ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

Unit Data

Unit Manufacturer	Daikin
Unit Model Number	CAH071GDGM
Unit Serial Number	FBOU140300365
Design Supply Fan Airflow	30500 CFM
Design Supply Fan ESP	3 in. wc
Design Outside Airflow	6500 CFM
Total Connected Supply	21255 CFM

Starter Data

AHU-01 / Supply Fan

Starter Manufacturer	VFD

Test Data

Actual Supply Airflow	20950 CFM
Actual Outside Airflow	6455 CFM
Actual Return Airflow	14495 CFM
Actual Exhaust Airflow	0 CFM
Duct Static SP	0.9 in.wc

AHU-01 / Supply Fan

Actual RPM	Direct Drive RPM
Volts	460 Volts
Amps	25.6 Amps
VFD Speed	35 Hz

Motor Data

AHU-01 / Supply Fan

Motor Manufacturer	Teco X 2
Motor HP	25 HP
Motor RPM	1765 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	57.5/28.8 Amps
Motor Service Factor	1.15
Motor Frame	284T
Nominal Efficiency	93.6 %

Sheave Data

AHU-01 / Supply Fan

Motor Sheave Model	Direct Drive

Test Pressures

Filter SP In	-0.11 in. wc
Filter SP Out	-0.36 in. wc
Heating Coil SP In	-0.36 in. wc
Heating Coil SP Out	-0.45 in. wc
Cooling Coil SP In	-0.45 in. wc
Cooling Coil SP Out	-0.81 in. wc
Fan SP In	-0.81 in. wc
Fan SP Out	1.26 in. wc

*** Notes**

AHU-01	10-May-16	Josh Drake	Calibrated outside air (Ebtron) with JCI. K-factor is 1.00

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01 / RHC-01-01
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

Unit Data	
VAV Address	57
Box Inlet Size	22X38
K Factor	0.849
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	3790 CFM
Actual Max Airflow	3780 CFM

AHU-01 / RHC-01-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S2	8				225	230	240	107
Outlet-02	S2	8				200	225	195	98
Outlet-03	S2	8				200	210	220	110
Outlet-04	S2	8				200	205	215	108
Outlet-05	S2	8				200	250	200	100
Outlet-06	S2	8				225	205	215	96
Outlet-07	S2	8				225	240	220	98
Outlet-08	S2	8				200	225	210	105
Outlet-09	S2	8				225	190	210	93
Outlet-10	S2	8				225	175	205	91
Outlet-11	S2	8				235	260	240	102
Outlet-12	S2	8				200	205	215	108
Outlet-13	S2	8				200	185	200	100
Outlet-14	S2	8				225	190	210	93
Outlet-15	S2	8				225	185	205	91
Outlet-16	S2	8				225	190	210	93
Outlet-17	S2	8				190	225	195	103
Outlet-18	S2	8				165	200	175	106
Totals :	**-**	**-**	**-**	**-**	**-**	**3,790**	**3,795**	**3,780**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01 / RHC-01-02
AREA:

Tested By: Josh Drake
Test Date: March 02, 2016

Unit Data	
VAV Address	59
Box Inlet Size	22X30
K Factor	0.831
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	3990 CFM
Actual Max Airflow	4020 CFM

AHU-01 / RHC-01-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	185	235	104
Outlet-02	S1	8				220	160	200	91
Outlet-03	S1	8				220	155	215	98
Outlet-04	S1	8				220	170	235	107
Outlet-05	S1	8				220	210	240	109
Outlet-06	S1	8				225	195	230	102
Outlet-07	S1	8				225	240	225	100
Outlet-08	S1	8				220	190	230	105
Outlet-09	S1	8				220	175	240	109
Outlet-10	S1	8				220	150	215	98
Outlet-11	S1	8				220	175	215	98
Outlet-12	S1	8				225	215	230	102
Outlet-13	S1	8				225	200	220	98
Outlet-14	S1	8				220	195	235	107
Outlet-15	S1	8				220	180	225	102
Outlet-16	S1	8				220	180	210	95
Outlet-17	S1	8				220	165	205	93
Outlet-18	S1	8				225	185	215	96
Totals :	**-**	**-**	**-**	**-**	**-**	**3,990**	**3,325**	**4,020**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01 / VVB-01-01
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	58
Box Inlet Size	9
K Factor	1.814
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	730 CFM
Actual Max Airflow	735 CFM
Min Design CFM	245 CFM
Actual Min Airflow	240 CFM
Design Heating Airflow	500 CFM
Actual Heating Airflow	515 CFM

AHU-01 / VVB-01-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				300	300	295	98
Outlet-02	S2	8				215	220	220	102
Outlet-03	S2	8				215	255	220	102
Totals :	**-**	**-**	**-**	**-**	**-**	**730**	**775**	**735**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01 / VVB-01-02
AREA:

Tested By: Josh Drake
Test Date: March 31, 2016

Unit Data	
VAV Address	54
Box Inlet Size	16
K Factor	1.399
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2185 CFM
Actual Max Airflow	2095 CFM
Min Design CFM	730 CFM
Actual Min Airflow	700 CFM
Design Heating Airflow	1460 CFM
Actual Heating Airflow	1430 CFM

AHU-01 / VVB-01-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S2	8				190	135	175	92
Outlet-02	S2	8				190	170	190	100
Outlet-03	S2	8				190	155	190	100
Outlet-04	S2	8				190	155	185	97
Outlet-05	S2	10				235	175	215	91
Outlet-06	S2	8				190	145	180	95
Outlet-07	S2	8				200	165	210	105
Outlet-08	S2	8				200	155	200	100
Outlet-09	S2	8				200	165	210	105
Outlet-10	S2	8				200	145	195	98
Outlet-11	S2	8				200	125	145	73
Totals :	-	-	-	-	-	**2,185**	**1,690**	**2,095**	**96 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01 / VVB-01-03
AREA:

Tested By: Josh Drake
Test Date: March 02, 2016

Unit Data	
VAV Address	55
Box Inlet Size	8
K Factor	1.948
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	400 CFM
Actual Max Airflow	410 CFM
Min Design CFM	135 CFM
Actual Min Airflow	140 CFM
Design Heating Airflow	200 CFM
Actual Heating Airflow	205 CFM

AHU-01 / VVB-01-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	205	205	103
Outlet-02	S1	8				200	205	205	103
Totals :	**-**	**-**	**-**	**-**	**-**	**400**	**410**	**410**	**103 %**

*** Notes**

SYSTEM/UNIT: AHU-01 / VVB-01-04
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

Unit Data	
VAV Address	56
Box Inlet Size	9
K Factor	1.740
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	630 CFM
Actual Max Airflow	625 CFM
Min Design CFM	225 CFM
Actual Min Airflow	225 CFM
Design Heating Airflow	440 CFM
Actual Heating Airflow	450 CFM

AHU-01 / VVB-01-04 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				330	375	335	102
Outlet-02	S1	10				300	275	290	97
Totals :	**-**	**-**	**-**	**-**	**-**	**630**	**650**	**625**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01 / VVB-01-05
AREA:

Tested By: Josh Drake
Test Date: March 31, 2016

Unit Data	
VAV Address	52
Box Inlet Size	6
K Factor	2.229
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	375 CFM
Actual Max Airflow	365 CFM
Min Design CFM	125 CFM
Actual Min Airflow	125 CFM
Design Heating Airflow	190 CFM
Actual Heating Airflow	185 CFM

AHU-01 / VVB-01-05 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				190	175	180	95
Outlet-02	S1	8				185	195	185	100
Totals :	**-**	**-**	**-**	**-**	**-**	**375**	**370**	**365**	**97 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01 / VVB-01-06
AREA:

Tested By: Josh Drake
Test Date: March 31, 2016

Unit Data	
VAV Address	51
Box Inlet Size	16
K Factor	1.409
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2185 CFM
Actual Max Airflow	2110 CFM
Min Design CFM	730 CFM
Actual Min Airflow	690 CFM
Design Heating Airflow	1095 CFM
Actual Heating Airflow	1055 CFM

AHU-01 / VVB-01-06 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S2	8				190	225	200	105
Outlet-02	S2	8				190	195	200	105
Outlet-03	S2	8				190	40	185	97
Outlet-04	S2	8				190	175	180	95
Outlet-05	S2	10				235	230	215	91
Outlet-06	S2	8				190	190	185	97
Outlet-07	S2	8				200	20	190	95
Outlet-08	S2	8				200	20	180	90
Outlet-09	S2	8				200	220	195	98
Outlet-10	S2	8				200	185	190	95
Outlet-11	S2	8				200	210	190	95
Totals :	**-**	**-**	**-**	**-**	**-**	**2,185**	**1,710**	**2,110**	**97 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01 / VVB-01-07
AREA:

Tested By: Josh Drake
Test Date: March 03, 2016

Unit Data	
VAV Address	49
Box Inlet Size	16
K Factor	1.012
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2185 CFM
Actual Max Airflow	2175 CFM
Min Design CFM	730 CFM
Actual Min Airflow	715 CFM
Design Heating Airflow	1095 CFM
Actual Heating Airflow	1060 CFM

AHU-01 / VVB-01-07 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S2	8				225	225	220	98
Outlet-02	S2	8				165	205	155	94
Outlet-03	S2	8				160	180	170	106
Outlet-04	S2	8				165	105	160	97
Outlet-05	S2	8				165	220	165	100
Outlet-06	S2	8				205	140	200	98
Outlet-07	S2	8				240	245	245	102
Outlet-08	S2	8				170	210	155	91
Outlet-09	S2	8				170	190	170	100
Outlet-10	S2	8				200	160	210	105
Outlet-11	S2	8				200	175	195	98
Outlet-12	S2	6				120	110	130	108
Totals :	**-**	**-**	**-**	**-**	**-**	**2,185**	**2,165**	**2,175**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01 / VVB-01-08
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

Unit Data	
VAV Address	50
Box Inlet Size	8
K Factor	1.320
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	540 CFM
Actual Max Airflow	530 CFM
Min Design CFM	175 CFM
Actual Min Airflow	165 CFM
Design Heating Airflow	265 CFM
Actual Heating Airflow	265 CFM

AHU-01 / VVB-01-08 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				300	265	290	97
Outlet-02	S2	10				240	245	240	100
Totals :	**-**	**-**	**-**	**-**	**-**	**540**	**510**	**530**	**98 %**

*** Notes**

SYSTEM/UNIT: AHU-01 / VVB-01-09
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	48
Box Inlet Size	10
K Factor	1.820
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	825 CFM
Actual Max Airflow	840 CFM
Min Design CFM	275 CFM
Actual Min Airflow	290 CFM
Design Heating Airflow	420 CFM
Actual Heating Airflow	430 CFM

AHU-01 / VVB-01-09 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	175	235	107
Outlet-02	S1	8				205	165	215	105
Outlet-03	S1	8				205	205	200	98
Outlet-04	S7	6X6				75	100	75	100
Outlet-05	S1	6				120	145	115	96
Totals :	**-**	**-**	**-**	**-**	**-**	**825**	**790**	**840**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01 / VVB-01-10
AREA:

Tested By: Josh Drake
Test Date: March 02, 2016

Unit Data	
VAV Address	60
Box Inlet Size	14
K Factor	1.568
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1320 CFM
Actual Max Airflow	1305 CFM
Min Design CFM	440 CFM
Actual Min Airflow	445 CFM
Design Heating Airflow	970 CFM
Actual Heating Airflow	965 CFM

AHU-01 / VVB-01-10 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	255	235	107
Outlet-02	S1	8				220	280	200	91
Outlet-03	S1	8				220	205	215	98
Outlet-04	S1	8				220	225	230	105
Outlet-05	S1	8				220	260	210	95
Outlet-06	S1	8				220	315	215	98
Totals :	-	-	-	-	-	**1,320**	**1,540**	**1,305**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-01 / VVB-01-11
AREA:

Tested By: Josh Drake
Test Date: March 02, 2016

Unit Data	
VAV Address	61
Box Inlet Size	16
K Factor	1.346
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2100 CFM
Actual Max Airflow	2110 CFM
Min Design CFM	700 CFM
Actual Min Airflow	730 CFM
Design Heating Airflow	1420 CFM
Actual Heating Airflow	1425 CFM

AHU-01 / VVB-01-11 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	18X6				350	335	335	96
Outlet-02	S3	18X6				350	280	360	103
Outlet-03	S3	18X6				350	265	330	94
Outlet-04	S3	18X6				350	290	345	99
Outlet-05	S3	18X6				350	315	375	107
Outlet-06	S3	18X6				350	415	365	104
Totals :	**-**	**-**	**-**	**-**	**-**	**2,100**	**1,900**	**2,110**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-02
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

Unit Data

Unit Manufacturer	Daikin
Unit Model Number	CAH047GDGM
Unit Serial Number	FBOU140300451
Design Supply Fan Airflow	20000 CFM
Design Supply Fan ESP	3 in. wc
Design Outside Airflow	7500 CFM
Total Connected Supply	20245 CFM

Starter Data

AHU-02 / Supply Fan

Starter Manufacturer	VFD

Test Data

Actual Supply Airflow	18890 CFM
Actual Outside Airflow	7590 CFM
Actual Return Airflow	11300 CFM
Actual Exhaust Airflow	0 CFM
Duct Static SP	0.7 in.wc

AHU-02 / Supply Fan

Actual RPM	Direct Drive RPM
Volts	460 Volts
Amps	23.5 Amps
VFD Speed	46 Hz

Motor Data

AHU-02 / Supply Fan

Motor Manufacturer	Teco X 2
Motor HP	20 HP
Motor RPM	1770 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	46.6/23.3 Amps
Motor Service Factor	1.15
Motor Frame	256T
Nominal Efficiency	91.7 %

Sheave Data

AHU-02 / Supply Fan

Motor Sheave Model	Direct Drive

Test Pressures

Filter SP In	-0.35 in. wc
Filter SP Out	-0.44 in. wc
Heating Coil SP In	-0.44 in. wc
Heating Coil SP Out	-0.60 in. wc
Cooling Coil SP In	-0.60 in. wc
Cooling Coil SP Out	-1.05 in. wc
Fan SP In	-1.05 in. wc
Fan SP Out	1.28 in. wc

*** Notes**

AHU-02	10-May-16	Josh Drake	Calibrated outside air (Ebtron) with JCI. K-factor is 1.06

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-02 / RHC-02-01
AREA:

Tested By: Josh Drake
Test Date: February 03, 2016

Unit Data	
VAV Address	43
Box Inlet Size	26X22
K Factor	0.86
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	3280 CFM
Actual Max Airflow	3475 CFM

AHU-02 / RHC-02-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S7	18X10				410	425	445	109
Outlet-02	S7	18X10				410	450	440	107
Outlet-03	S7	18X10				410	395	450	110
Outlet-04	S7	18X10				410	320	450	110
Outlet-05	S7	18X10				410	345	415	101
Outlet-06	S7	18X10				410	285	445	109
Outlet-07	S7	18X10				410	290	420	102
Outlet-08	S7	18X10				410	220	410	100
Totals :	-	-	-	-	-	**3,280**	**2,730**	**3,475**	**106 %**

*** Notes**

AHU-02 / RHC-02-01	3-Feb-16	Josh Drake	Pitot traversed for total, then preportioned grilles with velgrid

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-02 / RHC-02-02
AREA:

Tested By: Josh Drake
Test Date: February 03, 2016

Unit Data	
VAV Address	45
Box Inlet Size	32X22
K Factor	0.80
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	4650 CFM
Actual Max Airflow	4430 CFM

AHU-02 / RHC-02-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S7	18X10				465	635	440	95
Outlet-02	S7	18X10				465	590	490	105
Outlet-03	S7	18X10				465	490	440	95
Outlet-04	S7	18X10				465	535	475	102
Outlet-05	S7	18X10				465	425	430	92
Outlet-06	S7	18X10				465	455	420	90
Outlet-07	S7	18X10				465	380	420	90
Outlet-08	S7	18X10				465	360	430	92
Outlet-09	S7	18X10				465	295	440	95
Outlet-10	S7	18X10				465	270	445	96
Totals :	**-**	**-**	**-**	**-**	**-**	**4,650**	**4,435**	**4,430**	**95 %**

*** Notes**

AHU-02 / RHC-02-02	3-Feb-16	Josh Drake	Pitot traversed for total, then preportioned grilles with velgrid

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-02 / RHC-02-03
AREA:

Tested By: Josh Drake
Test Date: March 31, 2016

Unit Data	
VAV Address	47
Box Inlet Size	22X38
K Factor	0.95
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	5450 CFM
Actual Max Airflow	5295 CFM

AHU-02 / RHC-02-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S7	18X10				450	1010	430	96
Outlet-02	S7	18X10				500	685	475	95
Outlet-03	S7	18X10				500	580	510	102
Outlet-04	S7	18X10				500	655	460	92
Outlet-05	S7	18X10				500	590	515	103
Outlet-06	S7	18X10				500	495	495	99
Outlet-07	S7	18X10				500	470	475	95
Outlet-08	S7	18X10				500	435	460	92
Outlet-09	S7	18X10				500	390	505	101
Outlet-10	S7	18X10				500	390	495	99
Outlet-11	S7	18X10				500	355	475	95
Totals :	**-**	**-**	**-**	**-**	**-**	**5,450**	**6,055**	**5,295**	**97 %**

*** Notes**

AHU-02 / RHC-02-03	3-Feb-16	Josh Drake	Pitot traversed for total, then preportioned grilles with velgrid

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-02 / VVB-02-01
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
VAV Address	39
Box Inlet Size	8
K Factor	1.380
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	550 CFM
Actual Max Airflow	560 CFM
Min Design CFM	180 CFM
Actual Min Airflow	195 CFM
Design Heating Airflow	265 CFM
Actual Heating Airflow	275 CFM

AHU-02 / VVB-02-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				300	310	320	107
Outlet-02	S1	10				250	310	240	96
Totals :	**-**	**-**	**-**	**-**	**-**	**550**	**620**	**560**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-02 / VVB-02-02
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
VAV Address	41
Box Inlet Size	14
K Factor	1.524
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1480 CFM
Actual Max Airflow	1505 CFM
Min Design CFM	495 CFM
Actual Min Airflow	490 CFM
Design Heating Airflow	740 CFM
Actual Heating Airflow	755 CFM

AHU-02 / VVB-02-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				245	230	255	104
Outlet-02	S1	10				245	305	240	98
Outlet-03	S1	10				250	300	255	102
Outlet-04	S1	10				250	300	260	104
Outlet-05	S1	10				245	325	245	100
Outlet-06	S1	10				245	245	250	102
Totals :	**-**	**-**	**-**	**-**	**-**	**1,480**	**1,705**	**1,505**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-02 / VVB-02-03
AREA:

Tested By: Josh Drake
Test Date: March 02, 2016

Unit Data	
VAV Address	42
Box Inlet Size	14
K Factor	1.446
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1480 CFM
Actual Max Airflow	1525 CFM
Min Design CFM	495 CFM
Actual Min Airflow	520 CFM
Design Heating Airflow	740 CFM
Actual Heating Airflow	745 CFM

AHU-02 / VVB-02-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S7	18X10				480	335	470	98
Outlet-02	S7	18X10				500	560	520	104
Outlet-03	S7	18X10				500	755	535	107
Totals :	-	-	-	-	-	**1,480**	**1,650**	**1,525**	**103 %**

*** Notes**

SYSTEM/UNIT: AHU-02 / VVB-02-04
AREA:

Tested By: Josh Drake
Test Date: March 31, 2016

Unit Data	
VAV Address	40
Box Inlet Size	14
K Factor	1.169
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1405 CFM
Actual Max Airflow	1440 CFM
Min Design CFM	465 CFM
Actual Min Airflow	475 CFM
Design Heating Airflow	940 CFM
Actual Heating Airflow	955 CFM

AHU-02 / VVB-02-04 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				300	30	310	103
Outlet-02	S1	8				220	250	235	107
Outlet-03	S1	6				130	130	125	96
Outlet-04	S7	10X6				200	280	210	105
Outlet-05	S7	10X6				180	220	175	97
Outlet-06	S7	10X6				150	235	160	107
Outlet-07	S7	10X6				225	230	225	100
Totals :	-	-	-	-	-	**1,405**	**1,375**	**1,440**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-02 / VVB-02-05
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
VAV Address	46
Box Inlet Size	9
K Factor	1.290
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	650 CFM
Actual Max Airflow	655 CFM
Min Design CFM	225 CFM
Actual Min Airflow	230 CFM
Design Heating Airflow	440 CFM
Actual Heating Airflow	450 CFM

AHU-02 / VVB-02-05 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				300	340	300	100
Outlet-02	S1	6				130	120	140	108
Outlet-03	S1	8				220	270	215	98
Totals :	-	-	-	-	-	**650**	**730**	**655**	**101 %**

*** Notes**

SYSTEM/UNIT: AHU-02 / VVB-02-06
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	12
Box Inlet Size	14
K Factor	1.404
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1300 CFM
Actual Max Airflow	1280 CFM
Min Design CFM	435 CFM
Actual Min Airflow	420 CFM
Design Heating Airflow	920 CFM
Actual Heating Airflow	895 CFM

AHU-02 / VVB-02-06 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	275	210	93
Outlet-02	S1	8				225	245	215	96
Outlet-03	S1	8				225	280	225	100
Outlet-04	S2	8				200	210	210	105
Outlet-05	S2	8				200	255	210	105
Outlet-06	S1	8				225	220	210	93
Totals :	-	-	-	-	-	**1,300**	**1,485**	**1,280**	**98 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data

Unit Manufacturer	Daikin
Unit Model Number	CAH031GDGM
Unit Serial Number	FB0U140300436
Design Supply Fan Airflow	12750 CFM
Design Supply Fan ESP	3 in. wc
Design Outside Airflow	3000 CFM
Total Connected Supply	12950 CFM

Starter Data

AHU-05 / Supply Fan

Starter Manufacturer	VFD

Test Data

Actual Supply Airflow	12650 CFM
Actual Outside Airflow	2965 CFM
Actual Return Airflow	9685 CFM
Actual Exhaust Airflow	0 CFM
Duct Static SP	0.55 in.wc

AHU-05 / Supply Fan

Actual RPM	Direct Drive RPM
Volts	460 Volts
Amps	15.0 Amps
VFD Speed	70 Hz

Motor Data

AHU-05 / Supply Fan

Motor Manufacturer	Teco X 2
Motor HP	15
Motor RPM	1770
Motor Rated Volts	230/460
Motor Phase	3
Motor FL Amps	35.7/17.9
Motor Service Factor	1.15
Motor Frame	254T
Nominal Efficiency	93

Sheave Data

AHU-05 / Supply Fan

Motor Sheave Model	Direct Drive

Test Pressures

Filter SP In	-0.54 in. wc
Filter SP Out	-0.65 in. wc
Heating Coil SP In	-0.65 in. wc
Heating Coil SP Out	-0.80 in. wc
Cooling Coil SP In	-0.80 in. wc
Cooling Coil SP Out	-1.52 in. wc
Fan SP In	-1.52 in. wc
Fan SP Out	1.08 in. wc

*** Notes**

AHU-05	28-Mar-16	Josh Drake	Calibrated outside air (Ebtron) with JCI. K-factor is 0.92
AHU-05 / Supply Fan	30-Mar-16	Josh Drake	Increased fan hz to 70 as per Ken Hilton

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05 / VVB-05-01
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	46
Box Inlet Size	8
K Factor	1.967
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	520 CFM
Actual Max Airflow	530 CFM
Min Design CFM	175 CFM
Actual Min Airflow	190 CFM
Design Heating Airflow	265 CFM
Actual Heating Airflow	285 CFM

AHU-05 / VVB-05-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				260	285	275	106
Outlet-02	S1	8				260	245	255	98
Totals :	**-**	**-**	**-**	**-**	**-**	**520**	**530**	**530**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-05 / VVB-05-02
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	45
Box Inlet Size	9
K Factor	1.848
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	620 CFM
Actual Max Airflow	625 CFM
Min Design CFM	220 CFM
Actual Min Airflow	215 CFM
Design Heating Airflow	440 CFM
Actual Heating Airflow	430 CFM

AHU-05 / VVB-05-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				180	275	180	100
Outlet-02	S1	8				220	210	225	102
Outlet-03	S1	8				220	160	220	100
Totals :	**-**	**-**	**-**	**-**	**-**	**620**	**645**	**625**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05 / VVB-05-03
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	44
Box Inlet Size	9
K Factor	1.877
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	660 CFM
Actual Max Airflow	670 CFM
Min Design CFM	220 CFM
Actual Min Airflow	220 CFM
Design Heating Airflow	440 CFM
Actual Heating Airflow	440 CFM

AHU-05 / VVB-05-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	240	220	100
Outlet-02	S1	8				220	215	230	105
Outlet-03	S1	8				220	210	220	100
Totals :	-	-	-	-	-	**660**	**665**	**670**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-05 / VVB-05-04
AREA:

Tested By: Josh Drake
Test Date: February 02, 2016

Unit Data	
VAV Address	43
Box Inlet Size	9
K Factor	1.916
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	660 CFM
Actual Max Airflow	645 CFM
Min Design CFM	220 CFM
Actual Min Airflow	210 CFM
Design Heating Airflow	440 CFM
Actual Heating Airflow	425 CFM

AHU-05 / VVB-05-04 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	230	225	102
Outlet-02	S1	8				220	165	210	95
Outlet-03	S1	8				220	245	210	95
Totals :	-	-	-	-	-	**660**	**640**	**645**	**98 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05 / VVB-05-05
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	42
Box Inlet Size	9
K Factor	1.830
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	660 CFM
Actual Max Airflow	665 CFM
Min Design CFM	220 CFM
Actual Min Airflow	235 CFM
Design Heating Airflow	440 CFM
Actual Heating Airflow	450 CFM

AHU-05 / VVB-05-05 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	225	225	102
Outlet-02	S1	8				220	225	225	102
Outlet-03	S1	8				220	215	215	98
Totals :	-	-	-	-	-	**660**	**665**	**665**	**101 %**

*** Notes**

SYSTEM/UNIT: AHU-05 / VVB-05-06
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	41
Box Inlet Size	9
K Factor	1.843
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	660 CFM
Actual Max Airflow	670 CFM
Min Design CFM	220 CFM
Actual Min Airflow	225 CFM
Design Heating Airflow	440 CFM
Actual Heating Airflow	455 CFM

AHU-05 / VVB-05-06 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	245	225	102
Outlet-02	S1	8				220	230	235	107
Outlet-03	S1	8				220	205	210	95
Totals :	-	-	-	-	-	**660**	**680**	**670**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05 / VVB-05-07
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	40
Box Inlet Size	8
K Factor	1.731
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	425 CFM
Actual Max Airflow	415 CFM
Min Design CFM	140 CFM
Actual Min Airflow	135 CFM
Design Heating Airflow	200 CFM
Actual Heating Airflow	200 CFM

AHU-05 / VVB-05-07 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	215	215	96
Outlet-02	S1	8				200	200	200	100
Totals :	**-**	**-**	**-**	**-**	**-**	**425**	**415**	**415**	**98 %**

*** Notes**

SYSTEM/UNIT: AHU-05 / VVB-05-08
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	26
Box Inlet Size	9
K Factor	1.760
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	660 CFM
Actual Max Airflow	665 CFM
Min Design CFM	220 CFM
Actual Min Airflow	230 CFM
Design Heating Airflow	440 CFM
Actual Heating Airflow	465 CFM

AHU-05 / VVB-05-08 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	220	220	100
Outlet-02	S1	8				220	240	240	109
Outlet-03	S1	8				220	205	205	93
Totals :	**-**	**-**	**-**	**-**	**-**	**660**	**665**	**665**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05 / VVB-05-09
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

Unit Data	
VAV Address	25
Box Inlet Size	12
K Factor	1.652
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	900 CFM
Actual Max Airflow	865 CFM
Min Design CFM	300 CFM
Actual Min Airflow	285 CFM
Design Heating Airflow	450 CFM
Actual Heating Airflow	430 CFM

AHU-05 / VVB-05-09 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	250	210	93
Outlet-02	S1	8				225	230	215	96
Outlet-03	S1	8				225	265	215	96
Outlet-04	S1	8				225	175	225	100
Totals :	-	-	-	-	-	**900**	**920**	**865**	**96 %**

*** Notes**

AHU-05 / VVB-05-09	25-Apr-16	Josh Drake	Checked again in 4/25/16, still missing grille. (Ceiling grid is incomplete)

SYSTEM/UNIT: AHU-05 / VVB-05-10
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	28
Box Inlet Size	9
K Factor	1.744
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	360 CFM
Actual Max Airflow	360 CFM
Min Design CFM	215 CFM
Actual Min Airflow	210 CFM
Design Heating Airflow	320 CFM
Actual Heating Airflow	310 CFM

AHU-05 / VVB-05-10 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				180	185	170	94
Outlet-02	S1	8				180	205	190	106
Totals :	-	-	-	-	-	**360**	**390**	**360**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05 / VVB-05-11
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	29
Box Inlet Size	9
K Factor	1.348
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	440 CFM
Actual Max Airflow	470 CFM
Min Design CFM	220 CFM
Actual Min Airflow	230 CFM
Design Heating Airflow	330 CFM
Actual Heating Airflow	325 CFM

AHU-05 / VVB-05-11 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	255	240	109
Outlet-02	S1	8				220	255	230	105
Totals :	**-**	**-**	**-**	**-**	**-**	**440**	**510**	**470**	**107 %**

*** Notes**

SYSTEM/UNIT: AHU-05 / VVB-05-12
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	30
Box Inlet Size	12
K Factor	1.455
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1100 CFM
Actual Max Airflow	1095 CFM
Min Design CFM	365 CFM
Actual Min Airflow	385 CFM
Design Heating Airflow	550 CFM
Actual Heating Airflow	560 CFM

AHU-05 / VVB-05-12 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	230	210	95
Outlet-02	S1	8				220	255	215	98
Outlet-03	S1	8				220	260	240	109
Outlet-04	S1	8				220	235	220	100
Outlet-05	S1	8				220	225	210	95
Totals :	**-**	**-**	**-**	**-**	**-**	**1,100**	**1,205**	**1,095**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05 / VVB-05-13
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	27
Box Inlet Size	9
K Factor	1.235
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	440 CFM
Actual Max Airflow	450 CFM
Min Design CFM	200 CFM
Actual Min Airflow	215 CFM
Design Heating Airflow	300 CFM
Actual Heating Airflow	320 CFM

AHU-05 / VVB-05-13 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	245	220	100
Outlet-02	S1	8				220	300	230	105
Totals :	**-**	**-**	**-**	**-**	**-**	**440**	**545**	**450**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-05 / VVB-05-14
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	31
Box Inlet Size	8
K Factor	1.666
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	615 CFM
Actual Max Airflow	595 CFM
Min Design CFM	165 CFM
Actual Min Airflow	160 CFM
Design Heating Airflow	265 CFM
Actual Heating Airflow	255 CFM

AHU-05 / VVB-05-14 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	6				120	20	115	96
Outlet-02	S1	8				165	125	160	97
Outlet-03	S1	8				165	210	155	94
Outlet-04	S1	8				165	205	165	100
Totals :	**-**	**-**	**-**	**-**	**-**	**615**	**560**	**595**	**97 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05 / VVB-05-15
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	32
Box Inlet Size	9
K Factor	1.747
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	730 CFM
Actual Max Airflow	710 CFM
Min Design CFM	245 CFM
Actual Min Airflow	235 CFM
Design Heating Airflow	500 CFM
Actual Heating Airflow	490 CFM

AHU-05 / VVB-05-15 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				165	155	165	100
Outlet-02	S1	8				165	190	165	100
Outlet-03	S1	8				200	190	195	98
Outlet-04	S1	8				200	175	185	93
Totals :	-	-	-	-	-	**730**	**710**	**710**	**97 %**

*** Notes**

SYSTEM/UNIT: AHU-05 / VVB-05-16
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	33
Box Inlet Size	9
K Factor	1.678
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	660 CFM
Actual Max Airflow	685 CFM
Min Design CFM	220 CFM
Actual Min Airflow	225 CFM
Design Heating Airflow	330 CFM
Actual Heating Airflow	350 CFM

AHU-05 / VVB-05-16 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				175	190	190	109
Outlet-02	S1	8				175	190	190	109
Outlet-03	S2	8				155	160	160	103
Outlet-04	S2	8				155	145	145	94
Totals :	-	-	-	-	-	**660**	**685**	**685**	**104 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05 / VVB-05-17
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	34
Box Inlet Size	8
K Factor	1.979
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	400 CFM
Actual Max Airflow	410 CFM
Min Design CFM	135 CFM
Actual Min Airflow	145 CFM
Design Heating Airflow	200 CFM
Actual Heating Airflow	205 CFM

AHU-05 / VVB-05-17 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	200	200	100
Outlet-02	S1	8				200	210	210	105
Totals :	**-**	**-**	**-**	**-**	**-**	**400**	**410**	**410**	**103 %**

*** Notes**

SYSTEM/UNIT: AHU-05 / VVB-05-18
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	35
Box Inlet Size	8
K Factor	1.969
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	400 CFM
Actual Max Airflow	400 CFM
Min Design CFM	135 CFM
Actual Min Airflow	130 CFM
Design Heating Airflow	200 CFM
Actual Heating Airflow	205 CFM

AHU-05 / VVB-05-18 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	170	195	98
Outlet-02	S1	8				200	210	205	103
Totals :	**-**	**-**	**-**	**-**	**-**	**400**	**380**	**400**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05 / VVB-05-19
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	36
Box Inlet Size	8
K Factor	1.915
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	480 CFM
Actual Max Airflow	480 CFM
Min Design CFM	145 CFM
Actual Min Airflow	150 CFM
Design Heating Airflow	200 CFM
Actual Heating Airflow	195 CFM

AHU-05 / VVB-05-19 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	6				100	105	105	105
Outlet-02	S1	8				200	185	185	93
Outlet-03	S1	8				180	190	190	106
Totals :	-	-	-	-	-	**480**	**480**	**480**	**100 %**

*** Notes**

SYSTEM/UNIT: AHU-05 / VVB-05-20
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	37
Box Inlet Size	6
K Factor	2.471
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	300 CFM
Actual Max Airflow	320 CFM
Min Design CFM	100 CFM
Actual Min Airflow	110 CFM
Design Heating Airflow	150 CFM
Actual Heating Airflow	155 CFM

AHU-05 / VVB-05-20 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	6				100	110	110	110
Outlet-02	S1	8				200	210	210	105
Totals :	-	-	-	-	-	**300**	**320**	**320**	**107 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-05 / VVB-05-21
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	39
Box Inlet Size	9
K Factor	1.801
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	660 CFM
Actual Max Airflow	670 CFM
Min Design CFM	220 CFM
Actual Min Airflow	220 CFM
Design Heating Airflow	440 CFM
Actual Heating Airflow	450 CFM

AHU-05 / VVB-05-21 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	235	235	107
Outlet-02	S1	8				220	230	230	105
Outlet-03	S1	8				220	205	205	93
Totals :	-	-	-	-	-	**660**	**670**	**670**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-05 / VVB-05-22
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	38
Box Inlet Size	9
K Factor	1.807
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	600 CFM
Actual Max Airflow	570 CFM
Min Design CFM	200 CFM
Actual Min Airflow	185 CFM
Design Heating Airflow	300 CFM
Actual Heating Airflow	280 CFM

AHU-05 / VVB-05-22 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				300	290	290	97
Outlet-02	S1	10				300	280	280	93
Totals :	-	-	-	-	-	**600**	**570**	**570**	**95 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
Unit Manufacturer	Daikin
Unit Model Number	CAH071GDGM
Unit Serial Number	FB0U140300368
Design Supply Fan Airflow	26500 CFM
Design Supply Fan ESP	3 in. wc
Design Outside Airflow	5200 CFM
Total Connected Supply	24985 CFM

Starter Data	
AHU-06 / Supply Fan	
Starter Manufacturer	VFD

Motor Data	
AHU-06 / Supply Fan	
Motor Manufacturer	Teco X 2
Motor HP	15
Motor RPM	1770
Motor Rated Volts	230/460
Motor Phase	3
Motor FL Amps	35.7/17.9
Motor Service Factor	1.15
Motor Frame	254T
Nominal Efficiency	93

Sheave Data	
AHU-06 / Supply Fan	
Motor Sheave Model	Direct Drive

*** Notes**

SYSTEM/UNIT: AHU-06 / VVB-06-01
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	10
Box Inlet Size	10
K Factor	1.701
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	450 CFM
Actual Max Airflow	435 CFM
Min Design CFM	270 CFM
Actual Min Airflow	260 CFM
Design Heating Airflow	540 CFM
Actual Heating Airflow	520 CFM

AHU-06 / VVB-06-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	245	230	102
Outlet-02	S1	8				225	170	205	91
Totals :	-	-	-	-	-	**450**	**415**	**435**	**97 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-02
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	16
Box Inlet Size	5
K Factor	1.054
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	220 CFM
Actual Max Airflow	220 CFM
Min Design CFM	75 CFM
Actual Min Airflow	75 CFM
Design Heating Airflow	150 CFM
Actual Heating Airflow	155 CFM

AHU-06 / VVB-06-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	310	220	100
Totals :	**-**	**-**	**-**	**-**	**-**	**220**	**310**	**220**	**100 %**

*** Notes**

SYSTEM/UNIT: AHU-06 / VVB-06-03
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	15
Box Inlet Size	14
K Factor	1.473
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1450 CFM
Actual Max Airflow	1460 CFM
Min Design CFM	485 CFM
Actual Min Airflow	475 CFM
Design Heating Airflow	970 CFM
Actual Heating Airflow	990 CFM

AHU-06 / VVB-06-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S7	12X6				245	285	245	100
Outlet-02	S7	12X6				240	290	230	96
Outlet-03	S7	12X6				245	260	240	98
Outlet-04	S7	12X6				240	255	245	102
Outlet-05	S7	12X6				240	240	260	108
Outlet-06	S7	12X6				240	230	240	100
Totals :	**-**	**-**	**-**	**-**	**-**	**1,450**	**1,560**	**1,460**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-04
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
VAV Address	17
Box Inlet Size	16
K Factor	1.529
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2000 CFM
Actual Max Airflow	1930 CFM
Min Design CFM	665 CFM
Actual Min Airflow	650 CFM
Design Heating Airflow	1340 CFM
Actual Heating Airflow	1315 CFM

AHU-06 / VVB-06-04 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01		8				220	140	235	107
Outlet-02	S2	8				220	300	225	102
Outlet-03	S2	8				220	190	205	93
Outlet-04	S2	8				220	260	215	98
Outlet-05	S2	8				220	260	205	93
Outlet-06	S2	8				220	345	215	98
Outlet-07	S2	8				220	235	205	93
Outlet-08	S7	12X6				230	0	210	91
Outlet-09	S1	10				230	365	215	93
Totals :	**-**	**-**	**-**	**-**	**-**	**2,000**	**2,095**	**1,930**	**97 %**

*** Notes**

SYSTEM/UNIT: AHU-06 / VVB-06-05
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
VAV Address	19
Box Inlet Size	5
K Factor	1.346
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	200 CFM
Actual Max Airflow	205 CFM
Min Design CFM	70 CFM
Actual Min Airflow	75 CFM
Design Heating Airflow	100 CFM
Actual Heating Airflow	105 CFM

AHU-06 / VVB-06-05 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	150	205	103
Totals :	**-**	**-**	**-**	**-**	**-**	**200**	**150**	**205**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-06
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
VAV Address	21
Box Inlet Size	5
K Factor	1.378
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	200 CFM
Actual Max Airflow	200 CFM
Min Design CFM	70 CFM
Actual Min Airflow	75 CFM
Design Heating Airflow	100 CFM
Actual Heating Airflow	100 CFM

AHU-06 / VVB-06-06 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	240	200	100
Totals :	**-**	**-**	**-**	**-**	**-**	**200**	**240**	**200**	**100 %**

*** Notes**

SYSTEM/UNIT: AHU-06 / VVB-06-07
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	14
Box Inlet Size	9
K Factor	1.882
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	910 CFM
Actual Max Airflow	900 CFM
Min Design CFM	240 CFM
Actual Min Airflow	235 CFM
Design Heating Airflow	500 CFM
Actual Heating Airflow	480 CFM

AHU-06 / VVB-06-07 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	10	S1				305	335	285	93
Outlet-02	10	S1				300	220	300	100
Outlet-03	10	S1				305	290	315	103
Totals :	**-**	**-**	**-**	**-**	**-**	**910**	**845**	**900**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-08
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
VAV Address	22
Box Inlet Size	16
K Factor	1.937
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2800 CFM
Actual Max Airflow	2730 CFM
Min Design CFM	925 CFM
Actual Min Airflow	880 CFM
Design Heating Airflow	1870 CFM
Actual Heating Airflow	1805 CFM

AHU-06 / VVB-06-08 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				250	345	230	92
Outlet-02	S1	10				250	225	245	98
Outlet-03	S1	10				250	240	240	96
Outlet-04	S1	10				250	275	245	98
Outlet-05	S6	18X6				300	315	310	103
Outlet-06	S6	18X6				300	280	275	92
Outlet-07	S6	18X6				300	330	305	102
Outlet-08	S6	18X6				300	305	300	100
Outlet-09	S6	18X6				300	210	285	95
Outlet-10	S6	18X6				300	210	295	98
Totals :	**-**	**-**	**-**	**-**	**-**	**2,800**	**2,735**	**2,730**	**98 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-09
AREA:

Tested By: Josh Drake
Test Date: February 29, 2016

Unit Data	
VAV Address	13
Box Inlet Size	16
K Factor	1.682
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2625 CFM
Actual Max Airflow	2495 CFM
Min Design CFM	800 CFM
Actual Min Airflow	775 CFM
Design Heating Airflow	1200 CFM
Actual Heating Airflow	1160 CFM

AHU-06 / VVB-06-09 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				300	235	315	105
Outlet-02	S1	10				300	175	275	92
Outlet-03	S1	10				300	200	295	98
Outlet-04	S1	10				300	225	325	108
Outlet-05	S1	8				225	160	220	98
Outlet-06	S6	18X6				300	140	280	93
Outlet-07	S6	18X6				300	150	280	93
Outlet-08	S6	18X6				300	125	275	92
Outlet-09	S6	18X6				300	195	230	77
Totals :	**-**	**-**	**-**	**-**	**-**	**2,625**	**1,605**	**2,495**	**95 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-10
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
VAV Address	20
Box Inlet Size	12
K Factor	1.460
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1000 CFM
Actual Max Airflow	980 CFM
Min Design CFM	335 CFM
Actual Min Airflow	325 CFM
Design Heating Airflow	500 CFM
Actual Heating Airflow	475 CFM

AHU-06 / VVB-06-10 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	285	195	98
Outlet-02	S1	8				200	265	190	95
Outlet-03	S1	8				200	280	210	105
Outlet-04	S1	8				200	45	200	100
Outlet-05	S7	10X8				200	80	185	93
Totals :	**-**	**-**	**-**	**-**	**-**	**1,000**	**955**	**980**	**98 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-11
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	9
Box Inlet Size	16
K Factor	1.419
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2400 CFM
Actual Max Airflow	2415 CFM
Min Design CFM	800 CFM
Actual Min Airflow	835 CFM
Design Heating Airflow	1600 CFM
Actual Heating Airflow	1580 CFM

AHU-06 / VVB-06-11 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	230	210	105
Outlet-02	S1	8				200	160	190	95
Outlet-03	S1	8				200	320	185	93
Outlet-04	S1	8				200	235	205	103
Outlet-05	S1	8				200	255	200	100
Outlet-06	S1	8				200	165	215	108
Outlet-07	S1	8				200	245	200	100
Outlet-08	S1	8				200	180	185	93
Outlet-09	S1	8				200	215	205	103
Outlet-10	S1	10				300	320	295	98
Outlet-11	S1	10				300	255	325	108
Totals :	**-**	**-**	**-**	**-**	**-**	**2,400**	**2,580**	**2,415**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-12
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	5
Box Inlet Size	5
K Factor	1.355
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	200 CFM
Actual Max Airflow	195 CFM
Min Design CFM	65 CFM
Actual Min Airflow	65 CFM
Design Heating Airflow	100 CFM
Actual Heating Airflow	95 CFM

AHU-06 / VVB-06-12 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	240	195	98
Totals :	**-**	**-**	**-**	**-**	**-**	**200**	**240**	**195**	**98 %**

*** Notes**

SYSTEM/UNIT: AHU-06 / VVB-06-13
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	6
Box Inlet Size	10
K Factor	1.389
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	800 CFM
Actual Max Airflow	820 CFM
Min Design CFM	265 CFM
Actual Min Airflow	275 CFM
Design Heating Airflow	400 CFM
Actual Heating Airflow	405 CFM

AHU-06 / VVB-06-13 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				265	230	255	96
Outlet-02	S1	10				265	360	275	104
Outlet-03	S1	10				270	295	290	107
Totals :	**-**	**-**	**-**	**-**	**-**	**800**	**885**	**820**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-14
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
VAV Address	7
Box Inlet Size	16
K Factor	1.150
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2300 CFM
Actual Max Airflow	2335 CFM
Min Design CFM	770 CFM
Actual Min Airflow	790 CFM
Design Heating Airflow	1150 CFM
Actual Heating Airflow	1205 CFM

AHU-06 / VVB-06-14 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				290	350	305	105
Outlet-02	S1	10				290	370	320	110
Outlet-03	S1	10				290	315	285	98
Outlet-04	S1	10				290	325	305	105
Outlet-05	S1	10				285	335	285	100
Outlet-06	S1	10				285	290	260	91
Outlet-07	S1	10				285	300	270	95
Outlet-08	S1	10				285	350	305	107
Totals :	**-**	**-**	**-**	**-**	**-**	**2,300**	**2,635**	**2,335**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-15
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	8
Box Inlet Size	16
K Factor	1.353
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2200 CFM
Actual Max Airflow	2205 CFM
Min Design CFM	740 CFM
Actual Min Airflow	760 CFM
Design Heating Airflow	1100 CFM
Actual Heating Airflow	1120 CFM

AHU-06 / VVB-06-15 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				275	325	270	98
Outlet-02	S1	10				275	345	275	100
Outlet-03	S1	10				275	345	285	104
Outlet-04	S1	10				275	330	285	104
Outlet-05	S1	10				275	340	295	107
Outlet-06	S1	10				275	365	260	95
Outlet-07	S1	10				275	330	285	104
Outlet-08	S1	10				275	275	250	91
Totals :	**-**	**-**	**-**	**-**	**-**	**2,200**	**2,655**	**2,205**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-16
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
VAV Address	12
Box Inlet Size	16
K Factor	1.537
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2300 CFM
Actual Max Airflow	2285 CFM
Min Design CFM	770 CFM
Actual Min Airflow	765 CFM
Design Heating Airflow	1150 CFM
Actual Heating Airflow	1130 CFM

AHU-06 / VVB-06-16 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				285	330	295	104
Outlet-02	S1	10				285	310	300	105
Outlet-03	S1	10				285	240	270	95
Outlet-04	S1	10				285	290	275	96
Outlet-05	S1	10				290	255	285	98
Outlet-06	S1	10				290	300	285	98
Outlet-07	S1	10				290	285	280	97
Outlet-08	S1	10				290	280	295	102
Totals :	-	-	-	-	-	**2,300**	**2,290**	**2,285**	**99 %**

*** Notes**

SYSTEM/UNIT: AHU-06 / VVB-06-17
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
VAV Address	11
Box Inlet Size	8
K Factor	1.930
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	530 CFM
Actual Max Airflow	535 CFM
Min Design CFM	175 CFM
Actual Min Airflow	180 CFM
Design Heating Airflow	265 CFM
Actual Heating Airflow	275 CFM

AHU-06 / VVB-06-17 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				265	260	270	102
Outlet-02	S1	10				265	225	265	100
Totals :	-	-	-	-	-	**530**	**485**	**535**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-06 / VVB-06-18
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
VAV Address	14
Box Inlet Size	16
K Factor	1.439
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2400 CFM
Actual Max Airflow	2390 CFM
Min Design CFM	800 CFM
Actual Min Airflow	765 CFM
Design Heating Airflow	1200 CFM
Actual Heating Airflow	1210 CFM

AHU-06 / VVB-06-18 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S2	8				200	200	190	95
Outlet-02	S2	8				225	20	235	104
Outlet-03	S2	8				225	335	220	98
Outlet-04	S2	8				225	300	215	96
Outlet-05	S2	8				225	285	215	96
Outlet-06	S2	8				225	285	215	96
Outlet-07	S2	8				225	300	215	96
Outlet-08	S2	8				225	240	230	102
Outlet-09	S2	8				225	280	235	104
Outlet-10	S1	8				200	250	210	105
Outlet-11	S1	8				200	240	210	105
Totals :	**-**	**-**	**-**	**-**	**-**	**2,400**	**2,735**	**2,390**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data

Unit Manufacturer	Daikin
Unit Model Number	CAH071GDGM
Unit Serial Number	FB0U140300363
Design Supply Fan Airflow	31850 CFM
Design Supply Fan ESP	4 in. wc
Design Outside Airflow	9300 CFM
Total Connected Supply	31695 CFM

Starter Data

AHU-07 / Supply Fan

Starter Manufacturer	VFD

Test Data

Actual Supply Airflow	31265 CFM
Actual Outside Airflow	9380 CFM
Actual Return Airflow	21885 CFM
Actual Exhaust Airflow	0 CFM
Duct Static SP	0.7 in.wc

AHU-07 / Supply Fan

Actual RPM	Direct Drive RPM
Volts	460 Volts
Amps	39.0 Amps
VFD Speed	48 Hz

Motor Data

AHU-07 / Supply Fan

Motor Manufacturer	Teco X 2
Motor HP	30
Motor RPM	1770
Motor Rated Volts	230/460
Motor Phase	3
Motor FL Amps	68.6/34.3
Motor Service Factor	1.15
Motor Frame	286T
Nominal Efficiency	94.1

Sheave Data

AHU-07 / Supply Fan

Motor Sheave Model	Direct Drive

Test Pressures

Filter SP In	-0.81 in. wc
Filter SP Out	-0.94 in. wc
Heating Coil SP In	-0.94 in. wc
Heating Coil SP Out	-1.02 in. wc
Cooling Coil SP In	-1.02 in. wc
Cooling Coil SP Out	-1.86 in. wc
Fan SP In	-1.86 in. wc
Fan SP Out	1.35 in. wc

*** Notes**

AHU-07	28-Mar-16	Josh Drake	Calibrated outside air (Ebtron) with JCI.
AHU-07	28-Mar-16	Josh Drake	Finaled AHU with 6 VVB's still deficient

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-01
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	22
Box Inlet Size	6
K Factor	1.946
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	340 CFM
Actual Max Airflow	350 CFM
Min Design CFM	110 CFM
Actual Min Airflow	115 CFM
Design Heating Airflow	170 CFM
Actual Heating Airflow	180 CFM

AHU-07 / VVB-07-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				170	180	165	97
Outlet-02	S1	8				170	225	185	109
Totals :	**-**	**-**	**-**	**-**	**-**	**340**	**405**	**350**	**103 %**

*** Notes**

SYSTEM/UNIT: AHU-07 / VVB-07-02
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	21
Box Inlet Size	12
K Factor	1.705
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	900 CFM
Actual Max Airflow	915 CFM
Min Design CFM	300 CFM
Actual Min Airflow	325 CFM
Design Heating Airflow	455 CFM
Actual Heating Airflow	470 CFM

AHU-07 / VVB-07-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	245	245	109
Outlet-02	S1	8				225	225	225	100
Outlet-03	S1	8				225	230	230	102
Outlet-04	S1	8				225	215	215	96
Totals :	**-**	**-**	**-**	**-**	**-**	**900**	**915**	**915**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-03
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
VAV Address	10
Box Inlet Size	9
K Factor	1.813
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	720 CFM
Actual Max Airflow	720 CFM
Min Design CFM	255 CFM
Actual Min Airflow	260 CFM
Design Heating Airflow	510 CFM
Actual Heating Airflow	520 CFM

AHU-07 / VVB-07-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	6				120	105	120	100
Outlet-02	S1	10				300	300	300	100
Outlet-03	S1	10				300	395	300	100
Totals :	-	-	-	-	-	**720**	**800**	**720**	**100 %**

*** Notes**

SYSTEM/UNIT: AHU-07 / VVB-07-04
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	9
Box Inlet Size	12
K Factor	1.163
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1050 CFM
Actual Max Airflow	1065 CFM
Min Design CFM	350 CFM
Actual Min Airflow	355 CFM
Design Heating Airflow	700 CFM
Actual Heating Airflow	715 CFM

AHU-07 / VVB-07-04 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				265	310	275	104
Outlet-02	S1	10				260	320	255	98
Outlet-03	S1	10				260	320	280	108
Outlet-04	S1	10				265	300	255	96
Totals :	-	-	-	-	-	**1,050**	**1,250**	**1,065**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-05
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	8
Box Inlet Size	9
K Factor	1.247
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	750 CFM
Actual Max Airflow	750 CFM
Min Design CFM	250 CFM
Actual Min Airflow	240 CFM
Design Heating Airflow	500 CFM
Actual Heating Airflow	505 CFM

AHU-07 / VVB-07-05 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				175	235	170	97
Outlet-02	S1	8				175	210	170	97
Outlet-03	S1	8				200	245	210	105
Outlet-04	S1	8				200	230	200	100
Totals :	-	-	-	-	-	**750**	**920**	**750**	**100 %**

*** Notes**

SYSTEM/UNIT: AHU-07 / VVB-07-06
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	11
Box Inlet Size	12
K Factor	0.943
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	900 CFM
Actual Max Airflow	905 CFM
Min Design CFM	300 CFM
Actual Min Airflow	315 CFM
Design Heating Airflow	450 CFM
Actual Heating Airflow	470 CFM

AHU-07 / VVB-07-06 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	255	225	100
Outlet-02	S1	8				225	250	220	98
Outlet-03	S1	8				225	335	235	104
Outlet-04	S1	8				225	295	225	100
Totals :	-	-	-	-	-	**900**	**1,135**	**905**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-07
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	7
Box Inlet Size	14
K Factor	0.991
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1400 CFM
Actual Max Airflow	1460 CFM
Min Design CFM	465 CFM
Actual Min Airflow	490 CFM
Design Heating Airflow	940 CFM
Actual Heating Airflow	960 CFM

AHU-07 / VVB-07-07 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	235	210	105
Outlet-02	S1	8				200	245	210	105
Outlet-03	S1	8				200	230	200	100
Outlet-04	S1	8				200	220	200	100
Outlet-05	S1	8				200	255	220	110
Outlet-06	S1	8				200	235	215	108
Outlet-07	S1	8				200	230	205	103
Totals :	**-**	**-**	**-**	**-**	**-**	**1,400**	**1,650**	**1,460**	**104 %**

*** Notes**

SYSTEM/UNIT: AHU-07 / VVB-07-08
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	12
Box Inlet Size	12
K Factor	1.533
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	860 CFM
Actual Max Airflow	830 CFM
Min Design CFM	285 CFM
Actual Min Airflow	280 CFM
Design Heating Airflow	430 CFM
Actual Heating Airflow	435 CFM

AHU-07 / VVB-07-08 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				215	220	220	102
Outlet-02	S1	8				215	200	200	93
Outlet-03	S1	8				215	200	200	93
Outlet-04	S1	8				215	210	210	98
Totals :	**-**	**-**	**-**	**-**	**-**	**860**	**830**	**830**	**97 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-09
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	20
Box Inlet Size	12
K Factor	0.599
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	940 CFM
Actual Max Airflow	980 CFM
Min Design CFM	310 CFM
Actual Min Airflow	325 CFM
Design Heating Airflow	470 CFM
Actual Heating Airflow	510 CFM

AHU-07 / VVB-07-09 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				235	275	240	102
Outlet-02	S1	10				235	280	255	109
Outlet-03	S1	10				235	310	240	102
Outlet-04	S1	10				235	310	245	104
Totals :	-	-	-	-	-	**940**	**1,175**	**980**	**104 %**

*** Notes**

SYSTEM/UNIT: AHU-07 / VVB-07-10
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	19
Box Inlet Size	12
K Factor	1.683
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1050 CFM
Actual Max Airflow	1075 CFM
Min Design CFM	350 CFM
Actual Min Airflow	355 CFM
Design Heating Airflow	500 CFM
Actual Heating Airflow	510 CFM

AHU-07 / VVB-07-10 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				235	235	235	100
Outlet-02	S1	10				235	255	255	109
Outlet-03	S1	10				235	260	255	109
Outlet-04	S1	10				235	250	220	94
Outlet-05	S1	6				110	75	110	100
Totals :	-	-	-	-	-	**1,050**	**1,075**	**1,075**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-11
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	13
Box Inlet Size	12
K Factor	1.589
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1140 CFM
Actual Max Airflow	1200 CFM
Min Design CFM	380 CFM
Actual Min Airflow	405 CFM
Design Heating Airflow	560 CFM
Actual Heating Airflow	590 CFM

AHU-07 / VVB-07-11 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				230	270	245	107
Outlet-02	S1	10				230	280	240	104
Outlet-03	S1	10				230	240	245	107
Outlet-04	S1	10				230	260	245	107
Outlet-05	S1	8				220	145	225	102
Totals :	**-**	**-**	**-**	**-**	**-**	**1,140**	**1,195**	**1,200**	**105 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-12
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	6
Box Inlet Size	14
K Factor	1.587
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1635 CFM
Actual Max Airflow	1620 CFM
Min Design CFM	540 CFM
Actual Min Airflow	540 CFM
Design Heating Airflow	1090 CFM
Actual Heating Airflow	1110 CFM

AHU-07 / VVB-07-12 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	195	205	91
Outlet-02	S1	8				210	195	205	98
Outlet-03	S1	8				200	220	185	93
Outlet-04	S1	8				200	185	195	98
Outlet-05	S1	8				200	210	220	110
Outlet-06	S1	8				200	205	205	103
Outlet-07	S1	8				200	225	200	100
Outlet-08	S1	8				200	200	205	103
Totals :	**-**	**-**	**-**	**-**	**-**	**1,635**	**1,635**	**1,620**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-14
AREA:

Tested By: Josh Drake
Test Date: February 02, 2016

Unit Data	
VAV Address	5
Box Inlet Size	16
K Factor	1.521
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1800 CFM
Actual Max Airflow	1765 CFM
Min Design CFM	715 CFM
Actual Min Airflow	710 CFM
Design Heating Airflow	1420 CFM
Actual Heating Airflow	1400 CFM

AHU-07 / VVB-07-14 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	210	210	93
Outlet-02	S1	8				225	215	215	96
Outlet-03	S1	8				225	225	225	100
Outlet-04	S1	8				225	220	220	98
Outlet-05	S1	8				225	220	220	98
Outlet-06	S1	8				225	220	220	98
Outlet-07	S1	8				225	230	230	102
Outlet-08	S1	8				225	225	225	100
Totals :	**-**	**-**	**-**	**-**	**-**	**1,800**	**1,765**	**1,765**	**98 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-15
AREA:

Tested By: Josh Drake
Test Date: February 02, 2016

Unit Data	
VAV Address	15
Box Inlet Size	16
K Factor	1.550
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1935 CFM
Actual Max Airflow	1975 CFM
Min Design CFM	640 CFM
Actual Min Airflow	660 CFM
Design Heating Airflow	1290 CFM
Actual Heating Airflow	1335 CFM

AHU-07 / VVB-07-15 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				185	235	195	105
Outlet-02	S1	8				200	235	185	93
Outlet-03	S1	8				200	240	190	95
Outlet-04	S1	8				185	235	190	103
Outlet-05	S1	8				180	210	195	108
Outlet-06	S1	8				185	165	200	108
Outlet-07	S1	8				200	200	210	105
Outlet-08	S1	8				200	200	205	103
Outlet-09	S1	8				200	35	210	105
Outlet-10	S1	8				200	155	195	98
Totals :	-	-	-	-	-	**1,935**	**1,910**	**1,975**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-16
AREA:

Tested By: Josh Drake
Test Date: February 02, 2016

Unit Data	
VAV Address	18
Box Inlet Size	14
K Factor	1.539
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1500 CFM
Actual Max Airflow	1500 CFM
Min Design CFM	460 CFM
Actual Min Airflow	470 CFM
Design Heating Airflow	700 CFM
Actual Heating Airflow	725 CFM

AHU-07 / VVB-07-16 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	6				100	95	95	95
Outlet-02	S1	8				175	210	160	91
Outlet-03	S1	8				175	205	175	100
Outlet-04	S1	8				175	195	165	94
Outlet-05	S1	8				175	175	170	97
Outlet-06	S1	8				175	205	185	106
Outlet-07	S1	8				175	145	185	106
Outlet-08	S1	8				175	145	185	106
Outlet-09	S1	8				175	150	180	103
Totals :	**-**	**-**	**-**	**-**	**-**	**1,500**	**1,525**	**1,500**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-18
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	14
Box Inlet Size	9
K Factor	1.466
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	720 CFM
Actual Max Airflow	735 CFM
Min Design CFM	240 CFM
Actual Min Airflow	240 CFM
Design Heating Airflow	500 CFM
Actual Heating Airflow	515 CFM

AHU-07 / VVB-07-18 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				320	360	340	106
Outlet-02	S1	8				200	235	210	105
Outlet-03	S1	8				200	185	185	93
Totals :	-	-	-	-	-	**720**	**780**	**735**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-07 / VVB-07-19
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	81
Box Inlet Size	8
K Factor	1.715
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	450 CFM
Actual Max Airflow	450 CFM
Min Design CFM	150 CFM
Actual Min Airflow	140 CFM
Design Heating Airflow	300 CFM
Actual Heating Airflow	300 CFM

AHU-07 / VVB-07-19 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	230	230	102
Outlet-02	S1	8				225	220	220	98
Totals :	-	-	-	-	-	**450**	**450**	**450**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-20
AREA:

Tested By: Josh Drake
Test Date: February 02, 2016

Unit Data	
VAV Address	16
Box Inlet Size	16
K Factor	1.396
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1875 CFM
Actual Max Airflow	1850 CFM
Min Design CFM	620 CFM
Actual Min Airflow	590 CFM
Design Heating Airflow	940 CFM
Actual Heating Airflow	910 CFM

AHU-07 / VVB-07-20 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				180	190	175	97
Outlet-02	S1	8				200	220	210	105
Outlet-03	S1	8				200	205	190	95
Outlet-04	S1	8				180	250	170	94
Outlet-05	S1	8				180	205	185	103
Outlet-06	S1	8				175	185	185	106
Outlet-07	S1	8				180	160	175	97
Outlet-08	S1	8				200	215	195	98
Outlet-09	S1	8				200	185	185	93
Outlet-10	S1	8				180	245	180	100
Totals :	-	-	-	-	-	**1,875**	**2,060**	**1,850**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-21
AREA:

Tested By: Josh Drake
Test Date: February 02, 2016

Unit Data	
VAV Address	17
Box Inlet Size	9
K Factor	1.875
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	675 CFM
Actual Max Airflow	690 CFM
Min Design CFM	340 CFM
Actual Min Airflow	355 CFM
Design Heating Airflow	440 CFM
Actual Heating Airflow	460 CFM

AHU-07 / VVB-07-21 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	235	235	104
Outlet-02	S1	8				225	235	235	104
Outlet-03	S1	8				225	220	220	98
Totals :	-	-	-	-	-	**675**	**690**	**690**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-07 / VVB-07-22
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	23
Box Inlet Size	9
K Factor	1.864
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	675 CFM
Actual Max Airflow	685 CFM
Min Design CFM	340 CFM
Actual Min Airflow	330 CFM
Design Heating Airflow	440 CFM
Actual Heating Airflow	450 CFM

AHU-07 / VVB-07-22 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	265	215	96
Outlet-02	S1	8				225	200	225	100
Outlet-03	S1	8				225	235	245	109
Totals :	-	-	-	-	-	**675**	**700**	**685**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-23
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
VAV Address	24
Box Inlet Size	16
K Factor	1.387
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2025 CFM
Actual Max Airflow	2005 CFM
Min Design CFM	665 CFM
Actual Min Airflow	630 CFM
Design Heating Airflow	1340 CFM
Actual Heating Airflow	1320 CFM

AHU-07 / VVB-07-23 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	285	220	98
Outlet-02	S1	8				225	295	220	98
Outlet-03	S2	8				225	225	235	104
Outlet-04	S2	8				225	225	235	104
Outlet-05	S2	8				225	255	210	93
Outlet-06	S2	8				225	285	225	100
Outlet-07	S2	8				225	255	210	93
Outlet-08	S2	8				225	215	220	98
Outlet-09	S2	8				225	250	230	102
Totals :	**-**	**-**	**-**	**-**	**-**	**2,025**	**2,290**	**2,005**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-24
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
VAV Address	56
Box Inlet Size	16
K Factor	1.169
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1800 CFM
Actual Max Airflow	1815 CFM
Min Design CFM	600 CFM
Actual Min Airflow	605 CFM
Design Heating Airflow	1200 CFM
Actual Heating Airflow	1235 CFM

AHU-07 / VVB-07-24 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S6	18X6				350	330	355	101
Outlet-02	S6	18X6				350	360	360	103
Outlet-03	S6	18X6				350	390	330	94
Outlet-04	S6	18X6				350	335	355	101
Outlet-05	S1	8				200	170	205	103
Outlet-06	S1	8				200	230	210	105
Totals :	-	-	-	-	-	**1,800**	**1,815**	**1,815**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-25
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
VAV Address	55
Box Inlet Size	14
K Factor	1.372
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1385 CFM
Actual Max Airflow	1375 CFM
Min Design CFM	460 CFM
Actual Min Airflow	445 CFM
Design Heating Airflow	700 CFM
Actual Heating Airflow	680 CFM

AHU-07 / VVB-07-25 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	200	190	95
Outlet-02	S1	8				200	210	200	100
Outlet-03	S1	8				215	190	230	107
Outlet-04	S1	8				215	195	205	95
Outlet-05	S1	8				215	170	210	98
Outlet-06	S1	8				170	215	170	100
Outlet-07	S1	8				170	200	170	100
Totals :	**-**	**-**	**-**	**-**	**-**	**1,385**	**1,380**	**1,375**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-26
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
VAV Address	57
Box Inlet Size	16
K Factor	1.218
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2120 CFM
Actual Max Airflow	2205 CFM
Min Design CFM	700 CFM
Actual Min Airflow	735 CFM
Design Heating Airflow	1420 CFM
Actual Heating Airflow	1460 CFM

AHU-07 / VVB-07-26 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				210	285	220	105
Outlet-02	S1	8				210	235	230	110
Outlet-03	S1	8				210	275	220	105
Outlet-04	S1	8				210	275	210	100
Outlet-05	S1	8				210	255	220	105
Outlet-06	S6	18X6				360	350	375	104
Outlet-07	S6	18X6				355	310	360	101
Outlet-08	S6	18X6				355	300	370	104
Totals :	**-**	**-**	**-**	**-**	**-**	**2,120**	**2,285**	**2,205**	**104 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-07 / VVB-07-27
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
VAV Address	58
Box Inlet Size	16
K Factor	0.678
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2800 CFM
Actual Max Airflow	2875 CFM
Min Design CFM	925 CFM
Actual Min Airflow	960 CFM
Design Heating Airflow	1870 CFM
Actual Heating Airflow	1895 CFM

AHU-07 / VVB-07-27 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S6	20X10				500	585	525	105
Outlet-02	S6	20X10				500	490	540	108
Outlet-03	S6	18X6				400	460	420	105
Outlet-04	S6	20X10				500	445	490	98
Outlet-05	S6	20X10				500	480	480	96
Outlet-06	S6	18X6				400	530	420	105
Totals :	**-**	**-**	**-**	**-**	**-**	**2,800**	**2,990**	**2,875**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data

Unit Manufacturer	Daikin
Unit Model Number	CAH071GDGM
Unit Serial Number	FB0U140300366
Design Supply Fan Airflow	31500 CFM
Design Supply Fan ESP	4 in. wc
Design Outside Airflow	12900 CFM
Total Connected Supply	35055 CFM

Starter Data

AHU-08 / Supply Fan

Starter Manufacturer	VFD

Test Data

Actual Supply Airflow	34150 CFM
Actual Outside Airflow	12945 CFM
Actual Return Airflow	21205 CFM
Actual Exhaust Airflow	0 CFM
Duct Static SP	0.6 in.wc

AHU-08 / Supply Fan

Actual RPM	Direct Drive RPM
Volts	460 Volts
Amps	38.0 Amps
VFD Speed	49 Hz

Motor Data

AHU-08 / Supply Fan

Motor Manufacturer	Teco X 2
Motor HP	30
Motor RPM	1770
Motor Rated Volts	230/460
Motor Phase	3
Motor FL Amps	68.6/34.3
Motor Service Factor	1.15
Motor Frame	286T
Nominal Efficiency	94.1

Sheave Data

AHU-08 / Supply Fan

Motor Sheave Model	Direct Drive

Test Pressures

Filter SP In	-0.56 in. wc
Filter SP Out	-0.64 in. wc
Heating Coil SP In	-0.64 in. wc
Heating Coil SP Out	-0.70 in. wc
Cooling Coil SP In	-0.70 in. wc
Cooling Coil SP Out	-1.65 in. wc
Fan SP In	-1.65 in. wc
Fan SP Out	1.06 in. wc

*** Notes**

AHU-08	28-Mar-16	Josh Drake	Calibrated outside air (Ebtron) with JCI. K-factor is 0.90

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-01
AREA:

Tested By: Josh Drake
Test Date: December 18, 2015

Unit Data	
VAV Address	59
Box Inlet Size	12
K Factor	1.058
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1120 CFM
Actual Max Airflow	1150
Min Design CFM	370 CFM
Actual Min Airflow	375
Design Heating Airflow	560 CFM
Actual Heating Airflow	580

AHU-08 / VVB-08-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	245	240	107
Outlet-02	S1	8				225	290	230	102
Outlet-03	S1	8				220	285	220	100
Outlet-04	S1	8				225	285	220	98
Outlet-05	S1	8				225	245	240	107
Totals :	**-**	**-**	**-**	**-**	**-**	**1,120**	**1,350**	**1,150**	**103 %**

*** Notes**

SYSTEM/UNIT: AHU-08 / VVB-08-02
AREA:

Tested By: Josh Drake
Test Date: December 18, 2015

Unit Data	
VAV Address	60
Box Inlet Size	10
K Factor	1.400
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	840 CFM
Actual Max Airflow	865
Min Design CFM	280 CFM
Actual Min Airflow	300
Design Heating Airflow	420 CFM
Actual Heating Airflow	425

AHU-08 / VVB-08-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	215	210	95
Outlet-02	S1	8				200	215	210	105
Outlet-03	S1	8				200	220	215	108
Outlet-04	S1	8				220	240	230	105
Totals :	**-**	**-**	**-**	**-**	**-**	**840**	**890**	**865**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-03
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	72
Box Inlet Size	14
K Factor	1.589
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1390 CFM
Actual Max Airflow	1385 CFM
Min Design CFM	460 CFM
Actual Min Airflow	480 CFM
Design Heating Airflow	930 CFM
Actual Heating Airflow	945 CFM

AHU-08 / VVB-08-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				230	235	250	109
Outlet-02	S1	10				235	235	225	96
Outlet-03	S1	10				235	200	235	100
Outlet-04	S1	10				230	255	220	96
Outlet-05	S1	10				230	240	235	102
Outlet-06	S1	10				230	225	220	96
Totals :	-	-	-	-	-	**1,390**	**1,390**	**1,385**	**100 %**

*** Notes**

SYSTEM/UNIT: AHU-08 / VVB-08-04
AREA:

Tested By: Josh Drake
Test Date: December 18, 2015

Unit Data	
VAV Address	73
Box Inlet Size	12
K Factor	1.350
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1200 CFM
Actual Max Airflow	1230
Min Design CFM	400 CFM
Actual Min Airflow	425
Design Heating Airflow	800 CFM
Actual Heating Airflow	830

AHU-08 / VVB-08-04 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				240	215	225	94
Outlet-02	S1	10				240	275	250	104
Outlet-03	S1	10				240	210	240	100
Outlet-04	S1	10				240	240	265	110
Outlet-05	S1	10				240	280	250	104
Totals :	-	-	-	-	-	**1,200**	**1,220**	**1,230**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-05
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	74
Box Inlet Size	10
K Factor	1.717
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	940 CFM
Actual Max Airflow	925 CFM
Min Design CFM	315 CFM
Design Heating Airflow	480 CFM

AHU-08 / VVB-08-05 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	230	230	105
Outlet-02	S1	8				220	255	210	95
Outlet-03	S4	10				250	220	235	94
Outlet-04	S4	10				250	200	250	100
Totals :	-	-	-	-	-	**940**	**905**	**925**	**98 %**

*** Notes**

SYSTEM/UNIT: AHU-08 / VVB-08-06
AREA:

Tested By: Josh Drake
Test Date: December 18, 2015

Unit Data	
VAV Address	71
Box Inlet Size	10
K Factor	1.234
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	825 CFM
Actual Max Airflow	825
Min Design CFM	275 CFM
Actual Min Airflow	270
Design Heating Airflow	415 CFM
Actual Heating Airflow	405

AHU-08 / VVB-08-06 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	225	205	103
Outlet-02	S1	8				210	220	195	93
Outlet-03	S1	8				210	250	220	105
Outlet-04	S1	8				205	225	205	100
Totals :	-	-	-	-	-	**825**	**920**	**825**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-07
AREA:

Tested By: Josh Drake
Test Date: December 18, 2015

Unit Data	
VAV Address	75
Box Inlet Size	14
K Factor	1.702
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1380 CFM
Actual Max Airflow	1410
Min Design CFM	455 CFM
Actual Min Airflow	475
Design Heating Airflow	920 CFM
Actual Heating Airflow	940

AHU-08 / VVB-08-07 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				195	210	205	105
Outlet-02	S1	8				195	220	185	95
Outlet-03	S1	8				195	200	210	108
Outlet-04	S1	8				195	195	200	103
Outlet-05	S1	8				200	195	205	103
Outlet-06	S1	8				200	195	205	103
Outlet-07	S1	8				200	190	200	100
Totals :	**-**	**-**	**-**	**-**	**-**	**1,380**	**1,405**	**1,410**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-08 / VVB-08-08
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	70
Box Inlet Size	10
K Factor	1.614
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	860 CFM
Actual Max Airflow	850 CFM
Min Design CFM	290 CFM
Actual Min Airflow	290 CFM
Design Heating Airflow	430 CFM
Actual Heating Airflow	420 CFM

AHU-08 / VVB-08-08 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				215	230	230	107
Outlet-02	S1	8				215	215	215	100
Outlet-03	S1	8				215	205	205	95
Outlet-04	S1	8				215	200	200	93
Totals :	**-**	**-**	**-**	**-**	**-**	**860**	**850**	**850**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-09
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	61
Box Inlet Size	10
K Factor	1.580
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	960 CFM
Actual Max Airflow	930 CFM
Min Design CFM	320 CFM
Actual Min Airflow	310 CFM
Design Heating Airflow	480 CFM
Actual Heating Airflow	470 CFM

AHU-08 / VVB-08-09 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				240	260	240	100
Outlet-02	S1	10				240	210	225	94
Outlet-03	S1	10				240	240	225	94
Outlet-04	S1	10				240	225	240	100
Totals :	-	-	-	-	-	**960**	**935**	**930**	**97 %**

*** Notes**

SYSTEM/UNIT: AHU-08 / VVB-08-10
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	62
Box Inlet Size	12
K Factor	1.434
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1110 CFM
Actual Max Airflow	1100 CFM
Min Design CFM	370 CFM
Actual Min Airflow	365 CFM
Design Heating Airflow	555 CFM
Actual Heating Airflow	570 CFM

AHU-08 / VVB-08-10 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				250	275	255	102
Outlet-02	S1	10				250	250	235	94
Outlet-03	S1	10				250	260	260	104
Outlet-04	S1	10				250	275	235	94
Outlet-05	S1	6				110	85	115	105
Totals :	-	-	-	-	-	**1,110**	**1,145**	**1,100**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-11
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	69
Box Inlet Size	12
K Factor	1.698
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1145 CFM
Actual Max Airflow	1205 CFM
Min Design CFM	380 CFM
Actual Min Airflow	405 CFM
Design Heating Airflow	690 CFM
Actual Heating Airflow	720 CFM

AHU-08 / VVB-08-11 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				230	215	245	107
Outlet-02	S1	10				235	240	240	102
Outlet-03	S1	10				230	305	240	104
Outlet-04	S1	10				230	265	250	109
Outlet-05	S1	8				220	195	230	105
Totals :	**-**	**-**	**-**	**-**	**-**	**1,145**	**1,220**	**1,205**	**105 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-12
AREA:

Tested By: Josh Drake
Test Date: December 18, 2015

Unit Data	
VAV Address	76
Box Inlet Size	14
K Factor	1.524
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1620 CFM
Actual Max Airflow	1635
Min Design CFM	535 CFM
Actual Min Airflow	555
Design Heating Airflow	1080 CFM
Actual Heating Airflow	1100

AHU-08 / VVB-08-12 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	180	195	98
Outlet-02	S1	8				200	235	185	93
Outlet-03	S1	8				200	205	205	103
Outlet-04	S1	8				200	215	215	108
Outlet-05	S1	8				200	195	185	93
Outlet-06	S1	8				200	210	215	108
Outlet-07	S1	8				200	210	220	110
Outlet-08	S1	8				220	185	215	98
Totals :	**-**	**-**	**-**	**-**	**-**	**1,620**	**1,635**	**1,635**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-14
AREA:

Tested By: Josh Drake
Test Date: December 18, 2015

Unit Data	
VAV Address	77
Box Inlet Size	16
K Factor	1.544
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1800 CFM
Actual Max Airflow	1870
Min Design CFM	710 CFM
Actual Min Airflow	735
Design Heating Airflow	1420 CFM
Actual Heating Airflow	1440

AHU-08 / VVB-08-14 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	210	210	105
Outlet-02	S1	8				200	195	195	98
Outlet-03	S1	8				200	220	220	110
Outlet-04	S1	8				200	210	210	105
Outlet-05	S1	8				200	220	220	110
Outlet-06	S1	8				200	180	180	90
Outlet-07	S1	8				200	215	215	108
Outlet-08	S1	8				200	220	220	110
Outlet-09	S1	8				200	200	200	100
Totals :	**-**	**-**	**-**	**-**	**-**	**1,800**	**1,870**	**1,870**	**104 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-15
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	66
Box Inlet Size	16
K Factor	1.371
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1975 CFM
Actual Max Airflow	2055 CFM
Min Design CFM	650 CFM
Actual Min Airflow	675 CFM
Design Heating Airflow	1320 CFM
Actual Heating Airflow	1350 CFM

AHU-08 / VVB-08-15 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				195	220	210	108
Outlet-02	S1	8				200	215	220	110
Outlet-03	S1	8				200	245	210	105
Outlet-04	S1	8				195	185	190	97
Outlet-05	S1	8				195	200	200	103
Outlet-06	S1	8				195	245	215	110
Outlet-07	S1	8				200	215	210	105
Outlet-08	S1	8				200	200	205	103
Outlet-09	S1	8				200	195	195	98
Outlet-10	S1	8				195	205	200	103
Totals :	-	-	-	-	-	**1,975**	**2,125**	**2,055**	**104 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-16
AREA:

Tested By: Josh Drake
Test Date: December 18, 2015

Unit Data	
VAV Address	68
Box Inlet Size	14
K Factor	1.564
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1500 CFM
Actual Max Airflow	1555
Min Design CFM	465 CFM
Actual Min Airflow	490
Design Heating Airflow	700 CFM
Actual Heating Airflow	725

AHU-08 / VVB-08-16 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				175	145	185	106
Outlet-02	S1	8				175	135	170	97
Outlet-03	S1	8				175	120	165	94
Outlet-04	S1	6				100	55	105	105
Outlet-05	S1	8				175	215	190	109
Outlet-06	S1	8				175	195	190	109
Outlet-07	S1	8				175	175	175	100
Outlet-08	S1	8				175	220	185	106
Outlet-09	S1	8				175	215	190	109
Totals :	-	-	-	-	-	**1,500**	**1,475**	**1,555**	**104 %**

*** Notes**

SYSTEM/UNIT: AHU-08 / VVB-08-17
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	82
Box Inlet Size	8
K Factor	1.781
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	450 CFM
Actual Max Airflow	440 CFM
Min Design CFM	150 CFM
Actual Min Airflow	140 CFM
Design Heating Airflow	225 CFM
Actual Heating Airflow	220 CFM

AHU-08 / VVB-08-17 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	210	210	93
Outlet-02	S1	8				225	230	230	102
Totals :	-	-	-	-	-	**450**	**440**	**440**	**98 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-18
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	67
Box Inlet Size	9
K Factor	2.186
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	700 CFM
Actual Max Airflow	695 CFM
Min Design CFM	235 CFM
Actual Min Airflow	230 CFM
Design Heating Airflow	350 CFM
Actual Heating Airflow	350 CFM

AHU-08 / VVB-08-18 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				320	290	330	103
Outlet-02	S1	8				190	185	185	97
Outlet-03	S1	8				190	165	180	95
Totals :	**-**	**-**	**-**	**-**	**-**	**700**	**640**	**695**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-19
AREA:

Tested By: Josh Drake
Test Date: December 18, 2015

Unit Data	
VAV Address	65
Box Inlet Size	16
K Factor	1.510
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1960 CFM
Actual Max Airflow	2005
Min Design CFM	650 CFM
Actual Min Airflow	660
Design Heating Airflow	980 CFM
Actual Heating Airflow	1015

AHU-08 / VVB-08-19 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	200	200	100
Outlet-02	S1	8				200	195	195	98
Outlet-03	S1	8				200	210	210	105
Outlet-04	S1	8				195	215	215	110
Outlet-05	S1	8				195	200	200	103
Outlet-06	S1	8				195	180	180	92
Outlet-07	S1	8				195	210	210	108
Outlet-08	S1	8				200	215	215	108
Outlet-09	S1	8				200	200	200	100
Outlet-10	S1	8				180	180	180	100
Totals :	-	-	-	-	-	**1,960**	**2,005**	**2,005**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-20
AREA:

Tested By: Josh Drake
Test Date: December 18, 2015

Unit Data	
VAV Address	64
Box Inlet Size	14
K Factor	1.272
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1525 CFM
Actual Max Airflow	1555
Min Design CFM	495 CFM
Actual Min Airflow	530
Design Heating Airflow	750 CFM
Actual Heating Airflow	785

AHU-08 / VVB-08-20 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	235	240	107
Outlet-02	S1	8				225	215	225	100
Outlet-03	S1	8				225	280	230	102
Outlet-04	S1	8				200	255	195	98
Outlet-05	S1	8				225	215	230	102
Outlet-06	S1	8				200	260	205	103
Outlet-07	S1	8				225	225	230	102
Totals :	**-**	**-**	**-**	**-**	**-**	**1,525**	**1,685**	**1,555**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-21
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	63
Box Inlet Size	14
K Factor	1.627
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1500 CFM
Actual Max Airflow	1530 CFM
Min Design CFM	495 CFM
Actual Min Airflow	500 CFM
Design Heating Airflow	750 CFM
Actual Heating Airflow	760 CFM

AHU-08 / VVB-08-21 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	230	225	100
Outlet-02	S1	8				225	200	215	96
Outlet-03	S1	8				200	220	215	108
Outlet-04	S1	8				225	225	230	102
Outlet-05	S1	8				225	215	225	100
Outlet-06	S1	8				200	210	215	108
Outlet-07	S1	8				200	255	205	103
Totals :	**-**	**-**	**-**	**-**	**-**	**1,500**	**1,555**	**1,530**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-22
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	54
Box Inlet Size	16
K Factor	1.360
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2100 CFM
Actual Max Airflow	2155 CFM
Min Design CFM	700 CFM
Actual Min Airflow	720 CFM
Design Heating Airflow	1400 CFM
Actual Heating Airflow	1440 CFM

AHU-08 / VVB-08-22 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				235	255	225	96
Outlet-02	S1	10				235	270	235	100
Outlet-03	S1	10				235	230	250	106
Outlet-04	S1	10				235	230	250	106
Outlet-05	S1	10				235	270	235	100
Outlet-06	S1	10				235	260	250	106
Outlet-07	S1	10				230	235	245	107
Outlet-08	S1	10				230	195	230	100
Outlet-09	S1	10				230	295	235	102
Totals :	**-**	**-**	**-**	**-**	**-**	**2,100**	**2,240**	**2,155**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-23
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	53
Box Inlet Size	14
K Factor	1.627
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1660 CFM
Actual Max Airflow	1730 CFM
Min Design CFM	440 CFM
Actual Min Airflow	475 CFM
Design Heating Airflow	880 CFM
Actual Heating Airflow	915 CFM

AHU-08 / VVB-08-23 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	225	225	102
Outlet-02	S1	8				220	235	235	107
Outlet-03	S1	8				220	235	235	107
Outlet-04	S1	8				200	200	200	100
Outlet-05	S1	8				200	215	215	108
Outlet-06	S1	8				200	205	205	103
Outlet-07	S1	8				200	205	205	103
Outlet-08	S1	8				200	210	210	105
Totals :	**-**	**-**	**-**	**-**	**-**	**1,660**	**1,730**	**1,730**	**104 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-24
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	52
Box Inlet Size	12
K Factor	0.951
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1200 CFM
Actual Max Airflow	1235 CFM
Min Design CFM	400 CFM
Actual Min Airflow	405 CFM
Design Heating Airflow	800 CFM
Actual Heating Airflow	800 CFM

AHU-08 / VVB-08-24 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				240	315	260	108
Outlet-02	S1	10				240	315	235	98
Outlet-03	S1	10				240	305	240	100
Outlet-04	S1	10				240	310	240	100
Outlet-05	S1	10				240	250	260	108
Totals :	**-**	**-**	**-**	**-**	**-**	**1,200**	**1,495**	**1,235**	**103 %**

*** Notes**

SYSTEM/UNIT: AHU-08 / VVB-08-25
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	51
Box Inlet Size	12
K Factor	1.274
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	810 CFM
Actual Max Airflow	800 CFM
Min Design CFM	400 CFM
Actual Min Airflow	390 CFM
Design Heating Airflow	810 CFM
Actual Heating Airflow	800 CFM

AHU-08 / VVB-08-25 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				270	360	255	94
Outlet-02	S1	10				270	325	280	104
Outlet-03	S1	10				270	220	265	98
Totals :	**-**	**-**	**-**	**-**	**-**	**810**	**905**	**800**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-26
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	50
Box Inlet Size	14
K Factor	1.429
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1715 CFM
Actual Max Airflow	1770 CFM
Min Design CFM	570 CFM
Actual Min Airflow	595 CFM
Design Heating Airflow	1150 CFM
Actual Heating Airflow	1185 CFM

AHU-08 / VVB-08-26 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	18X6				300	360	305	102
Outlet-02	S3	18X6				300	395	325	108
Outlet-03	S3	18X6				300	315	290	97
Outlet-04	S3	18X6				300	285	325	108
Outlet-05	S3	18X6				300	330	300	100
Outlet-06	S3	18X6				215	300	225	105
Totals :	-	-	-	-	-	**1,715**	**1,985**	**1,770**	**103 %**

*** Notes**

SYSTEM/UNIT: AHU-08 / VVB-08-27
AREA:

Tested By: Josh Drake
Test Date: February 01, 2016

Unit Data	
VAV Address	49
Box Inlet Size	9
K Factor	1.818
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	825 CFM
Actual Max Airflow	855 CFM
Min Design CFM	275 CFM
Actual Min Airflow	290 CFM
Design Heating Airflow	550 CFM
Actual Heating Airflow	565 CFM

AHU-08 / VVB-08-27 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	6				110	105	105	95
Outlet-02	S1	6				115	120	120	104
Outlet-03	S1	8				200	210	210	105
Outlet-04	S1	8				200	215	215	108
Outlet-05	S1	8				200	205	205	103
Totals :	-	-	-	-	-	**825**	**855**	**855**	**104 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-08 / VVB-08-28
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	48
Box Inlet Size	9
K Factor	1.460
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	690 CFM
Actual Max Airflow	695 CFM
Min Design CFM	235 CFM
Actual Min Airflow	220 CFM
Design Heating Airflow	470 CFM
Actual Heating Airflow	460 CFM

AHU-08 / VVB-08-28 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	12X8				230	240	230	100
Outlet-02	S3	12X8				230	275	245	107
Outlet-03	S3	12X8				230	290	220	96
Totals :	-	-	-	-	-	**690**	**805**	**695**	**101 %**

*** Notes**

SYSTEM/UNIT: AHU-08 / VVB-08-29
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	47
Box Inlet Size	12
K Factor	0.952
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1000 CFM
Actual Max Airflow	1025 CFM
Min Design CFM	330 CFM
Actual Min Airflow	345 CFM
Design Heating Airflow	500 CFM
Actual Heating Airflow	510 CFM

AHU-08 / VVB-08-29 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	12X8				250	290	255	102
Outlet-02	S3	12X8				250	285	265	106
Outlet-03	S3	12X8				250	245	240	96
Outlet-04	S3	12X8				250	260	265	106
Totals :	-	-	-	-	-	**1,000**	**1,080**	**1,025**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-09
AREA:

Tested By: Josh Drake
Test Date: April 27, 2016

Unit Data

Unit Manufacturer	Daikin
Unit Model Number	CAH031GDGM
Unit Serial Number	FB0U140300500
Design Supply Fan Airflow	14000 CFM
Design Supply Fan ESP	3 in. wc
Design Outside Airflow	3600 CFM
Total Connected Supply	14475 CFM

Starter Data

AHU-09 / Supply Fan

Starter Manufacturer	VFD

Test Data

Actual Supply Airflow	14230 CFM
Actual Outside Airflow	3645 CFM
Actual Return Airflow	10585 CFM
Actual Exhaust Airflow	0 CFM
Duct Static SP	0.8 in.wc

AHU-09 / Supply Fan

Actual RPM	Direct Drive RPM
Volts	460 Volts
Amps	14.8 Amps
VFD Speed	68 Hz

Motor Data

AHU-09 / Supply Fan

Motor Manufacturer	Teco X 2
Motor HP	15
Motor RPM	1770
Motor Rated Volts	230/460
Motor Phase	3
Motor FL Amps	35.7/17.9
Motor Service Factor	1.15
Motor Frame	254T
Nominal Efficiency	93

Sheave Data

AHU-09 / Supply Fan

Motor Sheave Model	Direct Drive

Test Pressures

Filter SP In	-0.30 in. wc
Filter SP Out	-0.36 in. wc
Heating Coil SP In	-0.36 in. wc
Heating Coil SP Out	-0.55 in. wc
Cooling Coil SP In	-0.55 in. wc
Cooling Coil SP Out	-1.27 in. wc
Fan SP In	-1.27 in. wc
Fan SP Out	1.01 in. wc

*** Notes**

AHU-09	28-Mar-16	Josh Drake	Calibrated outside air (Ebtron) with JCI

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-09 / RHC-09-01
AREA:

Tested By: Josh Drake
Test Date: April 26, 2016

Unit Data	
VAV Address	22
K Factor	1.04
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	9000 CFM

AHU-09 / RHC-09-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S8	24X6				250	285		
Outlet-02	S8	24X6				250	270		
Outlet-03	S8	12X6				125	180		
Outlet-04	S8	12X6				125	185		
Outlet-05	S8	24X6				250	290		
Outlet-06	S8	24X6				250	325		
Outlet-07	S8	24X6				250	375		
Outlet-08	S8	12X6				125	205		
Outlet-09	S8	12X6				125	115		
Outlet-10	S8	24X6				250	300		
Outlet-11	S8	24X6				250	350		
Outlet-12	S8	24X6				250	400		
Outlet-13	S8	12X6				125	200		
Outlet-14	S8	12X6				125	180		
Outlet-15	S8	24X6				250	425		
Totals :	**-**	**-**	**-**	**-**	**-**	**3,000**	**4,085**	**-**	**0 %**

*** Notes**

AHU-09 / RHC-09-01	26-Apr-16	Josh Drake	Deficiency 0137 : Dampers missing for floor grilles
AHU-09 / RHC-09-01	26-Apr-16	Josh Drake	Set grilles #1-12 to design CFM. Preportioned remaining air in supply plentum equally as per engineer.

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-09 / VVB-09-01
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
VAV Address	25
Box Inlet Size	14
K Factor	1.576
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1575 CFM
Actual Max Airflow	1605 CFM
Min Design CFM	535 CFM
Actual Min Airflow	560 CFM
Design Heating Airflow	1070 CFM
Actual Heating Airflow	1095 CFM

AHU-09 / VVB-09-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	220	240	107
Outlet-02	S1	8				225	220	240	107
Outlet-03	S1	8				225	190	225	100
Outlet-04	S7	12X10	0.9	500		450	560	465	103
Outlet-05	S7	12X10	0.9	500		450	535	435	97
Totals :	**-**	**-**	**-**	**-**	**-**	**1,575**	**1,725**	**1,605**	**102 %**

*** Notes**

AHU-09 / VVB-09-01	26-Apr-16	Josh Drake	Calibrated box, cut plentum grilles that were high

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-09 / VVB-09-02
AREA:

Tested By: Josh Drake
Test Date: April 26, 2016

Unit Data	
VAV Address	83
Box Inlet Size	16
K Factor	1.333
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2400 CFM
Actual Max Airflow	2465 CFM
Min Design CFM	800 CFM
Actual Min Airflow	840 CFM
Design Heating Airflow	1600 CFM
Actual Heating Airflow	1650 CFM

AHU-09 / VVB-09-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	240	240	109
Outlet-02	S1	8				220	255	215	98
Outlet-03	S1	8				220	180	205	93
Outlet-04	S1	8				220	180	200	91
Outlet-05	S1	8				220	235	230	105
Outlet-06	S1	8				220	245	225	102
Outlet-07	S1	8				220	225	235	107
Outlet-08	S1	8				220	235	240	109
Outlet-09	S1	8				220	225	235	107
Outlet-10	S1	8				200	240	215	108
Outlet-11	S1	8				220	215	225	102
Totals :	**-**	**-**	**-**	**-**	**-**	**2,400**	**2,475**	**2,465**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-09 / VVB-09-03
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
VAV Address	84
Box Inlet Size	14
K Factor	1.544
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1500 CFM
Actual Max Airflow	1540 CFM
Min Design CFM	495 CFM
Actual Min Airflow	490 CFM
Design Heating Airflow	750 CFM
Actual Heating Airflow	765 CFM

AHU-09 / VVB-09-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S4	10				250	255	255	102
Outlet-02	S4	10				250	240	265	106
Outlet-03	S4	10				250	240	260	104
Outlet-04	S4	10				250	255	230	92
Outlet-05	S4	10				250	270	265	106
Outlet-06	S4	10				250	265	265	106
Totals :	**-**	**-**	**-**	**-**	**-**	**1,500**	**1,525**	**1,540**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data

Unit Manufacturer	Daikin
Unit Model Number	CAH071GDGM
Unit Serial Number	FBOU140300365
Design Supply Fan Airflow	31500 CFM
Design Supply Fan ESP	4 in. wc
Design Outside Airflow	12000 CFM
Total Connected Supply	32655 CFM

Starter Data

AHU-10 / Supply Fan

Starter Manufacturer	VFD

Test Data

Actual Supply Airflow	32765 CFM
Actual Outside Airflow	12560 CFM
Actual Return Airflow	20205 CFM
Actual Exhaust Airflow	0 CFM
Duct Static SP	0.75 in.wc

AHU-10 / Supply Fan

Actual RPM	Direct Drive RPM
Volts	460 Volts
Amps	36 Amps
VFD Speed	47 Hz

Motor Data

AHU-10 / Supply Fan

Motor Manufacturer	Teco X 2
Motor HP	30
Motor RPM	1770
Motor Rated Volts	230/460
Motor Phase	3
Motor FL Amps	68.6/34.3
Motor Service Factor	1.15
Motor Frame	286T
Nominal Efficiency	94.1

Sheave Data

AHU-10 / Supply Fan

Motor Sheave Model	Direct Drive

Test Pressures

Filter SP In	-0.63 in. wc
Filter SP Out	-0.69 in. wc
Heating Coil SP In	-0.69 in. wc
Heating Coil SP Out	-0.76 in. wc
Cooling Coil SP In	-0.76 in. wc
Cooling Coil SP Out	-1.58 in. wc
Fan SP In	-1.58 in. wc
Fan SP Out	1.14 in. wc

*** Notes**

AHU-10	28-Mar-16	Josh Drake	Calibrated outside air (Ebtron) with JCI. K-factor is 1.05

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-01
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	23
Box Inlet Size	9
K Factor	1.655
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	730 CFM
Actual Max Airflow	715
Min Design CFM	240 CFM
Actual Min Airflow	235
Design Heating Airflow	365 CFM
Actual Heating Airflow	360

AHU-10 / VVB-10-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				175	195	170	97
Outlet-02	S1	8				175	170	175	100
Outlet-03	S1	8				180	130	170	94
Outlet-04	S1	8				200	220	200	100
Totals :	-	-	-	-	-	**730**	**715**	**715**	**98 %**

*** Notes**

SYSTEM/UNIT: AHU-10 / VVB-10-02
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	22
Box Inlet Size	9
K Factor	1.737
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	800 CFM
Actual Max Airflow	815
Min Design CFM	265 CFM
Actual Min Airflow	275
Design Heating Airflow	400 CFM
Actual Heating Airflow	420

AHU-10 / VVB-10-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	205	205	103
Outlet-02	S1	8				200	200	200	100
Outlet-03	S1	8				200	195	195	98
Outlet-04	S1	8				200	215	215	108
Totals :	-	-	-	-	-	**800**	**815**	**815**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-03
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	11
Box Inlet Size	14
K Factor	1.512
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1400 CFM
Actual Max Airflow	1460
Min Design CFM	465 CFM
Actual Min Airflow	485
Design Heating Airflow	700 CFM
Actual Heating Airflow	735

AHU-10 / VVB-10-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				230	275	225	98
Outlet-02	S1	10				240	225	250	104
Outlet-03	S1	10				240	225	265	110
Outlet-04	S1	10				230	280	240	104
Outlet-05	S1	10				230	220	240	104
Outlet-06	S1	10				230	215	240	104
Totals :	-	-	-	-	-	**1,400**	**1,440**	**1,460**	**104 %**

*** Notes**

SYSTEM/UNIT: AHU-10 / VVB-10-04
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	10
Box Inlet Size	12
K Factor	1.277
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1200 CFM
Actual Max Airflow	1225
Min Design CFM	400 CFM
Actual Min Airflow	415
Design Heating Airflow	600 CFM
Actual Heating Airflow	620

AHU-10 / VVB-10-04 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				240	255	245	102
Outlet-02	S1	10				240	295	230	96
Outlet-03	S1	10				240	285	240	100
Outlet-04	S1	10				240	215	260	108
Outlet-05	S1	10				240	285	250	104
Totals :	-	-	-	-	-	**1,200**	**1,335**	**1,225**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-05
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	9
Box Inlet Size	9
K Factor	1.840
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	750 CFM
Actual Max Airflow	765
Min Design CFM	250 CFM
Actual Min Airflow	255
Design Heating Airflow	500 CFM
Actual Heating Airflow	510

AHU-10 / VVB-10-05 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				175	195	185	106
Outlet-02	S1	8				175	190	185	106
Outlet-03	S1	8				200	195	200	100
Outlet-04	S1	8				200	190	195	98
Totals :	-	-	-	-	-	**750**	**770**	**765**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-10 / VVB-10-06
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	12
Box Inlet Size	12
K Factor	1.425
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	900 CFM
Actual Max Airflow	920
Min Design CFM	300 CFM
Actual Min Airflow	315
Design Heating Airflow	450 CFM
Actual Heating Airflow	455

AHU-10 / VVB-10-06 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	220	225	100
Outlet-02	S1	8				225	245	225	100
Outlet-03	S1	8				225	255	235	104
Outlet-04	S1	8				225	300	235	104
Totals :	-	-	-	-	-	**900**	**1,020**	**920**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-07
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	8
Box Inlet Size	14
K Factor	1.141
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1375 CFM
Actual Max Airflow	1430
Min Design CFM	455 CFM
Actual Min Airflow	495
Design Heating Airflow	920 CFM
Actual Heating Airflow	1000

AHU-10 / VVB-10-07 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				190	225	205	108
Outlet-02	S1	8				195	225	200	103
Outlet-03	S1	8				195	255	205	105
Outlet-04	S1	8				195	240	210	108
Outlet-05	S1	8				200	230	210	105
Outlet-06	S1	8				200	210	190	95
Outlet-07	S1	8				200	230	210	105
Totals :	**-**	**-**	**-**	**-**	**-**	**1,375**	**1,615**	**1,430**	**104 %**

*** Notes**

SYSTEM/UNIT: AHU-10 / VVB-10-08
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	13
Box Inlet Size	12
K Factor	1.621
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	860 CFM
Actual Max Airflow	880
Min Design CFM	285 CFM
Actual Min Airflow	290
Design Heating Airflow	430 CFM
Actual Heating Airflow	430

AHU-10 / VVB-10-08 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				215	225	225	105
Outlet-02	S1	8				215	225	225	105
Outlet-03	S1	8				215	205	205	95
Outlet-04	S1	8				215	225	225	105
Totals :	**-**	**-**	**-**	**-**	**-**	**860**	**880**	**880**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-09
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	21
Box Inlet Size	12
K Factor	1.574
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	940 CFM
Actual Max Airflow	965
Min Design CFM	310 CFM
Actual Min Airflow	330
Design Heating Airflow	470 CFM
Actual Heating Airflow	480

AHU-10 / VVB-10-09 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				235	205	235	100
Outlet-02	S1	10				235	245	250	106
Outlet-03	S1	10				235	260	230	98
Outlet-04	S1	10				235	240	250	106
Totals :	-	-	-	-	-	**940**	**950**	**965**	**103 %**

*** Notes**

SYSTEM/UNIT: AHU-10 / VVB-10-10
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	20
Box Inlet Size	12
K Factor	1.600
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1050 CFM
Actual Max Airflow	1030
Min Design CFM	350 CFM
Actual Min Airflow	310
Design Heating Airflow	690 CFM
Actual Heating Airflow	660

AHU-10 / VVB-10-10 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				235	225	215	91
Outlet-02	S1	10				235	275	245	104
Outlet-03	S1	10				235	230	225	96
Outlet-04	S1	10				235	220	240	102
Outlet-05	S1	6				110	80	105	95
Totals :	-	-	-	-	-	**1,050**	**1,030**	**1,030**	**98 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-11
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	14
Box Inlet Size	12
K Factor	1.655
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1140 CFM
Actual Max Airflow	1140
Min Design CFM	380 CFM
Actual Min Airflow	385
Design Heating Airflow	690 CFM
Actual Heating Airflow	675

AHU-10 / VVB-10-11 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				230	220	235	102
Outlet-02	S1	10				230	210	230	100
Outlet-03	S1	10				230	275	230	100
Outlet-04	S1	10				230	200	220	96
Outlet-05	S1	8				220	205	225	102
Totals :	**-**	**-**	**-**	**-**	**-**	**1,140**	**1,110**	**1,140**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-12
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	7
Box Inlet Size	14
K Factor	1.207
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1570 CFM
Actual Max Airflow	1610
Min Design CFM	520 CFM
Actual Min Airflow	535
Design Heating Airflow	1050 CFM
Actual Heating Airflow	1090

AHU-10 / VVB-10-12 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	205	230	105
Outlet-02	S1	8				190	185	205	108
Outlet-03	S1	8				185	240	195	105
Outlet-04	S1	8				190	260	195	103
Outlet-05	S1	8				185	195	180	97
Outlet-06	S1	8				200	260	205	103
Outlet-07	S1	8				200	245	190	95
Outlet-08	S1	8				200	250	210	105
Totals :	**-**	**-**	**-**	**-**	**-**	**1,570**	**1,840**	**1,610**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-13
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	6
Box Inlet Size	12
K Factor	0.966
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1000 CFM
Actual Max Airflow	1040
Min Design CFM	330 CFM
Actual Min Airflow	335
Design Heating Airflow	670 CFM
Actual Heating Airflow	690

AHU-10 / VVB-10-13 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	235	205	103
Outlet-02	S1	8				200	275	210	105
Outlet-03	S1	8				200	265	200	100
Outlet-04	S1	8				200	250	215	108
Outlet-05	S1	8				200	240	210	105
Totals :	**-**	**-**	**-**	**-**	**-**	**1,000**	**1,265**	**1,040**	**104 %**

*** Notes**

SYSTEM/UNIT: AHU-10 / VVB-10-14
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	5
Box Inlet Size	12
K Factor	1.061
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1125 CFM
Actual Max Airflow	1130
Min Design CFM	370 CFM
Actual Min Airflow	380
Design Heating Airflow	750 CFM
Actual Heating Airflow	770

AHU-10 / VVB-10-14 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				260	390	260	100
Outlet-02	S1	10				270	275	280	104
Outlet-03	S1	10				270	240	260	96
Outlet-04	S1	8				145	155	155	107
Outlet-05	S2	8				180	280	175	97
Totals :	**-**	**-**	**-**	**-**	**-**	**1,125**	**1,340**	**1,130**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-15
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	19
Box Inlet Size	14
K Factor	1.524
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1500 CFM
Actual Max Airflow	1490
Min Design CFM	465 CFM
Actual Min Airflow	455
Design Heating Airflow	700 CFM
Actual Heating Airflow	690

AHU-10 / VVB-10-15 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	6				100	100	100	100
Outlet-02	S1	8				175	225	180	103
Outlet-03	S1	8				175	205	190	109
Outlet-04	S1	8				175	180	175	100
Outlet-05	S1	8				175	150	160	91
Outlet-06	S1	8				175	175	180	103
Outlet-07	S1	8				175	175	175	100
Outlet-08	S1	8				175	160	170	97
Outlet-09	S1	8				175	150	160	91
Totals :	-	-	-	-	-	**1,500**	**1,520**	**1,490**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-17
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	16
Box Inlet Size	16
K Factor	0.911
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1920 CFM
Actual Max Airflow	1930
Min Design CFM	635 CFM
Actual Min Airflow	635
Design Heating Airflow	1280 CFM
Actual Heating Airflow	1290

AHU-10 / VVB-10-17 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				180	220	175	97
Outlet-02	S1	8				200	260	205	103
Outlet-03	S1	8				200	275	185	93
Outlet-04	S1	8				180	245	180	100
Outlet-05	S1	8				180	200	190	106
Outlet-06	S1	8				180	210	185	103
Outlet-07	S1	8				200	195	210	105
Outlet-08	S1	8				200	150	200	100
Outlet-09	S1	8				200	215	205	103
Outlet-10	S1	8				200	220	195	98
Totals :	-	-	-	-	-	**1,920**	**2,190**	**1,930**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-18
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	15
Box Inlet Size	9
K Factor	1.633
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	720 CFM
Actual Max Airflow	720
Min Design CFM	235 CFM
Actual Min Airflow	240
Design Heating Airflow	470 CFM
Actual Heating Airflow	480

AHU-10 / VVB-10-18 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				320	370	335	105
Outlet-02	S1	8				200	200	195	98
Outlet-03	S1	8				200	190	190	95
Totals :	-	-	-	-	-	**720**	**760**	**720**	**100 %**

*** Notes**

SYSTEM/UNIT: AHU-10 / VVB-10-19
AREA:

Tested By: Josh Drake
Test Date: March 01, 2016

Unit Data	
VAV Address	66
Box Inlet Size	8
K Factor	1.990
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	450 CFM
Actual Max Airflow	450 CFM
Min Design CFM	150 CFM
Actual Min Airflow	155 CFM
Design Heating Airflow	300 CFM
Actual Heating Airflow	315 CFM

AHU-10 / VVB-10-19 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	225	225	100
Outlet-02	S1	8				225	260	225	100
Totals :	-	-	-	-	-	**450**	**485**	**450**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-20
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	17
Box Inlet Size	16
K Factor	1.386
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1860 CFM
Actual Max Airflow	1905
Min Design CFM	615 CFM
Actual Min Airflow	640
Design Heating Airflow	1240 CFM
Actual Heating Airflow	1280

AHU-10 / VVB-10-20 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				180	175	180	100
Outlet-02	S1	8				180	200	185	103
Outlet-03	S1	8				200	195	200	100
Outlet-04	S1	8				200	200	205	103
Outlet-05	S1	8				180	205	170	94
Outlet-06	S1	8				170	185	185	109
Outlet-07	S1	8				170	180	190	112
Outlet-08	S1	8				180	195	195	108
Outlet-09	S1	8				200	190	200	100
Outlet-10	S1	8				200	185	195	98
Totals :	-	-	-	-	-	**1,860**	**1,910**	**1,905**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-21
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	18
Box Inlet Size	9
K Factor	1.662
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	675 CFM
Actual Max Airflow	690
Min Design CFM	225 CFM
Actual Min Airflow	235
Design Heating Airflow	440 CFM
Actual Heating Airflow	445

AHU-10 / VVB-10-21 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	235	225	100
Outlet-02	S1	8				225	240	230	102
Outlet-03	S1	8				225	245	235	104
Totals :	-	-	-	-	-	**675**	**720**	**690**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-10 / VVB-10-22
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	24
Box Inlet Size	9
K Factor	1.477
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	675 CFM
Actual Max Airflow	700
Min Design CFM	225 CFM
Actual Min Airflow	235
Design Heating Airflow	440 CFM
Actual Heating Airflow	465

AHU-10 / VVB-10-22 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	265	240	107
Outlet-02	S1	8				225	255	230	102
Outlet-03	S1	8				225	255	230	102
Totals :	-	-	-	-	-	**675**	**775**	**700**	**104 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-23
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	26
Box Inlet Size	9
K Factor	1.698
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	640 CFM
Actual Max Airflow	645 CFM
Min Design CFM	210 CFM
Actual Min Airflow	220 CFM
Design Heating Airflow	430 CFM
Actual Heating Airflow	445 CFM

AHU-10 / VVB-10-23 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	6				120	130	115	96
Outlet-02	S1	6				120	105	115	96
Outlet-03	S1	8				200	225	205	103
Outlet-04	S1	8				200	195	210	105
Totals :	-	-	-	-	-	**640**	**655**	**645**	**101 %**

*** Notes**

SYSTEM/UNIT: AHU-10 / VVB-10-24
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	27
Box Inlet Size	14
K Factor	1.324
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1350 CFM
Actual Max Airflow	1375
Min Design CFM	450 CFM
Actual Min Airflow	460
Design Heating Airflow	900 CFM
Actual Heating Airflow	925

AHU-10 / VVB-10-24 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	255	240	107
Outlet-02	S1	8				225	255	230	102
Outlet-03	S1	8				225	235	215	96
Outlet-04	S1	8				225	245	225	100
Outlet-05	S1	8				225	270	235	104
Outlet-06	S1	8				225	250	230	102
Totals :	-	-	-	-	-	**1,350**	**1,510**	**1,375**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-25
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	28
Box Inlet Size	14
K Factor	1.394
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1680 CFM
Actual Max Airflow	1685
Min Design CFM	555 CFM
Actual Min Airflow	560
Design Heating Airflow	1120 CFM
Actual Heating Airflow	1120

AHU-10 / VVB-10-25 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				240	260	220	92
Outlet-02	S1	10				240	310	230	96
Outlet-03	S1	10				240	285	245	102
Outlet-04	S1	10				240	245	250	104
Outlet-05	S1	10				240	285	230	96
Outlet-06	S1	10				240	265	250	104
Outlet-07	S1	10				240	215	260	108
Totals :	**-**	**-**	**-**	**-**	**-**	**1,680**	**1,865**	**1,685**	**100 %**

*** Notes**

SYSTEM/UNIT: AHU-10 / VVB-10-26
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	29
Box Inlet Size	8
K Factor	1.694
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	520 CFM
Actual Max Airflow	530
Min Design CFM	175 CFM
Actual Min Airflow	180
Design Heating Airflow	350 CFM
Actual Heating Airflow	340

AHU-10 / VVB-10-26 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				150	180	150	100
Outlet-02	S1	8				145	170	140	97
Outlet-03	S1	8				225	195	240	107
Totals :	**-**	**-**	**-**	**-**	**-**	**520**	**545**	**530**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-27
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	30
Box Inlet Size	14
K Factor	1.694
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1620 CFM
Actual Max Airflow	1620
Min Design CFM	535 CFM
Actual Min Airflow	550
Design Heating Airflow	1080 CFM
Actual Heating Airflow	1090

AHU-10 / VVB-10-27 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				270	285	270	100
Outlet-02	S1	10				270	275	255	94
Outlet-03	S1	10				270	345	245	91
Outlet-04	S1	10				270	315	285	106
Outlet-05	S1	10				270	140	280	104
Outlet-06	S1	10				270	290	285	106
Totals :	-	-	-	-	-	**1,620**	**1,650**	**1,620**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-28
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	31
Box Inlet Size	14
K Factor	1.706
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1680 CFM
Actual Max Airflow	1685
Min Design CFM	555 CFM
Actual Min Airflow	545
Design Heating Airflow	1120 CFM
Actual Heating Airflow	1105

AHU-10 / VVB-10-28 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	18X6				240	200	245	102
Outlet-02	S3	18X6				240	230	225	94
Outlet-03	S3	18X6				240	265	245	102
Outlet-04	S3	18X6				240	280	235	98
Outlet-05	S3	18X6				240	240	255	106
Outlet-06	S3	18X6				240	240	240	100
Outlet-07	S3	18X6				240	220	240	100
Totals :	**-**	**-**	**-**	**-**	**-**	**1,680**	**1,675**	**1,685**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-29
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	32
Box Inlet Size	9
K Factor	1.793
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	755 CFM
Actual Max Airflow	775
Min Design CFM	250 CFM
Actual Min Airflow	260
Design Heating Airflow	505 CFM
Actual Heating Airflow	525

AHU-10 / VVB-10-29 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	6				75	105	80	107
Outlet-02	S1	8				200	230	195	98
Outlet-03	S1	6				130	115	130	100
Outlet-04	S1	6				125	125	135	108
Outlet-05	S1	8				225	205	235	104
Totals :	**-**	**-**	**-**	**-**	**-**	**755**	**780**	**775**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-10 / VVB-10-30
AREA:

Tested By: Josh Drake
Test Date: March 01, 2016

Unit Data	
VAV Address	33
Box Inlet Size	16
K Factor	1.096
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1890 CFM
Actual Max Airflow	1905
Min Design CFM	624 CFM
Actual Min Airflow	640
Design Heating Airflow	1260 CFM
Actual Heating Airflow	1290

AHU-10 / VVB-10-30 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	18X6				270	220	265	98
Outlet-02	S3	18X6				270	265	250	93
Outlet-03	S3	18X6				270	230	290	107
Outlet-04	S3	18X6				270	290	270	100
Outlet-05	S3	18X6				270	350	275	102
Outlet-06	S3	18X6				270	345	280	104
Outlet-07	S3	18X6				270	320	275	102
Totals :	**-**	**-**	**-**	**-**	**-**	**1,890**	**2,020**	**1,905**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data

Unit Manufacturer	Daikin
Unit Model Number	CAH071GDGM
Unit Serial Number	FBOU140201586
Design Supply Fan Airflow	31500 CFM
Design Supply Fan ESP	4 in. wc
Design Outside Airflow	12300 CFM
Total Connected Supply	34520 CFM

Starter Data

AHU-11 / Supply Fan

Starter Manufacturer	VFD

Test Data

Actual Supply Airflow	35010 CFM
Actual Outside Airflow	12090 CFM
Actual Return Airflow	22920 CFM
Actual Exhaust Airflow	0 CFM
Duct Static SP	0.8 in.wc

AHU-11 / Supply Fan

Actual RPM	Direct Drive RPM
Volts	460 Volts
Amps	44.5 Amps
VFD Speed	53 Hz

Motor Data

AHU-11 / Supply Fan

Motor Manufacturer	Teco X 2
Motor HP	30
Motor RPM	1770
Motor Rated Volts	230/460
Motor Phase	3
Motor FL Amps	68.6/34.3
Motor Service Factor	1.15
Motor Frame	286T
Nominal Efficiency	94.1

Sheave Data

AHU-11 / Supply Fan

Motor Sheave Model	Direct Drive

Test Pressures

Filter SP In	-0.25 in. wc
Filter SP Out	-0.42 in. wc
Heating Coil SP In	-0.42 in. wc
Heating Coil SP Out	-0.57 in. wc
Cooling Coil SP In	-0.57 in. wc
Cooling Coil SP Out	-1.60 in. wc
Fan SP In	-1.60 in. wc
Fan SP Out	1.56 in. wc

*** Notes**

AHU-11	28-Mar-16	Josh Drake	Calibrated Ebtron with JCI. K-factor is 1.04

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-01
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	43
Box Inlet Size	12
K Factor	1.647
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1120 CFM
Actual Max Airflow	1090
Min Design CFM	370 CFM
Actual Min Airflow	360
Design Heating Airflow	560 CFM
Actual Heating Airflow	540

AHU-11 / VVB-11-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	225	205	91
Outlet-02	S1	8				225	235	220	98
Outlet-03	S1	8				225	195	215	96
Outlet-04	S1	8				225	195	215	96
Outlet-05	S1	8				220	230	235	107
Totals :	**-**	**-**	**-**	**-**	**-**	**1,120**	**1,080**	**1,090**	**97 %**

*** Notes**

SYSTEM/UNIT: AHU-11 / VVB-11-02
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	44
Box Inlet Size	9
K Factor	1.733
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	840 CFM
Actual Max Airflow	835
Min Design CFM	280 CFM
Actual Min Airflow	265
Design Heating Airflow	420 CFM
Actual Heating Airflow	410

AHU-11 / VVB-11-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	200	205	93
Outlet-02	S1	8				200	240	210	105
Outlet-03	S1	8				220	210	215	98
Outlet-04	S1	8				200	200	205	103
Totals :	**-**	**-**	**-**	**-**	**-**	**840**	**850**	**835**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-03
AREA:

Tested By: Josh Drake
Test Date: December 15, 2015

Unit Data	
VAV Address	56
Box Inlet Size	14
K Factor	1.634
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1390 CFM
Actual Max Airflow	1410
Min Design CFM	460 CFM
Actual Min Airflow	475
Design Heating Airflow	695 CFM
Actual Heating Airflow	715

AHU-11 / VVB-11-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				230	235	220	96
Outlet-02	S1	10				230	280	240	104
Outlet-03	S1	10				230	320	245	107
Outlet-04	S1	10				235	260	230	98
Outlet-05	S1	10				235	260	240	102
Outlet-06	S1	10				230	30	235	102
Totals :	-	-	-	-	-	**1,390**	**1,385**	**1,410**	**101 %**

*** Notes**

SYSTEM/UNIT: AHU-11 / VVB-11-04
AREA:

Tested By: Josh Drake
Test Date: December 15, 2015

Unit Data	
VAV Address	57
Box Inlet Size	12
K Factor	1.663
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1200 CFM
Actual Max Airflow	1200
Min Design CFM	400 CFM
Actual Min Airflow	390
Design Heating Airflow	800 CFM
Actual Heating Airflow	795

AHU-11 / VVB-11-04 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				240	210	235	98
Outlet-02	S1	10				240	245	245	102
Outlet-03	S1	10				240	215	230	96
Outlet-04	S1	10				240	225	240	100
Outlet-05	S1	10				240	255	250	104
Totals :	-	-	-	-	-	**1,200**	**1,150**	**1,200**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-05
AREA:

Tested By: Josh Drake
Test Date: March 01, 2016

Unit Data	
VAV Address	58
Box Inlet Size	12
K Factor	0.796
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	940 CFM
Actual Max Airflow	960 CFM
Min Design CFM	315 CFM
Actual Min Airflow	310 CFM
Design Heating Airflow	480 CFM
Actual Heating Airflow	485 CFM

AHU-11 / VVB-11-05 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	170	250	114
Outlet-02	S1	8				220	220	250	114
Outlet-03	S4	10				250	350	240	96
Outlet-04	S4	10				250	280	220	88
Totals :	-	-	-	-	-	**940**	**1,020**	**960**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-11 / VVB-11-06
AREA:

Tested By: Josh Drake
Test Date: December 15, 2015

Unit Data	
VAV Address	55
Box Inlet Size	9
K Factor	1.764
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	825 CFM
Actual Max Airflow	825
Min Design CFM	275 CFM
Actual Min Airflow	280
Design Heating Airflow	415 CFM
Actual Heating Airflow	405

AHU-11 / VVB-11-06 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	180	210	105
Outlet-02	S1	8				210	205	210	100
Outlet-03	S1	8				210	205	210	100
Outlet-04	S1	8				205	230	195	95
Totals :	-	-	-	-	-	**825**	**820**	**825**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-07
AREA:

Tested By: Josh Drake
Test Date: December 15, 2015

Unit Data	
VAV Address	59
Box Inlet Size	14
K Factor	1.606
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1380 CFM
Actual Max Airflow	1385
Min Design CFM	455 CFM
Actual Min Airflow	470
Design Heating Airflow	920 CFM
Actual Heating Airflow	955

AHU-11 / VVB-11-07 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				195	165	180	92
Outlet-02	S1	8				195	180	190	97
Outlet-03	S1	8				195	195	195	100
Outlet-04	S1	8				195	185	215	110
Outlet-05	S1	8				200	205	215	108
Outlet-06	S1	8				200	190	200	100
Outlet-07	S1	8				200	190	190	95
Totals :	**-**	**-**	**-**	**-**	**-**	**1,380**	**1,310**	**1,385**	**100 %**

*** Notes**

SYSTEM/UNIT: AHU-11 / VVB-11-08
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	54
Box Inlet Size	10
K Factor	1.591
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	860 CFM
Actual Max Airflow	830
Min Design CFM	285 CFM
Actual Min Airflow	270
Design Heating Airflow	430 CFM
Actual Heating Airflow	410

AHU-11 / VVB-11-08 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				215	210	205	95
Outlet-02	S1	8				215	175	215	100
Outlet-03	S1	8				215	220	200	93
Outlet-04	S1	8				215	235	210	98
Totals :	**-**	**-**	**-**	**-**	**-**	**860**	**840**	**830**	**97 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-09
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	45
Box Inlet Size	12
K Factor	1.690
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	960 CFM
Actual Max Airflow	975
Min Design CFM	320 CFM
Actual Min Airflow	335
Design Heating Airflow	480 CFM
Actual Heating Airflow	490

AHU-11 / VVB-11-09 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				240	285	255	106
Outlet-02	S1	10				240	250	220	92
Outlet-03	S1	10				240	295	255	106
Outlet-04	S1	10				240	115	245	102
Totals :	-	-	-	-	-	**960**	**945**	**975**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-11 / VVB-11-10
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	46
Box Inlet Size	12
K Factor	1.682
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1110 CFM
Actual Max Airflow	1155
Min Design CFM	370 CFM
Actual Min Airflow	400
Design Heating Airflow	555 CFM
Actual Heating Airflow	585

AHU-11 / VVB-11-10 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				250	245	260	104
Outlet-02	S1	10				250	265	275	110
Outlet-03	S1	10				250	235	240	96
Outlet-04	S1	10				250	255	270	108
Outlet-05	S1	6				110	150	110	100
Totals :	-	-	-	-	-	**1,110**	**1,150**	**1,155**	**104 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-11
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	53
Box Inlet Size	12
K Factor	1.499
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1145 CFM
Actual Max Airflow	1120
Min Design CFM	385 CFM
Actual Min Airflow	380
Design Heating Airflow	750 CFM
Actual Heating Airflow	740

AHU-11 / VVB-11-11 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				230	290	235	102
Outlet-02	S1	10				235	265	245	104
Outlet-03	S1	10				230	500	215	93
Outlet-04	S1	10				230	235	225	98
Outlet-05	S1	8				220	205	200	91
Totals :	-	-	-	-	-	**1,145**	**1,495**	**1,120**	**98 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-12
AREA:

Tested By: Josh Drake
Test Date: December 15, 2015

Unit Data	
VAV Address	60
Box Inlet Size	14
K Factor	1.563
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1470 CFM
Actual Max Airflow	1430
Min Design CFM	485 CFM
Actual Min Airflow	470
Design Heating Airflow	980 CFM
Actual Heating Airflow	980

AHU-11 / VVB-11-12 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	210	220	100
Outlet-02	S1	8				160	225	160	100
Outlet-03	S1	8				160	220	160	100
Outlet-04	S1	8				170	235	165	97
Outlet-05	S1	8				160	230	145	91
Outlet-06	S1	8				200	220	195	98
Outlet-07	S1	8				200	245	195	98
Outlet-08	S1	8				200	235	190	95
Totals :	**-**	**-**	**-**	**-**	**-**	**1,470**	**1,820**	**1,430**	**97 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-13
AREA:

Tested By: Josh Drake
Test Date: December 15, 2015

Unit Data	
VAV Address	61
Box Inlet Size	12
K Factor	1.549
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1030 CFM
Actual Max Airflow	1030
Min Design CFM	340 CFM
Actual Min Airflow	345
Design Heating Airflow	690 CFM
Actual Heating Airflow	710

AHU-11 / VVB-11-13 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	295	210	105
Outlet-02	S1	8				210	290	205	98
Outlet-03	S1	8				210	295	205	98
Outlet-04	S1	8				210	290	195	93
Outlet-05	S1	8				200	300	215	108
Totals :	**-**	**-**	**-**	**-**	**-**	**1,030**	**1,470**	**1,030**	**100 %**

*** Notes**

SYSTEM/UNIT: AHU-11 / VVB-11-14
AREA:

Tested By: Josh Drake
Test Date: December 15, 2015

Unit Data	
VAV Address	62
Box Inlet Size	12
K Factor	1.703
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1125 CFM
Actual Max Airflow	1150
Min Design CFM	370 CFM
Actual Min Airflow	385
Design Heating Airflow	750 CFM
Actual Heating Airflow	770

AHU-11 / VVB-11-14 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				260	310	265	102
Outlet-02	S1	10				270	325	280	104
Outlet-03	S1	10				270	375	265	98
Outlet-04	S1	8				145	185	150	103
Outlet-05	S1	8				180	245	190	106
Totals :	**-**	**-**	**-**	**-**	**-**	**1,125**	**1,440**	**1,150**	**102 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-15
AREA:

Tested By: Josh Drake
Test Date: December 15, 2015

Unit Data	
VAV Address	50
Box Inlet Size	16
K Factor	1.355
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1975 CFM
Actual Max Airflow	1930
Min Design CFM	650 CFM
Actual Min Airflow	640
Design Heating Airflow	1310 CFM
Actual Heating Airflow	1305

AHU-11 / VVB-11-15 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				195	215	180	92
Outlet-02	S1	8				200	210	190	95
Outlet-03	S1	8				200	220	195	98
Outlet-04	S1	8				200	255	195	98
Outlet-05	S1	8				195	215	185	95
Outlet-06	S1	8				195	235	205	105
Outlet-07	S1	8				195	240	195	100
Outlet-08	S1	8				200	255	190	95
Outlet-09	S1	8				200	225	195	98
Outlet-10	S1	8				195	225	200	103
Totals :	-	-	-	-	-	**1,975**	**2,295**	**1,930**	**98 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-16
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	52
Box Inlet Size	14
K Factor	1.567
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1500 CFM
Actual Max Airflow	1475
Min Design CFM	465 CFM
Actual Min Airflow	460
Design Heating Airflow	700 CFM
Actual Heating Airflow	680

AHU-11 / VVB-11-16 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				175	150	170	97
Outlet-02	S1	8				175	145	170	97
Outlet-03	S1	8				175	135	165	94
Outlet-04	S1	6				100	105	100	100
Outlet-05	S1	8				175	200	175	100
Outlet-06	S1	8				175	170	175	100
Outlet-07	S1	8				175	175	180	103
Outlet-08	S1	8				175	195	175	100
Outlet-09	S1	8				175	220	165	94
Totals :	-	-	-	-	-	**1,500**	**1,495**	**1,475**	**98 %**

*** Notes**

SYSTEM/UNIT: AHU-11 / VVB-11-17
AREA:

Tested By: Josh Drake
Test Date: March 28, 2016

Unit Data	
VAV Address	41
Box Inlet Size	8
K Factor	1.769
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	450 CFM
Actual Max Airflow	450 CFM
Min Design CFM	148 CFM
Actual Min Airflow	150 CFM
Design Heating Airflow	300 CFM
Actual Heating Airflow	305 CFM

AHU-11 / VVB-11-17 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	230	215	96
Outlet-02	S1	8				225	265	235	104
Totals :	-	-	-	-	-	**450**	**495**	**450**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-18
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	51
Box Inlet Size	9
K Factor	1.711
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	700 CFM
Actual Max Airflow	685
Min Design CFM	230 CFM
Actual Min Airflow	220
Design Heating Airflow	350 CFM
Actual Heating Airflow	350

AHU-11 / VVB-11-18 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				320	255	320	100
Outlet-02	S1	8				190	270	185	97
Outlet-03	S1	8				190	230	180	95
Totals :	**-**	**-**	**-**	**-**	**-**	**700**	**755**	**685**	**98 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-19
AREA:

Tested By: Josh Drake
Test Date: December 15, 2015

Unit Data	
VAV Address	49
Box Inlet Size	16
K Factor	1.354
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1960 CFM
Actual Max Airflow	1965
Min Design CFM	650 CFM
Actual Min Airflow	660
Design Heating Airflow	1310 CFM
Actual Heating Airflow	1325

AHU-11 / VVB-11-19 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	260	205	103
Outlet-02	S1	8				200	260	195	98
Outlet-03	S1	8				200	245	210	105
Outlet-04	S1	8				195	250	215	110
Outlet-05	S1	8				195	235	215	110
Outlet-06	S1	8				195	205	180	92
Outlet-07	S1	8				195	170	200	103
Outlet-08	S1	8				200	250	180	90
Outlet-09	S1	8				200	250	190	95
Outlet-10	S1	8				180	240	175	97
Totals :	-	-	-	-	-	**1,960**	**2,365**	**1,965**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-20
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	48
Box Inlet Size	14
K Factor	1.013
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1525 CFM
Actual Max Airflow	1570
Min Design CFM	495 CFM
Actual Min Airflow	520
Design Heating Airflow	750 CFM
Actual Heating Airflow	785

AHU-11 / VVB-11-20 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	280	225	100
Outlet-02	S1	8				225	250	225	100
Outlet-03	S1	8				225	320	240	107
Outlet-04	S1	8				200	205	200	100
Outlet-05	S1	8				225	275	245	109
Outlet-06	S1	8				200	230	215	108
Outlet-07	S1	8				225	295	220	98
Totals :	**-**	**-**	**-**	**-**	**-**	**1,525**	**1,855**	**1,570**	**103 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-21
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	47
Box Inlet Size	14
K Factor	1.638
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1500 CFM
Actual Max Airflow	1490
Min Design CFM	495 CFM
Actual Min Airflow	470
Design Heating Airflow	750 CFM
Actual Heating Airflow	750

AHU-11 / VVB-11-21 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	195	215	96
Outlet-02	S1	8				225	195	210	93
Outlet-03	S1	8				200	205	215	108
Outlet-04	S1	8				225	205	225	100
Outlet-05	S1	8				225	200	215	96
Outlet-06	S1	8				200	200	210	105
Outlet-07	S1	8				200	240	200	100
Totals :	**-**	**-**	**-**	**-**	**-**	**1,500**	**1,440**	**1,490**	**99 %**

*** Notes**

SYSTEM/UNIT: AHU-11 / VVB-11-22
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	40
Box Inlet Size	12
K Factor	1.785
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	910 CFM
Actual Max Airflow	910
Min Design CFM	300 CFM
Actual Min Airflow	305
Design Heating Airflow	610 CFM
Actual Heating Airflow	620

AHU-11 / VVB-11-22 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				310	315	290	94
Outlet-02	S1	10				300	345	320	107
Outlet-03	S1	10				300	315	300	100
Totals :	**-**	**-**	**-**	**-**	**-**	**910**	**975**	**910**	**100 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-23
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
VAV Address	39
Box Inlet Size	12
K Factor	1.805
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	845 CFM
Actual Max Airflow	855
Min Design CFM	280 CFM
Actual Min Airflow	285
Design Heating Airflow	565 CFM
Actual Heating Airflow	570

AHU-11 / VVB-11-23 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				220	225	210	95
Outlet-02	S1	8				220	230	215	98
Outlet-03	S1	8				205	225	210	102
Outlet-04	S1	8				200	240	220	110
Totals :	**-**	**-**	**-**	**-**	**-**	**845**	**920**	**855**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-24
AREA:

Tested By: Josh Drake
Test Date: March 01, 2016

Unit Data	
VAV Address	38
Box Inlet Size	16
K Factor	1.168
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	2060 CFM
Actual Max Airflow	2145 CFM
Min Design CFM	680 CFM
Actual Min Airflow	705 CFM
Design Heating Airflow	1375 CFM
Actual Heating Airflow	1410 CFM

AHU-11 / VVB-11-24 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200	255	220	110
Outlet-02	S1	10				280	390	295	105
Outlet-03	S3	16X6				230	225	245	107
Outlet-04	S3	16X6				230	260	240	104
Outlet-05	S3	16X6				230	190	245	107
Outlet-06	S3	16X6				225	235	240	107
Outlet-07	S3	16X6				225	235	220	98
Outlet-08	S3	16X6				220	260	230	105
Outlet-09	S3	16X6				220	240	210	95
Totals :	**-**	**-**	**-**	**-**	**-**	**2,060**	**2,290**	**2,145**	**104 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-25
AREA:

Tested By: Josh Drake
Test Date: March 01, 2016

Unit Data	
VAV Address	37
Box Inlet Size	14
K Factor	1.454
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1780 CFM
Actual Max Airflow	1790 CFM
Min Design CFM	590 CFM
Actual Min Airflow	605 CFM
Design Heating Airflow	1190 CFM
Actual Heating Airflow	1185 CFM

AHU-11 / VVB-11-25 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	16X6				225	265	240	107
Outlet-02	S3	16X6				225	270	225	100
Outlet-03	S3	16X6				225	235	230	102
Outlet-04	S3	16X6				225	240	240	107
Outlet-05	S3	16X6				225	260	215	96
Outlet-06	S3	16X6				215	190	210	98
Outlet-07	S3	16X6				220	180	210	95
Outlet-08	S1	8				220	190	220	100
Totals :	**-**	**-**	**-**	**-**	**-**	**1,780**	**1,830**	**1,790**	**101 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-26
AREA:

Tested By: Josh Drake
Test Date: March 01, 2016

Unit Data	
VAV Address	36
Box Inlet Size	14
K Factor	0.968
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1560 CFM
Actual Max Airflow	1535 CFM
Min Design CFM	515 CFM
Actual Min Airflow	515 CFM
Design Heating Airflow	1040 CFM
Actual Heating Airflow	1030 CFM

AHU-11 / VVB-11-26 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	16X6				225	250	235	104
Outlet-02	S3	16X6				225	180	215	96
Outlet-03	S3	16X6				225	185	210	93
Outlet-04	S3	16X6				225	210	205	91
Outlet-05	S3	16X6				225	155	220	98
Outlet-06	S3	16X6				215	230	210	98
Outlet-07	S3	16X6				220	245	240	109
Totals :	**-**	**-**	**-**	**-**	**-**	**1,560**	**1,455**	**1,535**	**98 %**

*** Notes**

SYSTEM/UNIT: AHU-11 / VVB-11-27
AREA:

Tested By: Josh Drake
Test Date: December 17, 2015

Unit Data	
VAV Address	35
Box Inlet Size	9
K Factor	1.682
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	750 CFM
Actual Max Airflow	740
Min Design CFM	250 CFM
Actual Min Airflow	255
Design Heating Airflow	500 CFM
Actual Heating Airflow	490

AHU-11 / VVB-11-27 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225	225	225	100
Outlet-02	S1	8				225	230	230	102
Outlet-03	S1	8				150	150	150	100
Outlet-04	S1	8				150	135	135	90
Totals :	**-**	**-**	**-**	**-**	**-**	**750**	**740**	**740**	**99 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-11 / VVB-11-28
AREA:

Tested By: Josh Drake
Test Date: March 01, 2016

Unit Data	
VAV Address	34
Box Inlet Size	14
K Factor	1.616
Terminal Type	SHUT OFF W/ HEAT

Term Box Test Data	
Design Max Airflow	1750 CFM
Actual Max Airflow	1780 CFM
Min Design CFM	580 CFM
Actual Min Airflow	605 CFM
Design Heating Airflow	1170 CFM
Actual Heating Airflow	1190 CFM

AHU-11 / VVB-11-28 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	18X6				300	325	315	105
Outlet-02	S3	18X6				300	280	300	100
Outlet-03	S3	18X6				300	320	305	102
Outlet-04	S3	18X6				250	240	265	106
Outlet-05	S3	18X6				300	285	285	95
Outlet-06	S3	18X6				300	345	310	103
Totals :	-	-	-	-	-	**1,750**	**1,795**	**1,780**	**102 %**

*** Notes**

SYSTEM/UNIT: AHU-12 PH 2
AREA:

Tested By: Josh Drake
Test Date: January 25, 2016

Unit Data	
Design Supply Fan Airflow	36000 CFM
Design Supply Fan ESP	3 in. wc
Design Outside Airflow	13700 CFM
Total Connected Supply	40885 CFM

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-12 PH 2 / RHC-12-01
AREA:

Term Box Test Data	
Design Max Airflow	12000 CFM

AHU-12 PH 2 / RHC-12-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S6	20X15				645			
Outlet-02	S6	20X15				635			
Outlet-03	S6	20X15				635			
Outlet-04	S6	20X15				645			
Outlet-05	S6	20X15				645			
Outlet-06	S6	20X15				645			
Outlet-07	S6	20X15				645			
Outlet-08	S6	20X15				645			
Outlet-09	S6	20X15				645			
Outlet-10	S6	20X15				645			
Outlet-11	S6	20X15				645			
Outlet-12	S6	20X15				645			
Outlet-13	S6	20X15				645			
Outlet-14	S6	20X15				645			
Outlet-15	S6	20X15				645			
Outlet-16	S6	20X15				645			
Outlet-17	S6	20X12				580			
Outlet-18	S6	20X12				580			
Outlet-19		16				540			
Totals :	**-**	**-**	**-**	**-**	**-**	**12,000**	**-**	**-**	**0 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-12 PH 2 / RHC-12-02
AREA:

Term Box Test Data	
Design Max Airflow	8800 CFM

AHU-12 PH 2 / RHC-12-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01						3550			
Outlet-02						3550			
Outlet-03	S6	20X12				580			
Outlet-04	S6	20X12				580			
Outlet-05		16				540			
Totals :	**-**	**-**	**-**	**-**	**-**	**8,800**	**-**	**-**	**0 %**

*** Notes**

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-01
AREA:

Unit Data	
Box Inlet Size	9

Term Box Test Data	
Design Max Airflow	600 CFM
Min Design CFM	200 CFM
Design Heating Airflow	430 CFM

AHU-12 PH 2 / VVB-12-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				300			
Outlet-02	S1	10				300			
Totals :	**-**	**-**	**-**	**-**	**-**	**600**	**-**	**-**	**0 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-02
AREA:

Unit Data	
Box Inlet Size	16

Term Box Test Data	
Design Max Airflow	2975 CFM
Min Design CFM	1000 CFM
Design Heating Airflow	1870 CFM

AHU-12 PH 2 / VVB-12-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S9	8				425			
Outlet-02	S9	8				425			
Outlet-03	S9	8				425			
Outlet-04	S9	8				425			
Outlet-05	S9	8				425			
Outlet-06	S9	10				425			
Outlet-07	S9	10				425			
Totals :	**-**	**-**	**-**	**-**	**-**	**2,975**	**-**	**-**	**0 %**

*** Notes**

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-03
AREA:

Unit Data	
Box Inlet Size	8

Term Box Test Data	
Design Max Airflow	450 CFM
Min Design CFM	148 CFM
Design Heating Airflow	300 CFM

AHU-12 PH 2 / VVB-12-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225			
Outlet-02	S1	8				225			
Totals :	**-**	**-**	**-**	**-**	**-**	**450**	**-**	**-**	**0 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-04
AREA:

Unit Data	
Box Inlet Size	9

Term Box Test Data	
Design Max Airflow	390 CFM
Min Design CFM	200 CFM
Design Heating Airflow	430 CFM

AHU-12 PH 2 / VVB-12-04 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				225			
Outlet-02	S2	8				165			
Totals :	-	-	-	-	-	**390**	-	-	**0 %**

*** Notes**

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-05
AREA:

Unit Data	
Box Inlet Size	14

Term Box Test Data	
Design Max Airflow	1475 CFM
Min Design CFM	555 CFM
Design Heating Airflow	1120 CFM

AHU-12 PH 2 / VVB-12-05 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				330			
Outlet-02	S1	10				315			
Outlet-03	S1	8				220			
Outlet-04	S1	8				180			
Outlet-05	S1	8				210			
Outlet-06	S1	8				220			
Totals :	-	-	-	-	-	**1,475**	-	-	**0 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-06
AREA:

Unit Data	
Box Inlet Size	12

Term Box Test Data	
Design Max Airflow	885 CFM
Min Design CFM	295 CFM
Design Heating Airflow	450 CFM

AHU-12 PH 2 / VVB-12-06 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				235			
Outlet-02	S1	8				230			
Outlet-03	S1	8				210			
Outlet-04	S1	8				210			
Totals :	-	-	-	-	-	**885**	-	-	**0 %**

*** Notes**

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-07
AREA:

Unit Data	
Box Inlet Size	22

Term Box Test Data	
Design Max Airflow	3525 CFM
Min Design CFM	1175 CFM
Design Heating Airflow	1870 CFM

AHU-12 PH 2 / VVB-12-07 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	18X10				395			
Outlet-02	S3	18X10				390			
Outlet-03	S3	18X10				390			
Outlet-04	S3	18X10				390			
Outlet-05	S3	18X10				390			
Outlet-06	S3	18X10				395			
Outlet-07	S3	18X10				395			
Outlet-08	S3	18X10				390			
Outlet-09	S3	18X10				390			
Totals :	-	-	-	-	-	**3,525**	-	-	**0 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-08
AREA:

Unit Data	
Box Inlet Size	14

Term Box Test Data	
Design Max Airflow	1400 CFM
Min Design CFM	495 CFM
Design Heating Airflow	750 CFM

AHU-12 PH 2 / VVB-12-08 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				200			
Outlet-02	S1	8				200			
Outlet-03	S1	8				200			
Outlet-04	S1	8				200			
Outlet-05	S1	8				200			
Outlet-06	S1	8				200			
Outlet-07	S1	8				200			
Totals :	**-**	**-**	**-**	**-**	**-**	**1,400**	**-**	**-**	**0 %**

*** Notes**

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-09
AREA:

Unit Data	
Box Inlet Size	16

Term Box Test Data	
Design Max Airflow	1915 CFM
Min Design CFM	640 CFM
Design Heating Airflow	1310 CFM

AHU-12 PH 2 / VVB-12-09 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	18X8				335			
Outlet-02	S3	18X8				335			
Outlet-03	S3	18X8				335			
Outlet-04	S3	18X8				220			
Outlet-05	S3	18X8				220			
Outlet-06	S3	18X8				220			
Outlet-07	S7	12X10				250			
Totals :	**-**	**-**	**-**	**-**	**-**	**1,915**	**-**	**-**	**0 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-10
AREA:

Unit Data	
Box Inlet Size	14

Term Box Test Data	
Design Max Airflow	1500 CFM
Min Design CFM	495 CFM
Design Heating Airflow	750 CFM

AHU-12 PH 2 / VVB-12-10 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S3	18X8				300			
Outlet-02	S3	18X8				300			
Outlet-03	S3	18X8				300			
Outlet-04	S3	18X8				300			
Outlet-05	S3	18X8				300			
Totals :	**-**	**-**	**-**	**-**	**-**	**1,500**	**-**	**-**	**0 %**

*** Notes**

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-11
AREA:

Unit Data	
Box Inlet Size	16

Term Box Test Data	
Design Max Airflow	1800 CFM
Min Design CFM	635 CFM
Design Heating Airflow	1310 CFM

AHU-12 PH 2 / VVB-12-11 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	10				340			
Outlet-02	S1	8				225			
Outlet-03	S1	8				170			
Outlet-04	S1	8				170			
Outlet-05	S1	8				170			
Outlet-06	S1	8				190			
Outlet-07	S1	8				190			
Outlet-08	S7	12X8				345			
Totals :	**-**	**-**	**-**	**-**	**-**	**1,800**	**-**	**-**	**0 %**

*** Notes**

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-12 PH 2 / VVB-12-12
AREA:

Unit Data	
Box Inlet Size	22

Term Box Test Data	
Design Max Airflow	3170 CFM
Min Design CFM	1160 CFM
Design Heating Airflow	1870 CFM

AHU-12 PH 2 / VVB-12-12 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S1	8				175			
Outlet-02	S1	8				175			
Outlet-03	S1	8				170			
Outlet-04	S1	8				170			
Outlet-05	S1	8				150			
Outlet-06	S1	8				150			
Outlet-07	S1	8				150			
Outlet-08	S1	8				170			
Outlet-09	S1	8				170			
Outlet-10	S1	8				150			
Outlet-11	S1	8				150			
Outlet-12	S1	8				150			
Outlet-13	S1	8				150			
Outlet-14	S1	8				150			
Outlet-15	S1	8				150			
Outlet-16	S1	8				170			
Outlet-17	S1	8				10			
Outlet-18	S1	8				10			
Outlet-19	S1	8				150			
Outlet-20	S1	8				150			
Outlet-21	S1	10				300			
Totals :	-	-	-	-	-	**3,170**	-	-	**0 %**

*** Notes**

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-13EA
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

Unit Data

Unit Manufacturer	Daikin
Unit Model Number	CAH053GDGM
Unit Serial Number	FB0U140300452
Design Supply Fan Airflow	22000 CFM
Design Supply Fan ESP	3 in. wc
Design Outside Airflow	12400 CFM
Total Connected Supply	19900 CFM

Starter Data

AHU-13EA / Supply Fan

Starter Manufacturer	VFD

Test Data

Actual Supply Airflow	19945 CFM
Actual Outside Airflow	12560 CFM
Actual Return Airflow	7385 CFM
Actual Exhaust Airflow	0 CFM
Duct Static SP	N/A in.wc

AHU-13EA / Supply Fan

Actual RPM	Direct Drive RPM
Volts	460 Volts
Amps	23.2 Amps
VFD Speed	46 Hz

Motor Data

AHU-13EA / Supply Fan

Motor Manufacturer	Teco X 2
Motor HP	20 HP
Motor RPM	1770 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	46.6/23.3 Amps
Motor Service Factor	1.15
Motor Frame	256T
Nominal Efficiency	93 %

Sheave Data

AHU-13EA / Supply Fan

Motor Sheave Model	Direct Drive

Test Pressures

Filter SP In	-0.37 in. wc
Filter SP Out	-0.43 in. wc
Heating Coil SP In	-0.43 in. wc
Heating Coil SP Out	-0.79 in. wc
Cooling Coil SP In	-0.79 in. wc
Cooling Coil SP Out	-1.10 in. wc
Fan SP In	-1.10 in. wc
Fan SP Out	1.25 in. wc

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-13EA (Cont.)
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

AHU-13EA Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S6	12X6				300	335	315	105
Outlet-02	S6	12X6				300	360	320	107
Outlet-03	S6	12X6				300	320	300	100
Outlet-04	S6	12X6				300	335	295	98
Outlet-05	S6	12X6				300	315	270	90
Outlet-06	S6	12X6				300	280	300	100
Outlet-07	S6	12X6				300	300	320	107
Outlet-08	S6	12X6				300	355	315	105
Outlet-09	S6	12X6				300	360	320	107
Outlet-10	S6	12X6				300	380	330	110
Outlet-11	S6	12X6				300	340	310	103
Outlet-12	S6	12X6				300	330	270	90
Outlet-13	S6	12X6				300	360	285	95
Outlet-14	S6	12X6				300	325	305	102
Outlet-15	S6	12X6				300	330	320	107
Outlet-16	S6	12X6				300	365	295	98
Outlet-17	S6	12X6				300	370	300	100
Outlet-18	S6	12X6				300	390	275	92
Outlet-19	S6	12X6				300	415	290	97
Outlet-20	S6	12X6				300	305	290	97
Outlet-21	S6	12X6				250	290	265	106
Outlet-22	S6	12X6				250	285	270	108
Outlet-23	S6	12X6				460	420	470	102
Outlet-24	S6	18X6				460	445	450	98
Outlet-25	S6	18X6				460	430	440	96
Outlet-26	S6	18X6				460	395	435	95
Outlet-27	S6	18X6				460	400	450	98
Outlet-28	S6	18X6				460	455	460	100
Outlet-29	S6	12X6				250	300	260	104
Outlet-30	S6	12X6				250	295	275	110
Outlet-31	S6	12X6				250	275	260	104
Outlet-32	S6	12X6				250	280	255	102
Outlet-33	S6	18X6				460	380	475	103
Outlet-34	S6	18X6				460	380	465	101
Outlet-35	S6	18X6				460	435	455	99
Outlet-36	S6	18X6				460	440	460	100
Outlet-37	S6	18X6				460	420	430	93
Outlet-38	S6	18X6				460	405	485	105
Outlet-39	S6	12X6				250	240	275	110

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-13EA (Cont.)
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

Outlet-40	S6	12X6				250	230	260	104
Outlet-41	S6	12X6				250	315	250	100
Outlet-42	S6	12X6				300	320	305	102
Outlet-43	S6	12X6				300	330	295	98
Outlet-44	S6	18X6				460	380	430	93
Outlet-45	S6	18X6				460	480	445	97
Outlet-46	S6	12X6				300	405	320	107
Outlet-47	S6	18X6				460	450	450	98
Outlet-48	S6	12X6				300	315	280	93
Outlet-49	S6	12X6				250	290	240	96
Outlet-50	S6	12X6				300	275	290	97
Outlet-51	S6	12X6				300	3155	300	100
Outlet-52	S6	12X6				300	330	285	95
Outlet-53	S6	12X6				300	360	310	103
Outlet-54	S6	12X6				300	355	310	103
Outlet-55	S6	12X6				300	240	330	110
Outlet-56	S6	12X6				300	385	315	105
Outlet-57	S6	12X6				300	360	305	102
Outlet-58	S6	12X6				300	360	300	100
Outlet-59	S6	12X6				300	305	295	98
Outlet-60	S6	12X6				300	340	270	90
Totals :	**-**	**-**	**-**	**-**	**-**	**19,900**	**23,820**	**19,945**	**100 %**

*** Notes**

AHU-13EA	12-Jan-16	Josh Drake	Balanced at 46 hz for max speed. Min speed = 30 hz.
AHU-13EA	12-Jan-16	Josh Drake	Balanced branches but not grilles

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-3EA
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

Unit Data

Unit Manufacturer	Daikin
Unit Model Number	CAH071GDGM
Unit Serial Number	FBOU140300430
Design Supply Fan Airflow	18000 CFM
Design Supply Fan ESP	3 in. wc
Design Outside Airflow	5850 CFM
Total Connected Supply	18000 CFM

Starter Data

AHU-3EA / Supply Fan

Starter Manufacturer	VFD

Test Data

Actual Supply Airflow	18160 CFM
Actual Outside Airflow	5840 CFM
Actual Return Airflow	12320 CFM
Actual Exhaust Airflow	0 CFM
Duct Static SP	N/A in.wc

AHU-3EA / Supply Fan

Actual RPM	Direct Drive RPM
Volts	460 Volts
Amps	22.8 Amps
VFD Speed	58 Hz

Motor Data

AHU-3EA / Supply Fan

Motor Manufacturer	Teco X 2
Motor HP	15 HP
Motor RPM	1770 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	35.7/17.9 Amps
Motor Service Factor	1.15
Motor Frame	254T
Nominal Efficiency	93 %

Sheave Data

AHU-3EA / Supply Fan

Motor Sheave Model	Direct Drive

Test Pressures

Filter SP In	-0.78 in. wc
Filter SP Out	-1.07 in. wc
Heating Coil SP In	-1.07 in. wc
Heating Coil SP Out	-1.43 in. wc
Cooling Coil SP In	-1.43 in. wc
Cooling Coil SP Out	-1.84 in. wc
Fan SP In	-1.84 in. wc
Fan SP Out	1.20 in. wc

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-3EA (Cont.)
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

AHU-3EA Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S6	20X12				600	435	580	97
Outlet-02	S6	20X12				560	290	560	100
Outlet-03	S6	20X12				560	505	595	106
Outlet-04	S6	20X12				600	510	575	96
Outlet-05	S6	20X12				600	495	590	98
Outlet-06	S6	20X12				560	460	560	100
Outlet-07	S6	20X12				560	565	535	96
Outlet-08	S6	20X12				600	580	575	96
Outlet-09	S6	20X12				560	485	570	102
Outlet-10	S6	20X12				560	150	530	95
Outlet-11	S6	20X12				560	690	565	101
Outlet-12	S6	20X12				560	510	575	103
Outlet-13	S6	20X12				550	625	600	109
Outlet-14	S6	20X12				550	630	580	105
Outlet-15	S6	20X12				550	585	550	100
Outlet-16	S6	20X12				550	590	595	108
Outlet-17	S6	20X12				560	620	565	101
Outlet-18	S6	20X12				560	635	530	95
Outlet-19	S6	20X12				560	195	540	96
Outlet-20	S6	20X12				560	620	565	101
Outlet-21	S6	20X12				550	565	575	105
Outlet-22	S6	20X12				550	590	590	107
Outlet-23	S6	20X12				550	610	540	98
Outlet-24	S6	20X12				550	600	540	98
Outlet-25	S6	20X12				560	580	560	100
Outlet-26	S6	20X12				560	485	585	104
Outlet-27	S6	20X12				560	535	590	105
Outlet-28	S6	20X12				560	590	570	102
Outlet-29	S6	20X12				560	620	580	104
Outlet-30	S6	20X12				560	605	555	99
Outlet-31	S6	20X12				560	580	560	100
Outlet-32	S6	20X12				560	705	580	104
Totals :	**-**	**-**	**-**	**-**	**-**	**18,000**	**17,240**	**18,160**	**101 %**

*** Notes**

AHU-3EA	10-May-16	Josh Drake	Balanced at 58 hz for max speed. Min speed = 38 hz.
AHU-3EA	10-May-16	Josh Drake	Calibrated outside air (Ebtron) with JCI. K-factor is 0.90

ELITE BALANCING

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-4EA
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

Unit Data

Unit Manufacturer	Daikin
Unit Model Number	CAH071GDGM
Unit Serial Number	FBOU140300358
Design Supply Fan Airflow	32000 CFM
Design Supply Fan ESP	3 in. wc
Design Outside Airflow	31750 CFM
Total Connected Supply	32000 CFM

Starter Data

AHU-4EA / Supply Fan

Starter Manufacturer	VFD

Test Data

Actual Supply Airflow	32150 CFM
Actual Outside Airflow	32150 CFM
Actual Return Airflow	0 CFM
Actual Exhaust Airflow	0 CFM
O/A Damper Pos	100 %
Duct Static SP	N/A in.wc

AHU-4EA / Supply Fan

Actual RPM	Direct Drive RPM
Volts	460 Volts
Amps	15.8 Amps
VFD Speed	54 Hz

Motor Data

AHU-4EA / Supply Fan

Motor Manufacturer	Teco X 2
Motor HP	20 HP
Motor RPM	1770 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	46.6/23.3 Amps
Motor Service Factor	1.15
Motor Frame	256T
Nominal Efficiency	93 %

Sheave Data

AHU-4EA / Supply Fan

Motor Sheave Model	Direct Drive

Test Pressures

Filter SP In	-0.38 in. wc
Filter SP Out	-0.56 in. wc
Heating Coil SP In	-0.56 in. wc
Heating Coil SP Out	-0.67 in. wc
Cooling Coil SP In	-0.67 in. wc
Cooling Coil SP Out	-0.84 in. wc
Fan SP In	-0.84 in. wc
Fan SP Out	0.23 in. wc

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-4EA (Cont.)
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

AHU-4EA Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Outlet-01	S6	18X6				330	225	315	95
Outlet-02	S6	20X12				700	630	690	99
Outlet-03	S6	20X12				650	655	665	102
Outlet-04	S6	20X12				650	610	670	103
Outlet-05	S6	20X12				700	595	670	96
Outlet-06	S6	20X12				700	640	715	102
Outlet-07	S6	20X12				650	640	635	98
Outlet-08	S6	20X12				650	605	650	100
Outlet-09	S6	20X12				700	580	680	97
Outlet-10	S6	20X12				700	600	660	94
Outlet-11	S6	20X12				650	635	670	103
Outlet-12	S6	20X12				650	655	685	105
Outlet-13	S6	20X12				700	655	735	105
Outlet-14	S6	18X6				330	275	325	98
Outlet-15	S6	18X6				330	290	345	105
Outlet-16	S6	20X12				620	630	645	104
Outlet-17	S6	20X12				610	645	585	96
Outlet-18	S6	20X12				610	680	610	100
Outlet-19	S6	20X12				620	635	625	101
Outlet-20	S6	20X12				620	640	655	106
Outlet-21	S6	20X12				610	665	590	97
Outlet-22	S6	20X12				610	670	585	96
Outlet-23	S6	20X12				620	410	590	95
Outlet-24	S6	20X12				620	785	620	100
Outlet-25	S6	20X12				610	660	610	100
Outlet-26	S6	20X12				650	615	670	103
Outlet-27	S6	20X12				650	620	675	104
Outlet-28	S6	20X12				330	345	330	100
Outlet-29	S6	20X12				610	675	615	101
Outlet-30	S6	20X12				610	690	630	103
Outlet-31	S6	20X12				610	690	625	102
Outlet-32	S6	20X12				610	695	645	106
Outlet-33	S6	20X12				610	640	585	96
Outlet-34	S6	20X12				610	635	610	100
Outlet-35	S6	20X12				610	615	630	103
Outlet-36	S6	20X12				610	670	635	104
Outlet-37	S6	20X12				610	610	590	97
Outlet-38	S6	20X12				610	630	600	98
Outlet-39	S6	20X12				650	660	655	101

Air Handling Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AHU-4EA (Cont.)
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

Outlet-40	S6	20X12				650	685	660	102
Outlet-41	S6	18X6				330	390	345	105
Outlet-42	S6	20X12				610	595	640	105
Outlet-43	S6	20X12				610	420	610	100
Outlet-44	S6	20X12				610	585	625	102
Outlet-45	S6	20X12				610	730	590	97
Outlet-46	S6	20X12				610	640	600	98
Outlet-47	S6	20X12				610	655	650	107
Outlet-48	S6	20X12				610	670	615	101
Outlet-49	S6	20X12				610	580	635	104
Outlet-50	S6	20X12				610	595	585	96
Outlet-51	S6	20X12				610	620	620	102
Outlet-52	S6	20X12				650	635	635	98
Outlet-53	S6	20X12				650	660	620	95
Totals :	**-**	**-**	**-**	**-**	**-**	**32,000**	**31,960**	**32,150**	**100 %**

*** Notes**

AHU-4EA	10-May-16	Josh Drake	Balanced at 54 hz for max speed. Min speed = 36 hz.
AHU-4EA	10-May-16	Josh Drake	Calibrated outside air (Ebtron) with JCI. K-factor is 1.05

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA A-EF-17
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCRD075D1
Fan Serial Number	L14-000000138404
Design Airflow	200 CFM
Design ESP	0.3 in. wc

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	190 CFM
Actual RPM	1204 RPM
Volts	119 Volts
Amps	2.3 Amps
Fan SP In	-0.08 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Twin City
Motor HP	1/4 HP
Motor RPM	1750 RPM
Motor Rated Volts	115-208/230 Volts
Motor Phase	1
Motor FL Amps	4.2/2.1 Amps
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58 %
Power Factor	64

Sheave Data	
Motor Sheave Model	1VL25
Motor Sheave Bore	1/2 in.
Fan Sheave Model	AK34
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	3L240
Sheave Center Line	5 in.

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA A-EF-35
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCRD100D1
Fan Serial Number	D15-000000147821
Design Airflow	500 CFM
Design ESP	0.3 in. wc
Total Connected Airflow	500 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	505 CFM
Actual RPM	944 RPM
Volts	119 Volts
Amps	2.8 Amps
Fan SP In	-0.14 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Twin City
Motor HP	1/4 HP
Motor RPM	1750 RPM
Motor Rated Volts	115-208/230 Volts
Motor Phase	1
Motor FL Amps	4.2/2.1 Amps
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58 %
Power Factor	64

Sheave Data	
Motor Sheave Model	1VL25
Motor Sheave Bore	1/2 in.
Fan Sheave Model	AK44
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	3L240
Sheave Center Line	5 in.

AREA A-EF-35 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	10X10				250	300	245	98
Inlet-02	E1	10X10				250	220	260	104
Totals :	**-**	**-**	**-**	**-**	**-**	**500**	**520**	**505**	**101 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA A-REF-1-03
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCRD360D
Fan Serial Number	F15-000000152018
Design Airflow	9300 CFM
Design ESP	0.35 in. wc
Total Connected Airflow	9400 CFM

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	8150 CFM
Actual RPM	474 RPM
Volts	460 Volts
Amps	2.3 Amps
Fan SP In	-0.52 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	2 HP
Motor RPM	1725 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	6.3-6.0/3.0 Amps
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	79 %
Power Factor	80

Sheave Data	
Motor Sheave Model	1VM50
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK154
Fan Sheave Bore	1 7/16 in.
#Belts	1
Belt Size	A55
Sheave Center Line	12 in.

AREA A-REF-1-03 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	18X18				940	1470	770	82
Inlet-02	E1	18X18				940	1270	780	83
Inlet-03	E1	18X18				940	1190	820	87
Inlet-04	E1	18X18				940	810	785	84
Inlet-05	E1	18X18				940	780	875	93
Inlet-06	E1	18X18				940	705	800	85
Inlet-07	E1	18X18				940	585	775	82
Inlet-08	E1	18X18				940	565	865	92
Inlet-09	E1	18X18				940	455	870	93
Inlet-10	E1	18X18				940	65	810	86
Totals :	-	-	-	-	-	**9,400**	**7,895**	**8,150**	**87 %**

*** Notes**

AREA A-REF-1-03	11-May-16	Josh Drake	Fan balanced at 60 hz
AREA A-REF-1-03	11-May-16	Josh Drake	Grilles get noisy when aiflow is increased further. Left at 87%.

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA B-REF-03
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCRD420D
Fan Serial Number	F15-000000152029
Design Airflow	14000 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	13280 CFM
Actual RPM	413 RPM
Volts	460 Volts
Amps	2.9 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	2 HP
Motor RPM	1755 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	9.51/4.76 Amps
Motor Service Factor	1.15
Motor Frame	182T
Nominal Efficiency	89.5 %

Sheave Data	
Motor Sheave Model	2VP40
Motor Sheave Bore	1 1/8 in.
Fan Sheave Model	2AK144
Fan Sheave Bore	1 7/16 in.
#Belts	2
Belt Size	A52
Sheave Center Line	12 in.

*** Notes**

SYSTEM/UNIT: AREA B-REF-04
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCRD480D
Fan Serial Number	F15-000000152028
Design Airflow	16000 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	15445 CFM
Actual RPM	371 RPM
Volts	460 Volts
Amps	3.0 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	2 HP
Motor RPM	1755 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	9.51/4.76 Amps
Motor Service Factor	1.15
Motor Frame	182T
Nominal Efficiency	89.5 %

Sheave Data	
Motor Sheave Model	1VP44
Motor Sheave Bore	1 1/8 in.
Fan Sheave Model	BK190
Fan Sheave Bore	1 7/16 in.
#Belts	1
Belt Size	BX63
Sheave Center Line	13 in.

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA C-EF-14
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCRD100D1
Fan Serial Number	D15-000000147819
Design Airflow	600 CFM
Design ESP	0.3 in. wc

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	645 CFM
Actual RPM	946 RPM
Volts	119 Volts
Amps	3.7 Amps
Fan SP In	-0.10 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Twin City
Motor HP	1/4 HP
Motor RPM	1750 RPM
Motor Rated Volts	115-208/230 Volts
Motor Phase	1
Motor FL Amps	4.2/2.1 Amps
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58 %
Power Factor	64

Sheave Data	
Motor Sheave Model	1VL25
Motor Sheave Bore	1/2 in.
Fan Sheave Model	AK44
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	3L240
Sheave Center Line	5 in.

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA C-REF-1-01
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCRD360D
Fan Serial Number	F15-000000152016
Design Airflow	9300 CFM
Design ESP	0.35 in. wc
Total Connected Airflow	3820 CFM

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	5455 CFM
Actual RPM	439 RPM
Volts	460 Volts
Amps	1.9 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	2 HP
Motor RPM	1725 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	6.3-6.0/3.0 Amps
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	79 %
Power Factor	80

Sheave Data	
Motor Sheave Model	1VM50
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK154
Fan Sheave Bore	1 7/16 in.
#Belts	1
Belt Size	A55
Sheave Center Line	12 in.

AREA C-REF-1-01 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				215	235	335	156
Inlet-02	E1	12X12				215	220	330	153
Inlet-03	E1	12X12				75	70	110	147
Inlet-04	E1	12X12				260	280	350	135
Inlet-05	E1	12X12				300	280	400	133
Inlet-06	E1	12X12				355	365	505	142
Inlet-07	E1	12X12				375	385	550	147
Inlet-08	E1	12X12				355	330	475	134
Inlet-09	E1	12X12				355	335	460	130
Inlet-10	E1	12X12				250	260	370	148
Inlet-11	E1	12X12				345	380	550	159
Inlet-12	E1	12X12				345	350	470	136
Inlet-13	E1	12X12				375	400	550	147
Totals :	-	-	-	-	-	**3,820**	**3,890**	**5,455**	**143 %**

*** Notes**

AREA C-REF-1-01	10-May-16	Josh Drake	5485 CFM at 60 hz. 3890 CFM at 42 hz.
AREA C-REF-1-01	11-May-16	Josh Drake	Low airflow because of added restricton of locker room exhaust
AREA C-REF-1-01	11-May-16	Josh Drake	Prelim airflows were read after balance at 42 hz, final airflows were read after balance at 60 hz.
AREA C-REF-1-01	10-May-16	Josh Drake	Reduced airflow on grilles that were extremely high. Balanced as best as possible without restricting fan as per Ken Hilton.

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA C-REF-1-02
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCRD360D
Fan Serial Number	F15-000000152017
Design Airflow	9300 CFM
Design ESP	0.35 in. wc
Total Connected Airflow	3270 CFM

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	4825 CFM
Actual RPM	441 RPM
Volts	460 Volts
Amps	1.9 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	2 HP
Motor RPM	1725 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	6.3-6.0/3.0 Amps
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	79 %
Power Factor	80

Sheave Data	
Motor Sheave Model	1VM50
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK154
Fan Sheave Bore	1 7/16 in.
#Belts	1
Belt Size	A55
Sheave Center Line	12 in.

AREA C-REF-1-02 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				75	70	95	127
Inlet-02	E1	12X12				265	275	390	147
Inlet-03	E1	12X12				400	440	630	158
Inlet-04	E1	12X12				375	355	520	139
Inlet-05	E1	12X12				345	330	460	133
Inlet-06	E1	12X12				345	365	515	149
Inlet-07	E1	12X12				345	350	515	149
Inlet-08	E1	12X12				375	410	615	164
Inlet-09	E1	12X12				345	375	530	154
Inlet-10	E1	12X12				400	395	555	139
Totals :	-	-	-	-	-	**3,270**	**3,365**	**4,825**	**148 %**

*** Notes**

AREA C-REF-1-02	11-May-16	Josh Drake	4825 CFM at 60 hz. 3365 CFM at 42 hz.
AREA C-REF-1-02	11-May-16	Josh Drake	Low airflow because of added restricton of locker room exhaust
AREA C-REF-1-02	11-May-16	Josh Drake	Prelim airflows were read after balance at 42 hz, final airflows were read after balance at 60 hz.
AREA C-REF-1-02	10-May-16	Josh Drake	Reduced airflow on grilles that were extremely high. Balanced as best as possible without restricting fan as per Ken Hilton.

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA D-EF-08
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	DCRD-085BE
Fan Serial Number	F15-000000152220
Design Airflow	370 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	370 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	375 CFM
Actual RPM	Direct Drive RPM
Volts	119 Volts
Amps	1.0 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	McMillan
Motor HP	1/4 HP
Motor RPM	300-1800 RPM
Motor Rated Volts	120 Volts
Motor Phase	1
Motor FL Amps	3.3 Amps
Motor Service Factor	1.0

Sheave Data	
Motor Sheave Model	Direct Drive

AREA D-EF-08 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				90	155	95	106
Inlet-02	E1	12X12				90	215	95	106
Inlet-03	E1	12X12				190	330	185	97
Totals :	**-**	**-**	**-**	**-**	**-**	**370**	**700**	**375**	**101 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA D-EF-19
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCRD120D2
Fan Serial Number	D15-000000147623
Design Airflow	930 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	930 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	905 CFM
Actual RPM	1155 RPM
Volts	119 Volts
Amps	3.3 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Twin City
Motor HP	1/4 HP
Motor RPM	1750 RPM
Motor Rated Volts	115-208/230 Volts
Motor Phase	1
Motor FL Amps	4.2/2.1 Amps
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58 %
Power Factor	64

Sheave Data	
Motor Sheave Model	1VL34
Motor Sheave Bore	1/2 in.
Fan Sheave Model	AK41
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	3L250
Sheave Center Line	5 in.

AREA D-EF-19 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				220	350	200	91
Inlet-02	E1	12X12				330	250	335	102
Inlet-03	E1	12X12				380	335	370	97
Totals :	-	-	-	-	-	**930**	**935**	**905**	**97 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA D-EF-30
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	T150L
Fan Serial Number	59120302
Design Airflow	170 CFM
Design ESP	0.25 in. wc

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	155 CFM
Actual RPM	Direct Drive RPM
Volts	122 Volts
Amps	0.6 Amps
Fan SP In	Atmosphere in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Broan-Nutone
Motor RPM	745 RPM
Motor Rated Volts	120 Volts
Motor Phase	1
Motor FL Amps	1.3 Amps
Motor Service Factor	1.0

Sheave Data	
Motor Sheave Model	Direct Drive

*** Notes**

SYSTEM/UNIT: AREA D-EF-33
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCRD140D2
Fan Serial Number	E15-000000148893
Design Airflow	1200 CFM
Design ESP	0.25 in. wc
Total Connected Airflow	500 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1165 CFM
Actual RPM	922 RPM
Volts	119 Volts
Amps	3.1 Amps
Fan SP In	-0.11 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Twin City
Motor HP	1/4 HP
Motor RPM	1750 RPM
Motor Rated Volts	115-208/230 Volts
Motor Phase	1
Motor FL Amps	4.2/2.1 Amps
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58 %
Power Factor	64

Sheave Data	
Motor Sheave Model	1VL25
Motor Sheave Bore	1/2 in.
Fan Sheave Model	AK44
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	3L250
Sheave Center Line	6 in.

*** Notes**

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA D-EF-36
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	DCRD-085D1
Fan Serial Number	E15-000000148875
Design Airflow	350 CFM
Design ESP	0.375 in. wc

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	330 CFM
Actual RPM	1643 RPM
Volts	119 Volts
Amps	2.9 Amps
Fan SP In	-0.21 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Twin City
Motor HP	1/4 HP
Motor RPM	1750 RPM
Motor Rated Volts	115-208/230 Volts
Motor Phase	1
Motor FL Amps	4.2/2.1 Amps
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58 %
Power Factor	64

Sheave Data	
Motor Sheave Model	1VL34
Motor Sheave Bore	1/2 in.
Fan Sheave Model	AK32
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	3L240
Sheave Center Line	5 in.

*** Notes**

SYSTEM/UNIT: AREA D-EF-P-01
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
Design Airflow	10000 CFM
Design ESP	1.25 in. wc

*** Notes**

AREA D-EF-P-01	11-May-16	Josh Drake	Deficiency 0148 : Not installed

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA D-REF-2-01
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRU340B
Fan Serial Number	F15-000000152415
Design Airflow	4500 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	4325 CFM
Actual RPM	558 RPM
Volts	460 Volts
Amps	0.9 Amps
Fan SP In	-0.09 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	1 HP
Motor RPM	1725 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	3.2-3.4/1.8 Amps
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	76 %
Power Factor	75

Sheave Data	
Motor Sheave Model	VL40
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK84
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	4L330
Sheave Center Line	7 in.

* Notes				
	AREA D-REF-2-01	11-May-16	Josh Drake	Fan balanced at 60 hz

SYSTEM/UNIT: AREA D-REF-2-02
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRU240B
Fan Serial Number	F15-000000152416
Design Airflow	4500 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	4535 CFM
Actual RPM	557 RPM
Volts	460 Volts
Amps	0.9 Amps
Fan SP In	-0.14 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	1 HP
Motor RPM	1725 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	3.2-3.4/1.8 Amps
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	76 %
Power Factor	75

Sheave Data	
Motor Sheave Model	VL40
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK84
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	4L330
Sheave Center Line	7 in.

* Notes				
	AREA D-REF-2-02	11-May-16	Josh Drake	Fan balanced at 60 hz

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA D-REF-2-03
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRU300B
Fan Serial Number	F15-000000152033
Design Airflow	5300 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	3740 CFM
Actual RPM	490 RPM
Volts	460 Volts
Amps	1.1 Amps
Fan SP In	-0.46 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	1 HP
Motor RPM	1725 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	3.2-3.4/1.8 Amps
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	76 %
Power Factor	75

Sheave Data	
Motor Sheave Model	VL34
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK89H
Fan Sheave Bore	1 1/8 in.
#Belts	1
Belt Size	4L360
Sheave Center Line	8 in.

AREA D-REF-2-03 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	Hood	14				1500	1365	1495	100
Inlet-02	Hood	14				1500	1900	1495	100
Totals :	**-**	**-**	**-**	**-**	**-**	**3,000**	**3,265**	**2,990**	**100 %**

*** Notes**

AREA D-REF-2-03	11-May-16	Josh Drake	Fan balanced at 60 hz
AREA D-REF-2-03	11-May-16	Josh Drake	Low airflow because of added restricton of welding hoods

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA D-REF-2-04
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRU180B
Fan Serial Number	F15-000000152419
Design Airflow	2000 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	2090 CFM
Actual RPM	680 RPM
Volts	460 Volts
Amps	0.7 Amps
Fan SP In	-0.13 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	3/4 HP
Motor RPM	1725 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	2.6-2.6/1.3 Amps
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	73.5 %
Power Factor	73

Sheave Data	
Motor Sheave Model	VL34
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK56
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	4L270
Sheave Center Line	5 in.

* Notes				
	AREA D-REF-2-04	11-May-16	Josh Drake	Fan balanced at 60 hz

SYSTEM/UNIT: AREA E-EF-16 PH 2
AREA:

Tested By: Josh Drake
Test Date: April 26, 2016

Unit Data	
Design Airflow	100 CFM
Design ESP	0.3 in. wc

AREA E-EF-16 PH 2 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01									
Totals :	-	-	-	-	-	-	-	-	**0 %**

*** Notes**

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA E-EF-34 PH 2
AREA:

Tested By: Josh Drake
Test Date: April 26, 2016

Unit Data	
Design Airflow	1400 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1400 CFM

AREA E-EF-34 PH 2 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				200			
Inlet-02	E1	12X12				500			
Inlet-03	E1	12X12				500			
Inlet-04	E1	12X12				200			
Totals :	-	-	-	-	-	**1,400**	-	-	**0 %**

*** Notes**

SYSTEM/UNIT: AREA E-EF-37 PH 2
AREA:

Tested By: Josh Drake
Test Date: April 26, 2016

Unit Data	
Design Airflow	225 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	200 CFM

AREA E-EF-37 PH 2 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				100			
Inlet-02	E1	12X12				100			
Totals :	-	-	-	-	-	**200**	-	-	**0 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-09
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRD160D3
Fan Serial Number	C15-000000145501
Design Airflow	2100 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	2100 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	2030 CFM
Actual RPM	1033 RPM
Volts	122 Volts
Amps	2.3 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Twin City
Motor HP	1/3 HP
Motor RPM	1750 RPM
Motor Rated Volts	115/208-230 Volts
Motor Phase	1
Motor FL Amps	6.2/3.1 Amps
Motor Service Factor	1.15
Motor Frame	56c
Nominal Efficiency	68 %
Power Factor	58

Sheave Data	
Motor Sheave Model	VL34
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK51
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	4L270
Sheave Center Line	5 in.

AREA F-EF-09 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	10X8				300	245	290	97
Inlet-02	E1	12X12				380	350	385	101
Inlet-03	E1	12X12				380	410	370	97
Inlet-04	E1	12X12				375	180	360	96
Inlet-05	E1	12X12				375	145	365	97
Inlet-06	E1	10X10				290	265	260	90
Totals :	-	-	-	-	-	**2,100**	**1,595**	**2,030**	**97 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-12
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRD085D3
Fan Serial Number	D15-000000147792
Design Airflow	320 CFM
Design ESP	0.3 in. wc
Total Connected Airflow	320 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	305 CFM
Actual RPM	976 RPM
Volts	122 Volts
Amps	2.4 Amps
Fan SP In	-0.13 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Twin City
Motor HP	1/4 HP
Motor RPM	1750 RPM
Motor Rated Volts	115/208-230 Volts
Motor Phase	1
Motor FL Amps	4.2/2.1 Amps
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58 %
Power Factor	64

Sheave Data	
Motor Sheave Model	VL25
Motor Sheave Bore	1/2 in.
Fan Sheave Model	AK41
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	3L250
Sheave Center Line	5 in.

AREA F-EF-12 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01						145	165	130	90
Inlet-02						55	120	60	109
Inlet-03						120	80	115	96
Totals :	-	-	-	-	-	**320**	**365**	**305**	**95 %**

*** Notes**

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-15
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRD075D1
Fan Serial Number	A15-000000140810
Design Airflow	240 CFM
Design ESP	0.3 in. wc

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	260 CFM
Actual RPM	1654 RPM
Volts	122 Volts
Amps	2.3 Amps
Fan SP In	-0.08 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Twin City
Motor HP	1/4 HP
Motor RPM	1750 RPM
Motor Rated Volts	115/208-230 Volts
Motor Phase	1
Motor FL Amps	4.2/2.1 Amps
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58 %
Power Factor	64

Sheave Data	
Motor Sheave Model	1VP34
Motor Sheave Bore	1/2 in.
Fan Sheave Model	AK32
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	3L240
Sheave Center Line	5 in.

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-18
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRD085D1
Fan Serial Number	E15000000148874
Design Airflow	400 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	400 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	400 CFM
Actual RPM	1596 RPM
Volts	122 Volts
Amps	2.1 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Twin City
Motor HP	1/4 HP
Motor RPM	1750 RPM
Motor Rated Volts	115/208-230 Volts
Motor Phase	1
Motor FL Amps	4.2/2.1 Amps
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58 %
Power Factor	64

Sheave Data	
Motor Sheave Model	1VP34
Motor Sheave Bore	1/2 in.
Fan Sheave Model	AK32
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	3L240
Sheave Center Line	5 in.

AREA F-EF-18 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	6X6				100	90	90	90
Inlet-02	E1	12X12				100	125	105	105
Inlet-03	E1	12X12				100	85	105	105
Inlet-04	E1	6X6				100	125	100	100
Totals :	-	-	-	-	-	**400**	**425**	**400**	**100 %**

*** Notes**

SYSTEM/UNIT: AREA F-EF-31
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Design Airflow	140 CFM
Design ESP	0.25 in. wc

*** Notes**

AREA F-EF-31	11-May-16	Josh Drake	Deleted

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-32
AREA:

Tested By: Josh Drake
Test Date: April 27, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	TCPE-161A
Fan Serial Number	F15-000000153604
Design Airflow	1350 CFM
Design ESP	0.25 in. wc

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1435 CFM
Actual RPM	Direct Drive RPM
Volts	121 Volts
Amps	2.3 Amps
Fan SP In	Atmosphere in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Twin City
Motor HP	1/4 HP
Motor RPM	1140 RPM
Motor Rated Volts	115-208/230 Volts
Motor Phase	1
Motor FL Amps	3.0/1.5 Amps
Motor Service Factor	1.00

Sheave Data	
Motor Sheave Model	Direct Drive

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-K-01
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
Fan Manufacturer	Econ-air
Fan Model Number	EABDU24HP
Fan Serial Number	2056818
Design Airflow	3766 CFM
Design ESP	1.3 in. wc
Total Connected Airflow	3766 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	3670 CFM
Actual RPM	1018 RPM
Volts	465/463/464 Volts
Amps	2.5/2.6/2.6 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Weg
Motor HP	2 HP
Motor RPM	1740 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	6.88-6.22/3.11 Amps
Motor Service Factor	1.15
Motor Frame	56HZ
Nominal Efficiency	78.5 %
Power Factor	77

Sheave Data	
Motor Sheave Model	2VP42
Motor Sheave Bore	7/8 in.
Fan Sheave Model	2BK70
Fan Sheave Bore	1 in.
#Belts	2
Belt Size	BX-28
Sheave Center Line	8 in.

AREA F-EF-K-01 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Hood 1.1	Hood	110X18	13.75	144	149	1983	2050	2050	103
Hood 1.2	Hood	94X18	11.75	152	138	1783	1620	1620	91
Totals :	-	-	-	-	-	**3,766**	**3,670**	**3,670**	**97 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-K-02
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
Fan Manufacturer	Econ-air
Fan Model Number	EABDU24HP
Fan Serial Number	2056818
Design Airflow	3470 CFM
Design ESP	1.3 in. wc
Total Connected Airflow	3470 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	3300 CFM
Actual RPM	993 RPM
Volts	465/463/464 Volts
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Weg
Motor HP	5 HP
Motor RPM	1750 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	230/460 Amps
Motor Service Factor	1.15
Motor Frame	184T
Nominal Efficiency	89.5 %
Power Factor	77

Sheave Data	
Motor Sheave Model	2VP42
Motor Sheave Bore	7/8 in.
Fan Sheave Model	2BK70 H
Fan Sheave Bore	1 in.
#Belts	2
Belt Size	BX-28
Sheave Center Line	8 in.

AREA F-EF-K-02 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Hood 2.1	Hood	110X18	13.75	126	119	1735	1635	1635	94
Hood 2.2	Hood	110X18	13.75	126	121	1735	1665	1665	96
Totals :	-	-	-	-	-	**3,470**	**3,300**	**3,300**	**95 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-K-03
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
Fan Manufacturer	Econ-air
Fan Model Number	EABDU24HP
Fan Serial Number	2056818
Design Airflow	5742 CFM
Design ESP	1.5 in. wc
Total Connected Airflow	5742 CFM

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	5455 CFM
Actual RPM	1356 RPM
Volts	465/463/464 Volts
Amps	5.1/5.0/5.0 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	5 HP
Motor RPM	1750 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	13.6/6.8 Amps
Motor Service Factor	1.15
Motor Frame	184T
Nominal Efficiency	89.5 %

Sheave Data	
Motor Sheave Model	2VP42
Motor Sheave Bore	1 1/8 in.
Fan Sheave Model	BK60
Fan Sheave Bore	1 in.
#Belts	2
Belt Size	BX-28
Sheave Center Line	8 in.

AREA F-EF-K-03 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Hood 3.1	Hood	124X18	15.5	185	180	2871	2790	2790	97
Hood 3.2	Hood	124X18	15.5	185	172	2871	2665	2665	93
Totals :	**-**	**-**	**-**	**-**	**-**	**5,742**	**5,455**	**5,455**	**95 %**

*** Notes**

AREA F-EF-K-03	12-May-16	Josh Drake	Tested at "max airflow"

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-K-04
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
Fan Manufacturer	Econ-air
Fan Model Number	EABDU24HP
Fan Serial Number	2056818
Design Airflow	5742 CFM
Design ESP	1.5 in. wc
Total Connected Airflow	5742 CFM

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	5490 CFM
Actual RPM	1394 RPM
Volts	465/463/464 Volts
Amps	4.9/4.9/4.8 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	5 HP
Motor RPM	1750 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	13.6/6.8 Amps
Motor Service Factor	1.15
Motor Frame	184T
Nominal Efficiency	89.5 %

Sheave Data	
Motor Sheave Model	2VP42
Motor Sheave Bore	1 1/8 in.
Fan Sheave Model	BK60
Fan Sheave Bore	1 in.
#Belts	2
Belt Size	BX-28
Sheave Center Line	8 in.

AREA F-EF-K-04 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Hood 4.1	Hood	124X18	15.5	185	179	2871	2775	2775	97
Hood 4.2	Hood	124X18	15.5	185	175	2871	2715	2715	95
Totals :	**-**	**-**	**-**	**-**	**-**	**5,742**	**5,490**	**5,490**	**96 %**

*** Notes**

AREA F-EF-K-04	12-May-16	Josh Drake	Tested at "max airflow"

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-K-05
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
Fan Manufacturer	Econ-air
Fan Model Number	EABDU24HP
Fan Serial Number	2056818
Design Airflow	5742 CFM
Design ESP	1.5 in. wc
Total Connected Airflow	5742 CFM

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	5625 CFM
Actual RPM	1433 RPM
Volts	465/463/464 Volts
Amps	4.8/5.0/4.8 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	5 HP
Motor RPM	1750 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	13.6/6.8 Amps
Motor Service Factor	1.15
Motor Frame	184T
Nominal Efficiency	89.5 %

Sheave Data	
Motor Sheave Model	2VP42
Motor Sheave Bore	1 1/8 in.
Fan Sheave Model	BK60
Fan Sheave Bore	1 in.
#Belts	2
Belt Size	BX-28
Sheave Center Line	8 in.

AREA F-EF-K-05 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Hood 5.1	Hood	124X18	15.5	185	182	2871	2820	2820	98
Hood 5.2	Hood	124X18	15.5	185	181	2871	2805	2805	98
Totals :	**-**	**-**	**-**	**-**	**-**	**5,742**	**5,625**	**5,625**	**98 %**

*** Notes**

AREA F-EF-K-05	12-May-16	Josh Drake	Tested at "max airflow"

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-K-06
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
Fan Manufacturer	Econ-air
Fan Model Number	EABDU24HP
Fan Serial Number	2056818
Design Airflow	5742 CFM
Design ESP	1.5 in. wc
Total Connected Airflow	5742 CFM

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	5520 CFM
Actual RPM	1412 RPM
Volts	465/463/464 Volts
Amps	5.1/5.2/5.0 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	5 HP
Motor RPM	1750 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	13.6/6.8 Amps
Motor Service Factor	1.15
Motor Frame	184T
Nominal Efficiency	89.5 %

Sheave Data	
Motor Sheave Model	2VP42
Motor Sheave Bore	1 1/8 in.
Fan Sheave Model	BK60
Fan Sheave Bore	1 in.
#Belts	2
Belt Size	BX-28
Sheave Center Line	8 in.

AREA F-EF-K-06 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Hood 6.1	Hood	124X18	15.5	185	176	2871	2730	2730	95
Hood 6.2	Hood	124X18	15.5	185	180	2871	2790	2790	97
Totals :	**-**	**-**	**-**	**-**	**-**	**5,742**	**5,520**	**5,520**	**96 %**

*** Notes**

AREA F-EF-K-06	12-May-16	Josh Drake	Tested at "max airflow"

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-EF-K-07
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
Fan Manufacturer	Econ-air
Fan Model Number	EADR30H
Fan Serial Number	2056818
Design Airflow	1015 CFM
Design ESP	0.5 in. wc
Total Connected Airflow	1000 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1000 CFM
Actual RPM	Direct Drive RPM
Volts	122 Volts
Amps	2.9 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	HSSA
Motor HP	1/4, 1/3 HP
Motor RPM	1400 RPM
Motor Rated Volts	115/230 Volts
Motor Phase	1
Motor FL Amps	3.0/1.5, 3.8/1.9 Amps
Motor Service Factor	1.0
Motor Frame	48Y

Sheave Data	
Motor Sheave Model	Direct Drive

AREA F-EF-K-07 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	Hood					200	185	185	93
Inlet-02	Hood					400	380	380	95
Inlet-03	Hood					400	435	435	109
Totals :	**-**	**-**	**-**	**-**	**-**	**1,000**	**1,000**	**1,000**	**100 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA F-REF-06
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRD420D
Fan Serial Number	F15000000152031
Design Airflow	15600 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	14955 CFM
Actual RPM	440 RPM
Volts	460 Volts
Amps	3.2 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	3 HP
Motor RPM	1755 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	9.51/4.76 Amps
Motor Service Factor	1.15
Motor Frame	182T
Nominal Efficiency	89.5 %

Sheave Data	
Motor Sheave Model	2VP40
Motor Sheave Bore	1 1/8 in.
Fan Sheave Model	2AK144
Fan Sheave Bore	1 7/16 in.
#Belts	2
Belt Size	A52
Sheave Center Line	12 in.

*** Notes**

AREA F-REF-06	12-May-16	Josh Drake	Fan balanced at 60 hz

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-04
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	DCRD-060BE
Fan Serial Number	F15-000000152217
Design Airflow	100 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	100 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	105 CFM
Actual RPM	Direct Drive RPM
Volts	118 Volts
Amps	1.8 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	MCMILLAN
Motor HP	1/4 HP
Motor RPM	300-1800 RPM
Motor Rated Volts	110/120 Volts
Motor Phase	1
Motor FL Amps	3.3 Amps
Motor Service Factor	1.0

Sheave Data	
Motor Sheave Model	Direct Drive

AREA G-EF-04 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				100	105	105	105
Totals :	**-**	**-**	**-**	**-**	**-**	**100**	**105**	**105**	**105 %**

*** Notes**

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-05
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRD85D1
Fan Serial Number	E15-000000148871
Design Airflow	370 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	370 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	400 CFM
Actual RPM	1475 RPM
Volts	121 Volts
Amps	2.5 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	TWIN CITY
Motor HP	1/4 HP
Motor RPM	1750 RPM
Motor Rated Volts	115/208-230 Volts
Motor Phase	1
Motor FL Amps	4.2/2.1 Amps
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58 %

Sheave Data	
Motor Sheave Model	1VL34
Motor Sheave Bore	1/2 in.
Fan Sheave Model	AK32
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	3L240
Sheave Center Line	5 in.

AREA G-EF-05 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				185	215	200	108
Inlet-02	E1	12X12				185	190	200	108
Totals :	**-**	**-**	**-**	**-**	**-**	**370**	**405**	**400**	**108 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-06 low airflow
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D2
Fan Serial Number	C15-000000145237
Design Airflow	1920 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1920 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1335 CFM
Actual RPM	783
Volts	119
Amps	4.0
Fan SP In	-0.11
Fan SP Out	ATMOSPHERE

Motor Data	
Motor Manufacturer	TWIN CITY
Motor HP	1/4
Motor RPM	1750
Motor Rated Volts	115-208/230
Motor Phase	1
Motor FL Amps	4.2/2.1
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58
Power Factor	64

Sheave Data	
Motor Sheave Model	1VL25
Motor Sheave Bore	1/2
Fan Sheave Model	AK51
Fan Sheave Bore	3/4
#Belts	1
Belt Size	3L260
Sheave Center Line	5

AREA G-EF-06 low airflow Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				300	275	215	72
Inlet-02	E1	12X12				260	105	180	69
Inlet-03	E1	12X12				325	120	215	66
Inlet-04	E1	12X12				75	85	55	73
Inlet-05	E1	12X12				300	85	220	73
Inlet-06	E1	12X12				260	280	190	73
Inlet-07	E1	12X12				325	50	205	63
Inlet-08	E1	12X12				75	115	55	73
Totals :	**-**	**-**	**-**	**-**	**-**	**1,920**	**1,115**	**1,335**	**70 %**

*** Notes**

AREA G-EF-06 low airflow	29-Mar-16	Josh Drake	Deficiency 0123 : Low airflow
AREA G-EF-06 low airflow	29-Mar-16	Josh Drake	Motor is at max amps
AREA G-EF-06 low airflow	26-Apr-16	Josh Drake	Pitot traverse for total = 1585 CFM (4/26/16)
AREA G-EF-06 low airflow	25-Apr-16	Josh Drake	Rechecked after duct was sealed on 4/25/16, no change.

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-07 low airflow
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRD160D3
Fan Serial Number	C15-000000145500
Design Airflow	1650 CFM
Design ESP	0.5 in. wc
Total Connected Airflow	1650 CFM

Starter Data	
Starter Manufacturer	None

Test Data	
Actual Airflow	1365 CFM
Actual RPM	1061 RPM
Volts	122 Volts
Amps	6.2 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	TWIN CITY
Motor HP	1/3 HP
Motor RPM	1750 RPM
Motor Rated Volts	115/208-230 Volts
Motor Phase	1
Motor FL Amps	6.2/3.1 Amps
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	68 %
Power Factor	58

Sheave Data	
Motor Sheave Model	1VP34
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK51
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	4L270
Sheave Center Line	5 in.

AREA G-EF-07 low airflow Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				200	280	155	78
Inlet-02	E1	12X12				450	420	370	82
Inlet-03	E1	12X12				450	440	355	79
Inlet-04	E1	12X12				120	75	105	88
Inlet-05	E1	12X12				310	175	275	89
Inlet-06	E1	12X12				120	95	105	88
Totals :	-	-	-	-	-	**1,650**	**1,485**	**1,365**	**83 %**

*** Notes**

AREA G-EF-07 low airflow	25-Apr-16	Josh Drake	Deficiency 0136 : Low airflow
AREA G-EF-07 low airflow	25-Apr-16	Josh Drake	Motor is at max amps

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-10
AREA:

Tested By: Josh Drake
Test Date: March 02, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD100D1
Fan Serial Number	D15-000000147831
Design Airflow	680 CFM
Design ESP	0.3 in. wc
Total Connected Airflow	680 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	655 CFM
Actual RPM	1123 RPM
Volts	118 Volts
Amps	3.3 Amps
Fan SP In	NAC in. wc
Fan SP Out	ATMOSPHERE in. wc

Motor Data	
Motor Manufacturer	TWIN CITY
Motor HP	1/4
Motor RPM	1750
Motor Rated Volts	115-208/230
Motor Phase	1
Motor FL Amps	4.2/2.1
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58
Power Factor	64

Sheave Data	
Motor Sheave Model	VL34
Motor Sheave Bore	1/2
Fan Sheave Model	AK44
Fan Sheave Bore	3/4
#Belts	1
Belt Size	3L240
Sheave Center Line	5

AREA G-EF-10 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01						680	560	655	96
Totals :	**-**	**-**	**-**	**-**	**-**	**680**	**560**	**655**	**96 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-20
AREA:

Tested By: Josh Drake
Test Date: February 29, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D4
Fan Serial Number	C15-000000144158
Design Airflow	1960 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1960 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1850 CFM
Actual RPM	1054 RPM
Volts	119 Volts
Amps	7.1 Amps
Fan SP In	-0.12 in. wc
Fan SP Out	ATMOSPHERE in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	1/2
Motor RPM	1725
Motor Rated Volts	115/208-230
Motor Phase	1
Motor FL Amps	7.8/3.9
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	61
Power Factor	65

Sheave Data	
Motor Sheave Model	1VL40
Motor Sheave Bore	5/8
Fan Sheave Model	AK54
Fan Sheave Bore	3/4
#Belts	1
Belt Size	4L280
Sheave Center Line	5

AREA G-EF-20 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X24				980	915	915	93
Inlet-02	E2	24X24				980	935	935	95
Totals :	-	-	-	-	-	**1,960**	**1,850**	**1,850**	**94 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-21 low airflow
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D2
Fan Serial Number	C15-000000147477
Design Airflow	1920 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1920 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1535 CFM
Actual RPM	1478 RPM
Volts	118
Amps	4.1
Fan SP In	-0.13
Fan SP Out	ATMOSPHERE

Motor Data	
Motor Manufacturer	TWIN CITY
Motor HP	1/4
Motor RPM	1750
Motor Rated Volts	115/208-230
Motor Phase	1
Motor FL Amps	4.2/2.1
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58
Power Factor	64

Sheave Data	
Motor Sheave Model	1VL44
Motor Sheave Bore	1/2
Fan Sheave Model	AK51
Fan Sheave Bore	3/4
#Belts	1
Belt Size	3L260
Sheave Center Line	5

AREA G-EF-21 low airflow Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X24				960	555	800	83
Inlet-02	E2	24X24				960	770	735	77
Totals :	**-**	**-**	**-**	**-**	**-**	**1,920**	**1,325**	**1,535**	**80 %**

*** Notes**

AREA G-EF-21 low airflow	28-Apr-16	Josh Drake	Deficiency 0145 : Low airflow

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-22
AREA:

Tested By: Josh Drake
Test Date: March 02, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D4
Fan Serial Number	F15-000000153867
Design Airflow	1920 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1920 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1740
Actual RPM	1232
Volts	118
Amps	7.6
Fan SP In	-0.10
Fan SP Out	ATMOSPHERE

Motor Data	
Motor Manufacturer	SMC
Motor HP	1/2
Motor RPM	1725
Motor Rated Volts	115-208/230
Motor Phase	1
Motor FL Amps	7.8/3.9
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	61
Power Factor	65

Sheave Data	
Motor Sheave Model	1VL40
Motor Sheave Bore	5/8
Fan Sheave Model	AK54
Fan Sheave Bore	3/4
#Belts	1
Belt Size	4L280
Sheave Center Line	5

AREA G-EF-22 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X24				960	875	890	93
Inlet-02	E2	24X24				960	820	850	89
Totals :	-	-	-	-	-	**1,920**	**1,695**	**1,740**	**91 %**

*** Notes**

AREA G-EF-22	2-Mar-16	Josh Drake	Motor is at max amps

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-23
AREA:

Tested By: Josh Drake
Test Date: February 02, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D4
Fan Serial Number	C15-000000144155
Design Airflow	1970 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1970 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	2095 CFM
Actual RPM	1040 RPM
Volts	119 Volts
Amps	7.2 Amps
Fan SP In	-0.10 in. wc
Fan SP Out	ATMOSPHERE in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	1/2
Motor RPM	1725
Motor Rated Volts	115/208-230
Motor Phase	1
Motor FL Amps	7.8/3.9
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	61
Power Factor	65

Sheave Data	
Motor Sheave Model	1VL40
Motor Sheave Bore	5/8
Fan Sheave Model	AK54
Fan Sheave Bore	3/4
#Belts	1
Belt Size	4L280
Sheave Center Line	5

AREA G-EF-23 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X24				985	210	1025	104
Inlet-02	E2	24X24				985	1045	1065	108
Totals :	**-**	**-**	**-**	**-**	**-**	**1,970**	**1,255**	**2,090**	**106 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-24
AREA:

Tested By: Josh Drake
Test Date: March 02, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D4
Fan Serial Number	F15-000000153871
Design Airflow	1920 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1920 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1625
Actual RPM	1185
Volts	118
Amps	7.7
Fan SP In	-0.13
Fan SP Out	ATMOSPHERE

Motor Data	
Motor Manufacturer	SMC
Motor HP	1/2
Motor RPM	1725
Motor Rated Volts	115-208/230
Motor Phase	1
Motor FL Amps	7.8/3.9
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	61
Power Factor	65

Sheave Data	
Motor Sheave Model	1VL40
Motor Sheave Bore	5/8
Fan Sheave Model	AK54
Fan Sheave Bore	3/4
#Belts	1
Belt Size	4L280
Sheave Center Line	5

AREA G-EF-24 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X24				960	615	795	83
Inlet-02	E2	24X24				960	770	830	86
Totals :	**-**	**-**	**-**	**-**	**-**	**1,920**	**1,385**	**1,625**	**85 %**

*** Notes**

AREA G-EF-24	2-Mar-16	Josh Drake	Motor is at max amps

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-25
AREA:

Tested By: Josh Drake
Test Date: March 29, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D4
Fan Serial Number	C15-000000144153
Design Airflow	1800 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1800 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	2095 CFM
Actual RPM	1019 RPM
Volts	119 Volts
Amps	6.9 Amps
Fan SP In	-0.08 in. wc
Fan SP Out	ATMOSPHERE in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	1/2
Motor RPM	1725
Motor Rated Volts	115/208-230
Motor Phase	1
Motor FL Amps	7.8/3.9
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	61
Power Factor	65

Sheave Data	
Motor Sheave Model	1VL40
Motor Sheave Bore	5/8
Fan Sheave Model	AK54
Fan Sheave Bore	3/4
#Belts	1
Belt Size	4L280
Sheave Center Line	5

AREA G-EF-25 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X24				900	965	950	106
Inlet-02	E2	24X24				900	785	940	104
Totals :	-	-	-	-	-	**1,800**	**1,750**	**1,890**	**105 %**

*** Notes**

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-EF-FLSK
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Fan Manufacturer	Econ-air
Fan Model Number	EABDU11
Fan Serial Number	2056818
Design Airflow	480 CFM
Design ESP	0.8 in. wc

Starter Data	
Starter Manufacturer	None

Test Data	
Actual Airflow	465 CFM
Actual RPM	1315 RPM
Volts	123 Volts
Amps	5.9 Amps
Fan SP In	NAC in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Weg
Motor HP	1/2 HP
Motor RPM	1730/1435 RPM
Motor Rated Volts	115-208/230 Volts
Motor Phase	1
Motor FL Amps	7.70/4.30-3.90 Amps
Motor Service Factor	1.35/1.00
Motor Frame	C56

Sheave Data	
Motor Sheave Model	1VL40
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK44
Fan Sheave Bore	3/4 in.
#Belts	1
Belt Size	AX21
Sheave Center Line	5 in.

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-LEF-01
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	165MV-QIFE
Fan Serial Number	15516261-15-1
Design Airflow	3390 CFM
Design ESP	3.0 in. wc
Total Connected Airflow	3390 CFM

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	3460 CFM
Actual RPM	NAC RPM
Amps	10.2 Amps
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	5 HP
Motor RPM	1750 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	13.6/6.80 Amps
Motor Service Factor	1.15
Nominal Efficiency	87.5 %

Sheave Data	
Motor Sheave Model	NAC

AREA G-LEF-01 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X12				450	0	860	191
Inlet-02	LAB HOOD					830	845	510	61
Inlet-03	E2	24X12				450	70	610	136
Inlet-04	LAB HOOD					830	820	765	92
Inlet-05	LAB HOOD					830	835	715	86
Totals :	**-**	**-**	**-**	**-**	**-**	**3,390**	**2,570**	**3,460**	**102 %**

*** Notes**

AREA G-LEF-01	10-May-16	Josh Drake	Calibrated room exhaust with JCI
AREA G-LEF-01	10-May-16	Josh Drake	Deficiency 0147 : Hoods will not calibrate
AREA G-LEF-01	27-Apr-16	Josh Drake	Fan balanced at 60 hz
AREA G-LEF-01	26-Apr-16	Josh Drake	Set bypass in fan on roof to 2.2"

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-REF-05
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRD420D
Fan Serial Number	F15-000000152030
Design Airflow	11600 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	9355 CFM
Actual RPM	466 RPM
Volts	460 Volts
Amps	1.6 Amps
Fan SP In	-0.42 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	2 HP
Motor RPM	1725 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	6.3-6.0/3.0 Amps
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	79 %
Power Factor	80

Sheave Data	
Motor Sheave Model	1VL40
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK154
Fan Sheave Bore	1 7/16 in.
#Belts	1
Belt Size	A53
Sheave Center Line	12 in.

AREA G-REF-05 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X24				1200	830	1135	95
Totals :	**-**	**-**	**-**	**-**	**-**	**1,200**	**830**	**1,135**	**95 %**

*** Notes**

AREA G-REF-05	11-May-16	Josh Drake	Low airflow because of added restricton of mailroom exhaust
AREA G-REF-05	29-Mar-16	Josh Drake	Tested at 60hz

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA G-REF-07
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCLH-540
Fan Serial Number	G15-000000155978
Design Airflow	30000 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	29420 CFM
Actual RPM	NAC RPM
Volts	460 Volts
Amps	6.0 Amps
Fan SP In	-0.12 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	7.5 HP
Motor RPM	1755 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	19/9.55 Amps
Motor Service Factor	1.15
Motor Frame	213T
Nominal Efficiency	91 %
Power Factor	89.5

Sheave Data	
Motor Sheave Model	VP75
Motor Sheave Bore	1 3/8 in.
Fan Sheave Model	32" OD
Fan Sheave Bore	2 in.
#Belts	1
Belt Size	B136
Sheave Center Line	42 in.

* Notes				
	AREA G-REF-07	29-Mar-16	Josh Drake	Tested at 60hz

SYSTEM/UNIT: AREA G-REF-08
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCLH-540
Fan Serial Number	G15-000000162123
Design Airflow	30000 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	30830 CFM
Actual RPM	NAC RPM
Volts	460 Volts
Amps	6.3 Amps
Fan SP In	-0.16 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	7.5 HP
Motor RPM	1755 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	19/9.55 Amps
Motor Service Factor	1.15
Motor Frame	213T
Nominal Efficiency	91 %
Power Factor	89.5

Sheave Data	
Motor Sheave Model	VP75
Motor Sheave Bore	1 3/8 in.
Fan Sheave Model	32" OD
Fan Sheave Bore	2 in.
#Belts	1
Belt Size	B136
Sheave Center Line	42 in.

* Notes				
	AREA G-REF-08	30-Mar-16	Josh Drake	Tested at 60hz

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA H-EF-01 low airflow
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD210D
Fan Serial Number	F15-000000152414
Design Airflow	3940 CFM
Design ESP	0.5 in. wc
Total Connected Airflow	3940 CFM

Starter Data	
Starter Manufacturer	Motor Logic
Starter Model No.	SF020
Installed Thermals	ADJUSTABLE
Rated Amps	6-18 Amps
Thermal Set At	6 Amps

Test Data	
Actual Airflow	3370 CFM
Actual RPM	988 RPM
Volts	212/211/211 Volts
Amps	3.2-3.0-3.2 Amps
Fan SP In	-0.37 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	1
Motor RPM	1725
Motor Rated Volts	208-230/460
Motor Phase	1
Motor FL Amps	3.2-3.4/1.8
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	76
Power Factor	75

Sheave Data	
Motor Sheave Model	VL34
Motor Sheave Bore	5/8
Fan Sheave Model	AK61
Fan Sheave Bore	3/4
#Belts	1
Belt Size	4L290
Sheave Center Line	7

AREA H-EF-01 low airflow Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	24X12				780	745	690	88
Inlet-02	E1	12X12				510	390	465	91
Inlet-03	E1	24X12				870	800	715	82
Inlet-04	E1	24X12				870	350	695	80
Inlet-05	E1	12X12				160	40	125	78
Inlet-06						750	330	680	91
Totals :	**-**	**-**	**-**	**-**	**-**	**3,940**	**2,655**	**3,370**	**86 %**

*** Notes**

AREA H-EF-01 low airflow	30-Mar-16	Josh Drake	Deficiency 0127 : Fan low on airflow
AREA H-EF-01 low airflow	30-Mar-16	Josh Drake	Motor is at max amps
AREA H-EF-01 low airflow	25-Apr-16	Josh Drake	Rechecked after duct was sealed on 4/25/16, gained about 10% airflow but still low overall.

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA H-EF-02 low airflow
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D2
Fan Serial Number	C15-000000145238
Design Airflow	1920 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1920 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1285
Actual RPM	788
Volts	119
Amps	4.1
Fan SP In	-0.07
Fan SP Out	ATMOSPHERE

Motor Data	
Motor Manufacturer	TWIN CITY
Motor HP	1/4
Motor RPM	1750
Motor Rated Volts	115-208/230
Motor Phase	1
Motor FL Amps	4.2/2.1
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58

Sheave Data	
Motor Sheave Model	1VL25
Motor Sheave Bore	1/2
Fan Sheave Model	AK51
Fan Sheave Bore	3/4
#Belts	1
Belt Size	3L260
Sheave Center Line	5

AREA H-EF-02 low airflow Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				300	285	195	65
Inlet-02	E1	12X12				260	465	165	63
Inlet-03	E1	12X12				325	280	205	63
Inlet-04	E1	12X12				75	35	55	73
Inlet-05	E1	12X12				300	90	215	72
Inlet-06	E1	12X12				260	140	185	71
Inlet-07	E1	12X12				325	90	210	65
Inlet-08	E1	12X12				75	25	55	73
Totals :	-	-	-	-	-	**1,920**	**1,410**	**1,285**	**67 %**

*** Notes**

AREA H-EF-02 low airflow	2-Feb-16	Josh Drake	Deficiency 0093 : Low airflow
AREA H-EF-02 low airflow	2-Feb-16	Josh Drake	Motor is at max amps
AREA H-EF-02 low airflow	29-Mar-16	Josh Drake	Pitot traverse for total = 1355 CFM
AREA H-EF-02 low airflow	25-Apr-16	Josh Drake	Rechecked after duct was sealed on 4/25/16, no change.

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA H-EF-03
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD070D2
Fan Serial Number	F15-000000153702
Design Airflow	225 CFM
Design ESP	0.5 in. wc
Total Connected Airflow	225 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	230 CFM
Actual RPM	1385 RPM
Volts	119 Volts
Amps	3.3 Amps
Fan SP In	NAC in. wc
Fan SP Out	ATMOSPHERE in. wc

Motor Data	
Motor Manufacturer	TWIN CITY
Motor HP	1/4
Motor RPM	1750
Motor Rated Volts	115/208-230
Motor Phase	1
Motor FL Amps	4.2/2.1
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58
Power Factor	64

Sheave Data	
Motor Sheave Model	VL30
Motor Sheave Bore	1/2
Fan Sheave Model	AK27
Fan Sheave Bore	3/4
#Belts	1
Belt Size	3L240
Sheave Center Line	5

AREA H-EF-03 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E1	12X12				75	85	75	100
Inlet-02	E1	12X12				75	40	80	107
Inlet-03	E1	12X12				75	80	75	100
Totals :	-	-	-	-	-	**225**	**205**	**230**	**102 %**

*** Notes**

AREA H-EF-03	2-Feb-16	Josh Drake	Motor is at max amps
AREA H-EF-03	25-Apr-16	Josh Drake	Rechecked after duct was sealed on 4/25/16, fan total airflow increased to 133%. Slowed down fan to achieve design.

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA H-EF-11
AREA:

Tested By: Josh Drake
Test Date: March 02, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD100D1
Fan Serial Number	D15-000000147820
Design Airflow	750 CFM
Design ESP	0.3 in. wc
Total Connected Airflow	750 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	735 CFM
Actual RPM	1032 RPM
Volts	118 Volts
Amps	3.0 Amps
Fan SP In	NAC in. wc
Fan SP Out	ATMOSPHERE in. wc

Motor Data	
Motor Manufacturer	TWIN CITY
Motor HP	1/4
Motor RPM	1750
Motor Rated Volts	115/208-230
Motor Phase	1
Motor FL Amps	4.2/2.1
Motor Service Factor	1.15
Motor Frame	48
Nominal Efficiency	58
Power Factor	64

Sheave Data	
Motor Sheave Model	VL34
Motor Sheave Bore	1/2
Fan Sheave Model	AK44
Fan Sheave Bore	3/4
#Belts	1
Belt Size	3L240
Sheave Center Line	5

AREA H-EF-11 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01						750	680	735	98
Totals :	-	-	-	-	-	**750**	**680**	**735**	**98 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA H-EF-26
AREA:

Tested By: Josh Drake
Test Date: February 02, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D4
Fan Serial Number	C15-000000144157
Design Airflow	1960 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1960 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	2035
Actual RPM	1066
Volts	119
Amps	7.5
Fan SP In	-0.13
Fan SP Out	ATMOSPHERE

Motor Data	
Motor Manufacturer	SMC
Motor HP	1/2
Motor RPM	1725
Motor Rated Volts	115/208-230
Motor Phase	1
Motor FL Amps	7.8/3.9
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	61
Power Factor	65

Sheave Data	
Motor Sheave Model	1VL40
Motor Sheave Bore	5/8
Fan Sheave Model	AK54
Fan Sheave Bore	3/4
#Belts	1
Belt Size	4L280
Sheave Center Line	5

AREA H-EF-26 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X24				980	805	1005	103
Inlet-02	E2	24X24				980	845	1030	105
Totals :	-	-	-	-	-	**1,960**	**1,650**	**2,035**	**104 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA H-EF-27
AREA:

Tested By: Josh Drake
Test Date: February 02, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D4
Fan Serial Number	F15-000000153868
Design Airflow	1860 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1860 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1090 CFM
Actual RPM	1097 RPM
Volts	119 Volts
Amps	7.3 Amps
Fan SP In	-0.11 in. wc
Fan SP Out	ATMOSPHERE in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	1/2
Motor RPM	1725
Motor Rated Volts	115/208-230
Motor Phase	1
Motor FL Amps	7.8/3.9
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	61
Power Factor	65

Sheave Data	
Motor Sheave Model	1VL40
Motor Sheave Bore	5/8
Fan Sheave Model	AK54
Fan Sheave Bore	3/4
#Belts	1
Belt Size	4L280
Sheave Center Line	5

AREA H-EF-27 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X24				930	930	905	97
Inlet-02	E2	24X24				930	1090	1005	108
Totals :	**-**	**-**	**-**	**-**	**-**	**1,860**	**2,020**	**1,910**	**103 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA H-EF-28
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D4
Fan Serial Number	F15-000000153869
Design Airflow	1920 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1920 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1790 CFM
Actual RPM	1045 RPM
Volts	119 Volts
Amps	7.7 Amps
Fan SP In	-0.14 in. wc
Fan SP Out	ATMOSPHERE in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	1/2
Motor RPM	1725
Motor Rated Volts	115/208-230
Motor Phase	1
Motor FL Amps	7.8/3.9
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	61
Power Factor	65

Sheave Data	
Motor Sheave Model	1VL40
Motor Sheave Bore	5/8
Fan Sheave Model	AK54
Fan Sheave Bore	3/4
#Belts	1
Belt Size	4L280
Sheave Center Line	5

AREA H-EF-28 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X24				960	935	920	96
Inlet-02	E2	24X24				960	565	870	91
Totals :	**-**	**-**	**-**	**-**	**-**	**1,920**	**1,500**	**1,790**	**93 %**

*** Notes**

AREA H-EF-28	2-Feb-16	Josh Drake	Motor is at max amps
AREA H-EF-28	25-Apr-16	Josh Drake	Rechecked after duct was sealed on 4/25/16, fan total airflow increased to 93%

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA H-EF-29
AREA:

Tested By: Josh Drake
Test Date: February 02, 2016

Unit Data	
Fan Manufacturer	TWIN CITY FANS
Fan Model Number	BCRD160D4
Fan Serial Number	C15-000000144146
Design Airflow	1970 CFM
Design ESP	0.375 in. wc
Total Connected Airflow	1970 CFM

Starter Data	
Starter Manufacturer	NONE

Test Data	
Actual Airflow	1935 CFM
Actual RPM	1080 RPM
Volts	119 Volts
Amps	7.5 Amps
Fan SP In	-0.10 in. wc
Fan SP Out	ATMOSPHERE in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	1/2
Motor RPM	1725
Motor Rated Volts	115/208-230
Motor Phase	1
Motor FL Amps	7.8/3.9
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	61
Power Factor	65

Sheave Data	
Motor Sheave Model	VL34
Motor Sheave Bore	5/8
Fan Sheave Model	AK54
Fan Sheave Bore	3/4
#Belts	1
Belt Size	4L280
Sheave Center Line	5

AREA H-EF-29 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X24				985	900	965	98
Inlet-02	E2	24X24				985	1020	970	98
Totals :	-	-	-	-	-	**1,970**	**1,920**	**1,935**	**98 %**

*** Notes**

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA H-LEF-02
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	150MV-QIFE
Fan Serial Number	15516261-16-1
Design Airflow	2766 CFM
Design ESP	3.0 in. wc
Total Connected Airflow	2560 CFM

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual RPM	NAC RPM
Amps	6.8 Amps
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	3 HP
Motor RPM	1725 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	8.60/4.30 Amps
Motor Service Factor	1.15
Nominal Efficiency	87.5 %

Sheave Data	
Motor Sheave Model	NAC

AREA H-LEF-02 Exhaust Inlet Summary

System / Unit	Inlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Inlet-01	E2	24X12				450	930	985	219
Inlet-02	LAB HOOD					830	1110	870	105
Inlet-03	LAB HOOD					830	765	775	93
Inlet-04	E2	24X12				450	0	0	0
Totals :	**-**	**-**	**-**	**-**	**-**	**2,560**	**2,805**	**2,630**	**103 %**

*** Notes**

AREA H-LEF-02	10-May-16	Josh Drake	Calibrated room exhaust with JCI
AREA H-LEF-02	10-May-16	Josh Drake	Deficiency 0146 : Hoods will not calibrate
AREA H-LEF-02	26-Apr-16	Josh Drake	Set bypass in fan on roof to 2.00"

ELITE BALANCING

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA H-REF-09
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Fan Manufacturer	TWIN CITY
Fan Model Number	BCRD420D
Fan Serial Number	F15-000000152032
Design Airflow	11200 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	11820 CFM
Actual RPM	442 RPM
Volts	460 Volts
Amps	1.7 Amps
Fan SP In	Atmosphere in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	SMC
Motor HP	2 HP
Motor RPM	1725 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	6.3-6.0/3.0 Amps
Motor Service Factor	1.15
Motor Frame	56C
Nominal Efficiency	79 %
Power Factor	80

Sheave Data	
Motor Sheave Model	1VL40
Motor Sheave Bore	5/8 in.
Fan Sheave Model	AK154
Fan Sheave Bore	1 7/16 in.
#Belts	1
Belt Size	A53
Sheave Center Line	12 in.

* Notes				
	AREA H-REF-09	29-Mar-16	Josh Drake	Tested at 60hz

SYSTEM/UNIT: AREA H-REF-10
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCLH-540
Fan Serial Number	G15-000000162124
Design Airflow	30000 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	29865 CFM
Actual RPM	NAC RPM
Volts	460 Volts
Amps	6.5 Amps
Fan SP In	-0.10 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	7.5 HP
Motor RPM	1755 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	19/9.55 Amps
Motor Service Factor	1.15
Motor Frame	213T
Nominal Efficiency	91 %
Power Factor	89.5

Sheave Data	
Motor Sheave Model	VP75
Motor Sheave Bore	1 3/8 in.
Fan Sheave Model	32" OD
Fan Sheave Bore	2 in.
#Belts	1
Belt Size	B136
Sheave Center Line	42 in.

* Notes				
	AREA H-REF-10	30-Mar-16	Josh Drake	Tested at 60hz

Fan Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: AREA H-REF-11
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Fan Manufacturer	Twin City
Fan Model Number	BCLH-540
Fan Serial Number	G15-000000162125
Design Airflow	30000 CFM
Design ESP	0.30 in. wc

Starter Data	
Starter Manufacturer	VFD

Test Data	
Actual Airflow	31245 CFM
Actual RPM	NAC RPM
Volts	460 Volts
Amps	6.2 Amps
Fan SP In	-0.14 in. wc
Fan SP Out	Atmosphere in. wc

Motor Data	
Motor Manufacturer	Teco
Motor HP	7.5 HP
Motor RPM	1755 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	19/9.55 Amps
Motor Service Factor	1.15
Motor Frame	213T
Nominal Efficiency	91 %
Power Factor	89.5

Sheave Data	
Motor Sheave Model	VP75
Motor Sheave Bore	1 3/8 in.
Fan Sheave Model	32" OD
Fan Sheave Bore	2 in.
#Belts	1
Belt Size	B136
Sheave Center Line	42 in.

* Notes				
	AREA H-REF-11	30-Mar-16	Josh Drake	Tested at 60hz

SYSTEM/UNIT: EF-13
AREA:

Tested By: Josh Drake
Test Date: December 16, 2015

Unit Data	
Design Airflow	510 CFM
Design ESP	0.3 in. wc

* Notes	

ELITE BALANCING

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: BP-01
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Pump Manufacturer	Wilo
Pump Model Number	Stratos 3X3-40
Pump Serial Number	2085596/14W34
Rated Flow	220 GPM
Rated Head	20 ft.

Starter Data	
Starter Manufacturer	NONE

Final Test Data	
Final Flow	225 GPM
Final Valve Setting	100 %
Final VFD Speed	42.1 ft
Volts	212 Volts
Amps	5.0 Amps

Balance Valve Data	
Valve Manufacturer	Venflo
Valve Model	VS300H
Valve Size	3
Valve Design DP	43.4
Vavle Actual DP	40.5
Valve Flow	225 GPM
Valve Position	100

Motor Data	
Motor Manufacturer	Wilo
Motor HP	40-1550 W
Motor Rated Volts	1-230
Motor Phase	1
Motor F.L. Amps	0.32-6.80
Motor Service Factor	1.0

Measured Data	
Valve Open Flow	225 GPM

*** Notes**

ELITE BALANCING

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: BP-02
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Pump Manufacturer	Wilo
Pump Model Number	Stratos 3X3-40
Pump Serial Number	2085596/14W34
Rated Flow	220 GPM
Rated Head	20 ft.

Starter Data	
Starter Manufacturer	NONE

Final Test Data	
Final Flow	210 GPM
Final Valve Setting	100 %
Final VFD Speed	39.5 ft
Volts	212 Volts
Amps	4.9 Amps

Balance Valve Data	
Valve Manufacturer	Venflo
Valve Model	VS300H
Valve Size	3
Valve Design DP	43.4
Vavle Actual DP	40.5
Valve Flow	210 GPM
Valve Position	100

Motor Data	
Motor Manufacturer	Wilo
Motor HP	40-1550 W
Motor Rated Volts	1-230
Motor Phase	1
Motor F.L. Amps	0.32-6.80
Motor Service Factor	1.0

Measured Data	
Valve Open Flow	210 GPM

*** Notes**

ELITE BALANCING

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: BP-03
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Pump Manufacturer	Wilo
Pump Model Number	Stratos 3X3-40
Pump Serial Number	2085596/14W34
Rated Flow	220 GPM
Rated Head	20 ft.

Starter Data	
Starter Manufacturer	NONE

Final Test Data	
Final Flow	215 GPM
Final Valve Setting	100 %
Final VFD Speed	39.3 ft
Volts	212 Volts
Amps	4.9 Amps

Balance Valve Data	
Valve Manufacturer	Venflo
Valve Model	VS300H
Valve Size	3
Valve Design DP	43.4
Vavle Actual DP	42.2
Valve Flow	215 GPM
Valve Position	100

Motor Data	
Motor Manufacturer	Wilo
Motor HP	40-1550 W
Motor Rated Volts	1-230
Motor Phase	1
Motor F.L. Amps	0.32-6.80
Motor Service Factor	1.0

Measured Data	
Valve Open Flow	215 GPM

*** Notes**

BP-03	30-Mar-16	Josh Drake	No PT ports or pressure gauges installed. Set pump with balance valve.

ELITE BALANCING

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: BP-04
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Pump Manufacturer	Wilo
Pump Model Number	Stratos 3X3-40
Pump Serial Number	2085596/14W34
Rated Flow	220 GPM
Rated Head	20 ft.

Starter Data	
Starter Manufacturer	NONE

Final Test Data	
Final Flow	210 GPM
Final Valve Setting	100 %
Final VFD Speed	39.3 ft
Volts	212 Volts
Amps	4.8 Amps

Balance Valve Data	
Valve Manufacturer	Venflo
Valve Model	VS300H
Valve Size	3
Valve Design DP	43.4
Vavle Actual DP	40.5
Valve Flow	210 GPM
Valve Position	100

Motor Data	
Motor Manufacturer	Wilo
Motor HP	40-1550 W
Motor Rated Volts	1-230
Motor Phase	1
Motor F.L. Amps	0.32-6.80
Motor Service Factor	1.0

Measured Data	
Valve Open Flow	210 GPM

*** Notes**

BP-04	30-Mar-16	Josh Drake	No PT ports or pressure gauges installed. Set pump with balance valve

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: CHP-01
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

Unit Data	
Type of Service	CHILLER
Pump Manufacturer	Armstrong
Pump Model Number	4380IVS-6" 3X3X6
Pump Serial Number	767769
Rated Flow	341.26 GPM
Rated Head	92.34 ft.

Starter Data	
Starter Manufacturer	VFD

Final Test Data	
Final Flow	340 GPM
Final SP	11 PSI
Final DP	52 PSI
Final Delta P	94.7 Ft.
Final Valve Setting	50 %
Final VFD Speed	60 Hz
Volts	460 Volts
Amps	18.5 Amps

Balance Valve Data	
Valve Manufacturer	None

Motor Data	
Motor Manufacturer	Armstrong
Motor HP	15
Motor RPM	3540
Motor Rated Volts	208-230/460
Motor Phase	3
Motor F.L. Amps	37.0-35.0/18.5
Motor Service Factor	1.0
Motor Frame	254IM

Measured Data	
Pump Off Pressure	21 PSI
Valve Shut SP	22 PSI
Valve Shut DP	89 PSI
Valve Shut Diff.	154.8 Ft.
Valve Open SP	8 PSI
Valve Open DP	41 PSI
Valve Open Diff.	76.2 Ft.
Valve Open Flow	500 GPM

*** Notes**

ELITE BALANCING

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: CHP-02
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

Unit Data

Type of Service	CHILLER
Pump Manufacturer	Armstrong
Pump Model Number	4380IVS-6" 3X3X6
Pump Serial Number	767770
Rated Flow	341.26 GPM
Rated Head	92.34 ft.

Starter Data

Starter Manufacturer	VFD

Final Test Data

Final Flow	340 GPM
Final SP	11 PSI
Final DP	51 PSI
Final Delta P	92.4 Ft.
Final Valve Setting	50 %
Final VFD Speed	60 Hz
Volts	460 Volts
Amps	18.5 Amps

Balance Valve Data

Valve Manufacturer	None

Motor Data

Motor Manufacturer	Armstrong
Motor HP	15
Motor RPM	3540
Motor Rated Volts	208-230/460
Motor Phase	3
Motor F.L. Amps	37.0-35.0/18.5
Motor Service Factor	1.0
Motor Frame	254IM

Measured Data

Pump Off Pressure	21 PSI
Valve Shut SP	21 PSI
Valve Shut DP	84
Valve Shut Diff.	145.5 Ft.
Valve Open SP	9 PSI
Valve Open DP	41 PSI
Valve Open Diff.	73.9 Ft.

*** Notes**

ELITE BALANCING

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: CHP-03
AREA:

Tested By: Josh Drake
Test Date: May 10, 2016

Unit Data	
Type of Service	CHILLER
Pump Manufacturer	Armstrong
Pump Model Number	4380IVS-8" 3X3X8
Pump Serial Number	767936
Rated Flow	275.63 GPM
Rated Head	45.8 ft.

Starter Data	
Starter Manufacturer	VFD

Final Test Data	
Final Flow	255 GPM
Final SP	14 PSI
Final DP	39 PSI
Final Delta P	57.8 Ft.
Final Valve Setting	100 %
Final VFD Speed	60 Hz
Diff Pressure SP	53 ft
Volts	460 Volts
Amps	6.5 Amps

Balance Valve Data	
Valve Manufacturer	None

Motor Data	
Motor Manufacturer	Armstrong
Motor HP	5
Motor RPM	1745
Motor Rated Volts	208-230/460
Motor Phase	3
Motor F.L. Amps	14.0-13.0/6.5
Motor Service Factor	1.15
Motor Frame	184JM
Nominal Efficiency	87.5 %
Power Factor	82

Measured Data	
Pump Off Pressure	21 PSI
Valve Shut SP	21 PSI
Valve Shut DP	51 PSI
Valve Shut Diff.	69.3 Ft.
Valve Open SP	14 PSI
Valve Open DP	39 PSI
Valve Open Diff.	57.8 Ft.
Valve Open Flow	255 GPM

*** Notes**

ELITE BALANCING

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: CWP-01
AREA:

Tested By: Josh Drake
Test Date: March 01, 2016

Unit Data

Type of Service	CHILLED WATER
Pump Manufacturer	Armstrong
Pump Model Number	4300IVS 0611040-0 BF-STD
Pump Serial Number	762748
Rated Flow	915 GPM
Rated Head	115 ft.
Total Connected	1190 GPM

Starter Data

Starter Manufacturer	VFD

Final Test Data

Final Flow	1055 GPM
Final SP	10 PSI
Final DP	47 PSI
Final Delta P	85.5 Ft.
Final Valve Setting	100 %
Final VFD Speed	60 Hz
Diff Pressure SP	92 ft
Volts	460 Volts
Amps	40.3 Amps

Balance Valve Data

Valve Manufacturer	None

Motor Data

Motor Manufacturer	Weg
Motor HP	40
Motor RPM	1775
Motor Rated Volts	208-230/460
Motor Phase	3
Motor F.L. Amps	107-96.4/48.2
Motor Service Factor	1.15
Motor Frame	324TC
Nominal Efficiency	94.1
Power Factor	83

Measured Data

Pump Off Pressure	16 PSI
Valve Shut SP	16 PSI
Valve Shut DP	75 PSI
Valve Shut Diff.	136.3 Ft.
Valve Open SP	10 PSI
Valve Open DP	47 PSI
Valve Open Diff.	85.5 Ft.
Valve Open Flow	1055 GPM

CWP-01 Balance Valve Summary

System / Unit	Valve Manufacturer	Valve Model	Valve Size	Design Flow	Design D.P.	Final Flow	Final D.P.	Final %	Valve Position
CC-01	TA	STAF	4	100.4	N/A	100	1.3	100	5.5
CC-02	TA	STAF	3	69	N/A	70	5.0	101	4.5
CC-05	TA	STAF	3	42	N/A	41	23	98	2.5
CC-06	TA	STAF	3	89.1	N/A	95	18	107	4.0
CC-07	TA	STAF	4	105.8	N/A	100	24	95	3.0
CC-08	TA	STAF	4	112.5	N/A	105	10.0	93	3.5
CC-09	TA	STAF	3	46.9	N/A	44	16.3	94	3.0
CC-10	TA	STAF	4	112.5	N/A	105	1.5	93	5.5
CC-11	TA	STAF	4	112.5	N/A	118	1.4	105	6.0
CC-12 PHASE 2				123.3					
CC-13EA	TA	STAF	3	69.9	N/A	69	2.8	99	5.0
CC-3EA	TA	STAF	3	74.1	N/A	71	1.0	96	6.5
CC-4EA	TA	STAF	4	131.8	N/A	130	4.9	99	4.5
Totals :	-	-	-	**1,189.8**	-	**1,048**	-	-	-

ELITE BALANCING

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: CWP-01 (Cont.)
AREA:

Tested By: Josh Drake
Test Date: March 01, 2016

*** Notes**

SYSTEM/UNIT: HWP-01
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

Unit Data	
Type of Service	HOT WATER
Pump Manufacturer	Armstrong
Pump Model Number	4302IVS-13 0813-050.0 BF
Pump Serial Number	764240
Rated Flow	1300 GPM
Rated Head	90 ft.
Total Connected	1588 GPM

Starter Data	
Starter Manufacturer	VFD

Final Test Data	
Final Flow	1301 GPM
Final SP	12 PSI
Final DP	41 PSI
Final Delta P	67.0 Ft.
Final Valve Setting	100 %
Final VFD Speed	52 Hz
Diff Pressure SP	65 PSI
Volts	460 Volts
Amps	53.5 Amps

Balance Valve Data	
Valve Manufacturer	None

Motor Data	
Motor Manufacturer	Weg
Motor HP	50
Motor RPM	1775
Motor Rated Volts	208-230/460
Motor Phase	3
Motor F.L. Amps	132-120/59.9
Motor Service Factor	1.15
Motor Frame	326TC
Nominal Efficiency	94.5
Power Factor	82

Measured Data	
Pump Off Pressure	13 PSI
Valve Shut SP	13 PSI
Valve Shut DP	95 PSI
Valve Shut Diff.	189.4 Ft.
Valve Open SP	10 PSI
Valve Open DP	43 PSI
Valve Open Diff.	76.2 Ft.
Valve Open Flow	1355 GPM

*** Notes**				
	HWP-01	28-Apr-16	Josh Drake	Pump hits max amps at 57hz. Valve open pressures read at 57hz.

ELITE BALANCING

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: HWP-02
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

Unit Data

Type of Service	HOT WATER
Pump Manufacturer	Armstrong
Pump Model Number	4302IVS-13 0813-050.0 BF
Pump Serial Number	764240
Rated Flow	1300 GPM
Rated Head	90 ft.
Total Connected	1588 GPM

Starter Data

Starter Manufacturer	VFD

Final Test Data

Final Flow	1301 GPM
Final SP	12 PSI
Final DP	41 PSI
Final Delta P	67.0 Ft.
Final Valve Setting	100 %
Final VFD Speed	52 Hz
Diff Pressure SP	65 PSI
Volts	460 Volts
Amps	56.4 Amps

Balance Valve Data

Valve Manufacturer	None

Motor Data

Motor Manufacturer	Weg
Motor HP	50
Motor RPM	1775
Motor Rated Volts	208-230/460
Motor Phase	3
Motor F.L. Amps	132-120/59.9
Motor Service Factor	1.15
Motor Frame	326TC
Nominal Efficiency	94.5
Power Factor	82

Measured Data

Pump Off Pressure	13 PSI
Valve Shut SP	13 PSI
Valve Shut DP	96 PSI
Valve Shut Diff.	191.7 Ft.
Valve Open SP	9 PSI
Valve Open DP	39 PSI
Valve Open Diff.	69.3 Ft.
Valve Open Flow	1368 GPM

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: HWP-02 (Cont.)
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

HWP-02 Balance Valve Summary

System / Unit	Valve Manufacturer	Valve Model	Valve Size	Design Flow	Design D.P.	Final Flow	Final D.P.	Final %	Valve Position
CH-01-01	TA	STAD	1/2	2.1	N/A	2.2	10.5	105	2.5
CH-01-02	TA	STAD	1/2	2.1	N/A	2.0	20.6	95	2.0
CH-01-03	TA	STAD	1/2	2.1	N/A	2.1	21.1	100	2.0
CH-01-04 *				2.1					
CH-01-05 *				2.1					
CH-01-06				2.1					
CH-01-07	TA	STAD	1/2	2.1	N/A	2.2	24.0	105	2.0
CH-01-08 PH 2				2.1					
CH-01-09 PH 2				2.1					
CH-01-10 PH 2				2.1					
CH-01-11 PH 2				2.1					
CH-01-12	TA	STAD	1/2	2.1	N/A	2.0	21.3	95	2.0
CH-01-13	TA	STAD	1/2	2.1	N/A	2.0	1.6	95	3.5
CH-01-14	TA	STAD	1/2	2.1	N/A	2.0	1.6	95	3.5
CH-01-15	TA	STAD	1/2	2.1	N/A	2.2	22.5	105	2.0
CH-01-16	TA	STAD	1/2	2.1	N/A	1.9	18.5	90	2.0
CH-01-17	TA	STAD	1/2	2.1	N/A	2.3	13	110	2.5
CH-01-18	TA	STAD	1/2	2.1	N/A	2.0	9.0	95	2.5
CH-01-19	TA	STAD	1/2	2.1	N/A	2.2	12	105	2.5
CH-01-20	TA	STAD	1/2	2.1	N/A	2.2	12	105	2.5
CH-01-21	TA	STAD	1/2	2.1	N/A	1.9	19.3	90	2.0
CH-01-22	TA	STAD	1/2	2.1	N/A	2.2	10.7	105	2.5
CH-02-01	TA	STAD	1/2	2.6	N/A	2.7	6.2	104	3.0
CH-02-02	TA	STAD	1/2	2.6	N/A	2.4	14.7	92	2.5
CH-02-03 PH 2				2.6					
CH-02-04	TA	STAD	1/2	2.6	N/A	2.5	5.0	96	3.0
CH-03-01	TA	STAD	1/2	3.4	N/A	3.4	10.1	100	3.0
CH-03-02	TA	STAD	1/2	3.4	N/A	3.5	3.0	103	4.0
FT-01-01	TA	STAD	1 1/4	8	N/A	8.5	34.7	106	1.0
FT-02-01	TA	STAD	3/4	4.0	N/A	3.8	1.6	95	3.0
FT-03-01 PH 2									
FT-03-02	TA	STAD	1	10.0	N/A	9.0	1.8	90	4.0
FT-03-03	TA	STAD	1/2	4.0	N/A	3.8	5.5	95	3.5
FT-03-04	TA	STAD	3/4	6.0	N/A	5.8	2.5	97	3.5
FT-03-05	TA	STAD	1/2	4.0	N/A	3.8	3.5	95	4.0
FT-03-06	TA	STAD	3/4	4	N/A	4.0	1.2	100	3.5

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: HWP-02 (Cont.)
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

FT-03-07	TA	STAD	3/4	4	N/A	3.9	1.2	98	3.5
HC-01	TA	STAF	2 1/2 N	39.3	N/A	42	21.2	107	2.7
HC-02	TA	STAD	2	25.8	N/A	27	25	105	1.5
HC-05	TA	STAD	2	16.4	N/A	18	13	110	1.5
HC-06	TA	STAF	3	34.1	N/A	36	34	106	2.0
HC-07	TA	STAF	3	41	N/A	44	16	107	3.0
HC-08	TA	STAF	3	40.6	N/A	40	13.4	99	3.0
HC-09	TA	STAD	2	18	N/A	18	12	100	1.5
HC-10	TA	STAF	3	40.6	N/A	42	11.1	103	3.0
HC-11	TA	STAF	2 1/2 N	40.6	N/A	41	10.6	101	3.0
HC-12 PH 2				69.1					
HC-13EA	TA	STAF	3	102	N/A	100	1.1	98	8.0
HC-3EA	TA	STAF	3	58	N/A	60	15.8	103	3.5
HC-4EA	TA	STAF	4	216.5	N/A	195	1.9	90	8.0
RHC-01-01	TA	STAD	3/4	7.7	N/A	7.2	2.6	94	4.0
RHC-01-02	TA	STAD	1 1/4	7.7	N/A	8.0	1.2	104	3.0
RHC-02-01	TA	STAD	3/4	6.4	N/A	6.0	3.9	94	3.0
RHC-02-02	TA	STAD	3/4	9.1	N/A	9.6	10.4	105	3.0
RHC-02-03	TA	STAD	3/4	10.4	N/A	10.0	10.3	96	3.0
RHC-09-01	TA	STAD	1 1/4	17.4	N/A	17	2.2	98	4.0
RHC-12-01 PH 2				23.2					
RHC-12-02 PH 2				17					
SHX-01	TA	STAD	2	29.5	N/A	32.0	12.5	108	2.0
SHX-02	TA	STAD	1 1/2	14.5	N/A	13.0	1.2	90	3.5
SHX-03 PH 2				10.1					
SHX-04	TA	STAD	1 1/2	9.3	N/A	10.0	8.2	108	1.5
SHX-05				1.9					
SHX-06	TA	STAD	1	3.2	N/A	3.2	15.6	100	1.0
UH-01-01	TA	STAD	3/4	5	N/A	4.8	24.3	96	1.5
UH-01-02 *				5					
UH-01-03	TA	STAD	3/4	5	N/A	5.2	12.7	104	2.0
UH-01-04	TA	STAD	3/4	5	N/A	5.5	14.2	110	2.0
UH-01-05	TA	STAD	3/4	5	N/A	5.4	28.3	108	1.5
UH-01-06	TA	STAD	3/4	5	N/A	5.4	31	108	1.5
UH-01-07	TA	STAD	3/4	5	N/A	5.2	29.3	104	1.5
UH-02-01	TA	STAD	3/4	13	N/A	12.0	7.1	92	4.0
UH-02-02	TA	STAD	1 1/4	13	N/A	12.0	11.1	92	2.0
UH-02-03	TA	STAD	1 1/4	13	N/A	14.0	16.2	108	2.0
VVB-01-01	TA	STAD	1/2	2.5	N/A	2.3	12.2	92	2.5
VVB-01-02	TA	STAD	3/4	6.0	N/A	6.0	16	100	2.0
VVB-01-03	TA	STAD	1/2	1.5	N/A	1.6	14.2	107	2.0

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: HWP-02 (Cont.)
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

VVB-01-04	TA	STAD	3/4	2.0	N/A	2.1	12.3	105	1.0
VVB-01-05 *	TA	STAD	3/4	1.5	N/A	1.9	23.1	127	0.5
VVB-01-06	TA	STAD	3/4	5.5	N/A	5.4	12.9	98	2.0
VVB-01-07	TA	STAD	3/4	5.5	N/A	5.9	15.5	107	2.0
VVB-01-08	TA	STAD	1/2	1.5	N/A	1.6	14.1	107	2.0
VVB-01-09	TA	STAD	1/2	2.5	N/A	2.5	14.7	100	2.5
VVB-01-10	TA	STAD	3/4	3.5	N/A	3.4	13	97	1.5
VVB-01-11	TA	STAD	3/4	5.0	N/A	5.3	5.5	106	2.5
VVB-02-01	TA	STAD	1/2	1.5	N/A	1.6	15	107	2.0
VVB-02-02	TA	STAD	3/4	3.5	N/A	3.6	14	103	1.5
VVB-02-03	TA	STAD	3/4	3.5	N/A	3.6	14	103	1.5
VVB-02-04	TA	STAD	1/2	3.0	N/A	3.2	9.3	107	3.0
VVB-02-05	TA	STAD	3/4	2.0	N/A	1.9	23.4	95	0.5
VVB-02-06	TA	STAD	3/4	3.5	N/A	3.4	31.1	97	1.0
VVB-05-01	TA	STAD	1/2	1.5	N/A	1.4	4.7	93	2.5
VVB-05-02	TA	STAD	1/2	2.0	N/A	1.9	2.9	95	3.0
VVB-05-03	TA	STAD	1/2	2.0	N/A	2.0	3.4	100	3.0
VVB-05-04	TA	STAD	1/2	2.0	N/A	2.0	3.4	100	2.0
VVB-05-05	TA	STAD	1/2	2.0	N/A	1.9	3.0	95	3.0
VVB-05-06	TA	STAD	1/2	2.0	N/A	2.2	4.0	110	3.0
VVB-05-07	TA	STAD	1/2	1.0	N/A	1.1	6.0	110	2.0
VVB-05-08	TA	STAD	1/2	2.0	N/A	2.0	3.4	100	3.0
VVB-05-09	TA	STAD	1/2	2.5	N/A	2.7	3.0	108	3.5
VVB-05-10	TA	STAD	1/2	1.0	N/A	1.0	5.7	100	2.0
VVB-05-11	TA	STAD	1/2	1.0	N/A	1.0	5.7	100	2.0
VVB-05-12	TA	STAD	1/2	2.5	N/A	2.3	1.3	92	4.0
VVB-05-13	TA	STAD	1/2	1.0	N/A	1.0	5.3	100	2.0
VVB-05-14	TA	STAD	1/2	1.5	N/A	1.6	6.1	107	2.5
VVB-05-15	TA	STAD	1/2	2.5	N/A	2.7	6.5	108	3.0
VVB-05-16	TA	STAD	1/2	1.0	N/A	0.9	14	90	1.5
VVB-05-17	TA	STAD	1/2	1.0	N/A	1.1	6.0	110	2.0
VVB-05-18	TA	STAD	1/2	1.0	N/A	1.1	6.0	110	2.0
VVB-05-19	TA	STAD	1/2	1.0	N/A	1.0	16	100	1.5
VVB-05-20	TA	STAD	1/2	1.0	N/A	1.1	6.0	110	2.0
VVB-05-21	TA	STAD	3/4	2.0	N/A	1.9	1.8	95	2.0
VVB-05-22	TA	STAD	1/2	1.5	N/A	1.6	5.4	107	2.5
VVB-06-01	TA	STAD	1/2	3.0	N/A	2.9	19.8	97	2.5
VVB-06-02	TA	STAD	1/2	1.5	N/A	1.6	13	107	2.0
VVB-06-03	TA	STAD	1/2	3.5	N/A	3.6	15	103	1.5
VVB-06-04	TA	STAD	3/4	5.5	N/A	5.8	16	105	2.0
VVB-06-05	TA	STAD	1/2	1.0	N/A	1.0	19	100	1.0
VVB-06-06	TA	STAD	1/2	1.0	N/A	0.9	3.5	90	2.0

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: HWP-02 (Cont.)
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

VVB-06-07	TA	STAD	1/2	2.5	N/A	2.7	18	108	2.5
VVB-06-08	TA	STAD	3/4	6.5	N/A	6.3	17.4	97	2.0
VVB-06-09	TA	STAD	3/4	5.5	N/A	5.9	15.9	107	2.0
VVB-06-10	TA	STAD	1/2	2.5	N/A	2.4	26	96	2.0
VVB-06-11	TA	STAD	3/4	6.5	N/A	6.8	5.3	105	3.0
VVB-06-12	TA	STAD	1/2	1.0	N/A	0.9	4.7	90	2.0
VVB-06-13	TA	STAD	1/2	2.0	N/A	2.2	10.8	110	2.5
VVB-06-14	TA	STAD	3/4	5.0	N/A	4.8	1.2	96	4.0
VVB-06-15	TA	STAD	3/4	5.0	N/A	4.8	10.6	96	2.0
VVB-06-16	TA	STAD	3/4	5.0	N/A	5.0	11.5	100	2.0
VVB-06-17	TA	STAD	1/2	1.5	N/A	1.6	13.8	107	2.0
VVB-06-18	TA	STAD	3/4	5.5	N/A	5.7	35.6	104	1.5
VVB-07-01	TA	STAD	1/2	1.0	N/A	1.0	16.4	100	1.5
VVB-07-02	TA	STAD	1/2	1.5	N/A	1.5	12.3	100	2.0
VVB-07-03	TA	STAD	1/2	2.0	N/A	2.1	3.7	105	3.0
VVB-07-04	TA	STAD	1/2	2.5	N/A	2.5	5.1	100	3.0
VVB-07-05	TA	STAD	1/2	2.5	N/A	2.6	5.8	104	3.0
VVB-07-06	TA	STAD	1/2	1.5	N/A	1.5	11.6	100	2.0
VVB-07-07	TA	STAD	1/2	3.0	N/A	3.2	3.9	107	3.5
VVB-07-08	TA	STAD	1/2	1.5	N/A	1.6	5.8	107	2.5
VVB-07-09	TA	STAD	1/2	1.5	N/A	1.6	12.3	107	2.0
VVB-07-10	TA	STAD	1/2	2.5	N/A	2.7	6.1	108	3.0
VVB-07-11	TA	STAD	1/2	2.0	N/A	2.1	1.8	105	3.5
VVB-07-12	TA	STAD	3/4	4.0	N/A	3.8	1.1	95	3.5
VVB-07-14	TA	STAD	3/4	5.0	N/A	4.9	1.2	98	4.0
VVB-07-15	TA	STAD	3/4	4.5	N/A	4.4	2.2	98	3.0
VVB-07-16	TA	STAD	1/2	1.5	N/A	1.6	5.9	107	2.5
VVB-07-18	TA	STAD	1/2	2.5	N/A	2.7	6.0	108	3.0
VVB-07-19	TA	STAD	1/2	1.5	N/A	1.6	5.7	107	2.5
VVB-07-20	TA	STAD	3/4	4.5	N/A	4.2	3.5	93	2.5
VVB-07-21	TA	STAD	1/2	2.0	N/A	2.0	3.6	100	3.0
VVB-07-22	TA	STAD	1/2	2.0	N/A	2.2	11.2	110	2.5
VVB-07-23	TA	STAD	3/4	5.5	N/A	5.7	6.7	104	2.5
VVB-07-24	TA	STAD	3/4	5.0	N/A	5.2	5.5	104	2.5
VVB-07-25	TA	STAD	1/2	1.5	N/A	1.5	11.8	100	2.0
VVB-07-26	TA	STAD	3/4	5.0	N/A	5.4	6.4	108	2.5
VVB-07-27	B&G	CB	3/4	6.5	N/A	6.0	7.5	92	0
VVB-08-01	TA	STAD	1/2	2.0	N/A	2.0	9.3	100	2.5
VVB-08-02	TA	STAD	1/2	1.0	N/A	0.95	14.1	95	1.5
VVB-08-03	TA	STAD	1/2	3.0	N/A	3.0	7.9	100	3.0
VVB-08-04	TA	STAD	1/2	3.0	N/A	3.2	4.3	107	3.5
VVB-08-05	TA	STAD	1/2	2.0	N/A	2.2	4.0	110	3.0

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: HWP-02 (Cont.)
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

VVB-08-06	TA	STAD	1/2	2.0	N/A	2.2	4.6	110	3.0
VVB-08-07	TA	STAD	1/2	3.0	N/A	3.1	4.0	103	3.5
VVB-08-08	TA	STAD	1/2	1.5	N/A	1.6	6.4	107	2.5
VVB-08-09	TA	STAD	1/2	2.0	N/A	2.0	9.4	100	2.5
VVB-08-10	TA	STAD	1/2	2.5	N/A	2.6	6.5	104	3.0
VVB-08-11	TA	STAD	1/2	2.5	N/A	2.3	4.7	92	3.0
VVB-08-12	TA	STAD	1/2	3.0	N/A	3.0	2.2	100	4.0
VVB-08-14	TA	STAD	3/4	5	N/A	5.0	1.9	100	3.5
VVB-08-15	TA	STAD	3/4	4.5	N/A	4.5	1.0	100	4.0
VVB-08-16	TA	STAD	1/2	2.5	N/A	2.7	7.0	108	3.0
VVB-08-17	TA	STAD	1/2	1	N/A	0.9	12.5	90	1.5
VVB-08-18	TA	STAD	1/2	3.0	N/A	2.8	7.0	93	3.0
VVB-08-19	TA	STAD	3/4	3.5	N/A	3.6	6.2	103	2.0
VVB-08-20	TA	STAD	1/2	2.5	N/A	2.7	7.0	108	3.0
VVB-08-21	TA	STAD	1/2	2.5	N/A	2.7	7.0	108	3.0
VVB-08-22	TA	STAD	3/4	5.0	N/A	5.4	3.3	108	3.0
VVB-08-23	TA	STAD	1/2	3	N/A	3.0	7.8	100	3.0
VVB-08-24	TA	STAD	1/2	2.5	N/A	2.7	6.0	108	3.0
VVB-08-25	TA	STAD	1/2	2.5	N/A	2.7	6.0	108	3.0
VVB-08-26	TA	STAD	3/4	4	N/A	3.8	1.0	95	3.5
VVB-08-27	TA	STAD	1/2	1.5	N/A	1.6	6.0	107	2.5
VVB-08-28	TA	STAD	1/2	2	N/A	2.0	1.7	100	3.5
VVB-08-29	TA	STAD	1/2	2	N/A	2.0	1.7	100	3.5
VVB-09-01	TA	STAD	1/2	3	N/A	3.1	9.2	103	3.0
VVB-09-02	TA	STAD	3/4	6.5	N/A	6.5	4.8	100	3.0
VVB-09-03	TA	STAD	1/2	2.5	N/A	2.5	14	100	2.5
VVB-10-01	TA	STAD	1/2	1	N/A	0.9	13.3	90	1.5
VVB-10-02	TA	STAD	1/2	1.5	N/A	1.4	9.7	93	2.0
VVB-10-03	TA	STAD	1/2	2	N/A	2.2	4.3	110	3.0
VVB-10-04	TA	STAD	1/2	2	N/A	2.1	1.1	105	4.0
VVB-10-05	TA	STAD	1/2	2.5	N/A	2.5	5.3	100	3.0
VVB-10-06	TA	STAD	1/2	1.5	N/A	1.4	9.4	93	2
VVB-10-07	TA	STAD	3/4	3.5	N/A	3.4	5.2	97	2.0
VVB-10-08	TA	STAD	1/2	1.0	N/A	1.1	6	110	2.0
VVB-10-09	TA	STAD	1/2	1.5	N/A	1.4	10	93	2.0
VVB-10-10	TA	STAD	1/2	2.5	N/A	2.5	5.2	100	3.0
VVB-10-11	TA	STAD	1/2	2.5	N/A	2.3	1.3	92	4.0
VVB-10-12	TA	STAD	3/4	3.5	N/A	3.6	2.8	103	2.5
VVB-10-13	TA	STAD	1/2	2.5	N/A	2.6	1.8	104	4.0
VVB-10-14	TA	STAD	1/2	2.5	N/A	2.7	6.0	108	3.0
VVB-10-15	TA	STAD	1/2	2	N/A	2.1	3.6	105	3.0
VVB-10-17	TA	STAD	1/2	2.5	N/A	2.6	5.5	104	3.0

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: HWP-02 (Cont.)
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

VVB-10-18	TA	STAD	1/2	2	N/A	2.2	1.2	110	4.0
VVB-10-19	TA	STAD	1/2	1.5	N/A	1.5	5.6	100	2.5
VVB-10-20	TA	STAD	3/4	5.5	N/A	5.4	1.4	98	4.0
VVB-10-21	TA	STAD	1/2	2	N/A	2.2	4.0	110	3.0
VVB-10-22	TA	STAD	1/2	2	N/A	1.9	8.5	95	2.5
VVB-10-23	TA	STAD	1/2	1.5	N/A	1.6	6.0	107	2.5
VVB-10-24	TA	STAD	1/2	3	N/A	3.0	4.0	100	3.5
VVB-10-25	TA	STAD	3/4	4	N/A	4.0	16.5	100	1.5
VVB-10-26	TA	STAD	1/2	1.5	N/A	1.6	6.0	107	2.5
VVB-10-27	TA	STAD	3/4	4	N/A	4.0	1.2	100	3.5
VVB-10-28	TA	STAD	3/4	4	N/A	3.8	1.0	95	3.5
VVB-10-29	TA	STAD	1/2	1.5	N/A	1.5	11	100	2.0
VVB-10-30	TA	STAD	3/4	5.5	N/A	5.5	1.5	100	4.0
VVB-11-01	TA	STAD	1/2	2	N/A	2.0	3.5	100	3.0
VVB-11-02	TA	STAD	1/2	1.5	N/A	1.6	6	107	2.5
VVB-11-03	TA	STAD	1/2	2	N/A	2.2	4.4	110	3.0
VVB-11-04	TA	STAD	1/2	3	N/A	2.8	2	93	4.0
VVB-11-05	TA	STAD	1/2	1.5	N/A	1.5	5.7	100	2.5
VVB-11-06	TA	STAD	1/2	1.5	N/A	1.5	5.8	100	2.5
VVB-11-07	TA	STAD	3/4	3.5	N/A	3.4	5.7	97	2.0
VVB-11-08	TA	STAD	1/2	2	N/A	1.9	7.3	95	3.0
VVB-11-09	TA	STAD	1/2	1.5	N/A	1.4	9.3	93	2.0
VVB-11-10	TA	STAD	1/2	2	N/A	2.2	4.0	110	3.0
VVB-11-11	TA	STAD	1/2	2.5	N/A	2.7	2.9	108	3.5
VVB-11-12	TA	STAD	1	3.5	N/A	3.6	6.0	103	2.0
VVB-11-13	TA	STAD	1/2	2.5	N/A	2.4	2.4	96	4.0
VVB-11-14	TA	STAD	1/2	2.5	N/A	2.4	2.4	96	3.5
VVB-11-15	TA	STAD	3/4	4.5	N/A	5.0	1.3	111	4.0
VVB-11-16	TA	STAD	1/2	2.0	N/A	2.1	3.8	105	3.0
VVB-11-17	TA	STAD	1/2	1.5	N/A	1.4	4.6	93	2.5
VVB-11-18	TA	STAD	1/2	1	N/A	1.1	7	110	2.0
VVB-11-19	TA	STAD	3/4	4.5	N/A	4.0	1.0	89	4.0
VVB-11-20	TA	STAD	1/2	2	N/A	2.2	4.0	110	3.0
VVB-11-21	TA	STAD	3/4	2	N/A	2.2	4.0	110	3.0
VVB-11-22	TA	STAD	1/2	2.5	N/A	2.4	4.5	96	3.0
VVB-11-23	TA	STAD	1/2	2	N/A	2.0	3.3	100	3.5
VVB-11-24	TA	STAD	3/4	4	N/A	4.2	1.4	105	3.5
VVB-11-25	TA	STAD	3/4	4	N/A	4.0	1.2	100	3.5
VVB-11-26	TA	STAD	3/4	4	N/A	3.8	1.1	95	3.5
VVB-11-27	TA	STAD	1/2	1	N/A	1.0	5.7	100	2.0
VVB-11-28	TA	STAD	3/4	4	N/A	4.0	1.2	100	3.5
VVB-12-01 PH 2				1.5					

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: HWP-02 (Cont.)
AREA:

Tested By: Josh Drake
Test Date: April 28, 2016

VVB-12-02 PH 2				6.5					
VVB-12-03 PH 2				1.5					
VVB-12-04 PH 2				1.5					
VVB-12-05 PH 2				4					
VVB-12-06 PH 2				1.5					
VVB-12-07 PH 2				6.5					
VVB-12-08 PH 2				2					
VVB-12-09 PH 2				4.5					
VVB-12-10 PH 2				2					
VVB-12-11 PH 2				4.5					
VVB-12-12 PH 2				6.5					
Totals :	**-**	**-**	**-**	**1,588.3**	**-**	**1,398.65**	**-**	**-**	**-**

*** Notes**

HWP-02	28-Jan-16	Josh Drake	Balanced with two pumps running at 44hz.
HWP-02	28-Apr-16	Josh Drake	Deficiency 0144 : Water is extremely dirty.
HWP-02	28-Apr-16	Josh Drake	Pump hits max amps at 53hz. Valve open pressures read at 53hz.
HWP-02 / CH-01-04	28-Apr-16	Josh Drake	Deleted
HWP-02 / CH-01-05	28-Apr-16	Josh Drake	Deleted
HWP-02 / CH-01-06	27-Jan-16	Josh Drake	Deficiency 0045 : Coil not piped
HWP-02 / SHX-05	28-Jan-16	Josh Drake	Deficiency 0047 : Piping is incomplete. Coil is isolated
HWP-02 / UH-01-02	28-Apr-16	Josh Drake	Deleted
HWP-02 / VVB-01-05	27-Jan-16	Josh Drake	Valve is oversized, cannot cut back anymore

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: RCP-01
AREA:

Tested By: Josh Drake
Test Date: March 30, 2016

Unit Data	
Type of Service	Domestic Water
Pump Manufacturer	Armstrong
Rated Flow	36 GPM
Rated Head	24 ft.

*** Notes**

SYSTEM/UNIT: RCP-02
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
Type of Service	Domestic Water
Pump Manufacturer	Armstrong
Rated Flow	36 GPM
Rated Head	24 ft.

*** Notes**

Hydronic Pump

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: RCP-03
AREA:

Tested By: Josh Drake
Test Date: April 25, 2016

Unit Data	
Type of Service	Domestic Water
Pump Manufacturer	Armstrong
Rated Flow	32 GPM
Rated Head	26 ft.

*** Notes**

ELITE BALANCING

Roof Top Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: MAU-K-01
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data

Unit Manufacturer	Econ-air
Unit Model Number	EA3-IBT-800-400-400-G18
Unit Serial Number	2056818
Design Supply Airflow	5788 CFM
Design ESP	0.65 in. wc

Starter Data

MAU-K-01 / Supply Fan

Starter Manufacturer	Built in

Test Data

Actual Supply Airflow	5480 CFM
Actual Outside Airflow	5480 CFM
Actual Return Airflow	0 CFM

MAU-K-01 / Supply Fan

Actual RPM	900 RPM
Volts	466/465/465 Volts
Amps	5.1/5.0/5.0 Amps

Motor Data

MAU-K-01 / Supply Fan

Motor Manufacturer	Teco
Motor HP	5 HP
Motor RPM	1750 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	13.6/6.8 Amps
Motor Service Factor	1.15
Motor Frame	184T
Nominal Efficiency	89.5 %

Sheave Data

MAU-K-01 / Supply Fan

Motor Sheave Model	2VP42
Motor Sheave Bore	1 1/8 in.
Fan Sheave Model	2BK90H
Fan Sheave Bore	1 3/16 in.
Number of Belts	2
Belt Size	BX59
Sheave Center Line	21 in.

Test Pressures

Filter SP In	Atmosphere in. wc
Filter SP Out	-0.06 in. wc
Cooling Coil SP In	-0.06 in. wc
Cooling Coil SP Out	-0.24 in. wc
Fan SP In	-0.37 in. wc
Fan SP Out	0.19 in. wc

MAU-K-01 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Hood 1.1	Hood					1586	1505	1505	95
Hood 1.2	Hood					1426	1375	1375	96
Hood 2.1	Hood					1388	1295	1295	93
Hood 2.2	Hood					1388	1305	1305	94
Totals :	-	-	-	-	-	**5,788**	**5,480**	**5,480**	**95 %**

*** Notes**

ELITE BALANCING

Roof Top Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: MAU-K-02
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data

Unit Manufacturer	Econ-air
Unit Model Number	EA4-IBT-1000-300-300-400
Unit Serial Number	2056818
Design Supply Airflow	9188 CFM
Design ESP	0.65 in. wc

Starter Data

MAU-K-02 / Supply Fan

Starter Manufacturer	Built in

Test Data

Actual Supply Airflow	9085 CFM
Actual Outside Airflow	9085 CFM
Actual Return Airflow	0 CFM

MAU-K-02 / Supply Fan

Actual RPM	758 RPM
Volts	466/465/465 Volts
Amps	6.4/6.5/6.5 Amps

Motor Data

MAU-K-02 / Supply Fan

Motor Manufacturer	Teco
Motor HP	5.5 HP
Motor RPM	1755 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	19.1/9.55 Amps
Motor Service Factor	1.15
Motor Frame	213T
Nominal Efficiency	91 %

Sheave Data

MAU-K-02 / Supply Fan

Motor Sheave Model	2VP60
Motor Sheave Bore	1 3/8 in.
Fan Sheave Model	2BK130H
Fan Sheave Bore	1 7/16 in.
Number of Belts	2
Belt Size	BX80
Sheave Center Line	27 in.

Test Pressures

Filter SP In	Atmosphere in. wc
Filter SP Out	-0.09 in. wc
Cooling Coil SP In	-0.09 in. wc
Cooling Coil SP Out	-0.28 in. wc
Fan SP In	-0.49 in. wc
Fan SP Out	0.23 in. wc

MAU-K-02 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Hood 3.1	Hood					2297	2160	2160	94
Hood 3.2	Hood					2297	2365	2365	103
Hood 4.1	Hood					2297	2090	2090	91
Hood 4.2	Hood					2297	2470	2470	108
Totals :	-	-	-	-	-	**9,188**	**9,085**	**9,085**	**99 %**

*** Notes**

ELITE BALANCING

Roof Top Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: MAU-K-03
AREA:

Tested By: Josh Drake
Test Date: May 12, 2016

Unit Data

Unit Manufacturer	Econ-air
Unit Model Number	EA4-IBT-1000-300-300-400
Unit Serial Number	2056818
Design Supply Airflow	9188 CFM
Design ESP	0.65 in. wc

Starter Data

MAU-K-03 / Supply Fan

Starter Manufacturer	Built in

Test Data

Actual Supply Airflow	8995 CFM
Actual Outside Airflow	8995 CFM
Actual Return Airflow	0 CFM

MAU-K-03 / Supply Fan

Actual RPM	749 RPM
Volts	466/465/465 Volts
Amps	6.3/6.5/6.4 Amps

Motor Data

MAU-K-03 / Supply Fan

Motor Manufacturer	Teco
Motor HP	5.5 HP
Motor RPM	1755 RPM
Motor Rated Volts	230/460 Volts
Motor Phase	3
Motor FL Amps	19.1/9.55 Amps
Motor Service Factor	1.15
Motor Frame	213T
Nominal Efficiency	91 %

Sheave Data

MAU-K-03 / Supply Fan

Motor Sheave Model	2VP60
Motor Sheave Bore	1 3/8 in.
Fan Sheave Model	2BK130H
Fan Sheave Bore	1 7/16 in.
Number of Belts	2
Belt Size	BX80
Sheave Center Line	27 in.

Test Pressures

Filter SP In	Atmosphere in. wc
Filter SP Out	-0.11 in. wc
Cooling Coil SP In	-0.11 in. wc
Cooling Coil SP Out	-0.25 in. wc
Fan SP In	-0.41 in. wc
Fan SP Out	0.27 in. wc

MAU-K-03 Supply Outlet Summary

System / Unit	Outlet Type	Size	AK Factor	Design Velocity	Final Velocity	Design Airflow	Prelim Airflow	Final Airflow	% Final Diff.
Hood 5.1	Hood					2297	2090	2090	91
Hood 5.2	Hood					2297	2415	2415	105
Hood 6.1	Hood					2297	2170	2170	94
Hood 6.2	Hood					2297	2320	2320	101
Totals :	-	-	-	-	-	**9,188**	**8,995**	**8,995**	**98 %**

*** Notes**

ELITE BALANCING

Roof Top Unit

PROJECT: Kelly Walsh High School
LOCATION: Casper, CO
PROJECT #:

DATE: 5/19/2016
CONTACT: Kevin Shaw

SYSTEM/UNIT: MAU-P-01
AREA:

Tested By: Josh Drake
Test Date: May 11, 2016

Unit Data	
Unit Manufacturer	Mestek
Unit Model Number	PV12
Unit Serial Number	E1501378236002001
Design Supply Airflow	9000 CFM
Design ESP	0.5 in. wc

Motor Data	
MAU-P-01 / Supply Fan	
Motor Manufacturer	Baldor
Motor HP	7.5 HP
Motor RPM	1770 RPM
Motor Rated Volts	208-230/460 Volts
Motor Phase	3
Motor FL Amps	20.4-19.4/9.7 Amps
Motor Service Factor	1.15
Motor Frame	213T
Nominal Efficiency	91 %
Motor Power Factor	79

Sheave Data	
MAU-P-01 / Supply Fan	
Motor Sheave Model	2VP60
Motor Sheave Bore	1 3/8 in.
Fan Sheave Model	2BK90
Fan Sheave Bore	1 3/16 in.
Number of Belts	2
Belt Size	BX63
Sheave Center Line	22 in.

*** Notes**

MAU-P-01	11-May-16	Josh Drake	Deficiency 0149 : Not running