00
182	24.69	26.75	28.00	36.00	37.00	28.38	0.69	256T	34.44	12	1.187	1.437	12	44.88	50.00
200	27.06	29.13	30.31	37.00	40.00	30.88	0.81	256T	36.25	12	1.437	1.437	12	49.41	44.00
222	30.06	32.13	33.33	40.00	43.00	33.88	0.81	286T	39.19	12	1.437	1.437	12	55.09	37.00
245	33.13	35.13	36.33	46.00	46.00	36.88	0.81	365T	43.63	12	1.437	1.937	12	61.99	29.00
270	36.50	38.50	39.75	47.00	50.00	40.13	0.81	365T	46.44	12	1.687	1.937	12	67.35	22.00
300	40.56	43.13	44.83	53.00	53.00	43.88	0.81	365T	48.38	16	1.937	2.187	10	74.84	13.00

PERFORMANCE

DENS. = 0.075 LB/FT 3	
BLDG. C.F.M./P.H.	–
MIN. BLDG. C.F.M./P.H.	–
TOT. LAB C.F.M.	–
BYPASS C.F.M./P.H.	–
NOZZLE	–
S.P.	–
H.P./M.	–
B.H.P.	–
R.S.	–
O.V.	–
PLUME HEIGHT	–

SUBMITTAL

Job Name: BSI-GE

Tag: EF-14-16
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

DCV - Backward Inclined Utility Set, Direct Drive

Construction Features

- Galvanized steel housing with lock seam construction.
- Deep spun inlet cone, aerodynamically designed for smooth air entry into the wheel.
- Motor compartment allows complete access for servicing.

See Attached Centrifugal Drawing

Description	Qty	Model	Size	Width	Wt (lb.)
	1	DCV	122	SWSI	87

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	L	CCW	4	UBD	--	Vertical

Performance	CFM	SP (in WC)	RPM	Oper. BHP
	600	0.990	1,334	0.16

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	3/4	1,750	115V/1/60	ECODP	EC

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	72	75	69	68	72	70	61	49	76	61	11.9

LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Speed Controller, Motor Mounted Dial, Factory Installed
0-10 VDC Lead, Factory Installed

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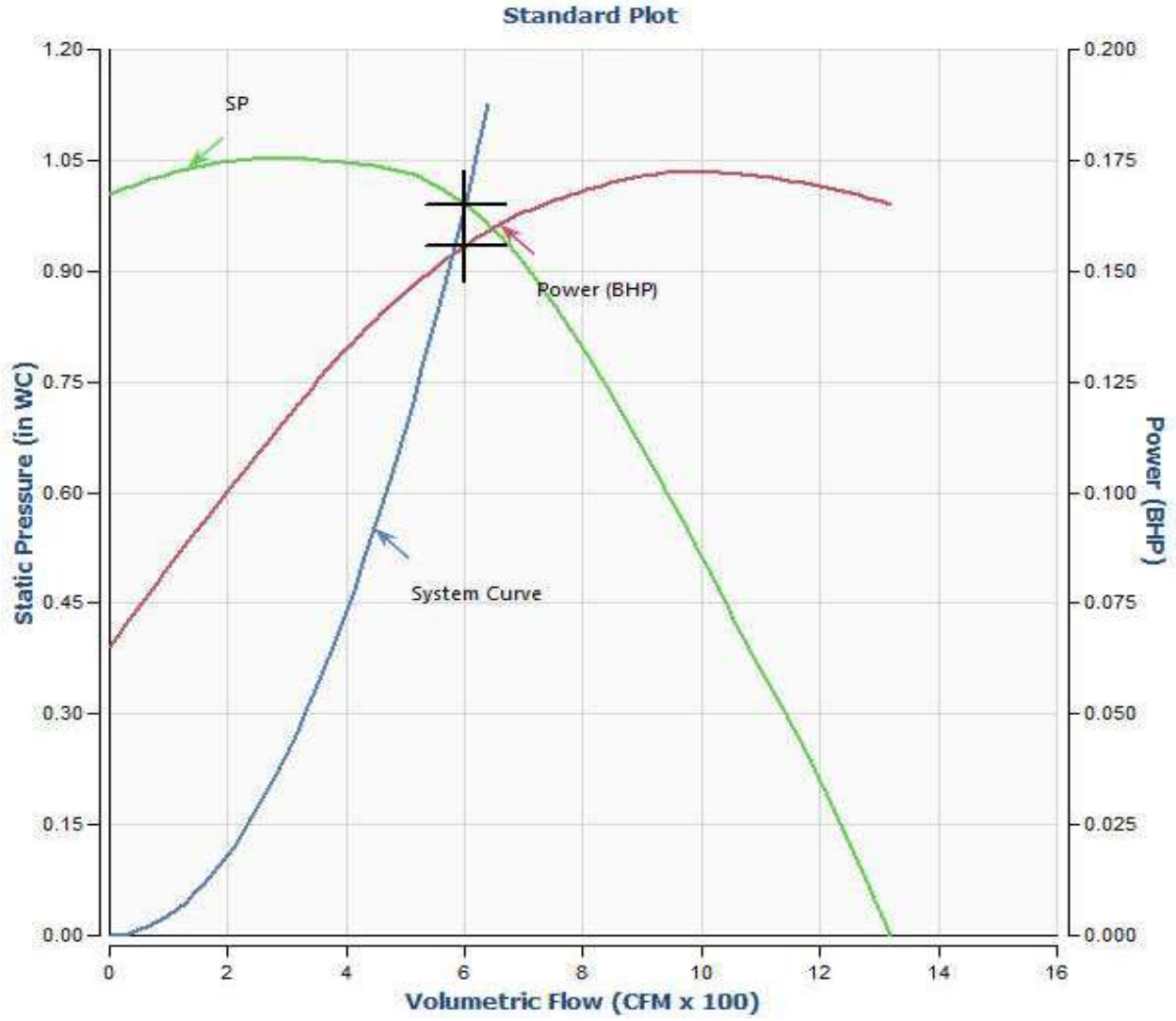

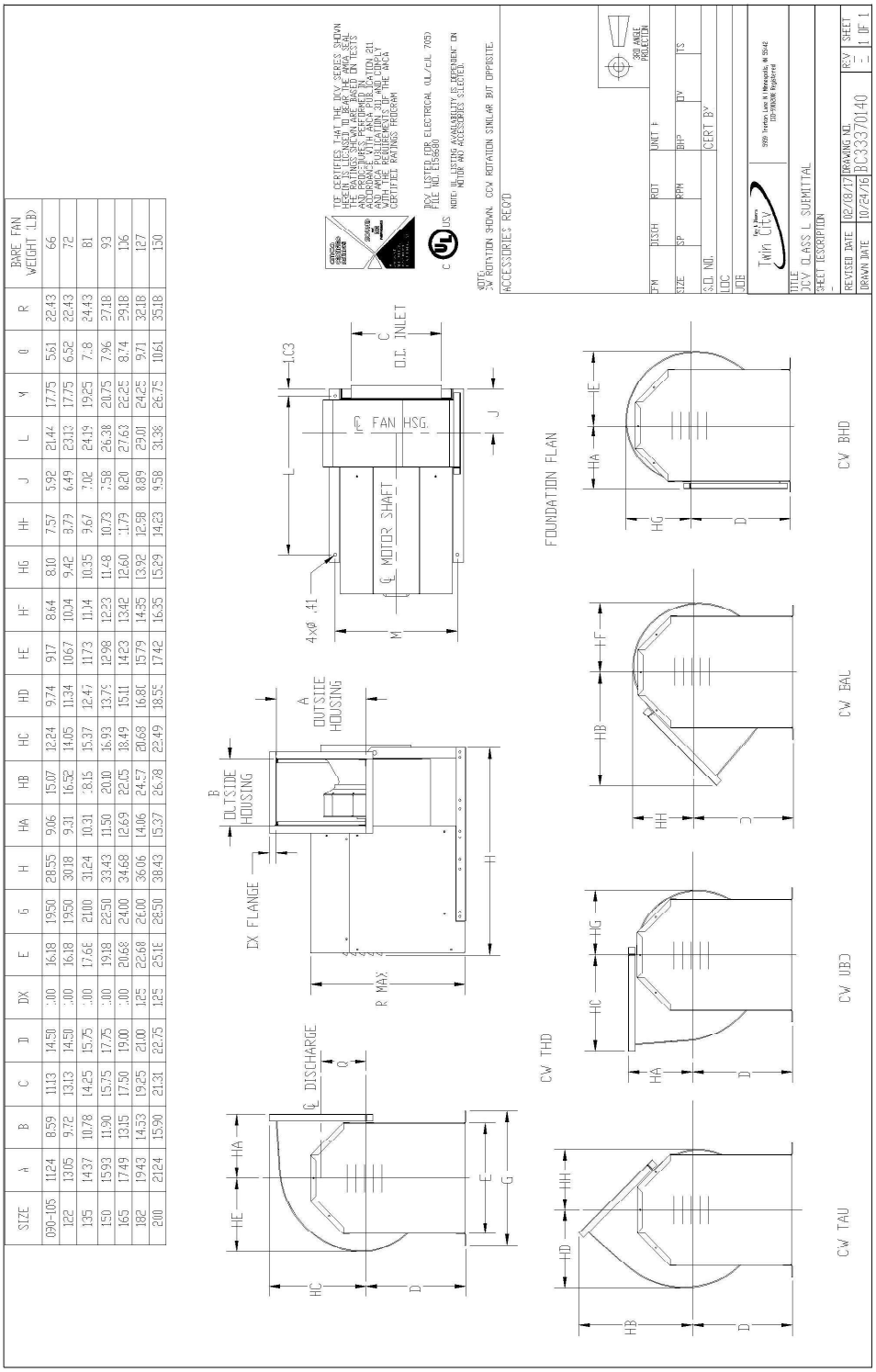

SIZE	A	B	C	D	DX	E	G	H	HA	HB	HC	HD	HE	HF	HG	HH	J	L	Y	Q	R	BARE FAN WEIGHT (LB)
090-105	11.24	8.59	11.13	14.50	.00	16.18	19.50	28.55	9.06	15.07	12.24	9.74	9.17	8.64	8.10	7.57	5.92	21.44	17.75	5.61	22.43	66
122	13.05	9.72	13.13	14.50	.00	16.18	19.50	30.18	9.31	16.52	14.05	11.34	10.67	10.04	9.42	8.79	6.49	23.13	17.75	6.52	22.43	72
135	14.37	10.78	14.25	15.75	.00	17.66	21.00	31.24	10.31	18.15	15.37	12.47	11.73	11.14	10.35	9.67	7.02	24.19	19.25	7.8	24.43	81
150	15.93	11.90	15.75	17.75	.00	19.18	22.50	33.43	11.50	20.10	16.93	13.75	12.98	12.23	11.48	10.73	7.58	26.38	20.75	7.96	27.18	93
165	17.49	13.15	17.50	19.00	.00	20.68	24.00	34.68	12.69	22.05	18.49	15.11	14.23	13.42	12.60	11.79	8.20	27.63	22.25	8.74	29.18	106
182	19.43	14.53	19.25	21.00	.125	22.68	26.00	36.06	14.06	24.57	20.69	16.81	15.79	14.35	13.92	12.38	8.89	29.01	24.25	9.71	32.18	127
200	21.24	15.90	21.31	22.75	.125	25.16	28.50	38.43	15.37	26.78	22.49	18.55	17.42	16.35	15.29	14.23	9.58	31.38	26.75	10.61	35.18	150

SUBMITTAL

Job Name: BSI-GE

Tag: EF-17
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

BCV - Backward Inclined Utility Set

Construction Features

- Steel housing with all-welded construction (class I and II), or galvanized steel housing with lock seam construction (class L).
- Shaft is AISI 1045 steel, turned, ground and polished for accuracy.
- Heavy-duty, grease lubricated pillow block bearings selected for minimum average L-50 life of at least 200,000 hours.
- Deep spun inlet cone, aerodynamically designed for smooth air entry into the wheel.
- Motor compartment allows complete access for servicing and belt tensioning.

See Attached Centrifugal Drawing

Description	Qty	Model	Size	Width	Wt (lb.)
	1	BCV	105	SWSI	100

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	I	CW	10	UBD	--	Vertical

Performance	CFM	SP (in WC)	RPM	Oper. BHP
	525	0.220	1,205	0.05

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1/4	1,800	115/230V/1/60	TEFC	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	55	59	61	63	59	54	46	37	64	49	5.4

LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Flange - Outlet, Unpunched
Weather Cover - Std Type
Variable Speed V-Belt Drive, 1.2 SF
Mount TCF Motor

Job Name: BSI-GE

Tag: EF-17
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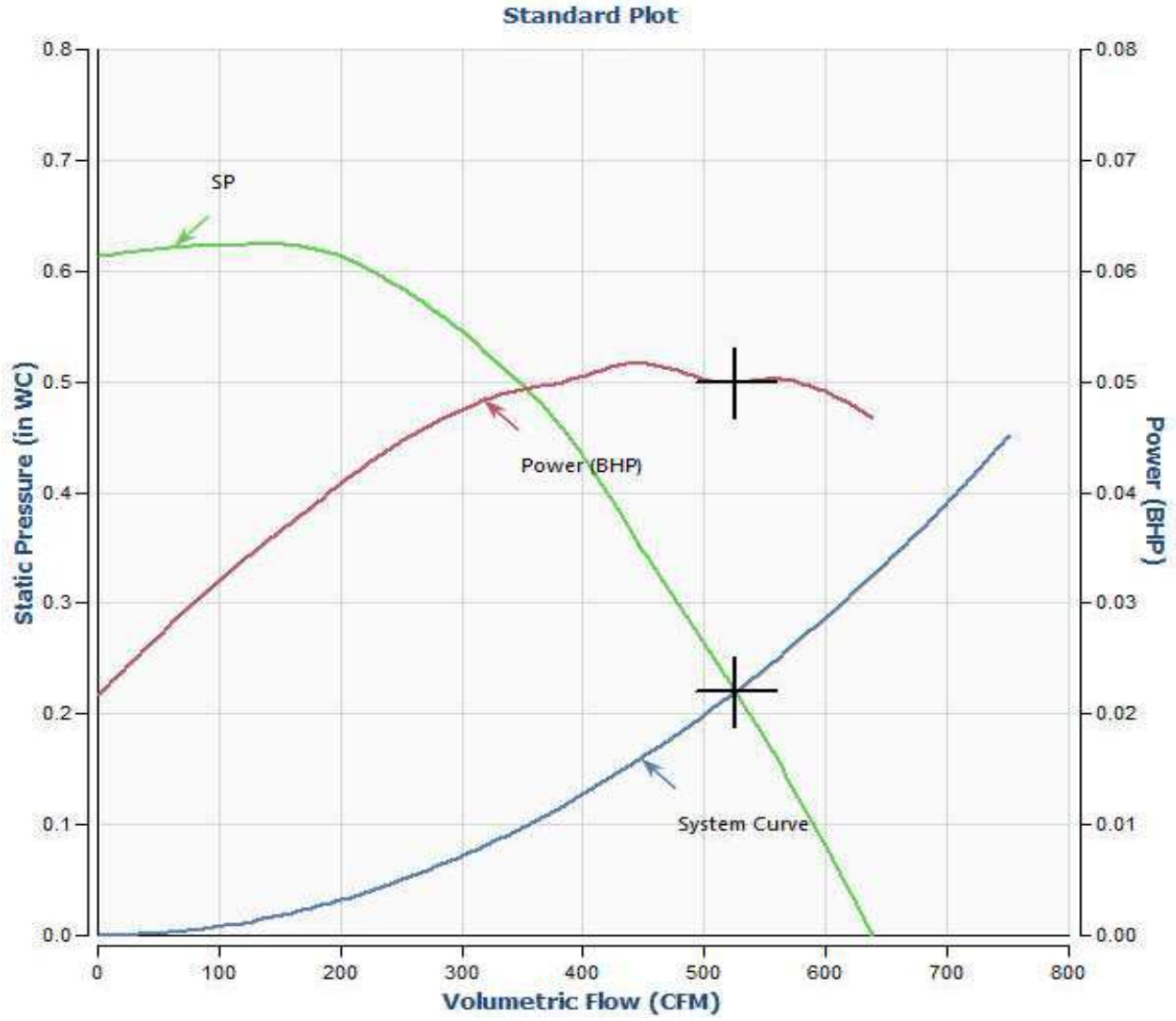

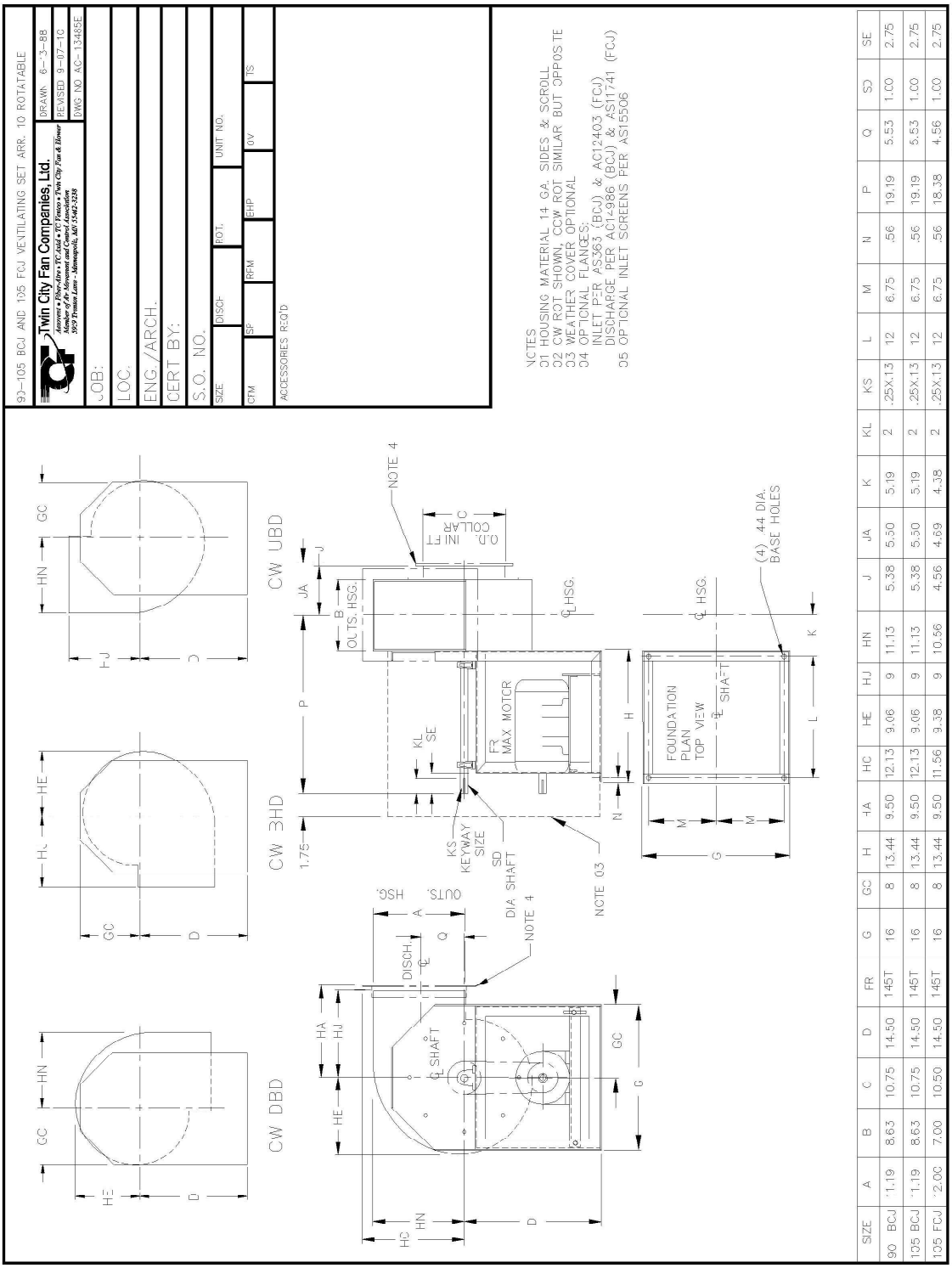

SIZE	A	B	C	D	FR	G	GC	H	HA	HC	HE	HJ	HN	J	JA	K	KL	KS	L	M	N	P	Q	SD	SE
90 BCJ	1.19	8.63	10.75	14.50	145T	16	8	13.44	9.50	12.13	9.06	9	11.13	5.38	5.50	5.19	2	.25X.13	12	6.75	.56	19.19	5.53	1.00	2.75
105 BCJ	1.19	8.63	10.75	14.50	145T	16	8	13.44	9.50	12.13	9.06	9	11.13	5.38	5.50	5.19	2	.25X.13	12	6.75	.56	19.19	5.53	1.00	2.75
105 FCJ	2.00	7.00	10.50	14.50	145T	16	8	13.44	9.50	11.56	9.38	9	10.56	4.56	4.69	4.38	2	.25X.13	12	6.75	.56	18.38	4.56	1.00	2.75

DWG NO AC13485-E

SUBMITTAL

Job Name: BSI-GE

Tag: EF-18
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

TFE - High Velocity Inline Centrifugal Exhaust Fan

Construction Features

• Incorporates a vertically mounted inline centrifugal fan, specially modified for laboratory fume hood exhaust.
• Discharge cap includes outlet venturi to meet require outlet velocity.
• Heavy-duty curb cap will permit optional stack extensions up to 10 feet total height from the roof line without the need for guy wires.

See Attached Fume Exhaust Drawing

Description	Qty	Model	Size	Wt (lb.)
	1	TFE	122C7	625

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	I	CW	9	VRM	--	N/A

Performance	CFM	SP (in WC)	RPM	Oper. BHP	Induced Flow (CFM)	Windband Ex. Flow (CFM)	Addl. Bypass (CFM)	Dilution Ratio	Plume Ht. (ft)
	800	0.480	1681	0.28	N/A	N/A	0	N/A	13.95

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1/3	1800	115/230V/1/60	TEFC	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	70	71	73	70	67	64	62	56	73	58	10.5
	Level at Outlet	74	73	69	69	67	64	61	59	72	58	10.6

LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Access Door - Bolted
Drain - 3/4"
Flanges - Inlet / Outlet, Punched
Belt Tube
Weather Cover - Std Type
Spark Resistant Fan Construction - Type B
Shaft Seal - Std Type
Discharge Cap W/ Venturi
Curb Cap

Extended Lube Lines
UL 705 Package
Hardware-316 Stainless Steel
Variable Speed V-Belt Drive, 2.0 SF
Mount TCF Motor

Job Name: BSI-GE

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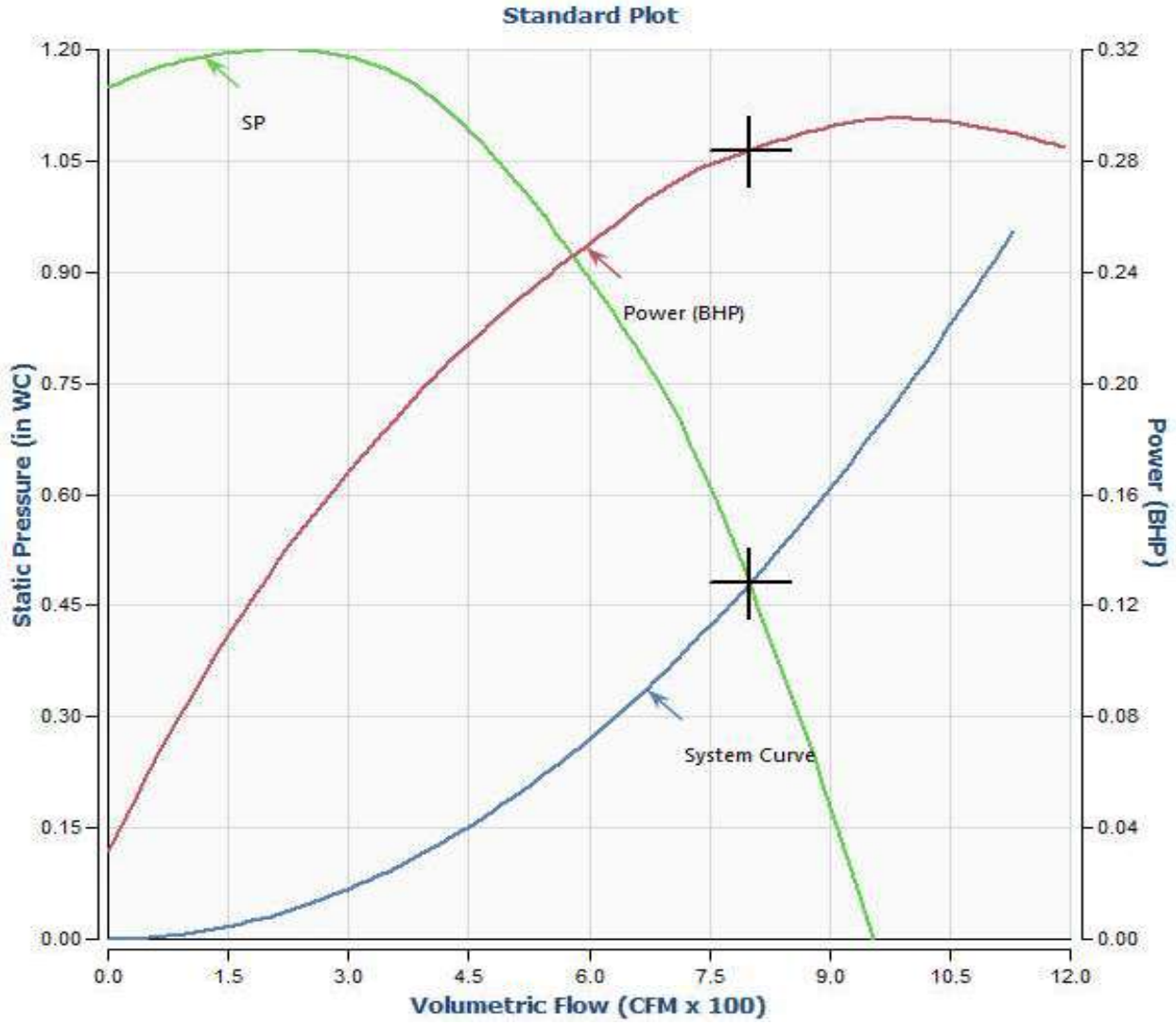

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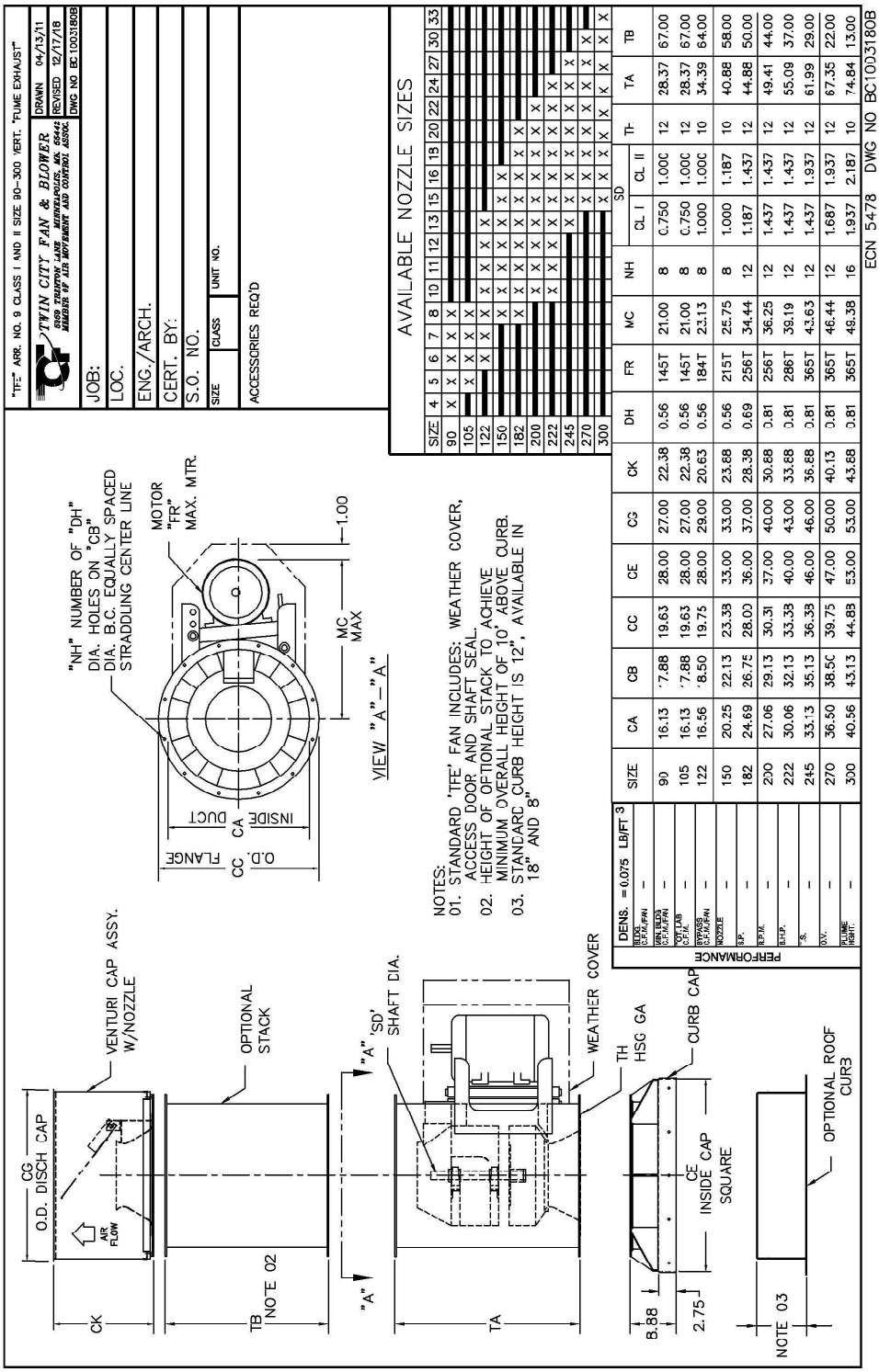

SUBMITTAL

Job Name: BSI-GE

Tag: EF-19
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

TFE - High Velocity Inline Centrifugal Exhaust Fan

Construction Features

• Incorporates a vertically mounted inline centrifugal fan, specially modified for laboratory fume hood exhaust.
• Discharge cap includes outlet venturi to meet require outlet velocity.
• Heavy-duty curb cap will permit optional stack extensions up to 10 feet total height from the roof line without the need for guy wires.

See Attached Fume Exhaust Drawing

Description	Qty	Model	Size	Wt (lb.)
	1	TFE	122C7	625

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	I	CW	9	VRM	--	N/A

Performance	CFM	SP (in WC)	RPM	Oper. BHP	Induced Flow (CFM)	Windband Ex. Flow (CFM)	Addl. Bypass (CFM)	Dilution Ratio	Plume Ht. (ft)
	800	0.850	1871	0.38	N/A	N/A	0	N/A	13.95

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1/2	1800	115/230V/1/60	TEFC	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	74	73	75	73	69	66	64	59	75	61	12.1
	Level at Outlet	78	75	73	71	69	67	64	62	75	60	12.7

LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Access Door - Bolted
Drain - 3/4"
Flanges - Inlet / Outlet, Punched
Belt Tube
Weather Cover - Std Type
Spark Resistant Fan Construction - Type B
Shaft Seal - Std Type
Discharge Cap W/ Venturi
Curb Cap

Job Name: BSI-GE

Tag: EF-19
Customer:
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Extended Lube Lines
UL 705 Package
Hardware-316 Stainless Steel
Variable Speed V-Belt Drive, 2.0 SF
Mount TCF Motor

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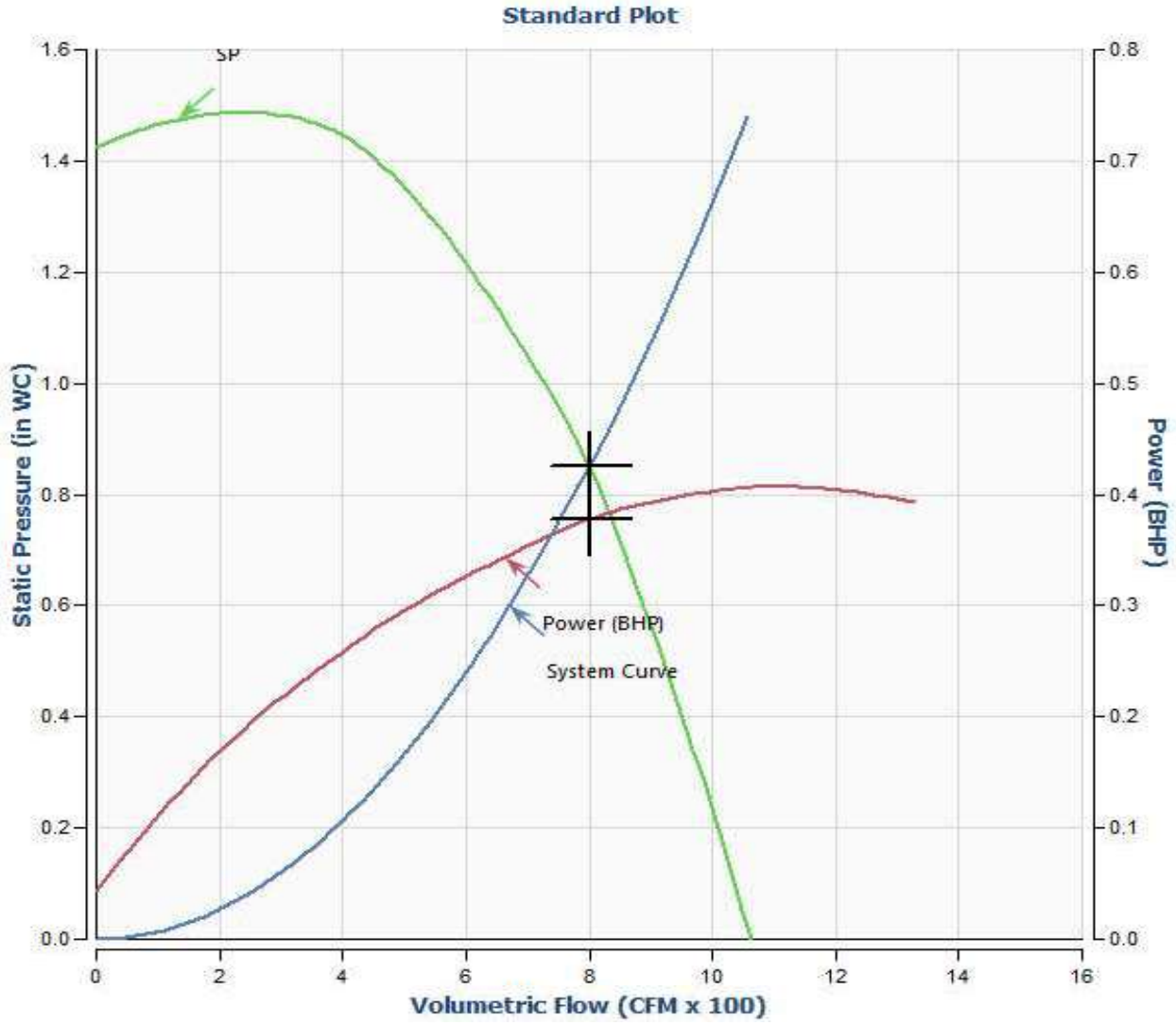

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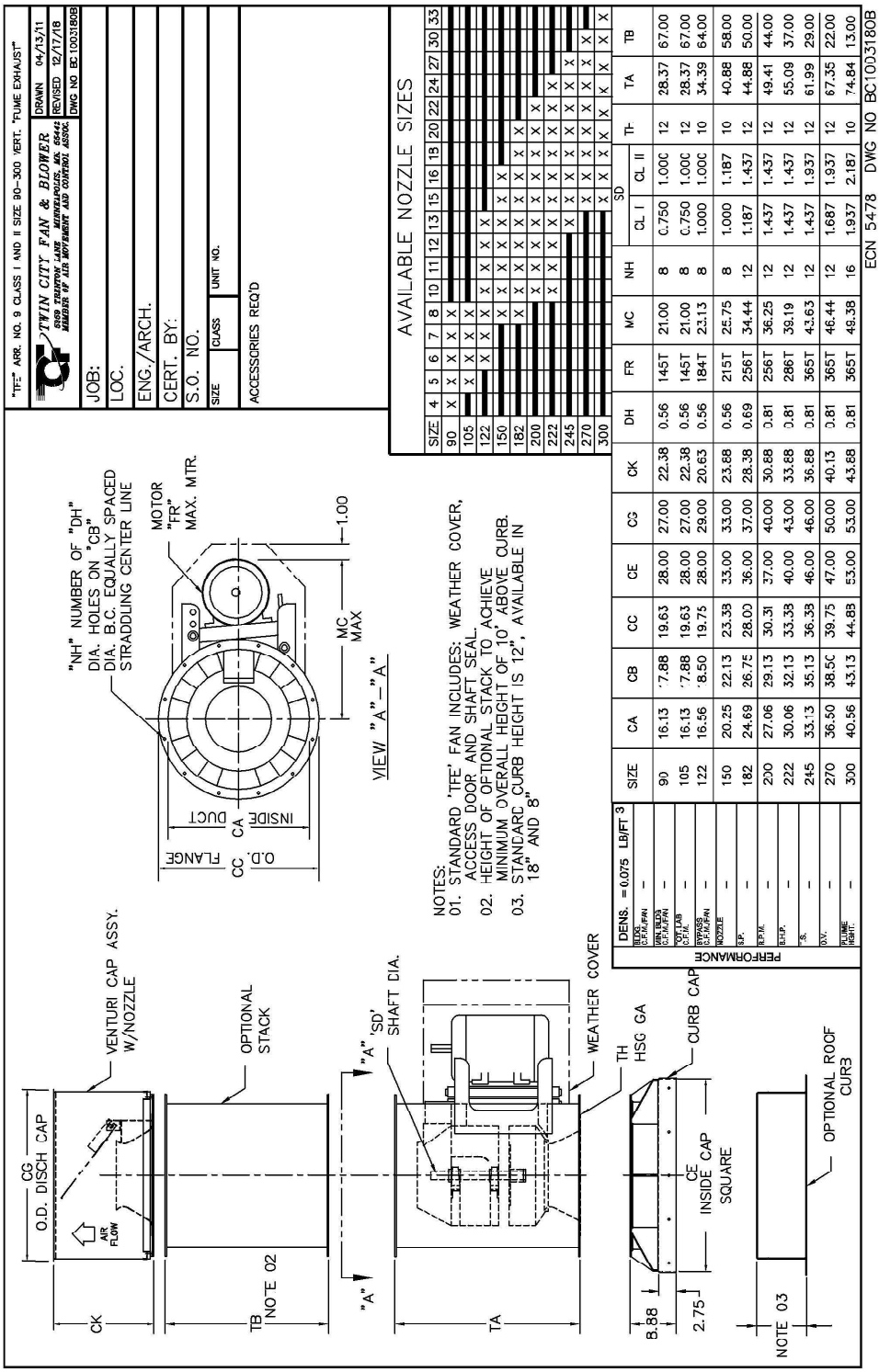
Job ID: BSI-GE-1-Q
Date: August 29, 2025



SIZE	4	5	6	7	8	10	11	12	13	15	16	18	20	22	24	27	30	33
90	X	X	X	X	X	X												
105		X	X	X	X													
122		X	X	X	X	X	X	X	X	X	X							
150					X	X	X	X	X	X	X	X	X					
182					X	X	X	X	X	X	X	X	X	X	X			
200						X	X	X	X	X	X	X	X	X	X	X		
222						X	X	X	X	X	X	X	X	X	X	X	X	X
245									X	X	X	X	X	X	X	X	X	X
270										X	X	X	X	X	X	X	X	X
300										X	X	X	X	X	X	X	X	X

SIZE	CA	CB	CC	CE	C3	CK	DH	FR	MC	NH	SD CL I	SD CL II	TF	TA	TB
90	16.13	7.88	19.63	28.00	27.00	22.38	0.56	145T	21.00	8	0.750	1.000	12	28.37	67.00
105	16.13	7.88	19.63	28.00	27.00	22.38	0.56	145T	21.00	8	0.750	1.000	12	28.37	67.00
122	16.56	8.50	19.75	28.00	29.00	20.63	0.56	184T	23.13	8	1.000	1.000	10	34.39	64.00
150	20.25	22.13	23.33	33.00	33.00	23.88	0.56	215T	25.75	8	1.000	1.187	10	40.88	58.00
182	24.69	26.75	28.00	36.00	37.00	28.38	0.69	256T	34.44	12	1.187	1.437	12	44.88	50.00
200	27.06	29.13	30.31	37.00	40.00	30.88	0.81	256T	36.25	12	1.437	1.437	12	49.41	44.00
222	30.06	32.13	33.33	40.00	43.00	33.88	0.81	286T	39.19	12	1.437	1.437	12	55.09	37.00
245	33.13	35.13	36.33	46.00	46.00	36.88	0.81	365T	43.63	12	1.437	1.937	12	61.99	29.00
270	36.50	38.50	39.75	47.00	50.00	40.13	0.81	365T	46.44	12	1.687	1.937	12	67.35	22.00
300	40.56	43.13	44.83	53.00	53.00	43.88	0.81	365T	48.38	16	1.937	2.187	10	74.84	13.00

SUBMITTAL

Job Name: BSI-GE

Tag: EF-20
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

TFE - High Velocity Inline Centrifugal Exhaust Fan

Construction Features

• Incorporates a vertically mounted inline centrifugal fan, specially modified for laboratory fume hood exhaust.
• Discharge cap includes outlet venturi to meet require outlet velocity.
• Heavy-duty curb cap will permit optional stack extensions up to 10 feet total height from the roof line without the need for guy wires.

See Attached Fume Exhaust Drawing

Description	Qty	Model	Size	Wt (lb.)
	1	TFE	122C7	625

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	I	CW	9	VRM	--	N/A

Performance	CFM	SP (in WC)	RPM	Oper. BHP	Induced Flow (CFM)	Windband Ex. Flow (CFM)	Addl. Bypass (CFM)	Dilution Ratio	Plume Ht. (ft)
	800	0.530	1707	0.30	N/A	N/A	0	N/A	13.95

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1/3	1800	115/230V/1/60	TEFC	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	71	71	73	71	67	64	62	56	73	58	10.6
	Level at Outlet	75	73	70	69	67	64	62	60	72	58	11.0

LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

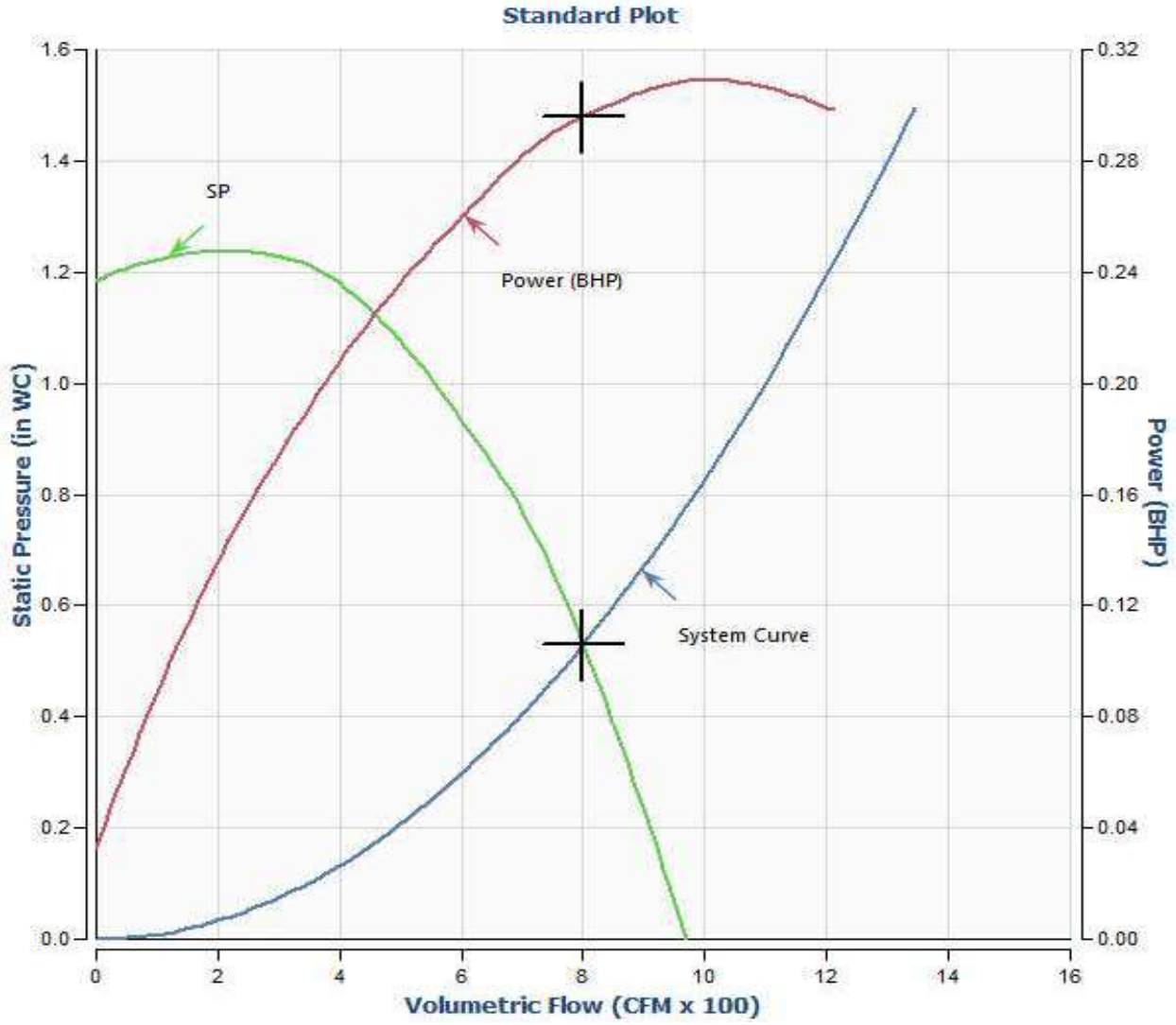
Accessories Included

Access Door - Bolted
Drain - 3/4"
Flanges - Inlet / Outlet, Punched
Belt Tube
Weather Cover - Std Type
Spark Resistant Fan Construction - Type B
Shaft Seal - Std Type
Discharge Cap W/ Venturi
Curb Cap

Extended Lube Lines
UL 705 Package
Hardware-316 Stainless Steel
Variable Speed V-Belt Drive, 2.0 SF
Mount TCF Motor

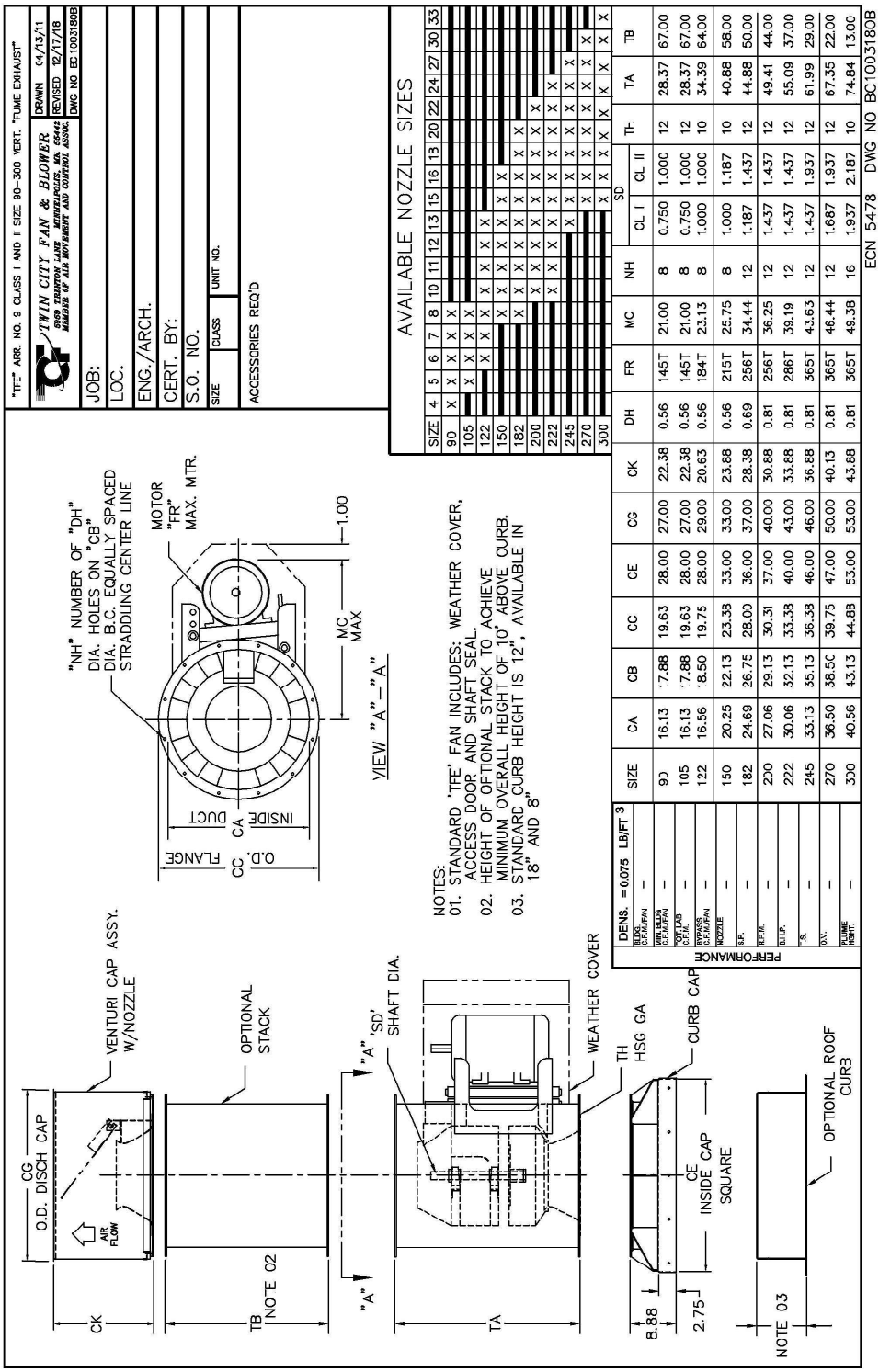
Job Name: BSI-GE

Tag: EF-20
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



TCF TWIN CITY FAN

Tag: EF-20
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



SIZE	4	5	6	7	8	10	11	12	13	15	16	18	20	22	24	27	30	33
90	X	X	X	X	X	X												
105		X	X	X	X													
122		X	X	X	X		X	X	X	X								
150					X	X	X	X	X	X	X	X	X					
182					X	X	X	X	X	X	X	X	X	X	X			
200						X	X	X	X	X	X	X	X	X	X	X		
222						X	X	X	X	X	X	X	X	X	X	X	X	X
245									X	X	X	X	X	X	X	X	X	X
270										X	X	X	X	X	X	X	X	X
300										X	X	X	X	X	X	X	X	X

SIZE	CA	CB	CC	CE	C3	CK	DH	FR	MC	NH	SD CL I	SD CL II	TF	TA	TB
90	16.13	7.88	19.63	28.00	27.00	22.38	0.56	145T	21.00	8	0.750	1.000	12	28.37	67.00
105	16.13	7.88	19.63	28.00	27.00	22.38	0.56	145T	21.00	8	0.750	1.000	12	28.37	67.00
122	16.56	8.50	19.75	28.00	29.00	20.63	0.56	184T	23.13	8	1.000	1.000	10	34.39	64.00
150	20.25	22.13	23.33	33.00	33.00	23.88	0.56	215T	25.75	8	1.000	1.187	10	40.88	58.00
182	24.69	26.75	28.00	36.00	37.00	28.38	0.69	256T	34.44	12	1.187	1.437	12	44.88	50.00
200	27.06	29.13	30.31	37.00	40.00	30.88	0.81	256T	36.25	12	1.437	1.437	12	49.41	44.00
222	30.06	32.13	33.33	40.00	43.00	33.88	0.81	286T	39.19	12	1.437	1.437	12	55.09	37.00
245	33.13	35.13	36.33	46.00	46.00	36.88	0.81	365T	43.63	12	1.437	1.937	12	61.99	29.00
270	36.50	38.50	39.75	47.00	50.00	40.13	0.81	365T	46.44	12	1.687	1.937	12	67.35	22.00
300	40.56	43.13	44.83	53.00	53.00	43.88	0.81	365T	48.38	16	1.937	2.187	10	74.84	13.00

SUBMITTAL

Job Name: BSI-GE

Tag: EF-21
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

BCV - Backward Inclined Utility Set

Construction Features

- Steel housing with all-welded construction (class I and II), or galvanized steel housing with lock seam construction (class L).
- Shaft is AISI 1045 steel, turned, ground and polished for accuracy.
- Heavy-duty, grease lubricated pillow block bearings selected for minimum average L-50 life of at least 200,000 hours.
- Deep spun inlet cone, aerodynamically designed for smooth air entry into the wheel.
- Motor compartment allows complete access for servicing and belt tensioning.

See Attached Centrifugal Drawing

Description	Qty	Model	Size	Width	Wt (lb.)
	1	BCV	165	SWSI	272

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	I	CW	10	UBD	--	Vertical

Performance	CFM	SP (in WC)	RPM	Oper. BHP
	545	0.150	409	0.02

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1	1,800	115/230V/1/60	TEFC	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	55	55	54	56	46	39	33	27	55	40	2.9

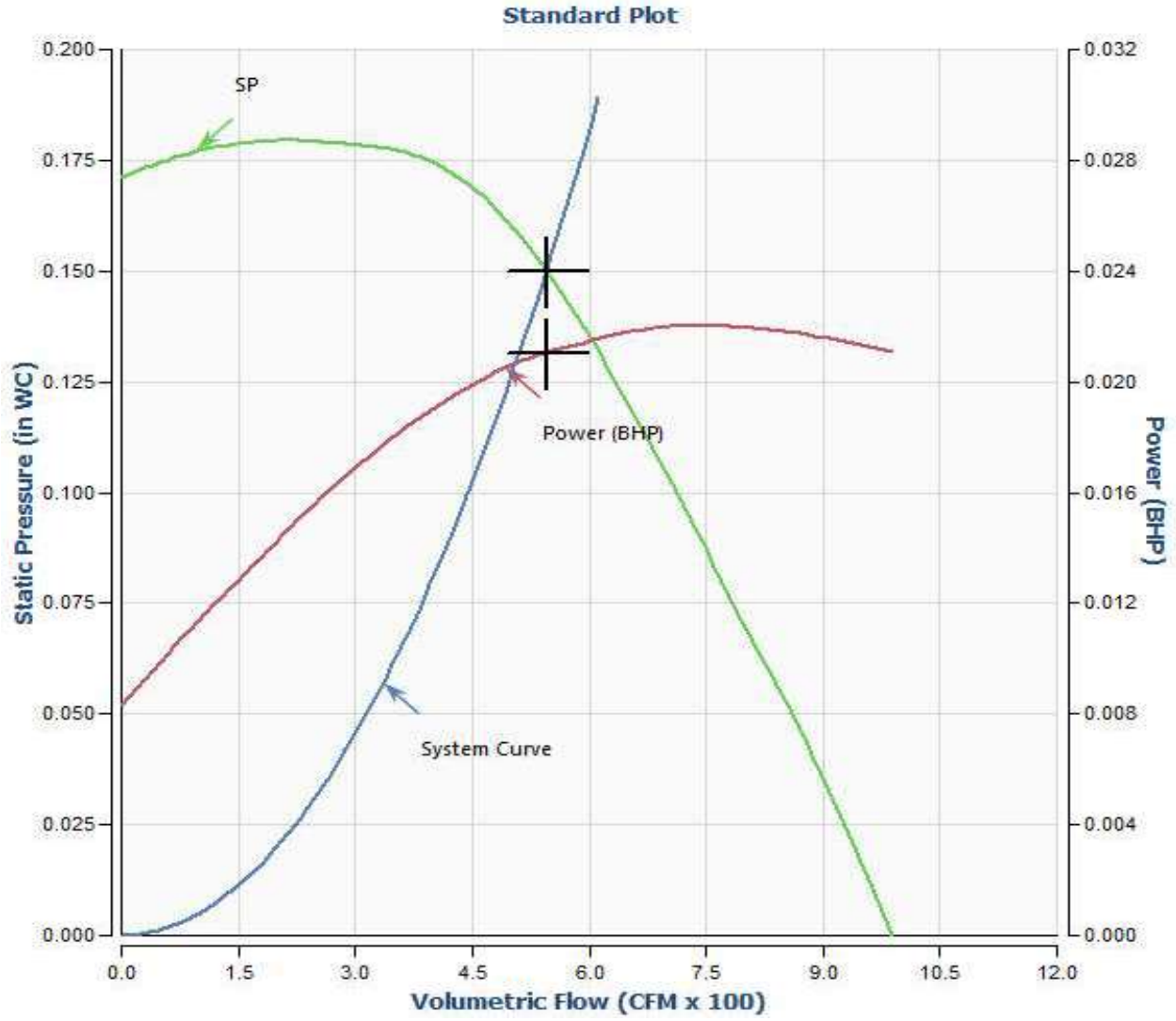
LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Weather Cover - Std Type
Variable Speed V-Belt Drive, 1.2 SF
Mount TCF Motor

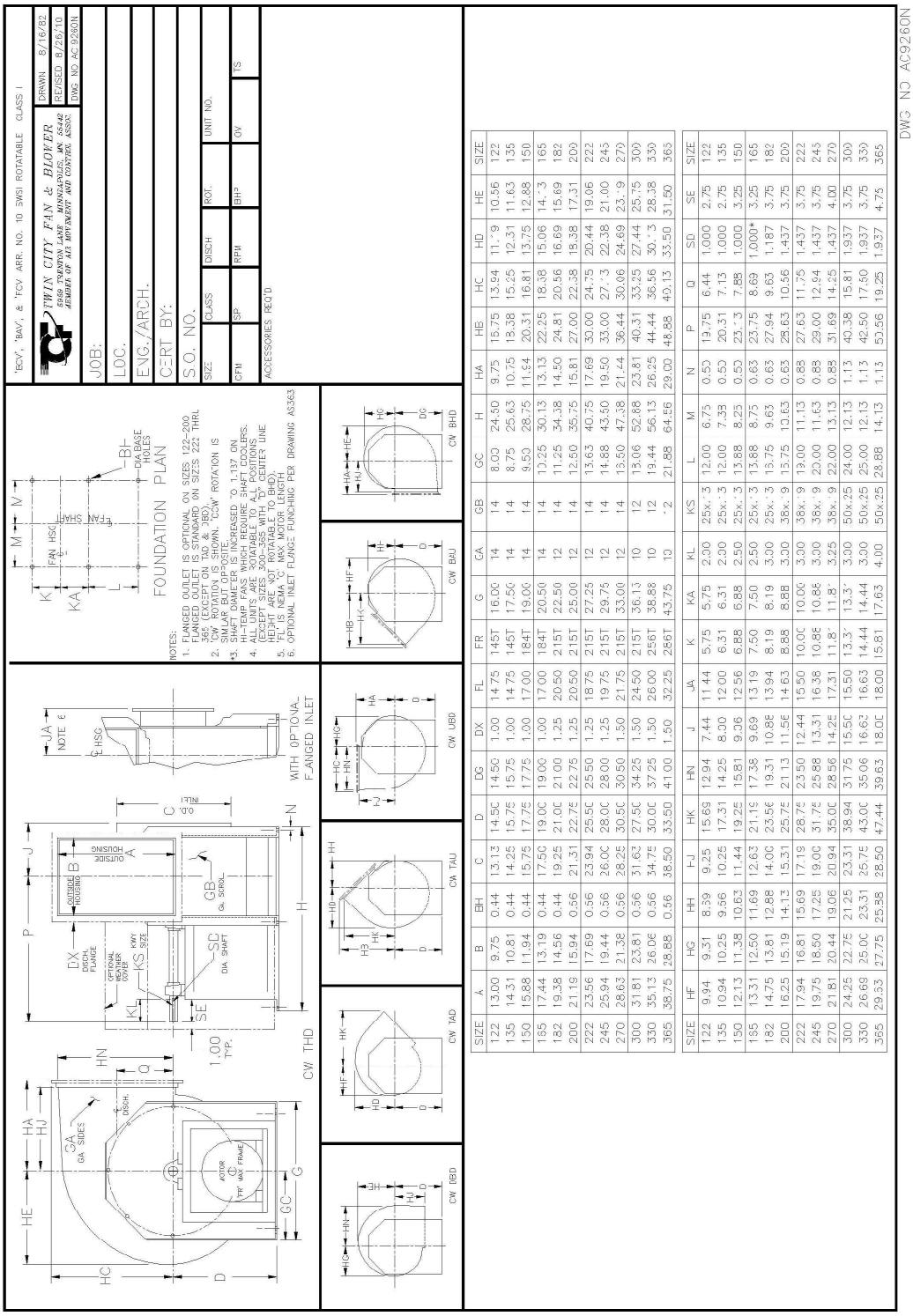
Job Name: BSI-GE

Tag: EF-21
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



TCF TWIN CITY FAN

Tag: EF-21
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



SIZE	A	B	BH	C	D	DG	DX	FL	FR	G	GA	GB	GC	H	HA	HB	HC	HD	HE	SIZE
122	13.00	9.75	0.44	13.13	14.50	14.50	1.00	14.75	145T	16.00	14	14	8.00	24.50	9.75	15.75	13.94	11.19	10.56	122
135	14.31	10.81	0.44	14.25	15.75	15.75	1.00	14.75	145T	17.50	14	14	8.75	25.63	10.75	18.38	15.25	12.31	11.63	135
150	15.88	11.94	0.44	15.75	17.75	17.75	1.00	17.00	184T	19.00	14	14	9.50	28.75	11.94	20.31	16.81	13.75	12.88	150
165	17.44	13.19	0.44	17.50	19.00	19.00	1.00	17.00	184T	20.50	14	14	10.25	30.13	13.13	22.25	18.38	15.06	14.13	165
182	19.38	14.56	0.44	19.25	21.00	21.00	1.25	20.50	215T	22.50	12	14	11.25	34.38	14.50	24.81	20.56	16.69	15.69	182
200	21.19	15.94	0.56	21.31	22.75	22.75	1.25	20.50	215T	25.00	12	14	12.50	35.75	15.81	27.00	22.38	18.38	17.31	200
222	23.56	17.69	0.56	23.94	25.50	25.50	1.25	18.75	215T	27.25	12	14	13.63	40.75	17.69	30.00	24.75	20.44	19.06	222
245	25.94	19.44	0.56	26.00	28.00	28.00	1.25	19.75	215T	29.75	12	14	14.88	43.50	19.50	33.00	27.13	22.38	21.00	245
270	28.63	21.38	0.56	28.25	30.50	30.50	1.50	21.75	215T	33.00	12	14	13.50	47.38	21.44	36.44	30.06	24.69	23.19	270
300	31.81	23.81	0.56	31.63	27.50	34.25	1.50	24.50	215T	36.13	10	12	13.06	52.88	23.81	40.31	33.25	27.44	25.75	300
330	35.13	26.06	0.56	34.75	30.00	37.25	1.50	26.00	256T	38.88	10	12	19.44	56.13	26.25	44.44	36.56	30.13	28.38	330
365	38.75	28.88	0.56	38.50	33.50	41.00	1.50	32.25	256T	43.75	10	12	21.88	64.56	29.00	48.88	40.13	33.50	31.50	365

SIZE	HF	HG	HH	I-J	HK	HN	J	JA	K	KA	KL	KS	L	M	N	P	Q	SD	SE	SIZE
122	9.94	9.31	8.39	9.25	15.69	12.94	7.44	11.44	5.75	5.75	2.00	25x.3	12.00	6.75	0.53	19.75	6.44	1.000	2.75	122
135	10.94	10.25	9.56	10.25	17.31	14.25	8.00	12.00	6.31	6.31	2.00	25x.3	12.00	7.38	0.53	20.31	7.13	1.000	2.75	135
150	12.13	11.38	10.63	11.44	19.25	15.81	9.06	12.56	6.88	6.88	2.50	25x.3	13.88	8.25	0.53	23.13	7.88	1.000	3.25	150
165	13.31	12.50	11.69	12.63	21.19	17.38	9.69	13.19	7.50	7.50	2.50	25x.3	13.88	8.75	0.63	23.75	8.69	1.000*	3.25	165
182	14.75	13.81	12.88	14.00	23.56	19.31	10.88	13.94	8.19	8.19	3.00	25x.3	13.75	9.63	0.63	27.94	9.63	1.187	3.75	182
200	16.25	15.19	14.13	15.31	25.75	21.13	11.56	14.63	8.88	8.88	3.00	38x.9	15.75	10.63	0.63	28.63	10.56	1.437	3.75	200
222	17.94	16.81	15.69	17.19	28.75	23.50	12.44	15.50	10.00	10.00	3.00	38x.9	19.00	11.13	0.88	27.63	11.75	1.437	3.75	222
245	19.75	18.50	17.25	19.00	31.75	25.88	13.31	16.38	10.88	10.88	3.00	38x.9	23.00	11.63	0.88	29.00	12.94	1.437	3.75	245
270	21.81	20.44	19.06	20.94	35.00	28.56	14.25	17.31	11.81	11.81	3.25	38x.9	22.00	13.13	0.88	31.69	14.25	1.437	4.00	270
300	24.25	22.75	21.25	23.31	38.94	31.75	15.50	15.50	13.31	13.31	3.00	50x.25	24.00	12.13	1.13	40.38	15.81	1.937	3.75	300
330	26.69	25.00	23.31	25.75	43.00	35.06	16.63	16.63	14.44	14.44	3.00	50x.25	25.00	12.13	1.13	42.50	17.50	1.937	3.75	330
365	29.53	27.75	25.38	28.50	47.44	39.63	18.00	18.00	15.81	17.63	4.00	50x.25	28.88	14.13	1.13	53.56	19.25	1.937	4.75	365

SUBMITTAL

Job Name: BSI-GE

Tag: EF-22
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

BCV - Backward Inclined Utility Set

Construction Features

- Steel housing with all-welded construction (class I and II), or galvanized steel housing with lock seam construction (class L).
- Shaft is AISI 1045 steel, turned, ground and polished for accuracy.
- Heavy-duty, grease lubricated pillow block bearings selected for minimum average L-50 life of at least 200,000 hours.
- Deep spun inlet cone, aerodynamically designed for smooth air entry into the wheel.
- Motor compartment allows complete access for servicing and belt tensioning.

See Attached Centrifugal Drawing

Description	Qty	Model	Size	Width	Wt (lb.)
	1	BCV	150	SWSI	232

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	I	CW	10	UBD	--	Vertical

Performance	CFM	SP (in WC)	RPM	Oper. BHP
	1,100	0.530	934	0.16

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1	1,800	115/230V/1/60	TEFC	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	69	71	71	69	73	64	56	51	75	60	11.2

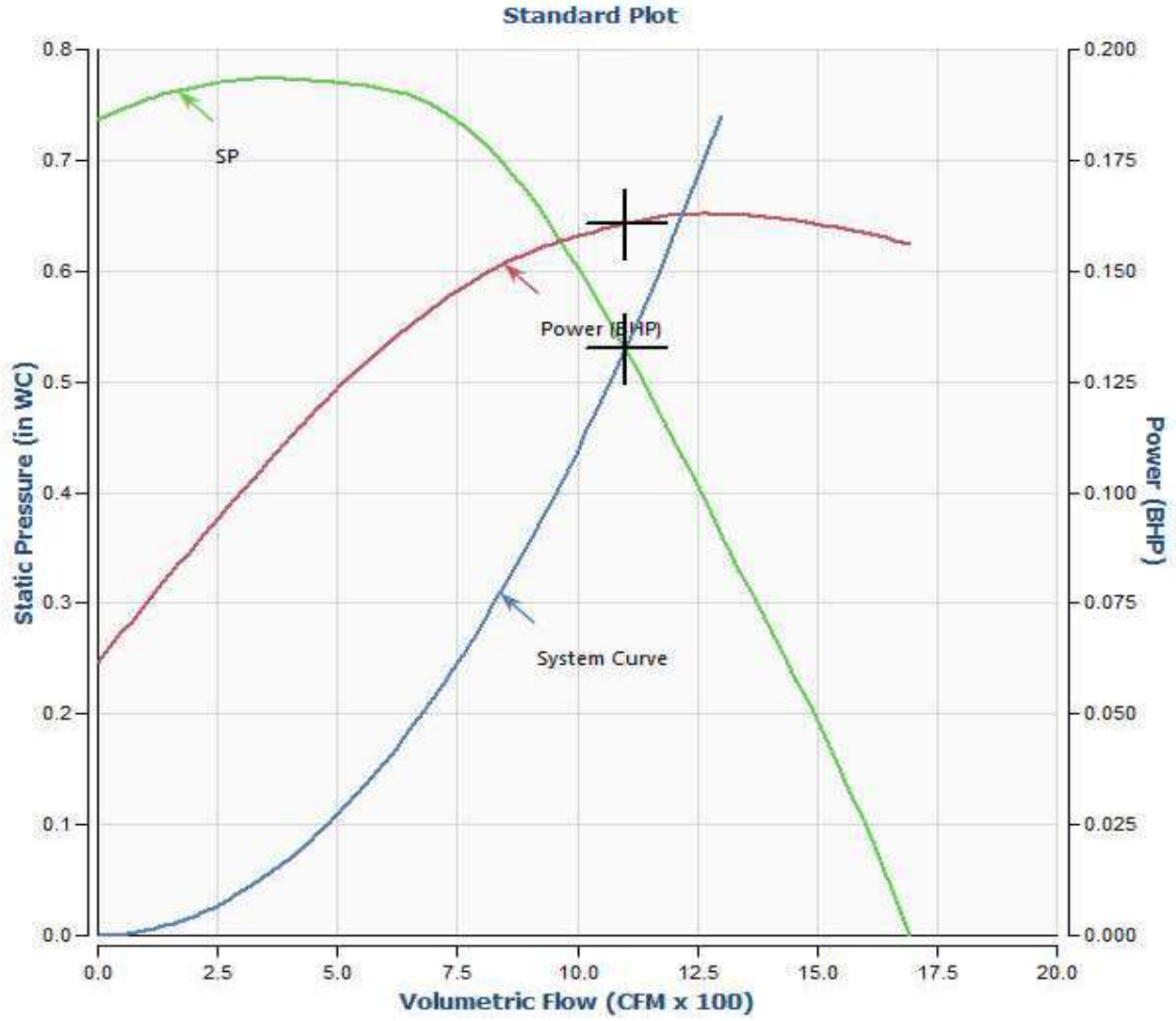
LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Weather Cover - Std Type
Variable Speed V-Belt Drive, 1.2 SF
Mount TCF Motor

Job Name: BSI-GE

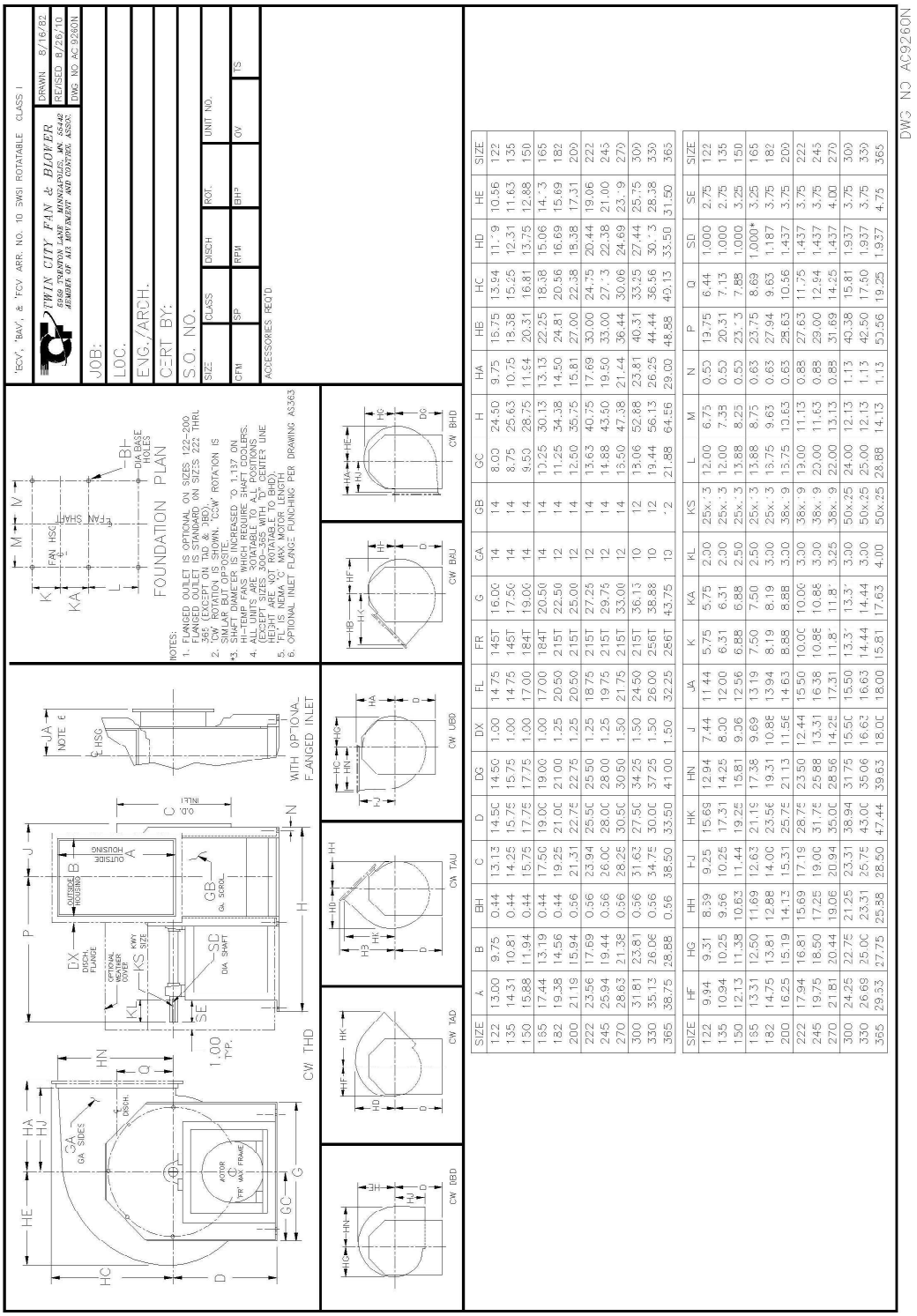
Tag: EF-22
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



SUBMITTAL

Job Name: BSI-GE

Tag: EF-22
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



DWG NO AC92960N

SIZE	A	B	BH	C	D	DG	DX	FL	FR	G	GA	GB	KL	KS	L	M	N	P	Q	SD	SE
122	13.00	9.75	0.44	13.13	14.50	14.50	1.00	14.75	145T	16.00	14	14	2.00	25x..3	12.00	6.75	0.53	19.75	6.44	1.000	2.75
135	14.31	10.81	0.44	14.25	15.75	15.75	1.00	14.75	145T	17.50	14	14	2.00	25x..3	12.00	7.38	0.53	20.31	7.13	1.000	2.75
150	15.88	11.94	0.44	15.75	17.75	17.75	1.00	17.00	184T	19.00	14	14	2.00	25x..3	13.88	8.25	0.53	23..3	7.88	1.000	3.25
165	17.44	13.19	0.44	17.50	19.00	19.00	1.00	17.00	184T	20.50	14	14	2.50	25x..3	13.88	8.75	0.63	23.75	8.69	1.000*	3.25
182	19.38	14.56	0.44	19.25	21.00	21.00	1.25	20.50	215T	22.50	12	14	3.00	25x..3	13.75	9.63	0.63	27.94	9.63	1.187	3.75
200	21.19	15.94	0.56	21.31	22.75	22.75	1.25	20.50	215T	25.00	12	14	3.00	38x..9	13.75	10.63	0.63	28.63	10.56	1.437	3.75
222	23.56	17.69	0.56	23.94	25.50	25.50	1.25	18.75	215T	27.25	12	14	3.00	38x..9	19.00	11.13	0.88	27.63	11.75	1.437	3.75
245	25.94	19.44	0.56	26.00	28.00	28.00	1.25	19.75	215T	29.75	12	14	3.00	38x..9	23.00	11.63	0.88	29.00	12.94	1.437	3.75
270	28.63	21.38	0.56	28.25	30.50	30.50	1.50	21.75	215T	33.00	12	14	3.00	38x..9	23.00	11.63	0.88	31.69	14.25	1.437	4.00
300	31.81	23.81	0.56	31.63	27.50	34.25	1.50	24.50	215T	36.13	10	12	3.25	38x..9	22.00	13.13	0.88	38x..9	14.25	1.437	4.00
330	35.13	26.06	0.56	34.75	30.00	37.25	1.50	26.00	256T	38.88	10	12	3.25	50x.25	24.00	12.13	1.13	42.50	17.50	1.937	3.75
365	38.75	28.88	0.56	38.50	33.50	41.00	1.50	32.25	256T	43.75	10	12	4.00	50x.25	25.00	12.13	1.13	50.56	19.25	1.937	4.75

SIZE	HF	HG	HH	I-J	HK	HN	J	JA	K	KA	SIZE	HE	HA	HB	HC	HD	SE
122	9.94	9.31	8.39	9.25	15.69	12.94	7.44	11.44	5.75	5.75	122	10.56	9.75	15.75	13.94	11.·9	2.75
135	10.94	10.25	9.56	10.25	17.31	14.25	8.00	12.00	6.31	6.31	135	11.63	10.75	18.38	15.25	12.31	2.75
150	12.13	11.38	10.63	11.44	19.25	15.81	9.06	12.56	6.88	6.88	150	12.88	11.94	20.31	16.81	13.75	3.25
165	13.31	12.50	11.69	12.63	21.19	17.38	9.69	13.19	7.50	7.50	165	14.·3	13.13	22.25	18.38	15.06	3.25
182	14.75	13.81	12.88	14.00	23.56	19.31	10.88	13.94	8.19	8.19	182	15.69	14.50	24.81	20.56	16.69	3.75
200	16.25	15.19	14.13	15.31	25.75	21.13	11.56	14.63	8.88	8.88	200	17.31	15.81	27.00	22.38	18.38	3.75
222	17.94	16.81	15.69	17.19	28.75	23.50	12.44	15.50	10.00	10.00	222	19.06	17.69	30.00	24.75	20.44	3.75
245	19.75	18.50	17.25	19.00	31.75	25.88	13.31	16.38	10.88	10.88	243	21.00	19.50	33.00	27.·3	22.38	3.75
270	21.81	20.44	19.06	20.94	35.00	28.56	14.25	17.31	11.8·	11.8·	270	23..9	21.44	36.44	30.06	24.69	4.00
300	24.25	22.75	21.25	23.31	38.94	31.75	15.50	15.50	13.3·	13.3·	300	25.75	23.81	40.31	33.25	27.44	4.00
330	26.69	25.00	23.31	25.75	43.00	35.06	16.63	16.63	14.44	14.44	330	28.38	26.25	44.44	36.56	30.·3	4.00
365	29.53	27.75	25.88	28.50	47.44	39.63	18.00	18.00	15.81	17.63	365	31.50	29.00	48.88	40.13	33.50	4.00

SUBMITTAL

Job Name: BSI-GE

Tag: EF-23
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

TFE - High Velocity Inline Centrifugal Exhaust Fan

Construction Features

• Incorporates a vertically mounted inline centrifugal fan, specially modified for laboratory fume hood exhaust.
• Discharge cap includes outlet venturi to meet require outlet velocity.
• Heavy-duty curb cap will permit optional stack extensions up to 10 feet total height from the roof line without the need for guy wires.

See Attached Fume Exhaust Drawing

Description	Qty	Model	Size	Wt (lb.)
	1	TFE	122C7	625

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	I	CW	9	VRM	--	N/A

Performance	CFM	SP (in WC)	RPM	Oper. BHP	Induced Flow (CFM)	Windband Ex. Flow (CFM)	Addl. Bypass (CFM)	Dilution Ratio	Plume Ht. (ft)
	800	0.760	1825	0.35	N/A	N/A	0	N/A	13.95

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1	1800	115/230V/1/60	EXPL	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	73	73	75	72	69	65	64	58	75	60	11.9
	Level at Outlet	77	75	72	71	69	66	63	61	74	60	12.1

LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

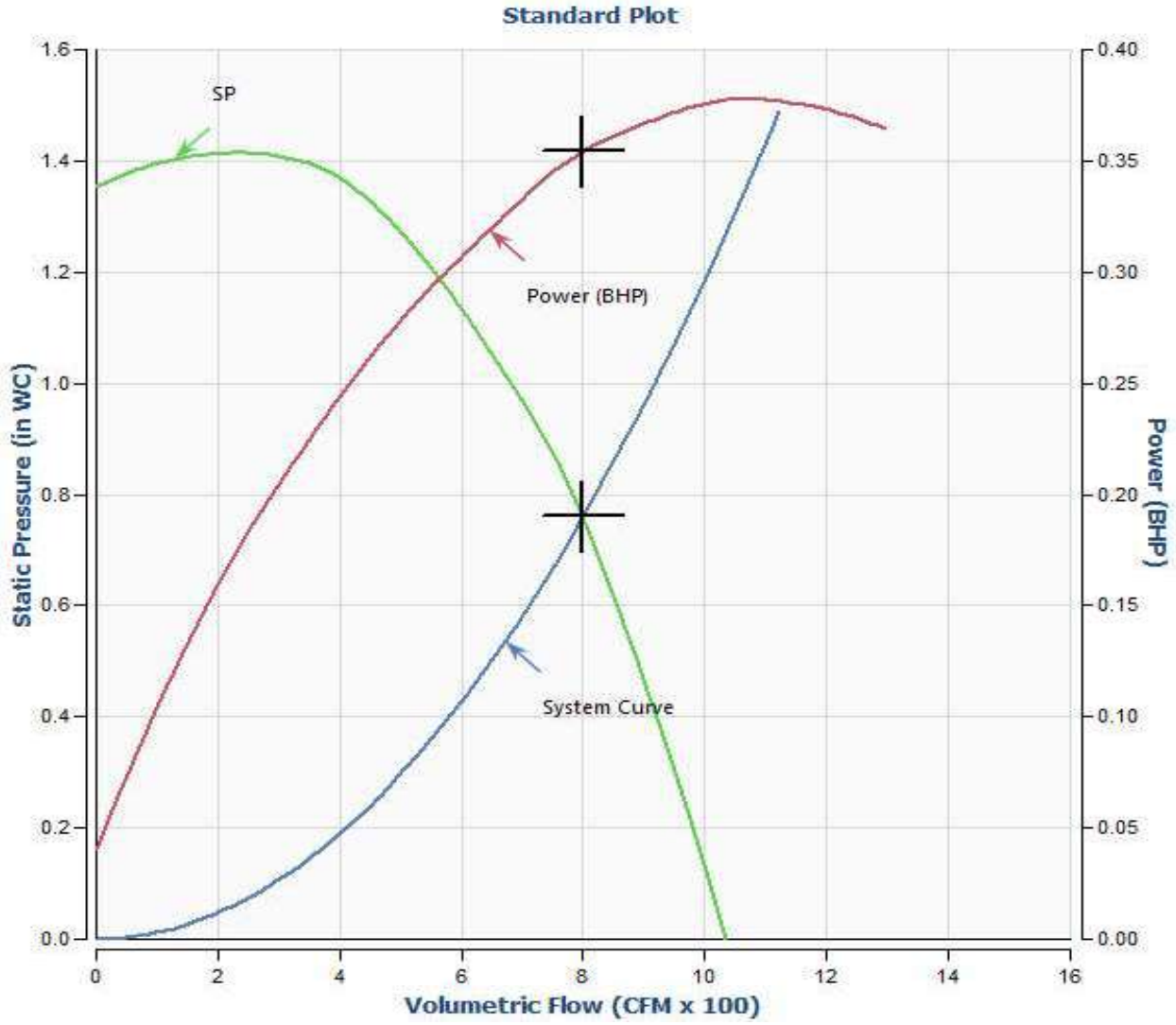
Accessories Included

Access Door - Bolted
Drain - 3/4"
Flanges - Inlet / Outlet, Punched
Belt Tube
Weather Cover - Std Type
Spark Resistant Fan Construction - Type B
Shaft Seal - Std Type
Discharge Cap W/ Venturi
Curb Cap

Extended Lube Lines
Hardware-316 Stainless Steel
Variable Speed V-Belt Drive, 2.0 SF
Mount TCF Motor

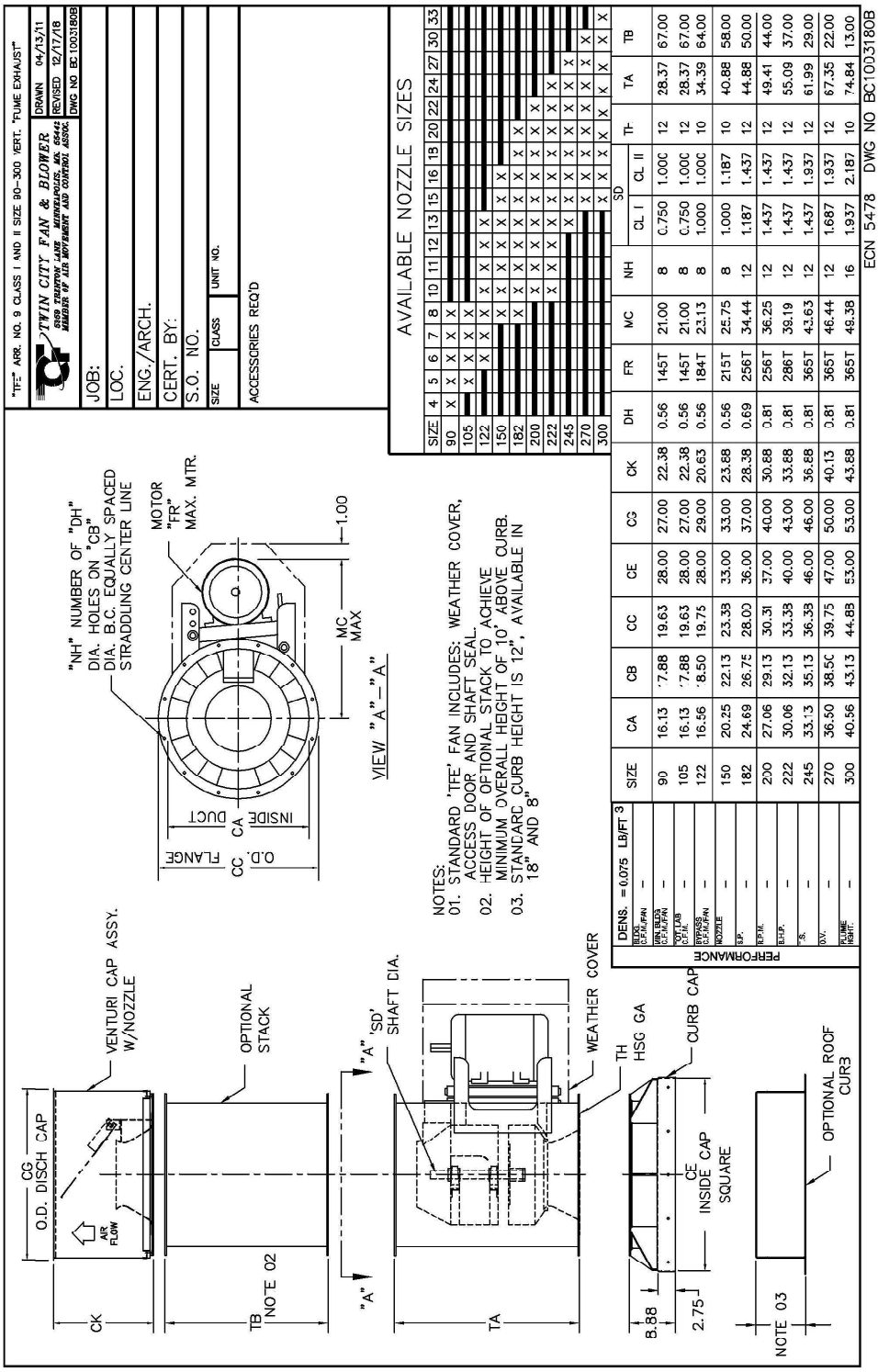
Job Name: BSI-GE

Tag: EF-23
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



TCF TWIN CITY FAN

Tag: EF-23
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



SIZE	4	5	6	7	8	10	11	12	13	15	16	18	20	22	24	27	30	33
90	X	X	X	X	X	X												
105		X	X	X	X	X												
122		X	X	X	X	X	X	X	X	X								
150					X	X	X	X	X	X	X	X	X					
182					X	X	X	X	X	X	X	X	X	X	X			
200						X	X	X	X	X	X	X	X	X	X	X		
222						X	X	X	X	X	X	X	X	X	X	X	X	X
245									X	X	X	X	X	X	X	X	X	X
270										X	X	X	X	X	X	X	X	X
300										X	X	X	X	X	X	X	X	X

SIZE	FR	MC	NH	SD CL I	SD CL II	TF	TA	TB
90	145T	21.00	8	0.750	1.000	12	28.37	67.00
105	145T	21.00	8	0.750	1.000	12	28.37	67.00
122	184T	23.13	8	1.000	1.000	10	34.39	64.00
150	215T	25.75	8	1.000	1.187	10	40.88	58.00
182	256T	34.44	12	1.187	1.437	12	44.88	50.00
200	256T	36.25	12	1.437	1.437	12	49.41	44.00
222	286T	39.19	12	1.437	1.437	12	55.09	37.00
245	365T	43.63	12	1.437	1.937	12	61.99	29.00
270	365T	46.44	12	1.687	1.937	12	67.35	22.00
300	365T	48.38	16	1.937	2.187	10	74.84	13.00

SIZE	CA	CB	CC	CE	C3	CK	DH
90	16.13	7.88	19.63	28.00	27.00	22.38	0.56
105	16.13	7.88	19.63	28.00	27.00	22.38	0.56
122	16.56	8.50	19.75	28.00	29.00	20.63	0.56
150	20.25	22.13	23.33	33.00	33.00	23.88	0.56
182	24.69	26.75	28.00	36.00	37.00	28.38	0.69
200	27.06	29.13	30.31	37.00	40.00	30.88	0.81
222	30.06	32.13	33.33	40.00	43.00	33.88	0.81
245	33.13	35.13	36.33	46.00	46.00	36.88	0.81
270	36.50	38.50	39.75	47.00	50.00	40.13	0.81
300	40.56	43.13	44.88	53.00	53.00	43.88	0.81

PERFORMANCE	
BLDG. C.F.M./PAN	–
MIN. BLDG. C.F.M./PAN	–
TOT. LAB C.F.M.	–
BYPASS C.F.M./PAN	–
NOZZLE	–
S.P.	–
R.P.M.	–
B.H.P.	–
η	–
O.V.	–
PLUME HEIGHT	–

SUBMITTAL

Job Name: BSI-GE

Tag: EF-24
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

BCV - Backward Inclined Utility Set

Construction Features

• Steel housing with all-welded construction (class I and II), or galvanized steel housing with lock seam construction (class L).
• Shaft is AISI 1045 steel, turned, ground and polished for accuracy.
• Heavy-duty, grease lubricated pillow block bearings selected for minimum average L-50 life of at least 200,000 hours.
• Deep spun inlet cone, aerodynamically designed for smooth air entry into the wheel.
• Motor compartment allows complete access for servicing and belt tensioning.

See Attached Centrifugal Drawing

Description	Qty	Model	Size	Width	Wt (lb.)
	1	BCV	165	SWSI	237

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	I	CW	10	UBD	--	Vertical

Performance	CFM	SP (in WC)	RPM	Oper. BHP
	1,100	0.800	910	0.23

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1/2	1,800	115/230V/1/60	EXPL	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	71	71	71	70	75	64	57	51	76	62	12.0

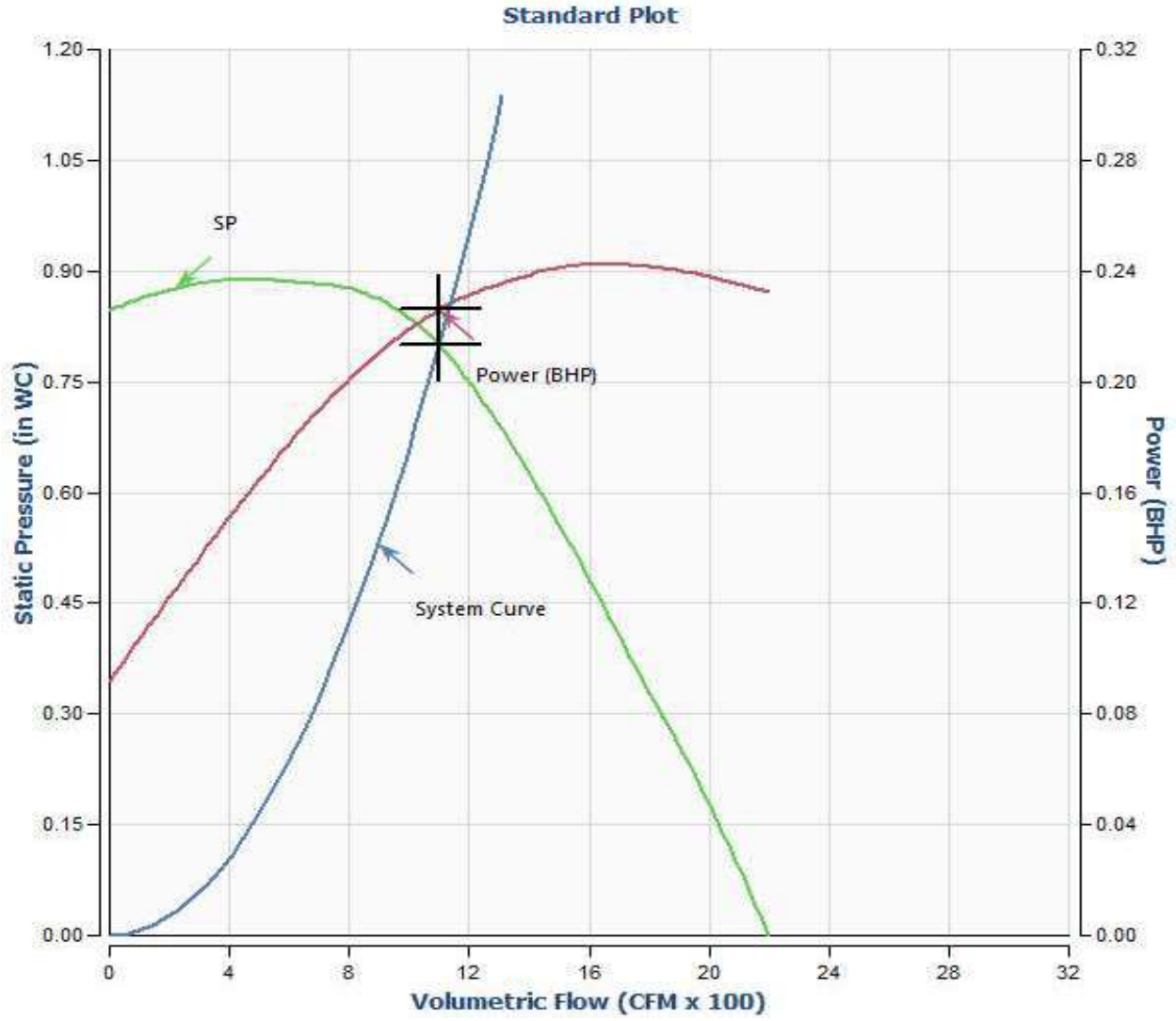
LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Variable Speed V-Belt Drive, 1.2 SF
Mount TCF Motor

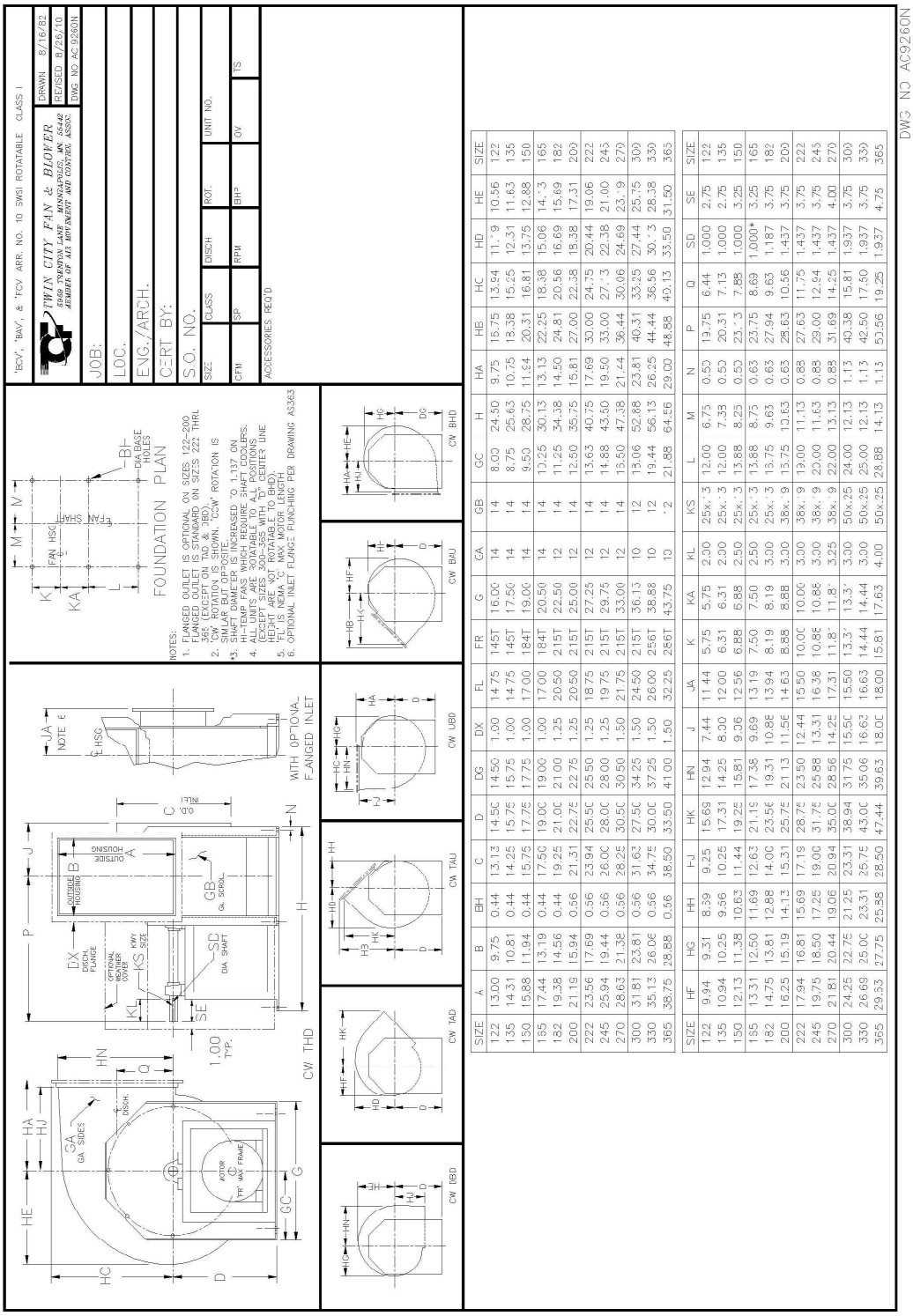
Job Name: BSI-GE

Tag: EF-24
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



TCF TWIN CITY FAN

Tag: EF-24
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



SIZE	A	B	BH	C	D	DG	DX	FL	FR	G	GA	GB	GC	H	HA	HB	HC	HD	HE	SIZE
122	13.00	9.75	0.44	13.13	14.50	14.50	1.00	14.75	145T	16.00	14	14	8.00	24.50	9.75	15.75	13.94	11.19	10.56	122
135	14.31	10.81	0.44	14.25	15.75	15.75	1.00	14.75	145T	17.50	14	14	8.75	25.63	10.75	18.38	15.25	12.31	11.63	135
150	15.88	11.94	0.44	15.75	17.75	17.75	1.00	17.00	184T	19.00	14	14	9.50	28.75	11.94	20.31	16.81	13.75	12.88	150
165	17.44	13.19	0.44	17.50	19.00	19.00	1.00	17.00	184T	20.50	14	14	10.25	30.13	13.13	22.25	18.38	15.06	14.13	165
182	19.38	14.56	0.44	19.25	21.00	21.00	1.25	20.50	215T	22.50	12	14	11.25	34.38	14.50	24.81	20.56	16.69	15.69	182
200	21.19	15.94	0.56	21.31	22.75	22.75	1.25	20.50	215T	25.00	12	14	12.50	35.75	15.81	27.00	22.38	18.38	17.31	200
222	23.56	17.69	0.56	23.94	25.50	25.50	1.25	18.75	215T	27.25	12	14	13.63	40.75	17.69	30.00	24.75	20.44	19.06	222
245	25.94	19.44	0.56	26.00	28.00	28.00	1.25	19.75	215T	29.75	12	14	14.88	43.50	19.50	33.00	27.13	22.38	21.00	245
270	28.63	21.38	0.56	28.25	30.50	30.50	1.50	21.75	215T	33.00	12	14	13.50	47.38	21.44	36.44	30.06	24.69	23.19	270
300	31.81	23.81	0.56	31.63	27.50	34.25	1.50	24.50	215T	36.13	10	12	13.06	52.88	23.81	40.31	33.25	27.44	25.75	300
330	35.13	26.06	0.56	34.75	30.00	37.25	1.50	26.00	256T	38.88	10	12	19.44	56.13	26.25	44.44	36.56	30.13	28.38	330
365	38.75	28.88	0.56	38.50	33.50	41.00	1.50	32.25	256T	43.75	10	12	21.88	64.56	29.00	48.88	40.13	33.50	31.50	365

SIZE	HF	HG	HH	I-J	HK	HN	J	JA	K	KA	KL	KS	L	M	N	P	Q	SD	SE	SIZE
122	9.94	9.31	8.39	9.25	15.69	12.94	7.44	11.44	5.75	5.75	2.00	25x.3	12.00	6.75	0.53	19.75	6.44	1.000	2.75	122
135	10.94	10.25	9.56	10.25	17.31	14.25	8.00	12.00	6.31	6.31	2.00	25x.3	12.00	7.38	0.53	20.31	7.13	1.000	2.75	135
150	12.13	11.38	10.63	11.44	19.25	15.81	9.06	12.56	6.88	6.88	2.50	25x.3	13.88	8.25	0.53	23.13	7.88	1.000	3.25	150
165	13.31	12.50	11.69	12.63	21.19	17.38	9.69	13.19	7.50	7.50	2.50	25x.3	13.88	8.75	0.63	23.75	8.69	1.000*	3.25	165
182	14.75	13.81	12.88	14.00	23.56	19.31	10.88	13.94	8.19	8.19	3.00	25x.3	13.75	9.63	0.63	27.94	9.63	1.187	3.75	182
200	16.25	15.19	14.13	15.31	25.75	21.13	11.56	14.63	8.88	8.88	3.00	38x.9	15.75	10.63	0.63	28.63	10.56	1.437	3.75	200
222	17.94	16.81	15.69	17.19	28.75	23.50	12.44	15.50	10.00	10.00	3.00	38x.9	19.00	11.13	0.88	27.63	11.75	1.437	3.75	222
245	19.75	18.50	17.25	19.00	31.75	25.88	13.31	16.38	10.88	10.88	3.00	38x.9	23.00	11.63	0.88	29.00	12.94	1.437	3.75	245
270	21.81	20.44	19.06	20.94	35.00	28.56	14.25	17.31	11.81	11.81	3.25	38x.9	22.00	13.13	0.88	31.69	14.25	1.437	4.00	270
300	24.25	22.75	21.25	23.31	38.94	31.75	15.50	15.50	13.31	13.31	3.00	50x.25	24.00	12.13	1.13	40.38	15.81	1.937	3.75	300
330	26.69	25.00	23.31	25.75	43.00	35.06	16.63	16.63	14.44	14.44	3.00	50x.25	25.00	12.13	1.13	42.50	17.50	1.937	3.75	330
365	29.53	27.75	25.38	28.50	47.44	39.63	18.00	18.00	15.81	17.63	4.00	50x.25	28.88	14.13	1.13	53.56	19.25	1.937	4.75	365

SUBMITTAL

Job Name: BSI-GE

Tag: EF-25
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

BCV - Backward Inclined Utility Set

Construction Features

- Steel housing with all-welded construction (class I and II), or galvanized steel housing with lock seam construction (class L).
- Shaft is AISI 1045 steel, turned, ground and polished for accuracy.
- Heavy-duty, grease lubricated pillow block bearings selected for minimum average L-50 life of at least 200,000 hours.
- Deep spun inlet cone, aerodynamically designed for smooth air entry into the wheel.
- Motor compartment allows complete access for servicing and belt tensioning.

See Attached Centrifugal Drawing

Description	Qty	Model	Size	Width	Wt (lb.)
	1	BCV	150	SWSI	232

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	I	CW	10	UBD	--	Vertical

Performance	CFM	SP (in WC)	RPM	Oper. BHP
	2,340	0.960	1,580	0.78

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	1.25	0.76	1.25	0.76	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1	1,800	115/230V/1/60	TEFC	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	78	79	82	82	79	79	72	67	85	70	22

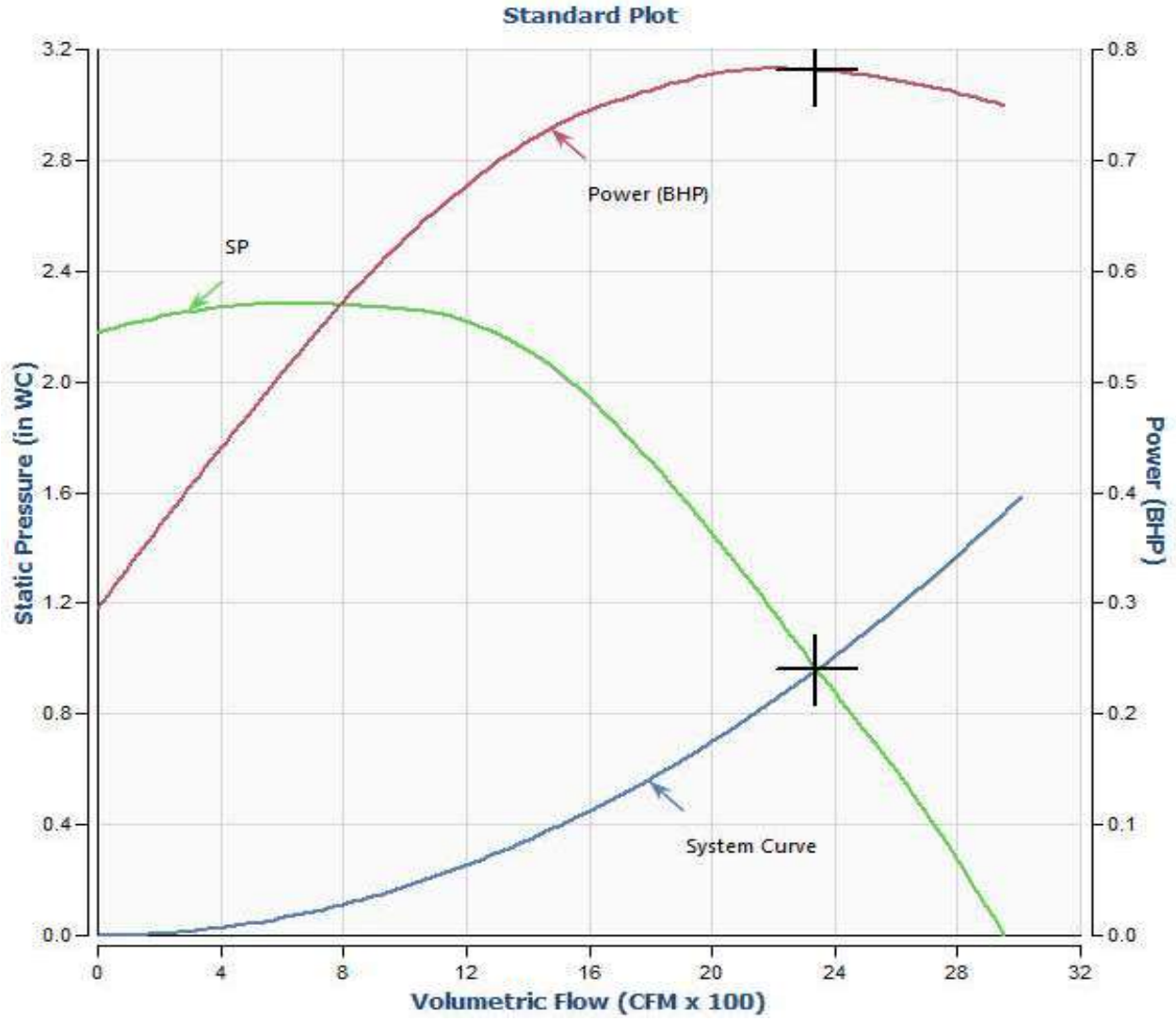
LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Weather Cover - Std Type
Variable Speed V-Belt Drive, 1.2 SF
Mount TCF Motor

Job Name: BSI-GE

Tag: EF-25
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



TCF TWIN CITY FAN

Tag: EF-25
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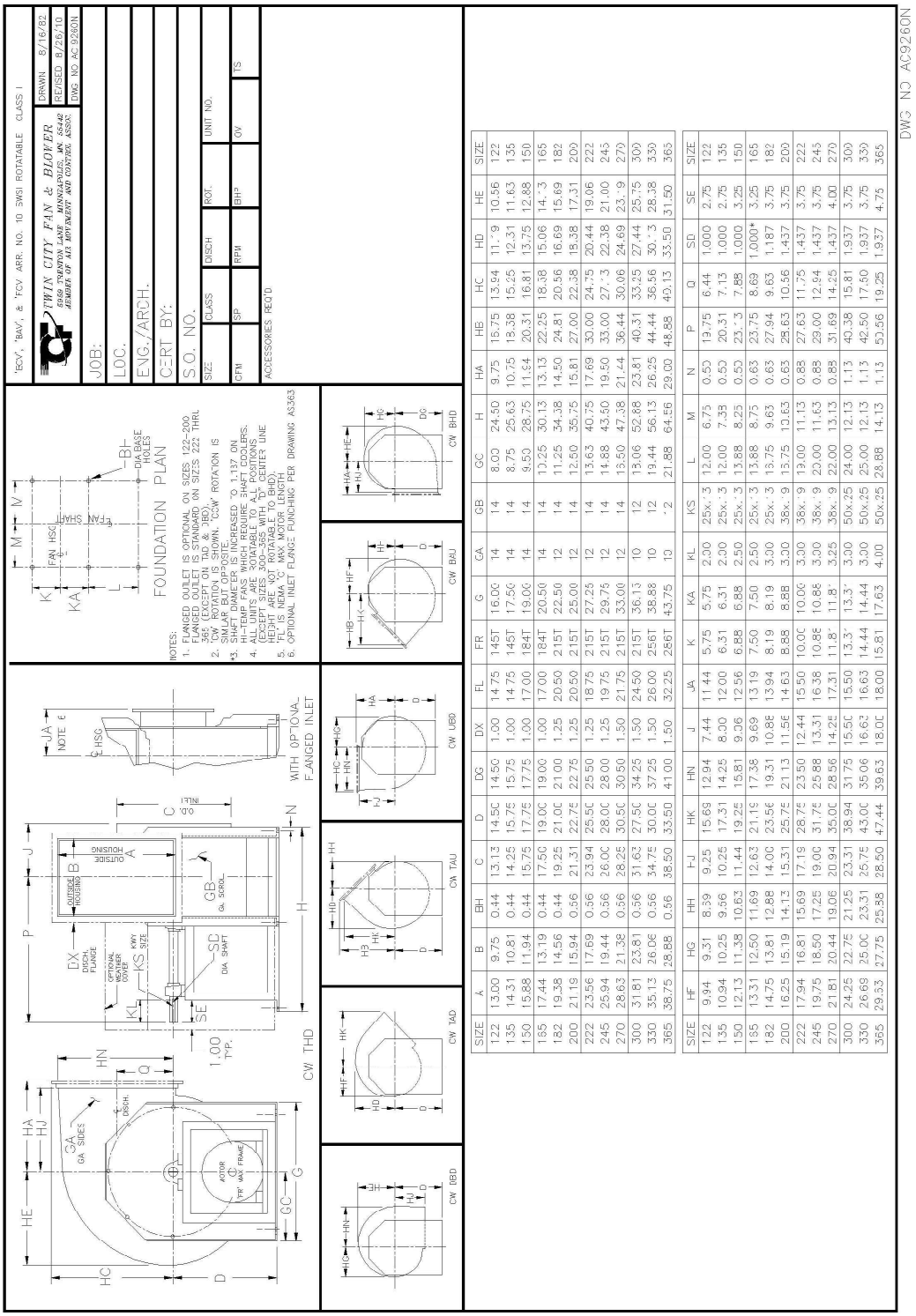
Date: August 29, 2025



SIZE	A	B	BH	C	D	DG	DX	FL	FR	G	GA	GB	GC	H	HA	HB	HC	HD	HE	SIZE
122	13.00	9.75	0.44	13.13	14.50	14.50	1.00	14.75	145T	16.00	14	14	8.00	24.50	9.75	15.75	13.94	11.19	10.56	122
135	14.31	10.81	0.44	14.25	15.75	15.75	1.00	14.75	145T	17.50	14	14	8.75	25.63	10.75	18.38	15.25	12.31	11.63	135
150	15.88	11.94	0.44	15.75	17.75	17.75	1.00	17.00	184T	19.00	14	14	9.50	28.75	11.94	20.31	16.81	13.75	12.88	150
165	17.44	13.19	0.44	17.50	19.00	19.00	1.00	17.00	184T	20.50	14	14	10.25	30.13	13.13	22.25	18.38	15.06	14.13	165
182	19.38	14.56	0.44	19.25	21.00	21.00	1.25	20.50	215T	22.50	12	14	11.25	34.38	14.50	24.81	20.56	16.69	15.69	182
200	21.19	15.94	0.56	21.31	22.75	22.75	1.25	20.50	215T	25.00	12	14	12.50	35.75	15.81	27.00	22.38	18.38	17.31	200
222	23.56	17.69	0.56	23.94	25.50	25.50	1.25	18.75	215T	27.25	12	14	13.63	40.75	17.69	30.00	24.75	20.44	19.06	222
245	25.94	19.44	0.56	26.00	28.00	28.00	1.25	19.75	215T	29.75	12	14	14.88	43.50	19.50	33.00	27.13	22.38	21.00	245
270	28.63	21.38	0.56	28.25	30.50	30.50	1.50	21.75	215T	33.00	12	14	13.50	47.38	21.44	36.44	30.06	24.69	23.19	270
300	31.81	23.81	0.56	31.63	27.50	34.25	1.50	24.50	215T	36.13	10	12	13.06	52.88	23.81	40.31	33.25	27.44	25.75	300
330	35.13	26.06	0.56	34.75	30.00	37.25	1.50	26.00	256T	38.88	10	12	19.44	56.13	26.25	44.44	36.56	30.13	28.38	330
365	38.75	28.88	0.56	38.50	33.50	41.00	1.50	32.25	256T	43.75	10	12	21.88	64.56	29.00	48.88	40.13	33.50	31.50	365

SIZE	HF	HG	HH	I-J	HK	HN	J	JA	K	KA	KL	KS	L	M	N	P	Q	SD	SE	SIZE
122	9.94	9.31	8.39	9.25	15.69	12.94	7.44	11.44	5.75	5.75	2.00	25x.3	12.00	6.75	0.53	19.75	6.44	1.000	2.75	122
135	10.94	10.25	9.56	10.25	17.31	14.25	8.00	12.00	6.31	6.31	2.00	25x.3	12.00	7.38	0.53	20.31	7.13	1.000	2.75	135
150	12.13	11.38	10.63	11.44	19.25	15.81	9.06	12.56	6.88	6.88	2.50	25x.3	13.88	8.25	0.53	23.13	7.88	1.000	3.25	150
165	13.31	12.50	11.69	12.63	21.19	17.38	9.69	13.19	7.50	7.50	2.50	25x.3	13.88	8.75	0.63	23.75	8.69	1.000*	3.25	165
182	14.75	13.81	12.88	14.00	23.56	19.31	10.88	13.94	8.19	8.19	3.00	25x.3	13.75	9.63	0.63	27.94	9.63	1.187	3.75	182
200	16.25	15.19	14.13	15.31	25.75	21.13	11.56	14.63	8.88	8.88	3.00	38x.9	15.75	10.63	0.63	28.63	10.56	1.437	3.75	200
222	17.94	16.81	15.69	17.19	28.75	23.50	12.44	15.50	10.00	10.00	3.00	38x.9	19.00	11.13	0.88	27.63	11.75	1.437	3.75	222
245	19.75	18.50	17.25	19.00	31.75	25.88	13.31	16.38	10.88	10.88	3.00	38x.9	23.00	11.63	0.88	29.00	12.94	1.437	3.75	245
270	21.81	20.44	19.06	20.94	35.00	28.56	14.25	17.31	11.81	11.81	3.25	38x.9	22.00	13.13	0.88	31.69	14.25	1.437	4.00	270
300	24.25	22.75	21.25	23.31	38.94	31.75	15.50	15.50	13.31	13.31	3.00	50x.25	24.00	12.13	1.13	40.38	15.81	1.937	3.75	300
330	26.69	25.00	23.31	25.75	43.00	35.06	16.63	16.63	14.44	14.44	3.00	50x.25	25.00	12.13	1.13	42.50	17.50	1.937	3.75	330
365	29.53	27.75	25.38	28.50	47.44	39.63	18.00	18.00	15.81	17.63	4.00	50x.25	28.88	14.13	1.13	53.56	19.25	1.937	4.75	365

SUBMITTAL

Job Name: BSI-GE

Tag: EF-26
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

BCV - Backward Inclined Utility Set

Construction Features

- Steel housing with all-welded construction (class I and II), or galvanized steel housing with lock seam construction (class L).
- Shaft is AISI 1045 steel, turned, ground and polished for accuracy.
- Heavy-duty, grease lubricated pillow block bearings selected for minimum average L-50 life of at least 200,000 hours.
- Deep spun inlet cone, aerodynamically designed for smooth air entry into the wheel.
- Motor compartment allows complete access for servicing and belt tensioning.

See Attached Centrifugal Drawing

Description	Qty	Model	Size	Width	Wt (lb.)
	1	BCV	135	SWSI	161

Approximate weight each, includes fan, motor and accessories.

Configuration	Class	Rotation	Arr	Disch	M. Pos	Disch Dir
	I	CW	10	UBD	--	Vertical

Performance	CFM	SP (in WC)	RPM	Oper. BHP
	525	0.390	781	0.05

Temperature: 70 °F Altitude: 0 ft

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Enclosure	Technology
	1/4	1,800	115V/1/60	TEFC	Induction

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	66	62	60	64	64	56	44	32	66	52	6.3

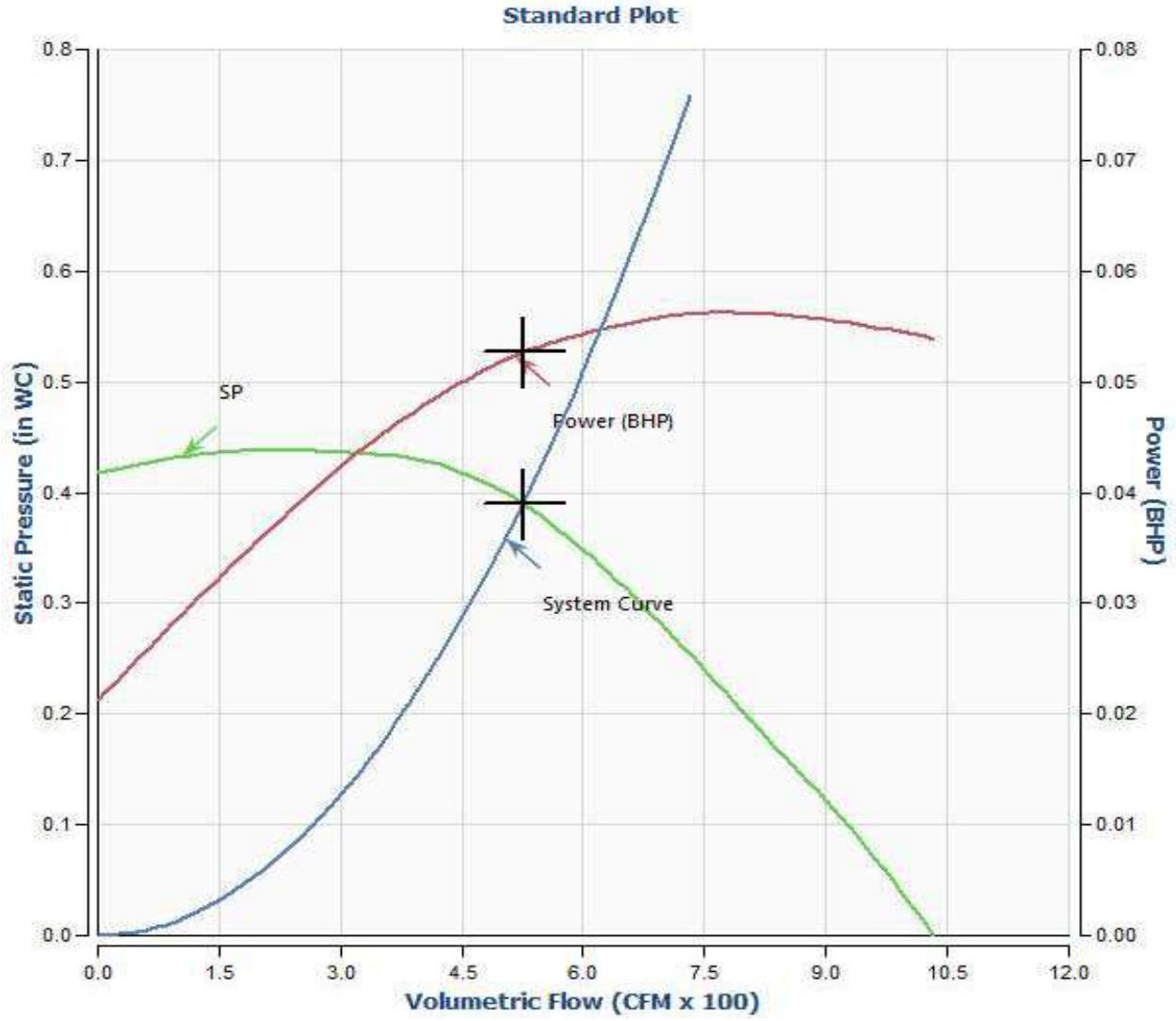
LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Variable Speed V-Belt Drive, 1.2 SF
Mount TCF Motor

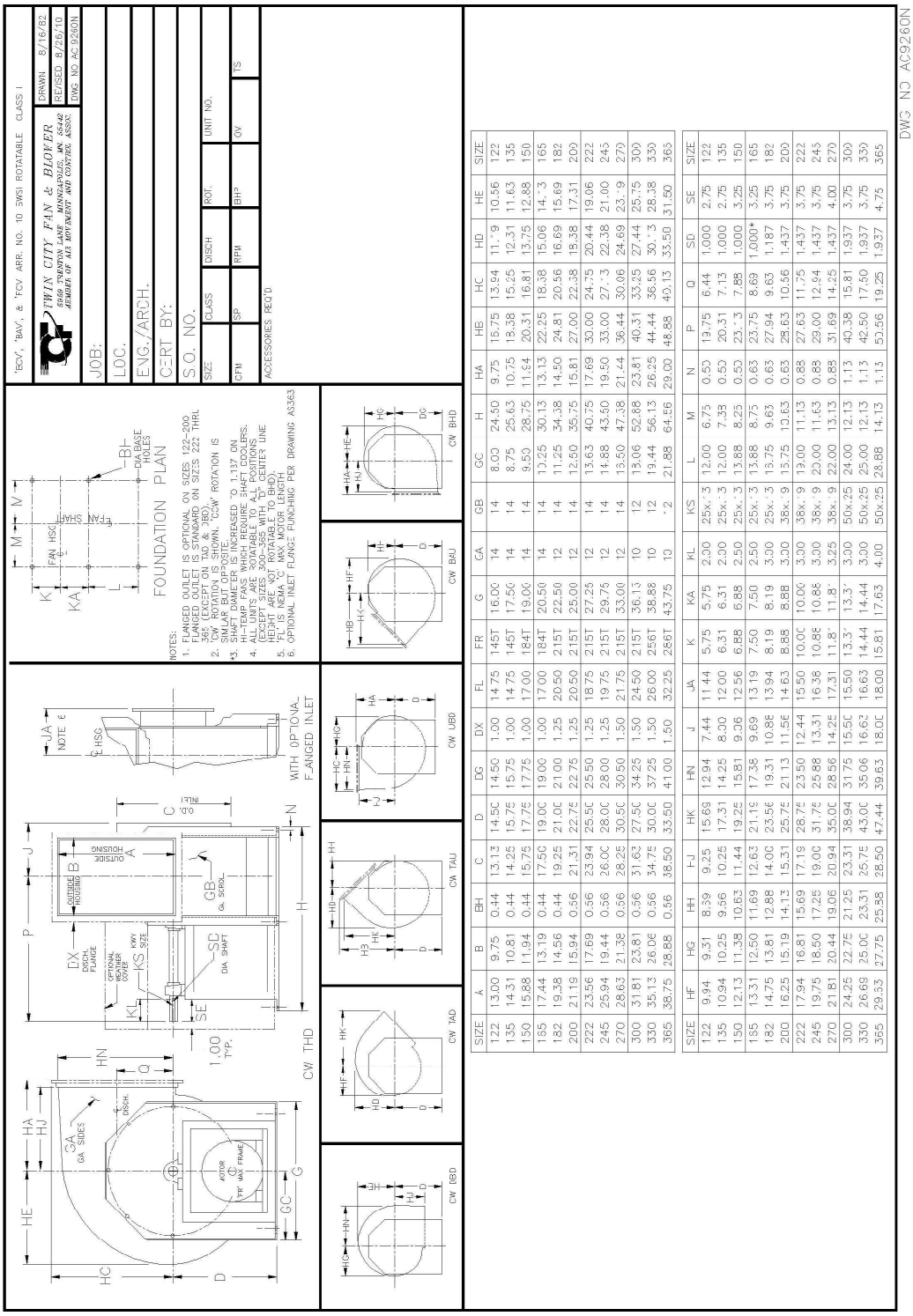
Job Name: BSI-GE

Tag: EF-26
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



TCF TWIN CITY FAN

Tag: EF-26
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



DWG NO AC92960N

SIZE	A	B	BH	C	D	DG	DX	FL	FR	G	GA	GB	KS	L	M	N	P	Q	SD	SE
122	13.00	9.75	0.44	13.13	14.50	14.50	1.00	14.75	145T	16.00	14	14	25x.3	12.00	6.75	0.53	19.75	6.44	1.000	2.75
135	14.31	10.81	0.44	14.25	15.75	15.75	1.00	14.75	145T	17.50	14	14	25x.3	12.00	7.38	0.53	20.31	7.13	1.000	2.75
150	15.88	11.94	0.44	15.75	17.75	17.75	1.00	17.00	184T	19.00	14	14	25x.3	13.88	8.25	0.53	23.13	7.88	1.000	3.25
165	17.44	13.19	0.44	17.50	19.00	19.00	1.00	17.00	184T	20.50	14	14	25x.3	13.88	8.75	0.63	23.75	8.69	1.000*	3.25
182	19.38	14.56	0.44	19.25	21.00	21.00	1.25	20.50	215T	22.50	12	14	25x.3	13.75	9.63	0.63	27.94	9.63	1.187	3.75
200	21.19	15.94	0.56	21.31	22.75	22.75	1.25	20.50	215T	25.00	12	14	25x.3	13.75	10.63	0.63	28.63	10.56	1.437	3.75
222	23.56	17.69	0.56	23.94	25.50	25.50	1.25	18.75	215T	27.25	12	14	38x.9	19.00	11.13	0.88	27.63	11.75	1.437	3.75
245	25.94	19.44	0.56	26.00	28.00	28.00	1.25	19.75	215T	29.75	12	14	38x.9	23.00	11.63	0.88	29.00	12.94	1.437	3.75
270	28.63	21.38	0.56	28.25	30.50	30.50	1.50	21.75	215T	33.00	12	14	38x.9	23.00	11.63	0.88	29.00	12.94	1.437	3.75
300	31.81	23.81	0.56	31.63	27.50	34.25	1.50	24.50	215T	36.13	10	12	50x.25	22.00	13.13	0.88	38x.9	14.25	1.437	4.00
330	35.13	26.06	0.56	34.75	30.00	37.25	1.50	26.00	256T	38.88	10	12	50x.25	25.00	12.13	1.13	42.50	17.50	1.937	3.75
365	38.75	28.88	0.56	38.50	33.50	41.00	1.50	32.25	256T	43.75	10	12	50x.25	28.88	14.13	1.13	50.56	19.25	1.937	4.75

SIZE	HF	HG	HH	I-J	HK	HN	J	JA	K	KA	KL	L	M	N	P	Q	SD	SE	SIZE
122	9.94	9.31	8.39	9.25	15.69	12.94	7.44	11.44	5.75	5.75	2.00	12.00	6.75	0.53	19.75	6.44	1.000	2.75	122
135	10.94	10.25	9.56	10.25	17.31	14.25	8.00	12.00	6.31	6.31	2.00	12.00	7.38	0.53	20.31	7.13	1.000	2.75	135
150	12.13	11.38	10.63	11.44	19.25	15.81	9.06	12.56	6.88	6.88	2.50	13.88	8.25	0.53	23.13	7.88	1.000	3.25	150
165	13.31	12.50	11.69	12.63	21.19	17.38	9.69	13.19	7.50	7.50	2.50	13.88	8.75	0.63	23.75	8.69	1.000*	3.25	165
182	14.75	13.81	12.88	14.00	23.56	19.31	10.88	13.94	8.19	8.19	3.00	13.75	9.63	0.63	27.94	9.63	1.187	3.75	182
200	16.25	15.19	14.13	15.31	25.75	21.13	11.56	14.63	8.88	8.88	3.00	13.75	10.63	0.63	28.63	10.56	1.437	3.75	200
222	17.94	16.81	15.69	17.19	28.75	23.50	12.44	15.50	10.00	10.00	3.00	38x.9	19.00	11.13	0.88	27.63	11.75	1.437	3.75	222
245	19.75	18.50	17.25	19.00	31.75	25.88	13.31	16.38	10.88	10.88	3.00	38x.9	23.00	11.63	0.88	29.00	12.94	1.437	3.75	243
270	21.81	20.44	19.06	20.94	35.00	28.56	14.25	17.31	11.81	11.81	3.25	38x.9	22.00	13.13	0.88	31.69	14.25	1.437	4.00	270
300	24.25	22.75	21.25	23.31	38.94	31.75	15.50	15.50	13.31	13.31	3.00	50x.25	24.00	12.13	1.13	40.38	15.81	1.937	3.75	300
330	26.69	25.00	23.31	25.75	43.00	35.06	16.63	16.63	14.44	14.44	3.00	50x.25	25.00	12.13	1.13	42.50	17.50	1.937	3.75	330
365	29.53	27.75	25.38	28.50	47.44	39.63	18.00	18.00	15.81	17.63	4.00	50x.25	28.88	14.13	1.13	53.56	19.25	1.937	4.75	365

SUBMITTAL

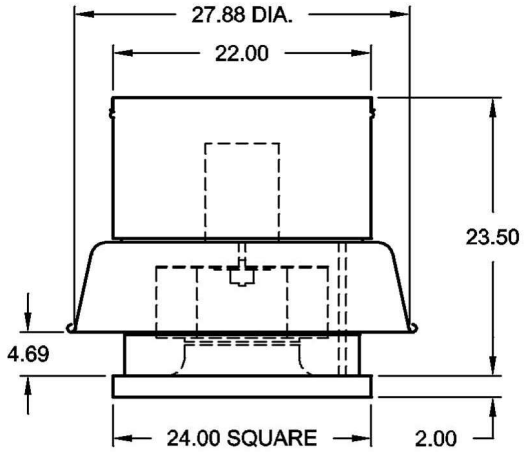
Job Name: BSI-GE

Tag: EF-27
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

DCRD - Centrifugal Roof Exhauster, Downblast, Direct Drive

Construction Features

- Spun aluminum construction High efficiency backward inclined wheel statically and dynamically balanced
- Rolled bead edge on fan skirt for added rigidity
- Curb cap/venturi assembly
- Motors designed for variable speed control option
- Heavy gauge galvanized mesh bird screen
- Disconnect switch.



Description	Qty	Model	Size	Wt (lb.)
	1	DCRD	140BE	67

Approximate weight each, includes fan, motor and accessories.

Performance	CFM	SP (in WC)	RPM	Oper. BHP
	425	0.110	495	0.02

Temperature: 70 °F Altitude: 0 ft

ROOF OPENING	18.50 X 18.50
DAMPER SIZE	18.00 X 18.00

D4051A DCRD 140B

Regulation Metrics	FEI	FEP (KW)	System FEI	System FEP (KW)	CA T20 Compliant/Exempt
	N/A	N/A	N/A	N/A	Yes

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.
Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Motor Data	HP	RPM	Volt/Ph/Hz	Encl	Technology
	3/4	1,750	115V/1/60	ECODP	EC

Efficiency: Standard

Sound Data	Octave Bands	1	2	3	4	5	6	7	8	LwA	dBA	Sones
	Level at Inlet	63	54	49	46	43	38	33	29	49	34	2.0

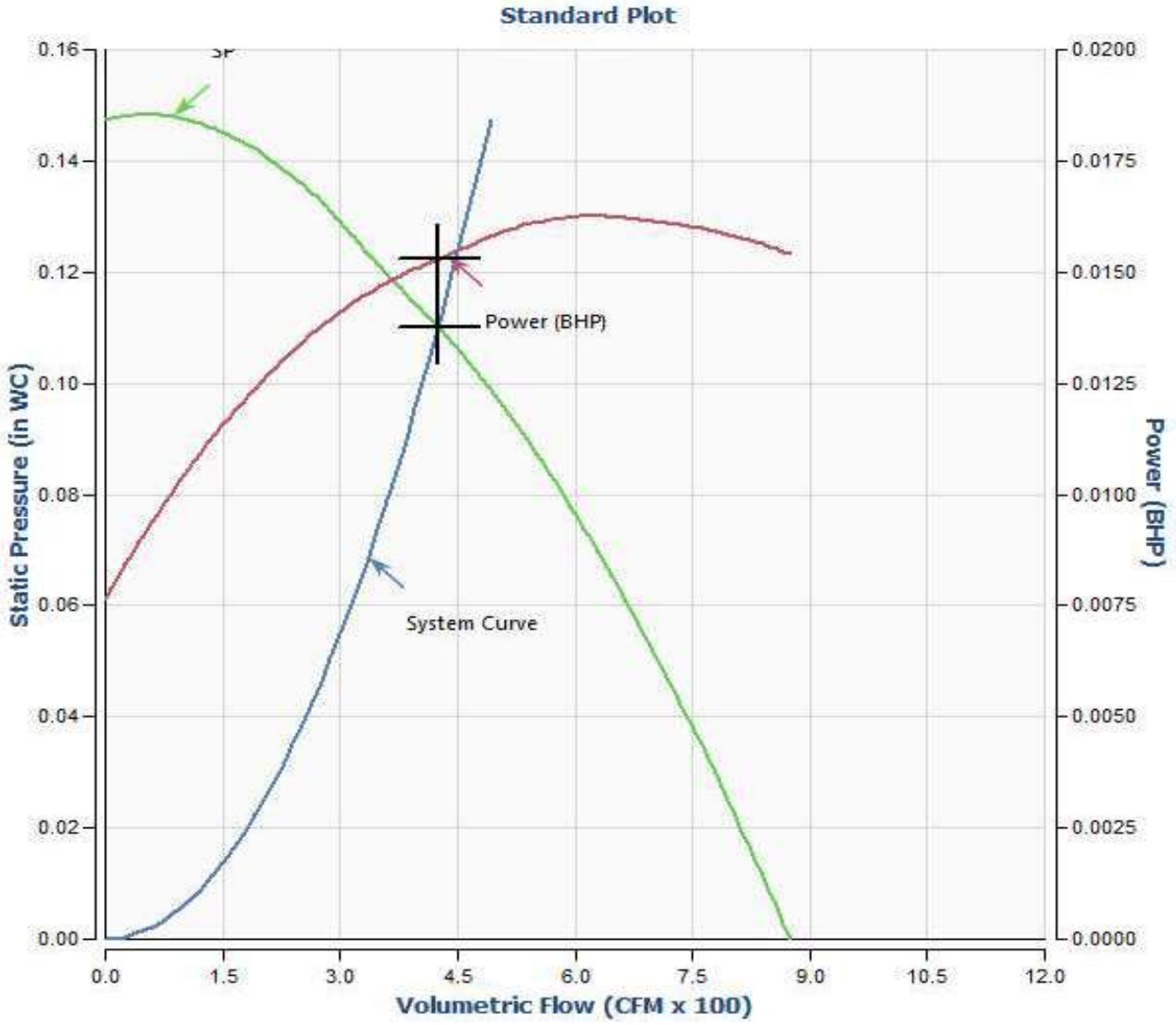
LwA: The overall (single value) fan sound power level in dB re. 10^{-12} Watts, 'A' weighted.
dBA: Estimated sound pressure level (re:0.0002 microbar) based on a single ducted installation at 5 ft., using a directivity factor of 1.

Accessories Included

Birdscreen - Galvanized
0-10 VDC Lead, Included By Motor Manufacturer
Disc Switch-Unfused (NEMA 1), Shipped Loose

Job Name: BSI-GE

Tag: EF-27
Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025



Customer:
Job ID: BSI-GE-1-Q
Date: August 29, 2025

Regulation Statements

Fan Energy Index (FEI) is an overall efficiency (wire-to-air) metric which includes not only the impact of the fan efficiency, but also each of the drive components used to operate the fan.

Fan Electrical Input Power (FEP) is the amount of power of a given fan at an operating point characterized by a value of flow and pressure.

Regulated fans with an FEI value less than 1.0 are not for sale or use in the state of California per CA Title 20 Requirements. FEI Value shown is based on selected fan performance at standard density.