	ATTACHMENT I – General Qualifications **ANNUAL REQUEST FOR QUALIFICATIONS AND EXPERIENCE NO: ADSPO15-00004729**	**STATE PROCUREMENT OFFICE** **Department of Administration** **100 North 15th Avenue, Suite 201** **Phoenix, Arizona 85007**

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

1. ***Annual Request for Qualifications***

a. FIRM (OR BRANCH OFFICE) NAME:	Taylor RyMar Corporation
b. FIRM (OR BRANCH OFFICE) STREET:	60 E. Rio Salado Pkwy., Suite 1010
c. FIRM (OR BRANCH OFFICE) CITY:	Tempe
d. FIRM (OR BRANCH OFFICE) STATE:	Arizona
e. FIRM (OR BRANCH OFFICE) ZIP CODE:	85281

f. YEAR ESTABLISHED:	1977

(g1). OWNERSHIP - TYPE:	Corporation
(g2) OWNERSHIP - SMALL BUSINESS STATUS:	Small Business

h. POINT OF CONTACT NAME AND TITLE:	Rodney Taylor
i. POINT OF CONTACT TELEPHONE NUMBER:	480-951-0517
j. POINT OF CONTACT E-MAIL ADDRESS:	rtaylor@tr-corp.com

k. NAME OF FIRM *(If block 1a is a branch office)*:	

2. EMPLOYEES BY DISCIPLINE

a. Discipline Title	b. Function: Primary (P) or Secondary (S)	c. No. of Employees - Firm	d. No. of Employees - Branch
Electrical Engineer	P	3	2
Fire Protection Engineer	S	1	1
Mechanical Engineer	P	4	4
Total		8	7

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)*
20	Electrical Studies and Design	4
5	Energy/Water Auditing Savings	2
20	Heating; Ventilating; Air Conditioning	3
20	Hospital and Medical Facilities	4
5	Industrial Buildings; Manufacturing Plants	2
3	LEED Accredited A/E	2
5	LEED Independent 3rd Party Building Commissioning	2
20	Plumbing and Piping Design	3
10	Solar Energy Utilization	4

PROFESSIONAL SERVICES REVENUE INDEX NUMBER

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

4. Resumes of Key Personnel Proposed for this Contract (*Complete one Section 4 for each key person.*)

a. NAME	b. ROLE IN THIS CONTRACT	c. YEARS EXPERIENCE	
		1. TOTAL	2. WITH CURRENT FIRM
E. Christopher Maroney	Mechanical Engineer	21	7

d. LOCATION *(City and State)*
Tempe, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. PROFESSIONAL TRAINING - REGISTRATIONS
University of Arizona Bachelor of Science – Engineering Mathematics Masters – Business Administration	

g. OTHER PROFESSIONAL QUALIFICATIONS *(Organizations, Awards, etc.)*
American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE); American Society of Plumbing Engineers (ASPE); National Council of Examiners for Engineering and Surveying (NCEES)

H. RELEVANT PROJECTS

1.

(1) TITLE AND LOCATION *(City and State)*
City of Phoenix Goode Building Refurbishment – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2011	2011

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Lead Mechanical Engineer ; Budget: $6,000,000.00
This project began as an energy audit to identify current code deficiencies and energy upgrades, and probable construction costs. The design and construction portion of this project involved upgrading the existing critical systems, including replacement of existing HVAC equipment with Hydronic piping systems, lighting, and electrical power systems. Since this building housed many critical systems which the City either provided or depended on, the main focus was how to replace fully functional systems without shutting down the building during working hours for extended periods.

2.

(1) TITLE AND LOCATION *(City and State)*
Arizona State University Energy Efficiency Upgrades – Tempe, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2012	2012

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Mechanical Engineer; Budget: $8,000,000.00
This project involved mechanical and electrical engineering design services and construction administration for converting existing constant volume air handling systems to variable volume systems in 14 building located at the ASU Tempe Campus for an energy efficiency upgrade project. Engineering design involved modifying existing constant volume multi-zone air handling units and dual duct air handling units to variable volume operation. The project also consisted of modifying existing constant volume exhaust systems to variable volume control to maintain building pressurization.

3.

(1) TITLE AND LOCATION *(City and State)*
Flagstaff Medical Center Renovation & Expansion – Flagstaff, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
Ongoing	Ongoing

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Mechanical Engineer; Budget: $20,000,000.00
This project involves a three-year master planning for the hospital's facility systems, including the mechanical and electrical design services for various upgrades, renovation and expansion projects. This partnership involves a Level 1 trauma hospital which is integral for the future operation of this facility. The oldest complex was constructed in the late 60's with last major expansion completed in 1996. Over the years, the facility has been modified without planning for future projects.

4.

(1) TITLE AND LOCATION *(City and State)*
Maricopa County Solar Thermal Hot Water Installation – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2011	2011

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Mechanical Engineer; Budget: $5,500,000.00
This project involved plumbing and electrical engineering design and construction administration services for installation of solar thermal panels to provide domestic hot water at seven different County buildings. Three of the smaller installations utilize a drain back type systems where the solar panels are drained at night or when the system is not in operation. These systems include roof mounted solar panels, 1,200 gallon drain back tank, heat exchanger to isolate domestic hot water loop from solar system, and associated pumps and controls. The remaining four systems are closed collection loops and utilize a heat exchanger to separate the collector loop from the new hot water solar storage tanks.

5.

(1) TITLE AND LOCATION *(City and State)*
Maricopa County Energy Engineering & Retrocommissioning – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2012	2012

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Mechanical Engineer; Budget: $450,000.00
TRC's Energy Services division provided retrocommissioning services for 28 Maricopa County government buildings, including courthouses, jails, and office buildings. This project focused on HVAC, central plants, and the building automation system for each building. TRC also provided commissioning services for seven large scale solar thermal projects; as well as third-party installation verification for lighting at 113 buildings, plumbing at 69 buildings, HVAC and central plant equipment upgrades at 25 buildings, and three Photovoltaic Systems.

4. Resumes of Key Personnel Proposed for this Contract (*Complete one Section 4 for each key person.)*

a. NAME	b. ROLE IN THIS CONTRACT	c. YEARS EXPERIENCE	
		1. TOTAL	2. WITH CURRENT FIRM
Mario Torregrossa	Mechanical Engineer	26	13

d. LOCATION *(City and State)*
Tempe, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. PROFESSIONAL TRAINING - REGISTRATIONS
Southern Illinois University Bachelor of Science – Mechanical Engineering	

g. OTHER PROFESSIONAL QUALIFICATIONS *(Organizations, Awards, etc.)*
American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE); National Fire Protection Association; Society of Fire Protection Engineers; American Society of Plumbing Engineers; National Council of Examiners for Engineering and Surveying (NCEES)

H. RELEVANT PROJECTS

1.

(1) TITLE AND LOCATION *(City and State)*
City of Phoenix Goode Building Refurbishment – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2011	2011

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Principal in Charge; Budget: $6,000,000.00
This project began as an energy audit to identify current code deficiencies and energy upgrades, and probable construction costs. The design and construction portion of this project involved upgrading the existing critical systems, including replacement of existing HVAC equipment with Hydronic piping systems, lighting, and electrical power systems. Since this building housed many critical systems which the City either provided or depended on, the main focus was how to replace fully functional systems without shutting down the building during working hours for extended periods.

2.

(1) TITLE AND LOCATION *(City and State)*
Arizona State University Energy Efficiency Upgrades – Tempe, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2012	2012

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Mechanical Engineer; Budget: $8,000,000.00
This project involved mechanical and electrical engineering design services and construction administration for converting existing constant volume air handling systems to variable volume systems in 14 building located at the ASU Tempe Campus for an energy efficiency upgrade project. Engineering design involved modifying existing constant volume multi-zone air handling units and dual duct air handling units to variable volume operation. The project also consisted of modifying existing constant volume exhaust systems to variable volume control to maintain building pressurization.

3.

(1) TITLE AND LOCATION *(City and State)*
Flagstaff Medical Center Renovation & Expansion – Flagstaff, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
Ongoing	Ongoing

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Principal in Charge; Budget: $20,000,000.00
This project involves a three-year master planning for the hospital's facility systems, including the mechanical and electrical design services for various upgrades, renovation and expansion projects. This partnership involves a Level 1 trauma hospital which is integral for the future operation of this facility. The oldest complex was constructed in the late 60's with last major expansion completed in 1996. Over the years, the facility has been modified without planning for future projects.

4.

(1) TITLE AND LOCATION *(City and State)*
City of Phoenix Convention Center – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2008	2008

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Mechanical Engineer; Budget: $1,200,000.00
This project involved mechanical, electrical, and plumbing engineering to renovate the existing South Hall of the Phoenix Convention Center. The project included rebuilding the existing air handling units serving the South Hall, replacing the VAV boxes in the meeting rooms and adding hot water reheat to the meeting room VAV boxes. Rebuilding the AHU's included replacing the chilled water and hot water coils, replacing condensate drain pans, replacing outside air, return air and mixed air dampers, replacing chilled water and hot water control valves, new motors and variable speed drives, and replacing existing pneumatic controls with electronic controls.

5.

(1) TITLE AND LOCATION *(City and State)*
Rio Salado 7th Ave Green Campus Adult Learning Center – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2010	2010

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Principal in Charge; Budget: $1,100,000.00
This project involved mechanical, electrical, and fire protection engineering, as well as LEED® Fundamental Commissioning services to assist in meeting the requirements to achieve LEED® certification. The project included developing a site master plan, programming, design and bid documents for a new Adult Learning Center building, the management of the bid process, and the construction administration for the new building at the Rio Salado Campus at 7th Ave.

4. Resumes of Key Personnel Proposed for this Contract (*Complete one Section 4 for each key person.)*

a. NAME	b. ROLE IN THIS CONTRACT	c. YEARS EXPERIENCE	
		1. TOTAL	2. WITH CURRENT FIRM
Danny J. Simpson	Electrical Engineer	18	18

d. LOCATION *(City and State)*
Tempe, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. PROFESSIONAL TRAINING - REGISTRATIONS
University Missouri-Rolla Bachelor of Science – Electrical Engineering	

g. OTHER PROFESSIONAL QUALIFICATIONS *(Organizations, Awards, etc.)*
IAEI Electrical Inspector General; Arizona Power Quality Association; Southwest Safety Training Alliance (SSTA)

H. RELEVANT PROJECTS

1.

(1) TITLE AND LOCATION *(City and State)*
City of Phoenix 911 Call Center Alarm Room Upgrade – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2005	2005

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Principal in Charge; Budget: $100,000.00
TRC provided engineering, design, and CA services for the replacement and all twenty four 911 operator call stations at the 150 South 12th St. facility which serves as the primary 911 call center for all Fire related emergency calls in greater Maricopa County. The design included UPS backed power for the work station circuits, data cabling plans, and new alarm room lighting plans. A new power distribution unit was installed in the adjacent supporting data center to supply critical circuits. The design was developed to allow the work to proceed in phases enabling the 911 call center to remain operational throughout construction.

2.

(1) TITLE AND LOCATION *(City and State)*
Buckeye Elementary School District Photovoltaic Additions – Buckeye, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2011	2011

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Principal in Charge; Budget: $18,500,000.00
TRC provided engineering and design services for approximately 3.8 MWp(dc) of solar covered parking canopies at 7 different sites within the Buckeye Elementary School District in Buckeye, AZ. The sites include Bales Elementary School, Buckeye Elementary School, District Office, Inca elementary School, Jasinski Elementary School, Sundance Elementary School, and West Park Elementary School.

3.

(1) TITLE AND LOCATION *(City and State)*
Arizona State University Photovoltaic Additions – Tempe, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2013	2013

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Principal in Charge; Budget: $145,000,000.00
TRC provided the engineering, design and construction administration services for approximately 13.2 MWp(dc) of photovoltaic power production facilities at ASU's Main and West campuses. The project includes arrays at the following buildings: Bio Design, Weatherup, Carson Athletic Center, Hayden Library, Parking Structure 4, Parking Structure 7, and West Campus Parking Lots 1, 2 and 3. Numerous systems are employed in the designs including single axis trackers, ground mounted fixed arrays, covered parking structures and roof mounted ballasted systems. Careful consideration was given to the parameters of construction schedule, construction cost, reliability, efficiency, safety, and cost of ownership.

4.

(1) TITLE AND LOCATION *(City and State)*
City of Phoenix Convention Center – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2008	2008

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Lead Electrical Engineer; Budget: $1,200,000.00
This project involved mechanical, electrical, and plumbing engineering to renovate the existing South Hall of the Phoenix Convention Center. The project included rebuilding the existing air handling units serving the South Hall, replacing the VAV boxes in the meeting rooms and adding hot water reheat to the meeting room VAV boxes. Rebuilding the AHU's included replacing the chilled water and hot water coils, replacing condensate drain pans, replacing outside air, return air and mixed air dampers, replacing chilled water and hot water control valves, new motors and variable speed drives, and replacing existing pneumatic controls with electronic controls.

5.

(1) TITLE AND LOCATION *(City and State)*
City of Phoenix 911 Call Center Essential Power System Upgrade – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2008	2008

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Lead Electrical Engineer; Budget: $750,000.00
TRC provided engineering, design, and construction administration services for the upgrade of the essential power system at the City's 12th St. 911 call center facility serving greater Maricopa County. The project involved replacement and upgrades of the existing generator sets, generator switchgear, automatic transfer switches, and associated feeders. The design provided a significant increase in system capacity, redundancy, and ease of maintenance. The 911 call center remained fully operational during the entire construction process.

4. Resumes of Key Personnel Proposed for this Contract (*Complete one Section 4 for each key person.)*

a. NAME	b. ROLE IN THIS CONTRACT	c. YEARS EXPERIENCE	
		1. TOTAL	2. WITH CURRENT FIRM
Joel D. DeHaven	Electrical Engineer	23	14

d. LOCATION *(City and State)*
Flagstaff, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. PROFESSIONAL TRAINING - REGISTRATIONS
Kansas State University Bachelor of Science – Architectural Engineering	

g. OTHER PROFESSIONAL QUALIFICATIONS *(Organizations, Awards, etc.)*
Illuminating Engineering Society (IES)

H. RELEVANT PROJECTS

1.

(1) TITLE AND LOCATION *(City and State)*
City of Phoenix Goode Building Refurbishment – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2011	2011

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Lead Electrical Engineer; Budget: $6,000,000.00
This project began as an energy audit to identify current code deficiencies and energy upgrades, and probable construction costs. The design and construction portion of this project involved upgrading the existing critical systems, including replacement of existing HVAC equipment with Hydronic piping systems, lighting, and electrical power systems. Since this building housed many critical systems which the City either provided or depended on, the main focus was how to replace fully functional systems without shutting down the building during working hours for extended periods.

2.

(1) TITLE AND LOCATION *(City and State)*
Maricopa County Solar Thermal Hot Water Installation – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2012	2012

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Electrical Engineer; Budget: $5,500,000.00
This project involved plumbing and electrical engineering design and construction administration services for installation of solar thermal panels to provide domestic hot water at seven different County buildings. Three of the smaller installations utilize a drain back type systems where the solar panels are drained at night or when the system is not in operation. These systems include roof mounted solar panels, 1,200 gallon drain back tank, heat exchanger to isolate domestic hot water loop from solar system, and associated pumps and controls. The remaining four systems are closed collection loops and utilize a heat exchanger to separate the collector loop from the new hot water solar storage tanks.

3.

(1) TITLE AND LOCATION *(City and State)*
Arizona State University Health Services Renovation & Addition– Tempe, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2012	2012

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Electrical Engineer; Budget: $7,000,000.00
TRC provided Commissioning Authority (CxA) services LEED required Fundamental and Enhanced commissioning requirements for the ASU Health Services Project. The project was divided into two phases: Phase 1 was the construction of an 18,000 sqft expansion building to the existing ASU Health Services building; Phase 2 is the renovation of the existing 15,000 sqft ASU Health Services building. This project included commissioning of the following systems: HVAC – VAV system, Domestic Hot Water and lighting and Daylighting controls.

4.

(1) TITLE AND LOCATION *(City and State)*
Flagstaff Medical Center Renovation & Expansion – Flagstaff, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
Ongoing	Ongoing

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Lead Electrical Engineer; Budget: $20,000,000.00
This project involves a three-year master planning for the hospital's facility systems, including the mechanical and electrical design services for various upgrades, renovation and expansion projects. This partnership involves a Level 1 trauma hospital which is integral for the future operation of this facility. The oldest complex was constructed in the late 60's with last major expansion completed in 1996. Over the years, the facility has been modified without planning for future projects.

5.

(1) TITLE AND LOCATION *(City and State)*
City of Flagstaff Innovation Mesa – Flagstaff, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
Ongoing	Ongoing

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE

X Check if project performed with current firm

Role: Principal in Charge; Budget:
This project consists of Mechanical, Plumbing, Electrical, and Fire Protection engineering design services and Commissioning services for a new 25,000 square foot business accelerator and emergency operations center for the City of Flagstaff.

4. Resumes of Key Personnel Proposed for this Contract (*Complete one Section 4 for each key person.)*

a. NAME	b. ROLE IN THIS CONTRACT	c. YEARS EXPERIENCE	
		1. TOTAL	2. WITH CURRENT FIRM
Richard T. Ryall	Mechanical Engineer	28	13

d. LOCATION *(City and State)*
Tempe, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. PROFESSIONAL TRAINING - REGISTRATIONS
University of Akron Bachelor of Science – Mechanical Engineering	

g. OTHER PROFESSIONAL QUALIFICATIONS *(Organizations, Awards, etc.)*
American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE)

H. RELEVANT PROJECTS

1.

(1) TITLE AND LOCATION *(City and State)*
City of Tempe Retrocommissioning – Tempe, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2012	

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE
Role: Principal in Charge; Budget: $1,100,000.00
TRC provided retro-commissioning services for 3 City of Tempe buildings for the HVAC systems. This project includes Tempe City Hall, Police and Courts buildings (133,000 square feet) and the associated district cooling central plant, located in the basement of the Police Building, with three chillers that serves these buildings. This included functional testing of fan coils, air handlers, VAV boxes, chillers, cooling towers, associated pumps, a new plate and frame heat exchanger, and the building automation system.

X Check if project performed with current firm

2.

(1) TITLE AND LOCATION *(City and State)*
Maricopa County Energy Engineering and Retrocommissioning – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2012	

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE
Role: Principal in Charge; Budget: $450,000.00
TRC's Energy Services division provided retrocommissioning services for 28 Maricopa County government buildings, including courthouses, jails, and office buildings. This project focused on HVAC, central plants, and the building automation system for each building. TRC also provided commissioning services for seven large scale solar thermal projects; as well as third-party installation verification for lighting at 113 buildings, plumbing at 69 buildings, HVAC and central plant equipment upgrades at 25 buildings, and three Photovoltaic Systems.

X Check if project performed with current firm

3.

(1) TITLE AND LOCATION *(City and State)*
Arizona State University Health Services – Tempe, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2012	

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE
Role: Principal in Charge; Budget: $7,000,000.00
TRC provided Commissioning Authority (CxA) services LEED required Fundamental and Enhanced commissioning requirements for the ASU Health Services Project. The project was divided into two phases: Phase 1 was the construction of an 18,000 sqft expansion building to the existing ASU Health Services building; Phase 2 is the renovation of the existing 15,000 sqft ASU Health Services building. This project included commissioning of the following systems: HVAC – VAV system, Domestic Hot Water and lighting and Daylighting controls.

X Check if project performed with current firm

4.

(1) TITLE AND LOCATION *(City and State)*
Maricopa County Investment Grade Audit – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2009	

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE
Role: Principal in Charge; Budget: $173,000.00
TRC was part of the team that performed an Investment Grade Audit for Maricopa County. This audit focused on 9 million square feet with 135 buildings of County facilities including Courts, Detention facilities, offices, and central plants. TRC audited approximately 5.5 million square feet, 111 buildings, collecting building and energy using equipment data, provided energy measures analysis, assistance with central plant evaluations, energy consulting services for the project, and the review and audit of $20 million in annual utility bill expenditures. TRC either performed or assisted with the evaluation of over 600 ECM's for this project.

X Check if project performed with current firm

5.

(1) TITLE AND LOCATION *(City and State)*
Arizona State University Energy Efficiency Upgrades – Tempe, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2010	2010

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE
Role: Mechanical Engineer; Budget: $8,000,000.00
This project involved mechanical and electrical engineering design services and construction administration for converting existing constant volume air handling systems to variable volume systems in 14 building located at the ASU Tempe Campus for an energy efficiency upgrade project. Engineering design involved modifying existing constant volume multi-zone air handling units and dual duct air handling units to variable volume operation. The project also consisted of modifying existing constant volume exhaust systems to variable volume control to maintain building pressurization. .

X Check if project performed with current firm

4. Resumes of Key Personnel Proposed for this Contract (*Complete one Section 4 for each key person.)*

a. NAME	b. ROLE IN THIS CONTRACT	c. YEARS EXPERIENCE	
		1. TOTAL	2. WITH CURRENT FIRM
Randy G. Despain	Commissioning Agent	19	6

d. LOCATION *(City and State)*
Tempe, AZ

e. EDUCATION *(DEGREE AND SPECIALIZATION)*	f. PROFESSIONAL TRAINING - REGISTRATIONS
Arizona State University Bachelor of Science – Design Master of Architecture	LEED® AP; Commissioning Process Management Professional (CPMP); Certified Energy Manager (CEM); Certified Energy Auditor (CEA); Business Energy Professional (BEP)

g. OTHER PROFESSIONAL QUALIFICATIONS *(Organizations, Awards, etc.)*
Association of Energy Engineers; U.S. Green Building Council (USGBC)

H. RELEVANT PROJECTS

1.

(1) TITLE AND LOCATION *(City and State)*
City of Tempe Retrocommissioning – Tempe, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2012	

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE
Role: Project Manager; Budget: $1,100,000.00
TRC provided retro-commissioning services for 3 City of Tempe buildings for the HVAC systems. This project includes Tempe City Hall, Police and Courts buildings (133,000 square feet) and the associated district cooling central plant, located in the basement of the Police Building, with three chillers that serves these buildings. This included functional testing of fan coils, air handlers, VAV boxes, chillers, cooling towers, associated pumps, a new plate and frame heat exchanger, and the building automation system.

X Check if project performed with current firm

2.

(1) TITLE AND LOCATION *(City and State)*
Maricopa County Energy Engineering and Retrocommissioning – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2012	

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE
Role: Project Manager; Budget: $450,000.00
TRC's Energy Services division provided retrocommissioning services for 28 Maricopa County government buildings, including courthouses, jails, and office buildings. This project focused on HVAC, central plants, and the building automation system for each building. TRC also provided commissioning services for seven large scale solar thermal projects; as well as third-party installation verification for lighting at 113 buildings, plumbing at 69 buildings, HVAC and central plant equipment upgrades at 25 buildings, and three Photovoltaic Systems.

X Check if project performed with current firm

3.

(1) TITLE AND LOCATION *(City and State)*
Arizona State University Health Services – Tempe, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2012	

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE
Role: Project Manager; Budget: $7,000,000.00
TRC provided Commissioning Authority (CxA) services LEED required Fundamental and Enhanced commissioning requirements for the ASU Health Services Project. The project was divided into two phases: Phase 1 was the construction of an 18,000 sqft expansion building to the existing ASU Health Services building; Phase 2 is the renovation of the existing 15,000 sqft ASU Health Services building. This project included commissioning of the following systems: HVAC – VAV system, Domestic Hot Water and lighting and Daylighting controls.

X Check if project performed with current firm

4.

(1) TITLE AND LOCATION *(City and State)*
Maricopa County Investment Grade Audit – Phoenix, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2009	

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE
Role: Energy Services; Budget: $173,000.00
TRC was part of the team that performed an Investment Grade Audit for Maricopa County. This audit focused on 9 million square feet with 135 buildings of County facilities including Courts, Detention facilities, offices, and central plants. TRC audited approximately 5.5 million square feet, 111 buildings, collecting building and energy using equipment data, provided energy measures analysis, assistance with central plant evaluations, energy consulting services for the project, and the review and audit of $20 million in annual utility bill expenditures. TRC either performed or assisted with the evaluation of over 600 ECM's for this project.

X Check if project performed with current firm

5.

(1) TITLE AND LOCATION *(City and State)*
Arizona State Veteran's Home LEED Commissioning Services – Tucson, AZ

(2) YEAR COMPLETED

Professional Services	Construction (if applicable)
2011	

(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE
Role: Lead Commissioning Agent; Budget: $27,000,000.00
TRC provided the Fundamental and Enhanced Commissioning LEED® services for HVAC, lighting controls and domestic hot water systems; as well as additional commissioning of the fire alarm, nurse call, and emergency generator systems. The assisted living facility consisted of five buildings with a total of 135,000 square feet. The HVAC system consisted of a Variable Refrigerant Volume (VRV) system with energy recovery units, kitchen makeup air and energy recovery unit. This building achieved LEED® Silver Certification.

X Check if project performed with current firm

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	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Arizona State University Photovoltaic Additions	2013	2013

23. PROJECT OWNER'S INFORMATION

c .PROJECT OWNER	d .ORIGINAL BUDGET/NTE AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Arizona State University	Unknown	$145,000,000.00

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

Services:
The project included the installation of dozens of PV arrays at locations throughout the campuses. In total, over 16,000 KW worth of solar panels were installed. Various systems were employed in the design including single axis trackers, ground mounted fixed arrays, covered parking structures, and roof mounted ballasted systems. Keeping the best interest of the system Owners in mind, careful consideration was given to key design parameters such as system safety, performance, construction schedule, construction cost, reliability, and cost of ownership.

Budget Estimate v. Final Contract/Change Orders/Cost Savings:
The projects were delivered within budget.

How Plans and Specifications were achieved:
Plans and specifications were developed through the application of our technical expertise and skill while considering owner needs, existing site conditions, applicable Codes and Standards, budget, and schedule.

Project Completed within Original Project Schedule:
The project construction was completed on schedule.

Avoidance of Potential Problems or Actual Problems Solved:
Many potential problems were avoided through our thorough attention to detail throughout the design process.

Dispute Resolution Process with Sub-Consultants and Others:
Face to face meetings were most often used to resolve conflicts.

Quality and Productivity of Interaction with Other Participants:
Our interaction with all stakeholders throughout the design and construction process was of the highest caliber.

LEED and Sustainability:
Due largely in part to the construction of this project, ASU is now considered one of the most sustainable universities in the world.

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	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Arizona State University Energy Efficiency Upgrades – Tempe, AZ	2012	2012

23. PROJECT OWNER'S INFORMATION

c .PROJECT OWNER	d .ORIGINAL BUDGET/NTE AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Arizona State University	Unknown	$8,000,000.00

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

Services:
Engineering design involved modifying existing constant volume multi-zone air handling units and dual duct air handling units to variable volume operation. The project also consisted of modifying existing constant volume exhaust systems to variable volume control to maintain building pressurization. Existing pneumatic damper actuators were replaced with electrical actuators and existing pneumatic control valves were replaced with electrical control valves. New control sequences were written for the variable volume systems and incorporated into the new DDC control systems for each building.

Budget Estimate v. Final Contract/Change Orders/Cost Savings:
The project was delivered within budget

How Plans and Specifications were achieved:
Plans and specifications were developed through the application of our technical knowledge and skills while considering owner needs, existing conditions and the application of new equipment. Converting existing constant volume air handling systems to variable volume systems required a thorough understanding of the building pressurization requirements as well as implementing energy efficiency measures.

Project Completed within Original Project Schedule:
The project construction was completed on schedule.

Avoidance of Potential Problems or Actual Problems Solved:
Many potential problems were avoided by thorough planning and assessment of current building conditions. We proceeded with design only after we had a good understanding of constraints and goals.

Dispute Resolution Process with Sub-Consultants and Others:
Face-to-face meetings were most often used to resolve conflicts as well as project discussion with equipment installers and operations personnel.

Quality and Productivity of Interaction with Other Participants:
Our interaction with all parties involved throughout the design and construction process was of the highest caliber.

LEED and Sustainability:
The project resulted energy efficiency and improved air quality standards.

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	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Maricopa County Energy Engineering and Retrocommissioning – Phoenix, AZ	2012	

23. PROJECT OWNER'S INFORMATION

c .PROJECT OWNER	d .ORIGINAL BUDGET/NTE AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Maricopa County	Unknown	$8,000,000.00

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

Services:
Engineering design involved modifying existing constant volume multi-zone air handling units and dual duct air handling units to variable volume operation. The project also consisted of modifying existing constant volume exhaust systems to variable volume control to maintain building pressurization. Existing pneumatic damper actuators were replaced with electrical actuators and existing pneumatic control valves were replaced with electrical control valves. New control sequences were written for the variable volume systems and incorporated into the new DDC control systems for each building.

Budget Estimate v. Final Contract/Change Orders/Cost Savings:
The project was delivered within budget

How Plans and Specifications were achieved:
Plans and specifications were developed through the application of our technical knowledge and skills while considering owner needs, existing conditions and the application of new equipment. Converting existing constant volume air handling systems to variable volume systems required a thorough understanding of the building pressurization requirements as well as implementing energy efficiency measures.

Project Completed within Original Project Schedule:
The project construction was completed on schedule.

Avoidance of Potential Problems or Actual Problems Solved:
Many potential problems were avoided by thorough planning and assessment of current building conditions. We proceeded with design only after we had a good understanding of constraints and goals.

Dispute Resolution Process with Sub-Consultants and Others:
Face-to-face meetings were most often used to resolve conflicts as well as project discussion with equipment installers and operations personnel.

Quality and Productivity of Interaction with Other Participants:
Our interaction with all parties involved throughout the design and construction process was of the highest caliber.

LEED and Sustainability:
The project resulted energy efficiency and improved air quality standards.

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	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
City of Phoenix – Goode Building Refurbishment – Phoenix, AZ	2011	2011

23. PROJECT OWNER'S INFORMATION

c .PROJECT OWNER	d .ORIGINAL BUDGET/NTE AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
City of Phoenix	Unknown	$6,000,000.00

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

Services:
Facility assessment, design and engineering for upgrading critical systems.

Budget Estimate v. Final Contract/Change Orders/Cost Savings:
The initial contract value was $477,325 with several contract amendments during the construction phase, including additional funding to bring the restrooms into ADA compliance.

How Plans and Specifications were Achieved:
The scope was based on TRC's building condition assessment with initial design focused on the identified priorities and was updated based on weekly budget updates during construction to maximize scope within the budget.

Project Completed within Original Project Schedule:
The original schedule was extended to accommodate the additional scope, which was made possible through value engineering during construction.

Avoidance of Potential Problems or Actual Problems Solved:
Since this building housed many critical systems that the City either provided or depended on, the main focus was how to replace fully functional systems without shutting down the building during working hours for extended periods. Design was carefully phased with owner and users to allow construction while keeping the building operational during work hours.

Dispute Resolution Process with Sub-Consultants and Others:
Weekly meetings were held with design team, contractors and owner to coordinate all activities and resolve issues found during the previous week.

Quality and Productivity of Interaction with Other Participants:
Weekly team meetings and daily open communication were critical to the success of this project to maximize the budget and minimize disruption.

LEED and Sustainability:
Project was designed to maximize energy efficiency in lighting and the HVAC system and documented to allow for a future LEED submittal if desired.

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	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Maricopa County Solar Thermal Hot Water Installation – Phoenix, AZ	2012	2012

23. PROJECT OWNER'S INFORMATION

c .PROJECT OWNER	d .ORIGINAL BUDGET/NTE AMOUNT OF PROJECT	e. TOTAL COST OF PROJECT
Maricopa County	Unknown	$5,500,000.00

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

Services:
Engineering, design and construction administration services for roofmounted solar panels, storage tanks, heat exchangers and associated pumps and controls to provide domestic hot water to County jails and support buildings. Buildings included the Estrella Jail, Durango Jail, Towers Jail, Durango Juvenile Detention, Sheriff's Food Factory, and two buildings at the South East Juvenile Facility in Mesa. In total, the system provides 30 million BTUs of domestic hot water daily.

Budget Estimate v. Final Contract/Change Orders/Cost Savings:
TRC's original contract was for $400,000 which expanded to $450,000 at the ESCO contractor's request.

How Plans and Specifications were achieved:
Through design meetings, site visits to determine existing conditions, and communication with the County and ESCO, TRC developed plans and specifications.

Project Completed within Original Project Schedule:
TRC met the ESCO contractor's schedule for all deliverables.

Avoidance of Potential Problems or Actual Problems Solved:
Any issues with the work were resolved quickly with the ESCO contractor by holding regular meetings and through direct communication with the project managers for the project.

Dispute Resolution Process with Sub-Consultants and Others:
While there were no disputes on this project, TRC's process is to identify roles and develop a management plan in the Commissioning Plan for all projects.

Quality and Productivity of Interaction with Other Participants:
A history of work with the ESCO contractor and installing contractors allowed the project to run smoothly.

LEED and Sustainability: N/A

6. ADDITIONAL INFORMATION

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

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:	10
b.	Percentage of Total Work Attributable to Non-Government Work:	90

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

Signature: Rodney Taylor Date: 12/29/2014

Name: Rodney Taylor Title: President