

SECTION 01 6410

SUBSTITUTION REQUEST FORM

TO: SOLARC Engineering and Energy + Architectural Consulting
Attn: Tanesha Hyde: tanesha@solarc-ae.net
CC: Galen Ohmart: galen@solarc-ae.net
CC: Brandon Crossley: bcrossley@co.marion.or.us

PROJECT: Marion County Work Release Center HVAC Replacement
4000 Aumsville Hwy
Salem, Oregon

SPECIFIED ITEM: 230593 Section 3.01F Paragraph PRE-QUALIFIED TAB AGENCIES Description

The undersigned requests consideration of the following:

PROPOSED SUBSTITUTION: PRECISION TEST & BALANCE, INC. (NEBB#3520)
AS APPROVED

Attached data includes product descriptions, specifications, drawings, photographs, performance and test data adequate for evaluation of request including identification of applicable data portions.

Attached data also includes description of changes to Contract Documents and proposed substitution requires for proper installation.

The undersigned certifies following items, unless modified by attachments, are correct:

- 1. Proposed substitution does not affect dimensions shown on drawings.
2. Undersigned pays for changes to building design, including engineering design, detailing, and construction costs caused by proposed substitution.
3. Proposed substitution has no adverse effect on other trades, construction schedule, or specified warranty requirements.
4. Maintenance and service parts available locally or readily obtainable for proposed substitution.

Undersigned further certifies function, appearance, and quality of proposed substitution are equivalent to or superior to specified item.

Submitted by: DOUGLAS L. FORSTER
Signature: Douglas L Forster
Firm: PRECISION TEST & BALANCE, INC.
Address: PO Box 23186 TIGARD, OR 97281
Date: 1/26/2015
Tel: 503-639-2538 Fax: 503-684-6259
Attachments: SUBMITTAL FORMS, CERTIFICATIONS
For use by Architect / Engineer for recommendation:
[X] Approved [] Approved as noted
[] Not Approved [] Received too late
By: GSB Date: 01/28/15
Comments:
For use by Marion County Project Manager for final decision:
[X] Approved [] Approved as noted
[] Not Approved [] Received too late
By: BC Date: 1/29/15
Comments:



Company Submittal Data

Project

**Marion County (ORCPP) Jail Work Release Center
HVAC Replacement
3950 Aumsville Highway SE
Salem, OR**

Presented To

**SOLARC Engineering and Energy + Architectural Consulting
319 SW Washington, Ste. 311
Portland, OR 97201**

Presented By

**Precision Test & Balance, Inc.
P.O. Box 23186
Tigard, Oregon 97281**



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Section A
Letter of Introduction

Precision Test & Balance, Inc. was established in 1999 to provide our clients with maximum service at an affordable price.

Our corporate philosophy is to work closely with owners, design engineers and contractors to achieve optimum performance of mechanical systems.

As a service company our only product is a report, however, a well designed and balanced HVAC system can be recognized by the lack of occupant comfort complaints. We believe that a gradual and controlled growth policy will ensure our balancing technicians have been trained thoroughly according to NEBB and AABC standards.

The principles of Precision Test & Balance, Inc. have over fifty years of combined experience, which will be covered in other sections, but we think it is important to mention that we have worked on many projects involving educational, commercial, industrial, medical research and hi-tech facilities.

We look forward to working with you in the near future.

Sincerely,

Douglas L. Forster
President

Richard D. Forster
Vice President

Section B
Principles & Key Staff Members

Principles

Douglas L. Forster, President
Richard D. Forster, Vice President

Staff

Joseph Myott, Project Manager
Adam Jakobsen, Technician
Rich Martin, Technician
Amy Porter, Office Manager

Section C Qualifications of Key Personnel

Douglas L. Forster

- Associate Degree Mechanical Engineering Technology
- NEBB Supervisor Air Systems Testing and Balancing
- NEBB Supervisor Hydronic Systems Testing and Balancing
- EIT Certificate #60122
- 19 Years of Field Experience Testing and Balancing with Northwest Engineering Service, Inc.
- 15 Years Principle – Precision Test & Balance, Inc.

Richard D. Forster

- 8 Years of Field Experience Testing and Balancing with Northwest Engineering Service, Inc.
- 15 Years Principle – Precision Test & Balance, Inc.

Rich Martin

- BA Business Administration University of Oregon
- 7 Years Precision Test & Balance, Inc.

Joseph Myott

- Associate of Applied Science Degree in HVAC/R
- EPA universal certified.
- Five years HVAC/R experience in various areas.
- 4 years with Precision Test & Balance, Inc.

Adam Jakobsen

- 3 years with Precision Test & Balance, Inc.

Section D Scope of Services & Project Approach

A. Scope of Services

We at Precision Test & Balance, Inc. feel we offer a full range of services in the HVAC testing, adjusting and balancing field. Our services include:

1. HVAC Air Systems Testing, Adjusting & Balancing
2. HVAC Hydronic Systems Testing, Adjusting & Balancing
3. HVAC Systems Monitoring & Surveying
4. Lab Hood Certification
5. Cleanroom Certification Testing
6. Sound & Vibration Testing

B. Project Approach

Following is a brief outline of approaching a project.

1. Initial Planning
 - A. Review Plans and Specifications
 - B. Assess Design Intent
2. Initial Review
 - A. Plan and schedule Testing, Adjusting and Balancing procedures
 - B. Set-up project on appropriate test forms
 - C. Preliminary field check of HVAC equipment and systems
 - D. Collect equipment data verify with design
 - E. Report any deficiencies that would prevent system to be properly balanced

Cont. Section D

3. Data Procurement
 - A. Acquire fan and pump curve submittal data
 - B. Acquire any manufacturers published data, i.e., electrical, air, water or control elements

4. System Field Review
 - A. Locate all balancing or control devices
 - B. Report any deficiencies in installation
 - C. Verify systems readiness for balancing, i.e., automatic controls

5. System Start-up
 - A. Verify piping and ductwork are clear of obstructions
 - B. Bump fans and pumps for proper rotation
 - C. Assist Mechanical Contractor with system start-up

6. Air Balance Procedure
 - A. Set fan condition for full-flow (cooling)
 - B. Check motor amperage
 - C. Traverse fan total for design volume
 - D. Change fan speed if necessary
 - E. Spot check for air circulation in various rooms
 - F. Balance supply system (proportional method)
 - G. Balance return or exhaust systems (proportional method)
 - H. Re-adjust supply and return fans speeds as needed
 - I. Read out systems for final readings

- J. Record fan(s) operating data under required conditions
-
- 7. Hydronic Balance Procedure
 - A. Set pump condition for full flow (heating or cooling)
 - B. Measure amperage
 - C. Measure pump total and adjust if necessary
 - D. Spot check for water circulation at various coils
 - E. Balance water system (proportional method)
 - F. Re-adjust pump volume for 100% flow if possible
 - G. Read out water system
 - H. Record pump(s) operating data under required conditions
-
- 8. Reporting
 - A. Review field data
 - B. Report any discrepancies encountered during the project
 - C. Input all data into a computer for future reference
 - D. Edit reports for typographical errors or omissions
 - E. Duplicate for distribution all applicable data and blueprints with elements or openings numbered for easy reference
 - F. Publish required number of reports for review

Section E
Experience with Mechanical Systems & Equipment

Following is partial list of mechanical systems and equipment we have worked on and have extensive experience with.

- | | | |
|-----------------------|--------------------------|-------------------------|
| 1. <u>Fan Systems</u> | 2. <u>Terminal Units</u> | 3. <u>Water Systems</u> |
| Package | Variable Volume | Pumps (Primary) |
| Built-up | VAV with Reheat | Pumps (Secondary) |
| VAV | Constant Volume | Pumps (Tertiary) |
| Constant Volume | CV with Reheat | Chillers |
| Dual Duct | Dual Duct | Boilers |
| Multi-zones | Fan Powered Parallel | Steam |
| Process Exhaust | Fan Powered Series | Cooling Towers |
| Utility Exhaust | Induction | Water Cooled Units |
| Split Systems | Pressure Dependent | |
| Makeup Air | Pressure Independent | |

Section F **Experience with Mechanical Control Systems**

We have working knowledge of the following control systems.

1. Powers, Landis & Gyr, Siemens
2. Johnson
3. Honeywell
4. Barber-Coleman
5. Robert Shaw
6. Staefa
7. Trane Tracer
8. Trane Intellipak
9. Carrier Parker Valve
10. Phoenix Valves
11. Metasys
12. Allerton
13. Delta

We have an excellent working relationship with all of the major control companies and often on a first name basis with most control fitters and technicians.

Section G

Project Management History (Partial)

Projects Managed by Richard “Duke” Forster

Projects

US Bancorp Tower & Plaza Buildings
Construction & Sustaining
Portland, Oregon

Merix Corporation
Construction, Sustaining, Certifications
Forest Grove, Oregon

Lakeridge High School
Construction & Remodels

Tektronics, Building 63
New Construction
Portland, Oregon

Shinitzu
New Construction, Certification
Tualatin, Oregon

Providence St. Vincent Hospital
Construction, Sustaining
Portland, Oregon

St. Charles Medical Center
Bend, OR

Fred Meyer Stores Northwest & Alaska
56 Projects Oregon, Washington, Alaska, Idaho

Contacts

Mr. Darrel Shereck
Unico Properties

Mr. Jack White
Engineer

Mr. Chuck Foreman
Total Mechanical, Inc

Mr. Bob Davis
Siemens

Mr. Bill Dewsnap
Hoffman Construction

Mr. Matt Masters, P.E
PSVMC Facilities

Mr. Kevin Link
Skanska USA PM

Mr. Wael Chamsedine
Owner Wytek Controls

Projects Managed by Douglas L. Forster

Projects

ETEC Systems, Inc
New Construction

Mitsubishi Silicon America
New Construction, Sustaining, Certifications

Maxim Integrated Circuits
Sustaining

Oregon Regional Primate Center Animal Svcs Building
New Construction, Certifications

Meridian Park Hospital ICU Exp.
New Construction
Tualatin, Oregon

Siltec Silicon Epitaxial Building
New Construction, Sustaining
Salem, Oregon

Tuality Community Hospital
New Construction
Hillsboro, Oregon

Wacker Siltronic
Construction
Portland, Oregon

Portland International Airport
New Construction, Sustaining
Portland, Oregon

Toshiba
Construction, Certifications
Hillsboro, Oregon

Triquint Semiconductor
Certification
Hillsboro, Oregon

Contacts

Cary Vincent
Facilities Manager

Steve Frank
Operations Lead

Drew Wilder
Corbin Engineers

Collin Weber
Facilities

Bob Byers
Facilities Manager

Steve Smith
Operations Lead

Hank Foster
Facilities Manager

Brett Edwardsen
Facilities Engineer

Linda Simmes
Port Of Portland

Ben Adao
Shimizu America

Dennis Boom
Engineering Manager

Providence St. Vincent's Hospital
New/Sustaining Projects
Portland, OR

John Casessa, PE.
Mgr. Physical Plant

North Clackamas School District
Clackamas, OR

Mr. Dave Church
Facilities Director

Wallowa Memorial Hospital
New Construction
Enterprise, OR.

Mr. Jason Oak
Skanska USA
Project Manager

Section H **Reference List**

- | | | | |
|-------------------------|---------------------------|------------------|--------------|
| 1. Steve Strauss, P.E. | Glumac International | Portland, OR | 503/227-5280 |
| 2. Byron Ramos, P.E. | I.D.C. | Corvallis, OR | 541/752-8932 |
| 3. James Thomas, P.E. | Glumac International | Portland, OR | 503/227-5280 |
| 4. Ed Carlyle, P.E. | R & W Engineering | Portland, OR | 503/292-6000 |
| 5. Creighton Kearns, PE | Interface Engineering | Portland, OR | 503/274-0908 |
| 6. Temple Looney P.E. | Merix Corporation | Forest Grove, OR | 503/359-9300 |
| 7. Scott Landrigan | Encompass Materials Group | Vancouver, WA | 360/254-0221 |
| 8. Paul DuPont P.E. | Interface Engineering | Portland, OR | |

Section I
Instrument Calibration List

INSTRUMENT / SERIAL#	APPLICATION	DATE OF USE	CAL. TEST DATE
Shortridge AMD-860C / M14381	Air Balance	TBD	07/28/2014
Davis A2/-4" / 87489B	Air Balance	TBD	12/13/2014
Milwaukee 2237-20 / B87A911121371	Electrical	TBD	08/13/2014
Shortridge HDM-250 / W14119	Water Balance	TBD	11/04/2014
Tegam 819A / T-300549	Temperature	TBD	11/19/2014
Fisher Scientific 02-401-1 / 122212966	Rotation Measurement	TBD	11/19/2014
Extreme Performance DLT5-600 / 194036	Duct Leakage	TBD	05/06/2014

Instruments Listed are those typically used on projects. Some instruments may not be used on all projects. Instruments may be calibrated again prior to project depending on timeframe.

Section J
Balancing Forms (Partial)

1. Fan Data Sheet
2. Airflow Data Sheet
3. Small Fan Data Sheet (<1/6HP)
4. Minimum Outside Air by Temperature
5. Pump Data Sheet
6. Water Flow Data Sheet (Fixed Restriction)
7. Water Flow Data Sheet (Regulating Device)

PROJECT _____

Title _____

1 OF 7

FAN SYSTEM	TESTED BY _____	DATE _____
	JOB# _____	

FAN OR UNIT DATA			MOTOR DATA		
MANUFACTURER _____	MOD.# _____		MANUFACTURER _____	HORSEPOWER _____	
TYPE OF UNIT _____			RPM _____	PHASE _____	
SERIAL NUMBER _____			VOLTAGE _____	AMPS _____	
NUMBER OF FANS _____	ARRANGEMENT _____		FRAME _____	SERVICE FACTOR _____	
DISCHARGE _____	SIZE _____		THERMALLY PROTECTED _____	YES _____	NO _____

SHEAVES AND BELTS

ORIGINAL				FINAL			
FAN SHEAVE _____				FAN SHEAVE _____			
BUSHING / BORE _____				BUSHING / BORE _____			
MOTOR SHEAVE _____				MOTOR SHEAVE _____			
BUSHING / BORE _____				BUSHING / BORE _____			
PITCH DIAMETER _____	MIN. _____	SET@ _____	MAX. _____	PITCH DIAMETER _____	MIN. _____	SET@ _____	MAX. _____
CENTER DISTANCE _____	MIN. _____	SET@ _____	MAX. _____	CENTER DISTANCE _____	MIN. _____	SET@ _____	MAX. _____
FAN BELTS _____	NUMBER _____	SIZE _____		FAN BELTS _____	NUMBER _____	SIZE _____	

STARTER DATA

MANUFACTURER _____	TYPE _____	NEMA SIZE _____
NUMBER O.L. HEATERS _____	O.L. HEATER SIZE _____	RATED AMPS _____
RECOMMENDED O.L. HEATERS _____	SET@ _____	

OPERATIONAL DATA

CFM	DESIGN RATINGS	AS FOUND			TEST 2			TEST 3			TEST 4		
				%			%			%			%
CFM PER PLANS		AS FOUND			ADJUSTING			ADJUSTED					
TEST CONDITION													
FAN RPM													
MOTOR AMPS													
MOTOR VOLTS													
	PRESSURES	IN	OUT	DIFF.	IN	OUT	DIFF.	IN	OUT	DIFF.	IN	OUT	DIFF.
FILTERS													
COIL													
FAN													

NOTES: _____

DIRECT DRIVE FANS LESS THAN 1/6 HP (125W)						TESTED BY _____ DATE _____						
						JOB# _____						
FAN OR UNIT DATA						AIRFLOW DATA						
DESIGNATION		LOCATION		OWNERS DATA	GRILLE OR DIFFUSER DATA		DESIGNED		ACTUAL			
TYPE OF UNIT		OPENING#	ROOM#	EQP. NAME	RF	SIZE	AREA K	FPM	CFM	FPM	CFM	%
MANUFACTURER												
MOD.#												
SERIAL NUMBER												
MOTOR HP:												
FAN OR UNIT DATA						AIRFLOW DATA						
DESIGNATION		LOCATION		OWNERS DATA	GRILLE OR DIFFUSER DATA		DESIGNED		ACTUAL			
TYPE OF UNIT		OPENING#	ROOM#	EQP. NAME	RF	SIZE	AREA K	FPM	CFM	FPM	CFM	%
MANUFACTURER												
MOD.#												
SERIAL NUMBER												
MOTOR HP:												
FAN OR UNIT DATA						AIRFLOW DATA						
DESIGNATION		LOCATION		OWNERS DATA	GRILLE OR DIFFUSER DATA		DESIGNED		ACTUAL			
TYPE OF UNIT		OPENING#	ROOM#	EQP. NAME	RF	SIZE	AREA K	FPM	CFM	FPM	CFM	%
MANUFACTURER												
MOD.#												
SERIAL NUMBER												
MOTOR HP:												
FAN OR UNIT DATA						AIRFLOW DATA						
DESIGNATION		LOCATION		OWNERS DATA	GRILLE OR DIFFUSER DATA		DESIGNED		ACTUAL			
TYPE OF UNIT		OPENING#	ROOM#	EQP. NAME	RF	SIZE	AREA K	FPM	CFM	FPM	CFM	%
MANUFACTURER												
MOD.#												
SERIAL NUMBER												
MOTOR HP:												
FAN OR UNIT DATA						AIRFLOW DATA						
DESIGNATION		LOCATION		OWNERS DATA	GRILLE OR DIFFUSER DATA		DESIGNED		ACTUAL			
TYPE OF UNIT		OPENING#	ROOM#	EQP. NAME	RF	SIZE	AREA K	FPM	CFM	FPM	CFM	%
MANUFACTURER												
MOD.#												
SERIAL NUMBER												
MOTOR HP:												

OUTSIDE AIR BY TEMPERATURE							FAN SYSTEM:				
							TESTED BY:	DATE:	JOB #		
ADJUSTMENT OF OUTSIDE AIR VOLUME BY TEMPERATURE METHOD: RA - MA / RA - OSA											
FAN UNIT	OSA	TEST #1					TEST #2				
		RA °F	MA °F	OSA °F	% OSA TEST	% OSA REQUIRED	RA °F	MA °F	OSA °F	% OSA TEST	% OSA REQUIRED
	MIN										
	MAX										
	MIN										
	MAX										
	MIN										
	MAX										
	MIN										
	MAX										
	MIN										
	MAX										
	MIN										
	MAX										
NOTES: _____											

PROJECT _____

Title _____

5 OF 7

PUMP SYSTEM _____

AREA SERVED _____

DESIGN CONDITIONS

GALLONS PER MIN. _____

MOTOR H.P. _____

HEAD (FT) _____

HEAD (PSIG) _____

PUMP DATA

MOTOR DATA

MANUFACTURER _____

MANUFACTURER _____

H.P. _____

RATED RPM _____

FRAME _____

NAMEPLATE DATA _____

RATED VOLTS _____

PHASE _____

RATED AMPS _____

SERVICE FACTOR _____

IMPELLER DIAMETER _____

VFD CONTROLLED

YES

NO

THERMALLY PROTECTED

YES

NO

NO DATA

OPERATING DATA

STATS	TEST #1	TEST #2	TEST #3	TEST #4	TEST CONDITION(S)
PUMP SPEED					TEST 1 CONDITION _____
INLET PRESSURE					
OUTLET PRESSURE					TEST 2 CONDITION _____
HEAD (FT)					
GALLONS PER MIN.					TEST 3 CONDITION _____
ACTUAL AMPS					
ACTUAL VOLTS					TEST 4 CONDITION _____
NOTES:					

National Environmental Balancing Bureau



Recertification

THIS IS TO CERTIFY THAT

Precision Test & Balance, Inc.

in Tigard, OR

HAS MET ALL REQUIREMENTS FOR RENEWAL OF NEBB
CERTIFICATION IN THE FOLLOWING DISCIPLINE

Air & Hydronics Systems

FOR THE BOARD OF DIRECTORS:

Exp. March 31, 2016

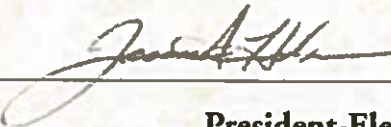
Precision Test & Balance, Inc./OR

No. 3520

NEBB Cert. No.



President



President-Elect

National Environmental Balancing Bureau



Recertification

THIS IS TO CERTIFY THAT

Douglas L. Forster

with Precision Test & Balance, Inc. in Tigard, OR

HAS MET ALL THE NEBB REQUIREMENTS FOR
NEBB CERTIFIED PROFESSIONAL STATUS IN

Air & Hydronics Systems

FOR THE BOARD OF DIRECTORS:

A handwritten signature in black ink, appearing to read 'R. Zinder', written over a horizontal line.

President

A handwritten signature in black ink, appearing to read 'Jacob A. ...', written over a horizontal line.

President-Elect

Exp. March 31, 2016

Precision Test & Balance, Inc./OR

No. 3520

NEBB Cert. No.