

DEFINITIONS

Architect Services, Engineer Services, Land Surveying Services, Assayer Services, Geologist Services and Landscape Architect Services: Those professional services within the scope of the practice of those services as provided in ARS § 32-101.

Branch Office: A geographically distinct place of business or subsidiary office of a firm that has a key role on the team.

Discipline: Primary technical capabilities of key personnel, as evidenced by academic degree, professional registration, certification, and/or extensive experience.

Firm: Defined in ARS § 32-101(B.19.).

Key Personnel: Individuals who will have major contract responsibilities and/or provide unusual or unique expertise.

SPECIFIC INSTRUCTIONS:

1. Complete this form for each branch office seeking work under this RFQ.
 - a. – e. **Firm (or Branch Office) Name and Address.** Self-explanatory.
 - f. **Year Established.** Enter the year the firm (or branch office, if appropriate) was established under the current name.
 - g. **Ownership.**
 - (g1). *Type.* Enter the type of ownership or legal structure of the firm (sole proprietor, partnership, corporation, joint venture, etc.).
 - (g2). *Small Business Status.* A firm is a small business if the firm has less than 100 employees **or** has gross revenues of \$4 million or less.
 - h.-j. **Point of Contact.** Provide this information for a representative of the firm that the Customer can contact for additional information. The representative must be empowered to speak on contractual and policy matters.
 - k. **Name of Firm.** Enter the name of the firm.
2. **Employees by Discipline.**
 - a. Select disciplines from the List of Disciplines (Function Code) listed on Page 3 of 4 Instructions. For employees that do not qualify for any of the disciplines, select Other. *Note: The intended searchable database indicated in the RFQ will be populated from the Qualifications Form I Excel attachment only.*
 - b. Each person can be counted only twice; once for his/her primary function and once for his/her secondary function. Primary and secondary functions should be indicated by including a "P" or an "S" in column b after the Description Title is given.
 - c-d. If the form is completed for a firm (including all branch offices), enter the number of employees by disciplines in column c. If the form is completed for a branch office, enter the number of employees by discipline in column d and for the firm in column c.
3. **Profile of Firm's Experience and Annual Average Revenue for Last Year.**
 - a. Enter the approximate number of projects the firm (or branch) has done attributable by Profile Code listed on Page 3 of 4 Instructions over the last year.
 - b. Enter the appropriate Profile Codes from Instructions Pages 3 of 4 that represent the type of work the firm (or branch) has done over the last year.
 - c. Using the Revenue Index Number on Page 3 of 6 Form, indicate the approximate revenue the firm has

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earned over the last year per Profile Code entered into the table.

4. **Resumes of Key Personnel Proposed for This Contract.** Complete this section for each key person who will participate in this contract.
 - a. Self-explanatory.
 - b. Self-explanatory
 - c. Total years of relevant experience (block c1), and years of relevant experience with current firm, but not necessarily the same branch office (block c2).
 - d. Name, City and State of the firm where the person currently works, which must correspond with one of the firms (or branch office or a firm, if appropriate) listed in Section 1.
 - e. Provide information on the highest relevant academic degree(s) received. Indicate the area(s) of specialization for each degree.
 - f. Provide information on current relevant professional registration(s) and in which State(s) they are current.
 - g. Provide information on any other professional qualifications relating to this contract, such as education, professional registration, publications, organizational memberships, certifications, training, awards, and foreign language capabilities.
 - h. Provide information on no more than five (5) projects in the last year which the person had a significant role that demonstrates the person's capability relevant to her/his proposed role in this contract. These projects do not necessarily have to be any of the projects presented in Section 5 for the project team if the person was not involved in any of those those projects or the person worked on other projects that were more relevant than the team projects in Section 5. Use the check box provided to indicate if the project was performed with any office of the current firm. If any of the professional services or construction projects are not complete, leave Year Completed blank and indicate the status in Brief Description and Specific Role.

5. **Example Projects Which Best Illustrate Firms Qualification for this contract.** Select project where multiple team members worked together, if possible, that demonstrate the team's capability to perform work similar to that required for this contract. Complete one Section 5 for each project. List no more than five (5) projects.
 - a. Title and Locations of project or contract. For an indefinite delivery contract, the location is the geographic scope of the contract.
 - b. Enter the year completed of the professional services (such as planning, engineering study, or design), and/or the year completed if construction. If any of the professional services or the construction projects are not complete, leave Year Completed blank and indicate the status in Brief Description of Project and Relevance to This Contract (block f).
 - c. Project Owner or user, such as a government agency or installation, an institution, a corporation or private individual.
 - d. Provide the original budget or not to exceed dollar amount for the project.
 - e. Provide the Total Cost of the Project. If any of the professional services or construction projects is not complete, indicate the percentage complete and whether this project will be on budget, over or under budget.
 - f. Brief Description: Indicate scope, size, and length of project, principle elements and special features of the project. Discuss the relevance of the example project to this contract.

6. **Additional Information.** Use this section to provide additional information you feel may be necessary to describe your firm's qualifications for this contract.

7. **Annual Average Professional Services Revenues of Firm for Last 3 Years.** Complete this block for the firm or branch office for which this form is completed. In column a, enter an approximate percentage of total work attributable to State, Federal or Municipal Work. In column b, enter an approximate percentage of total work attributable to Non-Government work. Percentages should take into consideration work completed over the last 3 years.

8. **Authorized Representative.** An authorized representative of the firm or branch office must sign and date the completed form. Signing attests that the information provided is current and factual. Provide the name and title of the authorized representative who signed the form.

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List of Disciplines (Function Codes) for Question 7

Aeronautical Engineer	Environmental Engineer	Mining Engineer
Agricultural Engineer	Environmental Scientist	Nuclear Engineer
Archeologist	Fire Protection Engineer	Petroleum Engineer
Architect	Geodetic Surveyor	Photogrammetrist
Architectural Engineering	Geographic Information System Specialist	Project Manager
Biologist	Geological Engineer	Sanitary Engineer
CADD Technician	Geologist	Soils Engineer
Chemical Engineer	Hydrographic Surveyor	Structural Engineer
Civil Engineer	Hydraulic Engineer	Technician/Analyst
Construction Manager	Hydrologist	Transportation Engineer
Construction Inspector	Industrial Engineer	Water Resources Engineer
Control Systems Engineer	Landscape Architect	
Cost Engineer/Estimator	Mechanical Engineer	
Ecologist	Metallurgical Engineer	
Electrical Engineer		

List of Experience Categories (Profile Codes for Question 8)

Acoustics, Noise Abatement	Dredging Studies and Design
Aerial Photography; Airborne Data and Imagery Collection and Analysis	Design & Planning Structured Parking Facilities
Activity Centers	Detention Security Systems
Air Pollution Control	Disability / Special Needs
Airports; Navajds; Airport Lighting; Aircraft Fueling	Ecological and Archeological Investigations
Airports; Terminals and Hangars; Freight Handling	Educational Facilities; Classrooms
Agricultural Development; Grain Storage; Farm Mechanization	Electrical Studies and Design
Animal Facilities	Electronics
Anti-Terrorism/Force Protection	Elevators; Escalators; People-Movers
Area Master Planning	Energy / Water Auditing Savings
Auditoriums and Theaters	Energy Conservation; New Energy Sources
Automation; Controls; Instrumentation	Environmental Impact Studies, Assessments or Statements
Barracks; Dormitories	Fallout Shelters; Blast-Resistant Design
Bridge Design: Bridges	Fire Protection
Cartography	Fisheries; Fish Ladders
Cemeteries (<i>Planning and Relocation</i>)	Forensic Engineering
Chemical Processing and Storage	Garages; Vehicles Maintenance Facilities; Parking
Child Care/Development Facilities	Gas Systems (<i>Propane; Natural, Etc.</i>)
Codes; Standards; Ordinances	Geodetic Surveying: Ground and Airborne
Cold Storage; Refrigeration and Fast Freeze	Heating; Ventilating; Air Conditioning
Commercial Building (<i>Low Rise</i>); Shopping Centers	Highways; Streets; Airfield Paving; Parking Lots
Community Facilities	Historical Preservation
Communications Systems; TV; Microwave	Hospital and Medical Facilities
Computer Facilities	Hotels; Motels
Conservation and Resource Management	<i>Housing (Residential, Multi-Family; Apartments; Condominiums)</i>
Construction Management	Hotels; Motels
Construction Surveying	Hydraulics and Pneumatics
Corrosion Control; Cathodic Protection Electrolysis	Hydrographic Surveying
Cost Estimating; Cost Engineering and Analysis; Parametric Costing; Forecasting	Industrial Buildings; Manufacturing Plants
Cryogenic Facilities	Industrial Processes; Quality Control
Construction Materials Testing	Industrial Waste Treatment
Dams (<i>Concrete; Arch</i>)	Intelligent Transportation Systems
Dams (<i>Earth; Rock</i>); Dikes; Levees	Infrastructure
Desalinization (<i>Process and Facilities</i>)	Irrigation; Drainage
Design-Build - Preparation of Requests for Proposals	Judicial and Courtroom Facilities
Digital Elevation and Terrain Model Development	Laboratories; Medical Research Facilities
Digital Orthophotography	Land Surveying
Dining Halls; Clubs; Restaurants	Landscape Architecture
	Libraries; Museums; Galleries

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Lighting (*Interior; Display; Theater, Etc.*)
Lighting (*Exteriors; Streets; Memorials; Athletic Fields, Etc.*)
Labs - General
Labs – Research – Dry
Labs – Research – Wet
LEED Accredited A/E
LEED Independent 3rd Party Building Commissioning
Mapping Location/Addressing Systems
Materials Handling Systems; Conveyors; Sorters
Metallurgy
Materials Testing
Measurement / Verification / Conservation Water Consumption Savings
Mining and Mineralogy
Medical Related
Modular Systems Design; Fabricated Structures or Components
Mold Investigation
Museums
Nuclear Facilities; Nuclear Shielding
Office Buildings; Industrial Parks
Outdoor Recreation
Petroleum and Fuel (*Storage and Distribution*)
Photogrammetry
Pipelines (*Cross-Country - Liquid and Gas*)
Phase I Environmental
Prisons & Correctional Facilities
Plumbing and Piping Design
Prisons and Correctional Facilities
Product, Machine Equipment Design Pneumatic Structures, Air-Support Buildings Power Generation, Transmission, Distribution Public Safety Facilities
Radar; Sonar; Radio and Radar Telescopes
Radio Frequency Systems and Shielding's
Railroad; Rapid Transit
Recreation Facilities (*Parks, Marinas, Etc.*)
Refrigeration Plants/Systems
Rehabilitation (*Buildings; Structures; Facilities*)
Research Facilities
Resources Recovery; Recycling
Roof Infrared Imaging to Identify Water Leaks

Roofing
Safety Engineering; Accident Studies; OSHA Studies
Security Systems; Intruder and Smoke Detection
Seismic Designs and Studies
Sewage Collection, Treatment and Disposal
Soils and Geologic Studies; Foundations
Solar Energy Utilization
Solid Wastes; Incineration; Landfill
Special Environments; Clean Rooms, Etc.
Structural Design; Special Structures
Surveying; Platting; Mapping; Flood Plain Studies
Sustainable Design
Swimming Pools
Storm Water Handling and Facilities
Specifications Writing
Toxicology
Testing and Inspection Services
Traffic and Transportation Engineering
Topographic Surveying and Mapping
Towers (*Self-Supporting and Guyed Systems*)
Tunnels and Subways
Traffic Studies
Transportation
Urban renewals; Community Development
Utilities (*Gas and Steam*)
Value Analysis; Life-Cycle Costing
Warehouse and Depots
Water Resources; Hydrology; Ground Water
Water Supply; Treatment and Distribution
Wind Tunnels; Research/Testing Facilities Design
Waste Water Treatment Facility
Water Well Rehabilitation; Water Well Work
Zoning; Land Use Studies

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(If a firm has branch offices, complete for each specific branch office seeking work.)

1. REVISED ADSPO13-00003465: Annual Request for Qualifications

a.	FIRM (OR BRANCH OFFICE) NAME:	Total Building Commissioning (TBC)
b.	FIRM (OR BRANCH OFFICE) STREET:	1501 West Fountainhead Parkway, Suite 330
c.	FIRM (OR BRANCH OFFICE) CITY:	Tempe
d.	FIRM (OR BRANCH OFFICE) STATE:	AZ
e.	FIRM (OR BRANCH OFFICE) ZIP CODE:	85282
f.	YEAR ESTABLISHED:	1986
(g1).	OWNERSHIP - TYPE:	Corporation
(g2).	OWNERSHIP - SMALL BUSINESS STATUS:	Small—AZ; Small—Federal
h.	POINT OF CONTACT NAME AND TITLE:	Todd A. Watson, Commissioning Authority
i.	POINT OF CONTACT TELEPHONE NUMBER:	480-621-3454
j.	POINT OF CONTACT E-MAIL ADDRESS:	taw@tbcxinc.com
k.	NAME OF FIRM (If block 1a is a branch office):	

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2. EMPLOYEES BY DISCIPLINE

a. Discipline Title	b. Function: Primary (P) or Secondary (S)	c. No. of Employees - Firm	d. No. of Employees - Branch
Project Manager	S	9	
Electrical Engineer	P	2	
Fire Protection Engineer	P	2	
Mechanical Engineer	P	5	
Technician/Analyst	P	1	
Total	10		

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3. PROFILE OF FIRM'S EXPERIENCE AND ANNUAL AVERAGE REVENUE FOR LAST YEAR

a. Approximate No. of Projects	b. Experience	c. Revenue Index Number (see below)
3	Commercial Building (Low Rise); Shopping Centers	2
1	Educational Facilities; Classrooms	4
4	Hospital and Medical Facilities	1
2	Laboratories; Medical Research Facilities	3
13	Office Buildings; Industrial Parks	3
4	Community Facilities	3
26	LEED Accredited A/E	4
23	LEED Independent 3 rd Party Building Commissioning	4

PROFESSIONAL SERVICES REVENUE INDEX NUMBER

- | | |
|---|---|
| 1. Less than \$100,000 | 6. \$2 million to less than \$5 million |
| 2. \$100,000 to less than \$250,000 | 7. \$5 million to less than \$10 million |
| 3. \$250,000 to less than \$500,000 | 8. \$10 million to less than \$25 million |
| 4. \$500,000 to less than \$1 million | 9. \$25 million to less than \$50 million |
| 5. \$1 million to less than \$2 million | 10. \$50 million or greater |

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4. RESUMES OF KEY PERSONNEL PROPOSED FOR THIS CONTRACT (Complete one Section 4 for each key person.)

a. NAME Todd A. Watson, CxA, LEED AP, QCxP		b. ROLE IN THIS CONTRACT Commissioning Authority		c. YEARS EXPERIENCE	
				1. TOTAL 18	2. WITH CURRENT FIRM 2
d. FIRM NAME AND LOCATION (City and State) Total Building Commissioning, Tempe, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) A.S. Computer Technology			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Certified Commissioning Authority (CxA) / AABC Commissioning Group (ACG) / 2013 Green Building Certification Institute, LEED AP Qualified Commissioning Process Provider (QCxP) Certified Corrosion Consultant, Purdue University		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) With 18 years of experience in the commissioning and design industry, Mr. Todd Watson, CxA, LEED AP, QCxP, is a hands-on commissioning authority with an aggressive approach to the commissioning process and integration into clients' projects. He is dedicated to collaborating with owners, design professionals and contractors, to ensure successful, high-performance projects that meet the owners' project requirements (OPR). Mr. Watson possesses eight years of construction experience. This gives him added insight into the design, building and commissioning process and the constructability of his designs from a contractor's perspective. With a lessons learned approach to each of his projects, Mr. Watson has created instrumental processes that have streamlined commissioning and design projects, which helps to maintain budgets. He is a qualified and experienced project manager and is comfortable managing teams commissioning/designing multiple projects, observing the progression of each project, and maintaining client relations.					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (City and State) Arizona State University Lattie F. Coor Hall Generator Reliability Phase 2B, Tempe AZ		(2) Year Completed		
			Professional Services 2013	Construction (if applicable) 2014	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Total Building Commissioning, is providing the required building commissioning services for achieving a constructed and operating building systems that meets the design intent and occupant's expectations. Commissioning activities are being provided during the Design, Construction and Acceptance Phases of the building delivery process. This project consisted of upgrading the HVAC and electrical infrastructure for the Intermediate Data Frame (IDF) and Main Data Frame (MDF) rooms within the facility. This includes installation of mechanical split systems, standby generator, and redundant automatic transfer switches and UPS systems to all critical loads. The mechanical and electrical systems are anticipated to be monitored by the central plant.		<input checked="" type="checkbox"/> Check if project performed with current firm		
2)	(1) TITLE AND LOCATION (City and State) Arizona State University ISTB 1 Commissioning (Phase 2b of the ASU Redundancy & Reliability Upgrade), Tempe, Arizona		(2) Year Completed		
			Professional Services 2013	Construction (if applicable) 2014	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE The project involves commissioning the systems for the research facility and data center areas affirming "no operational failure" can occur. The commissioning process is to test and verify that any maintenance or equipment failure would result in the system's sensing the problem and automatically shift to a backup/redundant system.		<input checked="" type="checkbox"/> Check if project performed with current firm		
3)	(1) TITLE AND LOCATION (City and State) Nu Skin Innovation Center and Downtown Expansion Project Commissioning, LEED® Silver Provo, UT		(2) Year Completed		
			Professional Services 2010	Construction (if applicable) 2013	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Total Building Commissioning (TBC) commissioned the \$100 million, 164,000 sq. ft. expansion of Nu Skin's global headquarters in Provo, UT. As the project's commissioning authority, TBC commissioned systems for the Data Center, Innovation Center, and the Building Envelope / Exterior.		<input checked="" type="checkbox"/> Check if project performed with current firm		

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a. NAME Ray Dodd, PE, LEED AP, CxA		b. ROLE IN THIS CONTRACT Principal Commissioning Authority		c. YEARS EXPERIENCE	
				2. TOTAL 27	2. WITH CURRENT FIRM 3
d. FIRM NAME AND LOCATION (<i>City and State</i>) Total Building Commissioning, Tempe, AZ					
e. EDUCATION (<i>DEGREE AND SPECIALIZATION</i>) B.S. Mechanical Engineering			f. CURRENT PROFESSIONAL REGISTRATION (<i>STATE AND DISCIPLINE</i>) Registered Professional Engineer / Utah #7521532-2202 Registered Professional Engineer / Colorado #29078 Leadership in Energy and Environmental Design Accredited Professional (LEED AP) / Version 2.2 Certified Commissioning Authority (CxA) / AABC Commissioning Group (ACG) / 2010		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) Mr. Dodd possesses a wide breadth of experience, totaling more than 25 years, in the mechanical facilities field with extensive knowledge of commercial, industrial, institutional and high-technology mechanical facilities systems. He is a skilled project manager proficient at handling the logistic, technical and communications challenges required in the commissioning, construction, design and sales process. He has been the owner of an HVAC service company, which has given him hands-on experience and provided him with additional insight into constructability of his designs as well as the issues faced by owners and facilities personnel throughout the commissioning process. He has served as a LEED commissioning engineer. Member—PI TAU SIGMA, Mechanical Engineering Honor Society; American Society of Heating, Refrigerating, Air-Conditioning Engineers (ASHRAE); American Society of Energy Engineers (ASEE).					
H. RELEVANT PROJECTS					
(1) TITLE AND LOCATION (<i>City and State</i>) 222 South Main, Salt Lake City, UT		(2) Year Completed			
		Professional Services 2010		Construction (<i>if applicable</i>) 2011	
1) (3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE		<input checked="" type="checkbox"/> Check if project performed with current firm			
Total Building Commissioning (TBC) commissioned the following systems at the 154,000 sq. ft., \$45 million tenant finish of seven floors at the 222 South Main building in Salt Lake City, Utah: Electrical; Mechanical; Fire protection; Security; Building Automation System (BAS). This financial services company has designated the high-rise at 222 South Main, Salt Lake City, Utah as a mission-critical regional service center for 1500 associates transferring to the facility in the spring of 2011. The project includes a tenant finish of six office floors, one floor of amenity/conference center space, and several data and technology support spaces. Systems include a 1800 kW dual fuel generator, redundant Uninterruptible Power Supply (UPS) and battery backup, automatic transfer switches on each floor controlled by a programmable logic controller (PLC) and infrastructure upgrades including a new chiller, cooling tower and makeup air handlers. The fit-up of the 154,000 sq. ft. space included a complete under-floor air distribution system and NC 25 sound criteria. In addition to commissioning the building systems, Total Building Commissioning conducted generator and UPS burn-in tests, load-bank testing, integrated system testing and several full-project "pull the plug" tests.					
(1) TITLE AND LOCATION (<i>City and State</i>) University of Utah Daybreak Specialty Care Center, South Jordan, UT		(2) Year Completed			
		Professional Services 2011		Construction (<i>if applicable</i>) 2011	
2) (3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE		<input checked="" type="checkbox"/> Check if project performed with current firm			
Principal commissioning authority for this approximately \$52 million (budget), 108,000 GSF, 3-story, Type 2A & 2B building. The facility comprises 60% enclosed office / exam room space, 10% open and circulation space, and 30% outpatient surgery space. The facility is designed as a multiservice Medical Office Building including other support services such as pharmaceutical services and cafeteria. The space distribution includes both surgical and clinical components (occupancy codes I and B), and is allocated at approximately 35%/65% respectively. In addition to the building and parking improvements, University AirMed has flight operations and a landing zone incorporated into the development. This is a turn-key project that includes both core & shell construction and tenant improvement build-out. The owner is seeking a Silver Level Certification Standard for LEED® NC 2.2 for New Construction. Mr. Dodd and his team commissioned the following systems: HVAC systems, Building Automation Systems (controls), plumbing and fire suppression systems, electrical systems including "normal" power, emergency power and fire/life safety systems; and security systems.					

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a. NAME Roger Shearrow, PE, CxTS, LEED AP		b. ROLE IN THIS CONTRACT Project Commissioning Authority/ Mechanical Engineer		c. YEARS EXPERIENCE	
		3. TOTAL	2. WITH CURRENT FIRM		
		17	2		
d. FIRM NAME AND LOCATION (<i>City and State</i>) Total Building Commissioning, Tempe, AZ					
e. EDUCATION (<i>DEGREE AND SPECIALIZATION</i>) B.S. Mechanical Engineering			f. CURRENT PROFESSIONAL REGISTRATION (<i>STATE AND DISCIPLINE</i>) Registered Professional Engineer—Mechanical/Arizona #37366		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) Mr. Shearrow is a registered professional engineer with more than 15 years of experience designing and commissioning HVAC, plumbing and fire sprinkler systems. He has extensive experience providing engineering and commissioning for various types of projects. He also possesses advanced knowledge of CHVAC with load calculations and U-Factor Calculator as well as Trane Trace 700. Other Training/Certifications include: Commissioning Process Technical Service Provider (CxTS); LEED Accredited Professional; Fire Sprinkler Design Certificate AFSA, Autodesk Building Systems (MEP) Training Certificate, and Autodesk Revit Training Certificate.					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (<i>City and State</i>) Arizona State University Lattie F. Coor Hall Generator Reliability Phase 2B, Tempe AZ		(2) Year Completed		
			Professional Services 2013	Construction (<i>if applicable</i>) 2014	
	(3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE Total Building Commissioning, is providing the required building commissioning services for achieving a constructed and operating building systems that meets the design intent and occupant's expectations. Commissioning activities are being provided during the Design, Construction and Acceptance Phases of the building delivery process. This project consisted of upgrading the HVAC and electrical infrastructure for the Intermediate Data Frame (IDF) and Main Data Frame (MDF) rooms within the facility. This includes installation of mechanical split systems, standby generator, and redundant automatic transfer switches and UPS systems to all critical loads. The mechanical and electrical systems are anticipated to be monitored by the central plant.		<input checked="" type="checkbox"/> Check if project performed with current firm		
2)	(1) TITLE AND LOCATION (<i>City and State</i>) Arizona State University ISTB 1 Commissioning (Phase 2b of the ASU Redundancy & Reliability Upgrade), Tempe, Arizona		(2) Year Completed		
			Professional Services 2013	Construction (<i>if applicable</i>) 2014	
	(3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE The project involves commissioning the systems for the research facility and data center areas affirming "no operational failure" can occur. The commissioning process is to test and verify that any maintenance or equipment failure would result in the system's sensing the problem and automatically shift to a backup/redundant system.		<input checked="" type="checkbox"/> Check if project performed with current firm		
3)	(1) TITLE AND LOCATION (<i>City and State</i>) University of Utah Daybreak Specialty Care Center, South Jordan, UT		(2) Year Completed		
			Professional Services 2011	Construction (<i>if applicable</i>) 2011	
	(3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE The facility comprises 60% enclosed office / exam room space, 10% open and circulation space, and 30% outpatient surgery space. The facility is designed as a multiservice Medical Office Building including other support services such as pharmaceutical services and cafeteria. The space distribution includes both surgical and clinical components (occupancy codes I and B), and is allocated at approximately 35%/65% respectively. In addition to the building and parking improvements, University AirMed has flight operations and a landing zone incorporated into the development. This is a turn-key project that includes both core & shell construction and tenant improvement build-out. The owner is seeking a Silver Level Certification Standard for LEED® NC 2.2 for New Construction. TBC commissioned the following systems: HVAC systems, Building Automation Systems (controls), plumbing and fire suppression systems, electrical systems including "normal" power, emergency power and fire/life safety systems; and security systems.		<input checked="" type="checkbox"/> Check if project performed with current firm		

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a. NAME Larry L. Hackleman, PE, LEED AP, QCxP		b. ROLE IN THIS CONTRACT Project Commissioning Authority/ Electrical and Mechanical Engineer		c. YEARS EXPERIENCE	
				4. TOTAL 21	2. WITH CURRENT FIRM 1
d. FIRM NAME AND LOCATION (<i>City and State</i>) Total Building Commissioning, Tempe, AZ					
e. EDUCATION (<i>DEGREE AND SPECIALIZATION</i>) B.S. Architectural Engineering			f. CURRENT PROFESSIONAL REGISTRATION (<i>STATE AND DISCIPLINE</i>) Registered Professional Engineer: Arizona #41990 - Electrical, 2004; Arizona #38532 - Mechanical, 2002; Kansas #14389 - Electrical and Mechanical, 1997 LEED AP - United States Green Building Council (USGBC) Leadership in Energy and Environmental Design, Accredited Professional QCxP - University of Wisconsin at Madison, Qualified Commissioning Process Provider		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) Mr. Hackleman has more than 20+ years of electrical and mechanical engineering experience, with an emphasis in electrical engineering design and management, as well as three years of commissioning experience for LEED and non-LEED projects. He is a focused and diligent individual, accustomed to responsibility. He has a strong sense of character and commitment to continual learning and self-improvement. He appreciates the science of engineering, the art of architecture and the importance of integrating the two. He is skilled in project management, engineering design, commissioning, and supervising personnel. He has a successful record of meeting deadlines and budgets, and following projects through completion. He is experienced in acting as a liaison between the MEP design team, architects and contractors and extensive experience in project management, group management, new construction, renovation, design-build, and Integrated Project Delivery teaming. Member – IES, IEEE, ASHE					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (<i>City and State</i>) Arizona State University Lattie F. Coor Hall Generator Reliability Phase 2B, Tempe AZ		(2) Year Completed		
			Professional Services 2013	Construction (<i>if applicable</i>) 2014	
(3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE Mr. Hackleman is the Principal Electrical Commissioning Authority for this 6,000 SF, \$1.6M project. It involved a New Redundant System A/System B UPS systems and distribution to MDF and IDF loads with dual power supplies, each backed up with generator power. Backup cooling systems on emergency power added to each IDF.			<input checked="" type="checkbox"/> Check if project performed with current firm		
2)	(1) TITLE AND LOCATION (<i>City and State</i>) Arizona State University ISTB 1 Commissioning (Phase 2b of the ASU Redundancy & Reliability Upgrade), Tempe, Arizona		(2) Year Completed		
			Professional Services 2013	Construction (<i>if applicable</i>) 2014	
(3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE The project involves commissioning the systems for the research facility and data center areas affirming “no operational failure” can occur. The commissioning process is to test and verify that any maintenance or equipment failure would result in the system’s sensing the problem and automatically shift to a backup/redundant system.			<input checked="" type="checkbox"/> Check if project performed with current firm		
3)	(1) TITLE AND LOCATION (<i>City and State</i>) Pottawatomie County Courthouse; Westmoreland, KS*		(2) Year Completed		
			Professional Services 2001	Construction (<i>if applicable</i>) 2001	
(3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE Mechanical and electrical engineering. Complete building renovation including large and small courtrooms. Expanded IDf and electrical rooms. PROJECT SIZE: 20,000 sq. ft.			<input type="checkbox"/> Check if project performed with current firm		

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a. NAME Jeffrey D. DuBois, PE, FPE, UBT-1		b. ROLE IN THIS CONTRACT Fire Protection Systems Commissioning Specialist/Principal Fire Protection Engineer		c. YEARS EXPERIENCE	
		5. TOTAL	7	2. WITH CURRENT FIRM	7
d. FIRM NAME AND LOCATION (City and State) Total Building Commissioning, Tempe, AZ					
e. EDUCATION (DEGREE AND SPECIALIZATION) B.S. Mechanical Engineering			f. CURRENT PROFESSIONAL REGISTRATION (STATE AND DISCIPLINE) Registered Fire Protection Engineer / Arizona / #46296 Registered Professional Engineer in three states including Utah/#265949-2202/2001 Utah Backflow Technician (UBT), Classification Level 1 / Certificate # 11123		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) Jeff DuBois, P.E., F.P.E., is a principal and licensed fire protection engineer (F.P.E.) and licensed professional mechanical engineer (P.E.) with 17 years of national design and project management experience in fire suppression systems for new and remodeled projects. His experience includes new fire suppression systems for more than 300 facilities and fire suppression system upgrades for more than 200 remodeled projects. He has overseen engineering services on projects across the country including underground piping systems, fire flow calculations, high piled storage systems, fire alarm systems, and commercial sprinkler systems. Mr. DuBois provides clients strong communication skills and sound engineering judgment, giving him the ability to consistently achieve desired results. He is accustomed to negotiating with building and fire department officials to implement the most effective fire protection for a project while mitigating unrealistic demands placed on the client. Member—National Fire Protection Association (NFPA); Society of Fire Protection Engineers (SFPE); Utah Society of Fire Protection Professionals (USFPP); Consultant/Writer for AIA/MASTERSPEC—sections include clean agents and foam systems.					
H. RELEVANT PROJECTS					
1)	(1) TITLE AND LOCATION (City and State) Arizona State University Lattie F. Coor Hall Generator Reliability Phase 2B, Tempe AZ		(2) Year Completed		
			Professional Services 2013	Construction (if applicable) 2014	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Total Building Commissioning, is providing the required building commissioning services for achieving a constructed and operating building systems that meets the design intent and occupant's expectations. Commissioning activities are being provided during the Design, Construction and Acceptance Phases of the building delivery process.		<input checked="" type="checkbox"/> Check if project performed with current firm		
2)	(1) TITLE AND LOCATION (City and State) University of Utah Daybreak Specialty Care Center, South Jordan, UT		(2) Year Completed		
			Professional Services 2011	Construction (if applicable) 2011	
	(3) BRIEF DESCRIPTION (Brief scope, size, cost, etc.) AND SPECIFIC ROLE Principal fire protection engineer/commissioning authority for this approximately \$52 million (budget), 108,000 GSF, 3-story, Type 2A & 2B building. The facility comprises 60% enclosed office / exam room space, 10% open and circulation space, and 30% outpatient surgery space. The facility is designed as a multiservice Medical Office Building including other support services such as pharmaceutical services and cafeteria. The space distribution includes both surgical and clinical components (occupancy codes I and B), and is allocated at approximately 35%/65% respectively. In addition to the building and parking improvements, University AirMed has flight operations and a landing zone incorporated into the development. This is a turn-key project that includes both core & shell construction and tenant improvement build-out. The owner is seeking a Silver Level Certification Standard for LEED® NC 2.2 for New Construction. Mr. Dodd and his team commissioned the following systems: HVAC systems, Building Automation Systems (controls), plumbing and fire suppression systems, electrical systems including "normal" power, emergency power and fire/life safety systems; and security systems.		<input checked="" type="checkbox"/> Check if project performed with current firm		

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a. NAME Susan Marshall, LEED AP		b. ROLE IN THIS CONTRACT Project Commissioning Authority		c. YEARS EXPERIENCE	
				6. TOTAL 33	2. WITH CURRENT FIRM 3
d. FIRM NAME AND LOCATION (<i>City and State</i>) Total Building Commissioning, Tempe, AZ					
e. EDUCATION (<i>DEGREE AND SPECIALIZATION</i>) B.S. Chemical Engineering			f. CURRENT PROFESSIONAL REGISTRATION (<i>STATE AND DISCIPLINE</i>) Leadership in Energy & Environmental Design Accredited Professional (LEED AP)		
g. OTHER PROFESSIONAL QUALIFICATIONS (Publications, Organizations, Training, Awards, etc.) Susan Marshall provides project management, planning, commissioning, and start-up services for commercial, industrial and utility projects. She is experienced in all phases of engineering, from conceptualization and detail design through construction, commissioning and start-up. Ms. Marshall has more than 30 years of international industrial experience including time spent in operations, process trouble shooting, process design, capital project management, construction and facility start-up. She has managed multiple capital projects and led interdisciplinary teams to successfully complete projects on time and within budget. She has a thorough understanding of project planning, incorporation of business objectives, contract negotiation, fiscal and resource projections, monitoring, reporting and controls. Her expertise also includes instrumentation & process control system implementation from large Distributed Control Systems to Building Automation Systems. Ms. Marshall has a wide breadth of experience coordinating teams for mechanical completion, commissioning, start-up and operation optimization for process and instrumentation systems and in Oil and Gas Refining and Storage, Power Plant, Chemical Solvents and Olefins Plants. Ms. Marshall is an experienced LEED® Commissioning Agent for Commercial Facilities and Mechanical Systems. She has served as a Client Representative for both Royal Dutch Shell and Deutsche Energy AG for all aspects of the process control systems design and implementation, from initial system design, through project management, and to on-site system startup and commissioning. Ms. Marshall has excellent written and verbal communications skills with co-workers and clients. She is fluent in both English and German and holds a German and Austrian Visa.					
H. RELEVANT PROJECTS					
(1) TITLE AND LOCATION (<i>City and State</i>) 222 South Main, Salt Lake City, UT		(2) Year Completed			
		Professional Services 2010	Construction (<i>if applicable</i>) 2014		
1)	(3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm TBC commissioned the following systems at the 154,000 sq. ft., \$45 million tenant finish of seven floors: Electrical; Mechanical; Fire protection; Security; Building Automation System (BAS). This financial services company has designated the high-rise as a mission-critical regional service center for 1500 associates transferring to the facility in the spring of 2011. The project includes a tenant finish of six office floors, one floor of amenity/conference center space, and several data and technology support spaces. Systems include a 1800 kW dual fuel generator, redundant Uninterruptible Power Supply (UPS) and battery backup, automatic transfer switches on each floor controlled by a programmable logic controller (PLC) and infrastructure upgrades including a new chiller, cooling tower and makeup air handlers. The fit-up of the 154,000 sq. ft. space included a complete under-floor air distribution system and NC 25 sound criteria.				
(1) TITLE AND LOCATION (<i>City and State</i>) University of Utah Daybreak Specialty Care Center, South Jordan, UT		(2) Year Completed			
		Professional Services 2011	Construction (<i>if applicable</i>) 2011		
2)	(3) BRIEF DESCRIPTION (<i>Brief scope, size, cost, etc.</i>) AND SPECIFIC ROLE <input checked="" type="checkbox"/> Check if project performed with current firm Mechanical commissioning authority for this approximately \$52 million (budget), 108,000 GSF, 3-story, Type 2A & 2B building. The facility comprises 60% enclosed office / exam room space, 10% open and circulation space, and 30% outpatient surgery space. The facility is designed as a multiservice Medical Office Building including other support services such as pharmaceutical services and cafeteria. The space distribution includes both surgical and clinical components (occupancy codes I and B), and is allocated at approximately 35%/65% respectively. In addition to the building and parking improvements, University AirMed has flight operations and a landing zone incorporated into the development. This is a turn-key project that includes both core & shell construction and tenant improvement build-out. The owner is seeking a Silver Level Certification Standard for LEED® NC 2.2 for New Construction. Mr. Dodd and his team commissioned the following systems: HVAC systems, Building Automation Systems (controls), plumbing and fire suppression systems, electrical systems including “normal” power, emergency power and fire/life safety systems; and security systems.				

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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT		
(Present no more than five (5) projects. Complete one Section 5 for each project.)		
a. TITLE AND LOCATION (City and State)	b. YEAR COMPLETED	
Multi-Agency State Office Building, Salt Lake City, UT	PROFESSIONAL SERVICES 2008	CONSTRUCTION (If applicable) 2008
23. PROJECT OWNER'S INFORMATION		
c. PROJECT OWNER State of Utah	d. DOLLAR AMOUNT OF PROJECT \$40,000,000	e. TOTAL COST OF PROJECT \$40,000,000

f. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)
Spectrum Engineers provided electrical engineering and technology and lighting design for this approximately 180,000 sq. ft., \$40 million (approximate budget) new facility to house Department of Human Services and Department of Environmental Quality and other state agencies. Spaces include a cafeteria, lockers/showers, fitness facility and reception area. The project includes a 700-stall parking lot.

Spectrum Engineers was responsible for the electrical engineering scope of work including all electrical and technology, A/V systems, security systems, card access, CCTV, telecommunications raceway infrastructure, power, lighting, specialty artwork lighting, fire alarm, emergency standby power and exterior lighting.

The building was designed to meet the state's High Performance Design Standards and is beating the energy code by at least 10%. This was accomplished by using occupancy and daylighting controls in the building. Although the budget for this project was tight, Spectrum was able to design a Class A office building lighting system within budget.

Spectrum also designed a temporary power solution for the building that allowed construction and occupancy to occur while Rocky Mountain Power was still upgrading the substation that supplies the building with power.

The office building was designed in a compressed timeframe using multiple bid packages.

Spectrum subsidiary Total Building Commissioning (TBC) was the commissioning authority for this building and commissioned the following systems:

- Electrical
 - Normal power systems
 - Emergency power generators
 - Automatic transfer switching
- Mechanical
 - HVAC systems
 - Energy-related plumbing systems
- Building Automation and Control Systems (BMCS)
 - Building HVAC control systems
 - Lighting control systems
 - Daylight dimming control systems



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present no more than five (5) projects. Complete one Section 5 for each project.)

b. TITLE AND LOCATION <i>(City and State)</i>	b. YEAR COMPLETED	
Nu Skin Innovation Center and Downtown Expansion Project Commissioning, LEED® Silver, Provo, UT	PROFESSIONAL SERVICES 2013	CONSTRUCTION <i>(If applicable)</i> 2013

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER Nu Skin Enterprises	d. DOLLAR AMOUNT OF PROJECT \$100,000,000	e. TOTAL COST OF PROJECT \$100,000,000
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g. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)
Total Building Commissioning (TBC) commissioned the \$100 million, 164,000 sq. ft. expansion of Nu Skin's global headquarters in Provo, UT. As the project's commissioning authority, TBC commissioned the building envelope, and:

Data Center-and related systems

- Uninterruptible Power Supply (UPS) systems
- Emergency Power Supply (EPS) systems, including
- Generator
- Automatic transfer switches
- Power distribution systems
- Under floor air leak (integrity) tests—perforated tile and airflow
- All computer room air-conditioning (CRAC) units and associated data center cooling systems
- Hydrostatic testing of sprinkler systems
- Pre-action systems
- Fire alarm system interaction with HVAC systems and fire smoke dampers
- Building management system (BAS)/building automation system (BAS)/direct digital control (DDC) system
- Interior and exterior lighting systems (occupancy sensors, daylight dimming, lighting scenes, lighting controls)

Innovation Center-related systems and equipment

- UPS systems
- EPS systems
- Power distribution systems
- All HVAC systems
- Laboratory ventilation systems
- Laboratory fume hoods
- Fire sprinkler systems, including system pumps and storage tanks
- Pre-action systems
- Fire alarm system interaction with HVAC and fire smoke dampers
- Stairway pressurization systems
- Atrium smoke control
- BMS/BAS/DDC system
- Domestic hot water plumbing systems
- Automatic plumbing systems
- Interior and exterior lighting systems
- Building envelope
- Security systems (CCTV and access control)



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT		
<i>(Present no more than five (5) projects. Complete one Section 5 for each project.)</i>		
c. TITLE AND LOCATION <i>(City and State)</i>	b. YEAR COMPLETED	
	222 South Main, Salt Lake City, UT	PROFESSIONAL SERVICES 2010
23. PROJECT OWNER'S INFORMATION		
c. PROJECT OWNER Financial Services Company	d. DOLLAR AMOUNT OF PROJECT \$45,000,000	e. TOTAL COST OF PROJECT \$45,000,000

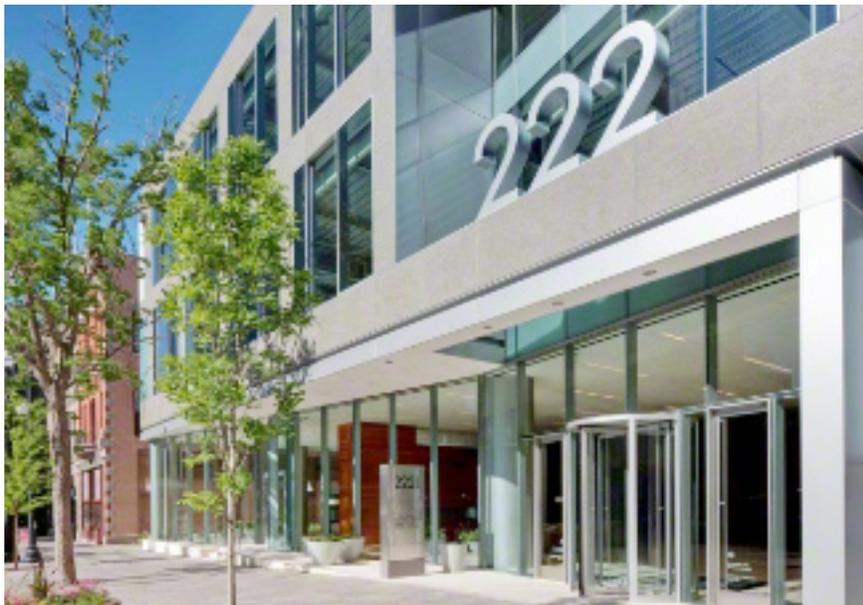
h. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)
Total Building Commissioning (TBC) commissioned the following systems at the 154,000 sq. ft., \$45 million tenant finish of seven floors at the 222 South Main building in Salt Lake City, Utah:

- Electrical
- Mechanical
- Fire protection
- Security
- Building Automation System (BAS)

This financial services company has designated the high-rise at 222 South Main, Salt Lake City, Utah as a mission-critical regional service center for 1500 associates transferring to the facility in the spring of 2011.

The project includes a tenant finish of six office floors, one floor of amenity/conference center space, and several data and technology support spaces. Systems include a 1800 kW dual fuel generator, redundant Uninterruptible Power Supply (UPS) and battery backup, automatic transfer switches on each floor controlled by a programmable logic controller (PLC) and infrastructure upgrades including a new chiller, cooling tower and makeup air handlers. The fit-up of the 154,000 sq. ft. space included a complete under-floor air distribution system and NC 25 sound criteria.

In addition to commissioning the building systems, Total Building Commissioning conducted generator and UPS burn-in tests, load-bank testing, integrated system testing and several full-project "pull the plug" tests.



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT		
<i>(Present no more than five (5) projects. Complete one Section 5 for each project.)</i>		
d. TITLE AND LOCATION <i>(City and State)</i>	b. YEAR COMPLETED	
University of Utah Specialty Care Center at Daybreak, South Jordan, UT	PROFESSIONAL SERVICES 2011	CONSTRUCTION <i>(If applicable)</i> 2011
23. PROJECT OWNER'S INFORMATION		
c. PROJECT OWNER University of Utah/Rio Tinto - Land	d. DOLLAR AMOUNT OF PROJECT \$50,000,000	e. TOTAL COST OF PROJECT \$50,000,000

i. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)
 The University of Utah Health Care, completed the new Utah Specialty Care Center at Daybreak in late fall 2011. The 208,000-square-foot facility, located at the Daybreak community in South Jordan, Utah, will house primary and emergency health care services including outpatient examination rooms, a surgical center with four operating suites, a pharmacy, a 24-hour-a-day emergency room and an AirMed helicopter landing pad to allow for the transfer of patients to the University of Utah Medical Center. Additionally the facility has been designed to achieve a LEED® Silver certification. The new South Jordan Health Center will offer specialty care in the areas of cardiology, dermatology, gastroenterology, neurology, obstetrics and gynecology, oncology, optometry, orthopedics, physical therapy, psychiatry, and radiology, as well as being the first phase of a larger planned medical campus.

Systems Commissioned:

- HVAC
- Building Automation System (BAS)
- Fire Protection
- Lighting Controls
- Electrical/Emergency Power
- Security
- Fire alarm and Protection Systems
- Mass notification system
- Nurse Call



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT		
<i>(Present no more than five (5) projects. Complete one Section 5 for each project.)</i>		
e. TITLE AND LOCATION <i>(City and State)</i>	b. YEAR COMPLETED	
Arizona State University ISTB1 Commissioning (Phase 2B of the ASU Redundancy & Reliability Upgrade), Tempe, AZ	PROFESSIONAL SERVICES 2013	CONSTRUCTION <i>(If applicable)</i> 2014 (expected)
23. PROJECT OWNER'S INFORMATION		
c. PROJECT OWNER Arizona State University	d. DOLLAR AMOUNT OF PROJECT \$5,000,000	e. TOTAL COST OF PROJECT \$5,000,000

j. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

This existing building is a LEED® Gold Certified Building classified as a Critical “C1” building. Includes a data center serving the entire campus with a “U3” classification. ISTB 1 also houses the ASU Vivarium Research unit and Nuclear Magnetic Resonance (NMR) along with other research areas. The project involves commissioning the systems for the research facility and data center areas affirming “no operational failure” can occur. The commissioning process is to test and verify that any maintenance or equipment failure would result in the system’s sensing the problem and automatically shift to a backup/redundant system. Building systems were originally designed to incorporate these failsafe systems without any downtime allowed. Though this building was fed with steam and chilled water from a campus central plant and alternate CHP, all were considered as “failable” and the design intent dictated that ISTB 1 would operate independently of any fuel, electric or temperature transfer media. The project consists of upgrading the existing HVAC and electrical infrastructure to include a complete local redundant chilled water, air handler, hydronic and electrical system. Mechanical modifications and commissioning included:

- New Chiller
- Existing Heating Hot Water Pumps
- Existing Steam Condensate Pump
- Existing Air Handlers 3 & 4
- Existing Air Handlers 5 & 6 with related VAV boxes and damper controls
- New computer Room air handler systems
- Existing computer room air handler systems to be relocated
- Existing computer room air handler systems to remain
- (12) Existing Exhaust Systems (verify operation when the equipment is transferred to the generator)
- Energy Management Control System/Building Automation Controls
- Simulate failure of Central Plant or CHP chilled water system.
- Verify automatic monthly maintenance sequence

Electrical modifications and commissioning included:

- New Standby Generator System
- (6) Automatic Transfer Switches
- (6) Automatic Transfer Switches on existing CRAH units
- Liebert Transfer devices on new CRAH units
- Integrated Systems Verification
- Simulate power failure of normal power system and verify operation of all critical equipment.
- Simulate power failure of critical power system and verify operation of all critical equipment.
- Pull the Plug, Emergency Power Verification (Includes verification of critical mechanical equipment pertaining to this project)
- Verify monthly generator test and transfer load procedure.



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT		
<i>(Present no more than five (5) projects. Complete one Section 5 for each project.)</i>		
f. TITLE AND LOCATION <i>(City and State)</i>	b. YEAR COMPLETED	
Arizona State University COOR Reliability Phase 2 Upgrades Commissioning, Tempe, AZ	PROFESSIONAL SERVICES 2013	CONSTRUCTION <i>(If applicable)</i> 2014 (expected)
23. PROJECT OWNER'S INFORMATION		
c. PROJECT OWNER Arizona State University	d. DOLLAR AMOUNT OF PROJECT \$1,600,000	e. TOTAL COST OF PROJECT \$1,600,000

k. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)
TBC is currently providing commissioning services for Coor Hall to ensure the systems being are designed for reliability are functioning properly. Coor Hall is home to advance mediated classrooms, traditional classrooms, open computer labs, research, survey research, special purpose facilities and offices. TBC is commissioning new redundant system A/system B UPS systems and distribution to MDF and IDF loads with dual power supplies, each backed up with generator power. Backup cooling systems on emergency power were added to each IDF.



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT <i>(Present no more than five (5) projects. Complete one Section 5 for each project.)</i>		
g. TITLE AND LOCATION <i>(City and State)</i> Tracy Aviary Education & Guest Services Building Commissioning, Salt Lake City, UT—LEED® Gold		b. YEAR COMPLETED PROFESSIONAL SERVICES 2011 CONSTRUCTION <i>(If applicable)</i> 2012
23. PROJECT OWNER'S INFORMATION		
c. PROJECT OWNER Salt Lake County	d. DOLLAR AMOUNT OF PROJECT \$11,900 fee	e. TOTAL COST OF PROJECT \$11,900 fee

i. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)
 The Guest Services and Education Building at Tracy Aviary is a (design-build) new two-story, 10,800 sq. ft. facility that has earned LEED® Gold. Visitors enter the aviary through the guest services portion of the building—a new and improved entrance point into the aviary experience. In addition to the visitor entrance, Guest Services houses ticketing, the nature store, employee workstations, storage areas and retail sales. The education portion of the facility features community connectivity through a flexible classroom/meeting space. Other features of the project overall include reduced water use, natural ventilation, use of sustainable materials, energy efficiency and recycling.

Awards
 2012 AIA Merit Award
 2012 Award of Merit, *ENR Mountain States*, Small Project (Under \$10 Million)



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT
(Present no more than five (5) projects. Complete one Section 5 for each project.)

h. TITLE AND LOCATION <i>(City and State)</i> Utah State University Wetlands Discovery Lab at Utah Botanical Center, Kaysville, UT	b. YEAR COMPLETED	
	PROFESSIONAL SERVICES 2008	CONSTRUCTION <i>(If applicable)</i> 2009

23. PROJECT OWNER'S INFORMATION

c. PROJECT OWNER Utah State University	d. DOLLAR AMOUNT OF PROJECT \$1,500,000	e. TOTAL COST OF PROJECT \$1,500,000
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m. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT *(include scope, size, and length of project)*
The Wetlands Discovery Lab is a 3200 sq. ft. hands-on nature discovery facility operated by Utah State University. It houses a classroom and offices as well as restroom facilities and showers, a mechanical room and storage areas. A glass hallway offers views of and information about the wetland area and connects the Discovery Lab to a boardwalk that takes visitors across portions of the wetlands including a pond.

The Discovery Point earned LEED® Platinum and features sustainable building materials. It is designed to conserve energy through a high-efficiency ground-source heat pump for heating and cooling, in-floor radiant heating and natural ventilation with ceiling fans. A photovoltaic array provides solar water heating and solar power generation for the building. Water conservation techniques include rainwater harvesting.

TBC, the commissioning authority, commissioned all energy-related systems including:

- Heating
- Air conditioning
- Mechanical
- Plumbing (including solar water heating systems)
- Electrical systems (including power and solar)



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5. EXAMPLE PROJECTS WHICH BEST ILLUSTRATE PROPOSED TEAM'S QUALIFICATIONS FOR THIS CONTRACT		
<i>(Present no more than five (5) projects. Complete one Section 5 for each project.)</i>		
i. TITLE AND LOCATION <i>(City and State)</i>	b. YEAR COMPLETED	
Various Projects at Hill Air Force Base, Layton, UT	PROFESSIONAL SERVICES Varies	CONSTRUCTION <i>(If applicable)</i> Varies
23. PROJECT OWNER'S INFORMATION		
c. PROJECT OWNER Hill Air Force Base	d. DOLLAR AMOUNT OF PROJECT Varies	e. TOTAL COST OF PROJECT Varies

n. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (include scope, size, and length of project)

Hill Air Force Base Fire Station Commissioning

HAFB, UT

TBC provided building commissioning for this three-bay fire station at Hill Air Force Base. The project includes “Enhanced Commissioning” per USGBC 2009 Design Guide, development of Re-commissioning Manual, and end-of-warranty/post-occupancy review.

Hill Air Force Base Building 230 Commissioning

HAFB, UT

TBC provided building commissioning of this metal shop at Hill Air Force Base. This includes LEED® Energy and Atmosphere Prerequisite 1: Fundamental Commissioning of the Building Energy Systems focusing on the HVAC system.

Hill Air Force Base Fitness Center Commissioning

HAFB, UT

TBC was the commissioning authority for this \$10 million (estimated total construction cost), 64,500 sq. ft. (approximate), state-of-the-art physical fitness and health and wellness center at Hill Air Force Base completed in 2008. The fitness center includes sport courts, racquetball courts, fitness areas, group exercise areas, running tracks (indoor and outdoor), 30-foot climbing wall, health/wellness area, locker rooms and support functions including offices. TBC commissioned the following systems:

Mechanical/HVAC systems

- Heating
- Cooling
- Humidifying
- Controls systems

Hill Air Force Base Aircraft Power Systems Repair Facility

HAFB, UT

TBC commissioned this one-story, pre-engineered repair facility at Hill Air Force Base. Commissioned systems include: HVAC systems (air-conditioning equipment, chiller, boilers, infra-red radiant tube heaters, fans, pumps, ducts, piping, Building Automation System, building/space pressurization, miscellaneous HVAC equipment—unit heaters, fans, etc. Test Adjust and Balance spot verification, fire/smoke dampers, etc.). Fundamental commissioning of building systems including: furnaces, condensing units, make-up air unit, air handlers, exhaust fans, infra-red heater, pumps, boilers, chiller, etc.

Hill Air Force Base Software Support Facility (Addition to Building 1515)

HAFB, UT

TBC was the commissioning authority for this \$37 million, 72,500 sq. ft., two-story addition to Building 1515. The facility includes space for software development and laboratory testing of computer systems. Twelve classified labs with raised floor areas are provided as is a loading dock and receiving area. The facility requires classified security systems, wiring and communication lines and includes antiterrorism force protection (AT/FP).

TBC developed the commissioning plan and coordinated the installation checklists as well as the functional performance tests for the mechanical systems. TBC also conducted weekly on-site commissioning meetings to coordinate the efforts of the commissioning team members. TBC produced a final commissioning report when the testing was completed.

6. ADDITIONAL INFORMATION

a. PROVIDE ANY ADDITIONAL INFORMATION YOU FEEL MAY BE NECESSARY TO DESCRIBE YOUR FIRMS QUALIFICATIONS. (ATTACH ADDITIONAL SHEETS AS NEEDED.)

TBC Firm Profile

Total Building Commissioning, Inc. (TBC) specializes in the commissioning of multiple building systems including heating, ventilating and air conditioning systems, building automation systems, life safety/fire protection systems, domestic and process water systems, emergency power systems, lighting control systems, security systems and building envelope to ensure that each systems' performance complies with the design intent and the building's functional, operational, and maintenance needs.

TBC and its predecessor firms have over 27 years experience related to design, construction, commissioning, energy-efficiency consulting, and building automation-controls consulting. Our professionals have the education, training and hands-on experience to meet your commissioning requirements. Our commissioning experts help to ensure that your facility works as it was intended because we understand the theory, implementation and operating and maintenance issues associated with the application of the specialized systems planned for your facility. We'll be there during each critical step of the building process. From planning, through design, construction, acceptance testing, turnover and operation, including operation and maintenance training, TBC is a dedicated advocate for the owners and the users, facilitating your design goals.

TBC uses an integrated commissioning approach, helping to ensure that buildings and the systems within it function as you envisioned. We offer true, lifecycle total building commissioning. TBC's professionals will not disappear after the construction of your facility. We remain involved throughout the warranty period. This approach saves you time, money, worry and hassle. TBC also has provided LEED® commissioning services for nearly two dozen projects seeking LEED® certification in the past three years with one recently awarded LEED® Platinum certification and several others currently seeking LEED® Platinum.

Total Building Commissioning is a BCA and ACG member firm.

The Total Building Commissioning Philosophy

Our ultimate goal is the success of the project for owners and the installing contractors alike. We believe that the benefits of commissioning—on-time and in-budget projects, meeting performance goals, improved coordination, zero call-backs, energy optimization and having a repeatable quality assurance process provides measurable value for every stakeholder in your project.

We are *highly visible* and present throughout the process. We are involved in the design, continually reviewing that the project adheres to the requirements set forth by the owner and that the construction documents support clear communication, maintainability and commissionability of the systems. We will be continually present throughout the construction process keeping a running issues log so the resolution of issues is current as the project moves into the near-completion phase. Our involvement becomes more intense as equipment passes the installation checklist phase, is started up, balanced, and readied for functional testing. The TBC approach embodies the term: *continuous commissioning*.

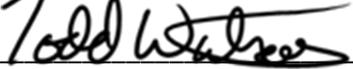
We bring to the project total building commissioning specialists who understand the design of systems as well as common construction challenges. We can provide commissioning authorities in HVAC, electrical systems, technology systems commissioning, lighting control, security, fire protection, and AV as well as the building envelope.

**RFQ# ADSPO14-00003465, Annual Request for Qualifications and Experience
REVISED - Attachment I – General Qualifications**

7. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS

a. Percentage of Total Work Attributable to State, Federal and Municipal Government Work:	40%
b. Percentage of Total Work Attributable to Non-Government Work:	60%

8. AUTHORIZED REPRESENTATIVE. The foregoing is a statement of facts.

Signature: 

Date: December 12, 2013

Name: Todd A Watson, Cx, QCxP, LEED AP

Title: Commissioning Authority