



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

Request for Proposals for Design & Build

SINGLE-STAGE COMPETITION

Value-Based Selection Method

June 10, 2014

MULTIPLE SOLAR PHOTOVOLTAIC FACILITIES

- **CAMP WILLIAMS (Four Separate Ground Mount Systems)**
- **DRAPER (Car Canopies)**
- **WEST JORDAN HANGAR (Roof and Canopy)**
- **WEST JORDAN ARMORY (Roof and Ground)**
- **BLANDING (Ground)**
- **ST GEORGE (Ground with Battery Back-up)**

UTAH NATIONAL GUARD

DFCM Project No. 14261480

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Exhibits A1-A4: Site Identification, Preliminary Layout, Funding Information, Billing Information for each Component:

- Exhibit A1: Camp Williams
- Exhibit A2: Draper
- Exhibit A3: West Jordan
- Exhibit A4: Blanding
- Exhibit A5: St George

Exhibit B: Installation Requirements & Material Specification

Exhibit C: Example Design/Build Contract

Current copies of the DFCM General Conditions dated May 25, 2005, Design Manual, and all Supplemental General Conditions are available upon request at the DFCM office and on the DFCM web site at <http://dfcm.utah.gov> - “Standard Documents” – “Reference Documents” – “Supplemental General Conditions”, and are hereby made part of these contract documents by reference.

The Agreement and General Conditions dated May 25, 2005 have been updated from versions that were formally adopted and in use prior to this date. The changes made to the General Conditions are identified in a document entitled Revisions to General Conditions that is available on DFCM’s web site at <http://dfcm.utah.gov>

NOTICE TO DESIGN/BUILD TEAMS SINGLE-STAGE COMPETITION

The State of Utah - Division of Facilities Construction and Management (DFCM) intends to hire a Design/Build (D/B Team) for the following project:

MULTIPLE SOLAR PV FACILITIES at CAMP WILLIAMS, DRAPER HQ, WEST JORDAN, BLANDING AND ST. GEORGE
UTAH NATIONAL GUARD
DFCM PROJECT NO. 14261480

This project includes design/build of nine (9) different solar PV systems at five different locations. Vendors are *permitted* to bid on all, or any combination of the nine projects. DFCM reserves the right to award contracts to one, or multiple vendors. Vendors are advised that DFCM will seek to maximize the value across all nine projects, therefore vendors are strongly encouraged to bid on all nine projects.

DFCM is looking to select the team providing the lowest dollar value per DC-Watt capacity installed, while complying with material specification and all applicable design and code requirements.

The RFP documents will be available at 3:30 PM on Tuesday, June 10, 2014, on the DFCM web page at <http://dfcm.utah.gov>. For questions regarding this project, please contact John Harrington, DFCM, at 801-652-2888. No others are to be contacted regarding this project.

The D/B Team for this work will be selected by a Value-Based Selection RFP method. There will be **MANDATORY** Pre-Proposal Site Visits for all proposers that will be held on **Tuesday, June 24, at 10:00 AM** starting at the Facilities Building, Camp Williams, Riverton, Utah (See project schedule). **St. George MANDATORY** Pre-Proposal Site visit for the **St. George** site will be on **Wednesday, June 25, at 10:00 AM** at the St. George Armory, 1710 East Commerce Drive, St. George, Utah for interested proposers. All Teams wishing to submit on this project must attend the meetings.

The Response Document to this RFP must be submitted to DFCM at 4110 State Office Building, Capitol Complex, Salt Lake City, Utah, by the dates and times shown in the Project Schedule.

The Division of Facilities Construction & Management reserves the right to reject any or all proposals or to waive any formality or technicality in any proposal in the interest of the State.

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT
4110 State Office Building
Capitol Hill Complex
Salt Lake City, Utah 84114

DESCRIPTION OF WORK

The scope of this project addresses the construction of nine (9) separate photovoltaic energy facilities, as follows:

1. An approximate 325 kW groundmount solar PV facility “South West Series” at Camp Williams (UTARNG funded project No 4914023)
2. An approximate 325 kW ground mount facility at Camp Williams (Jacobs Canal I, UTARNG funded project No 4914041)
3. An approximate 325 kW ground mount facility at Camp Williams (Jacobs Canal II, UTARNG funded project No 4914042)
4. An approximate 325 kW ground mount facility at Camp Williams (Series 9000, UTARNG funded project No 4914009)
5. An approximate 250 kW solar car parking canopy facility at Draper Headquarters (UTARNG funded project No 4914011)
6. An approximate 215 kW roof mount facility (flat roof) on the hangar building in West Jordan, **PLUS** an approximate 85 kW Solar Canopy for parking, west of the hangar building (UTARNG funded project No 4914013)
7. An approximate 250 kW combined (flat) roof and groundmount facility associated with the Armory building in West Jordan (UTARNG funded project No 4914012)
8. An approximate 38 kW ground mount facility at the Blanding Armory (UTARNG funded project No 4914010)
9. 50-200 kW ground mount facility at the St George Armory (UTARNG funded project No 4914050), which is to be partially net metered, but also has a battery back-up for a portion of the solar capacity (see more details in Exhibit A5).

DFCM will require the successful proposer to provide the complete design and installation of the proposed solar electric systems. The four projects at Camp Williams are net metered to the same main electrical meter. The West Jordan, Draper and Blanding projects are net metered to the meter numbers as detailed in Table 2. Net metering for the St George project is under negotiation (see Table 3). Updates on this situation will be posted via an Appendix on the DFCM website as more information becomes available.

The overall RFP objective is to obtain the best value per DC-Watts installed, for the approximate system capacities as set out in Table 1, 2 and 3, and while complying with all required material specifications, codes and legal requirements. The Proposer offering the strongest combination of these variables, with proven capabilities, will achieve the optimal score, as set out later in this RFP document.

DFCM strives to minimize the number of contract awards related to this project, ideally seeking a single vendor for all nine projects, but DFCM reserves the right to award contracts to multiple proposers. DFCM reserves the right to remove any site for any reason from the scope of work prior to execution of contract with the selected proposer(s). DFCM reserves the right to reject all proposals for any one or all of the sites.

The exhibits to RFP project # 14261480 cannot be warranted as correct. The information in the exhibits must be independently verified. The sizes and layouts in the RFP and its Exhibits, as stated are approximate and for informational purposes only. Vendors should use their own judgment in the design and layout of the solar systems they are proposing.

The contractual requirements provided for in this RFP may be modified by reviews with the Utah Attorney General's Office and/or legal counsel representing the Utah Army National Guard.

Partial funding was procured through the Rocky Mountain Power Utah Solar Incentive Program (RMP USIP), therefore Vendor should comply with the rules and regulations associated with these rebates. However, the USIP funding should not be considered a rebate to the Proposer.

The minimum combined size of the Camp Williams projects is 1,000 kW_{DC} to maintain the procured USIP award. The minimum size of the Draper project is 250 kW_{DC} to maintain the procured USIP award. Small non-residential USIP incentive awards were also procured for the Blanding and West Jordan (Armory) projects. Vendors are advised that additional funding was procured from a combination of Federal and State funds. Although the materials need not be 'ARRA' compliant, the modules and inverters need to be American made and under warranty with a domestic company. Wages need not be 'prevailing wage'.

Objectives

DFCM seeks a Design/ Build Team for the UTARNG-owned solar electric energy generation facilities described below, which may include high efficiency mono or polycrystalline silicon solar cells, specifically of U.S. manufacture and warranty, with the overall objective to offset the highest possible electrical consumption at each location, for a 25 year period, with a system warranty of at least 20 years and a system output of at least 80% of original design output in Year 25.

Table 1 - Project Details (Camp Williams)

	South West Series Ground Mount	Jacobs Canal Ground Mount I	Jacobs Canal Ground Mount II	Series 9000 Ground Mount
<i>Project Identifier</i>	project No 4914023	project No 4914041	project No 4914042	project No 4914009
<i>Project Description</i>	Ground mount, sloped grounds	Ground mount, sloped grounds	Ground mount	Ground mount
<i>Address</i>	17800 S Camp Williams Road, Riverton UT 84065-4999			
<i>(Estimated) Capacity</i>	325 kW	325 kW	325 kW	325 kW
<i>Meter#</i>	41049856			
<i>Account #</i>	54790086-001 6			
<i>Rate Schedule</i>	8			
<i>Annual Consumption</i>	9,110,000 kWh/y			
<i>Current Estimated Fully Blended Rate</i>	\$0.09/kWh			
<i>Remarks</i>	<p>Geotechnical studies were conducted for the proposed sites (see Exhibit A).</p> <p>Trenching and conduit (but not wiring) for this project is being done as part of another project at Camp Williams and therefore the cost can be deducted for budgeting purposes of the solar projects.</p> <p>The four ground mounts are to be interconnected to the same meter, however for budgetary purposes these are regarded four separate systems and are to be on separate inverters.</p>			

Table 2 - Project Details (Draper, West Jordan, Blanding)

	Draper Headquarters	West Jordan, Hangar	West Jordan, Armory	Blanding
<i>Project Identifier</i>	project No 4914011	project No 4914013	project No 4914012	project No 4914010
<i>Project Description</i>	Solar canopies in parking area east of helipad	Roof mount, flat roof, EPDM (~215 kW) Solar Canopy, single row of parked cars, north – south orientation (located west of hangar building) (~85 kW)	Roof mount (~150 kW), flat roof, EPDM and ground mount (~100 kW adjacent to Bld)	Ground Mount, previously paved and graded
<i>Address</i>	12953 S Minuteman Dr, Draper 84020 UT	7602 Airport Rd, West Jordan 84084 UT	7602 Airport Rd, West Jordan 84084 UT	10 W. Freedom Way, Blanding 84511 UT
<i>(Estimated) Capacity</i>	250 kW	215 kW	250 kW	38 kW
<i>Meter#</i>	<u>North-East Transformer</u> , 1924690	35857423	35857426	36260397
<i>RMP Account #</i>	31126376-001 0	37932266-001 8	37937306-001 9	59461326-001 9
<i>Rate Schedule</i>	6	6	6	23
<i>Annual Consumption</i>	1,014,548 kWh/y	922,903 kWh/y	699,127 kWh/y	62,111 kWh/y
<i>Current Estimated Fully Blended Rate</i>	\$0.106/kWh	\$0.08/kWh	\$0.08/kWh	\$0.08/kWh
<i>Remarks</i>		A roof inspection was carried out. The remaining life of the roof is considered to be sufficient for the life of the solar system. A structural ‘letter of opinion’ can be found in App A.	A roof inspection was carried out. The remaining life of the roof is considered to be sufficient for the life of the solar system. The north side of the building will be subject to an upgrade, therefore vendors are asked to include a ground mount or solar canopy as part of their bid. A structural ‘letter of opinion’ can be found in App A.	

Table 3 - Project Details (St George Armory)

St George Armory
UTARNG project No 4914050
Ground Mount with Battery Back-up
1710 E Commerce Drive, St George, UT 84790
Utility: Dixie Escalante
Acc# 209132
Meter # 10-946-318 (OMS Bld) 198,910 kWh/y (demand charges 50% of bill)
Meter # 06-296-497 (1710 E Commerce Dr) 186,870 kWh/y
Meter # 10-946-315 (Armory Bld) 56,577 kWh/y
The net metering and interconnect status of this project is under negotiation. Vendors are encouraged to submit a budgetary 'price per Watt' for a 50-200 kW solar ground mount system that includes battery back-up of a portion of the solar system. The budget of the St George project is not to exceed \$750,000.

The engineering and permit review for all projects is conducted by DFCM. Budget guidance for the review fee is the actual cost of inspections, with a structural review fee if applicable.

The overall objective of this project is for the selected vendor to develop and propose, for mutual agreement, the concept, final system design & engineering, system specifications, materials procurement, construction and installation of solar electric systems at the locations described above.

Specific objectives that DFCM seeks to attain while pursuing these goals include the following:

- As soon as possible, commence the development, design, procurement and installation of the solar electric systems (PV) at each of the sites at Camp Williams, Draper, West Jordan and Blanding.
- The newly installed solar PV systems must be installed and generating electricity no later than July 31, 2015.
- Select and contract with a highly qualified solar system developer, with demonstrated experience in outstanding system design and quality installation. Please demonstrate experience with building solar canopies.
- Performance guarantees, and warranty provisions for the inverters and solar modules will be part of the contract.
- A five year installation (workmanship) guarantee will be part of the contract, including making sure the existing roof warranties are upheld.
- The solar output shall be measured and connected to the UTARNG energy monitoring SCADA system. The specification for the metering and reporting requirement is attached in Exhibit B (Material Spec).
- Add long-term economic value by employing thoughtful designs and materials that are of investment grade quality.
- Be the beneficiary of the produced environmental attributes yielded from the constructed solar system, including carbon offsets, carbon credits, renewable energy credits, green tags or other climate/carbon offset entitlements (with the exception to those related to the USIP funding).
- Include solar and renewable energy educational elements for the benefit of UTARNG staff and the general public, inclusive of a solar information display and screen at (a) mutually agreed location(s) at Camp Williams.

In the construction & installation of the solar electric system, the selected solar proposer and its subcontractors must comply with pertinent State and Federal codes and laws as applicable, as well as obtain necessary bonding, as outlined in this RFP.

All solar projects will need to comply with the International Code Council family of codes and State amendments as approved by the Uniform Building Codes Commission. Design professionals of the proposers are encouraged to contact the building official(s) having jurisdiction early in the design process. Final construction documents will need to be reviewed and approved for code compliance prior to construction. Construction change orders will generally need to be reviewed for code compliance prior to construction implementation as well as obtain DFCM/UTARNG approval.

Deliverables

A. Develop Solar Energy Project Final Plans and Specifications: Upon the successful negotiation of the contract, the successful proposer shall develop final Solar Energy System project plans and specifications, which shall be subject to mutual agreement, regulatory plan check and design review by DFCM, UTARNG any other parties with local jurisdiction.

B. Design and Engineering: The design requires that the PV modules be installed according to the specifications outlined in the provided RFP Exhibits, and in a manner accepted by all parties specific to the final design(s), as developed and proposed by the selected vendor.

B.1. PV Module, Inverter and Balance of System - Component Specifications: The selected proposer shall install PV modules, inverters and all other components to meet the minimum standards outlined in the *Solar Electric Facility Installation Requirements, Exhibit B*.

In addition to requirements noted in the Exhibits, the proposed solar modules must have, at a minimum:

- 1) A 25-year power output performance warranty, with a minimum performance specification of 90% for the initial 10 years, and a progressive scale reaching no less than 80% for the remaining 15 years of the warranty. A linear rather than a stepped or tiered warranty is preferred.
- 2) The module warranty must be “investment grade” and be offered by a module manufacturer domiciled in the United States.
- 3) A certified power output and material spec close to those specified in the RMP incentive applications (265W, PTC, +/- 3%, see Exhibits A for more details). All modules shall be factory-tested and certified to meet or exceed name plate power rating, with preference for “plus-sorting” to minimize module mismatch losses and name plate tolerance losses.

In addition to requirements noted in the Exhibits, the grid-tied solar inverters must have, at a minimum:

- 1) A minimum of 10-year nationwide warranty, with such warranty being “investment grade” and offered by an inverter manufacturer domiciled in the United States
- 2) Weighted CEC Efficiency of not less than 95.5%.

B.2 PV System Performance Monitoring: The system shall include a performance monitoring system utilizing a software-based, multiple location capable, graphical display to provide real-time monitoring of the output and efficiency of the system for energy production and failure diagnostics. The minimum inputs shall be real-time PV system AC power output (kW) and production (kWh), local ambient temperature, irradiance, access to cumulative historical data for a minimum 365 past days, and accessible by UTARNG dedicated users. The production reporting is extremely important and shall be accessible via and connected to the energy management **SCADA system** that is in place at each solar site location.

Once the solar system plans and specifications have been approved by DFCM/UTARNG staff, the plans will be returned to the successful proposer, so they can be submitted to the necessary permitting authorities and agencies, as required, for plan review and issuance of the appropriate permits.

C. Obtain Building and all other needed Permits: The successful proposer must work with all local authorities and agencies, as needed, to ensure that plans and specifications meet relevant land use, building, and all other applicable codes, and must obtain the requisite building and other permits for the solar electric systems prior to construction. DFCM is the permitting authority for this project.

D. Construct the Solar Electric System: All costs associated with the construction of the solar electric system, with the exception of those mentioned in Table 1, shall be the responsibility of the selected proposer. The successful proposer shall furnish all labor, materials, permits, bonding, engineering/design (including all architectural and engineering drawings and specifications, as may be required), transportation, storage, and equipment rental costs to construct the entirety of the solar electric system, in accordance with the final approved plans and specifications. Construction shall include a solar panel cleaning plan, the cost of power system components, and the complete installation and commissioning of the solar power system (including tie-ins to the existing utility electric service in accordance with the prevailing net metering and interconnection agreements with Rocky Mountain Power (RMP)/ PacifiCorp.

E. Obtain Intermediate and Final Inspections: The selected proposer shall arrange for all intermediate and final permit-required inspections, including those required by the electrical inspector(s), and all requisite documentation and inspections from RMP or the serving local electric utility, to permit proper connection of the PV system to the building's electrical service, and to obtain the net metering benefits for UTARNG. Final inspection will also be performed by local authorities, as designated by DFCM's Project Manager.

F. Commissioning and Acceptance Testing: During the start-up, DFCM and/or its designee shall observe and verify each system performance requirement. Required commissioning and acceptance test services shall include, but not be limited to:

- a. Starting up the solar electric system until it achieves the mutually agreed performance requirements;
- b. Conducting the performance testing over five (5) consecutive calendar days;
- c. Conducting the successful delivery of power within thirty (30) days following the completion of the system, meeting each system requirement as designed.
- d. Fulfilling any other noted requirement as specified by DFCM or other local authority or UTARNG, including sign-off by the Utility and execution of the net metering & interconnect contracts.

G. Maintenance and Operation Training of the System: The selected proposer shall provide on-site training to UTARNG personnel for the operation and maintenance of the solar electric system. Prior to system start-up, the selected proposer shall supply to UTARNG/DFCM two copies of all Component Product Data and Component Operation and Maintenance Manuals. Each Component type must have a separate component ID, a separate 3-ring binder of information, and must be labeled appropriately for content. Additionally, one (1) electronic copy, on suitable media, shall also be provided. Such electronic copy may be directly aggregated PDF files and or images scanned to PDF files and aggregated. The information must be sufficient for UTARNG/DFCM to conduct the appropriate operation and maintenance for the life of the system, including Operation and Maintenance schedule, repair timelines, detailed O&M procedures, and performance assurance standards and guarantees. Examples of components include PV modules, inverter, racking, BOS, metering equipment, etc.

The selected proposer must submit to UTARNG/DFCM as-built detail drawings for each constructed system, detailing the location of all above and underground utilities, and all components. Such drawings shall be submitted within thirty days of project start-up, and shall include a set of both electronic and hard copy as-built drawings in AutoCad-Autodesk format, unless otherwise approved by the DFCM.

PROCUREMENT PROCESS

Procurement Process

Page No. 1

The State of Utah intends to enter into an agreement with a firm to provide Design/Build Services as described. The selection of the D/B Team will be made using a Value-Based Selection (VBS) system.

1. **Request for Proposals Documents for D/B Team**

The Request for Proposals (RFP) for Design/Build Services consists of all of the documents listed in the Table of Contents and all said documents are incorporated in this RFP by reference. The RFP will be available on the DFCM website as stated on the Project Schedule.

2. **Contact Information**

Except as authorized by the DFCM Representative or as otherwise stated in the RFP or the pre-proposal meeting, communication during the selection process shall be directed to the specified DFCM's Representative. In order to maintain the fair and equitable treatment of everyone, proposers shall not unduly contact or offer gifts or gratuities to DFCM, Utah Army National Guard, any officer, employee or agent of the State of Utah, users or selection committee members in an effort to influence the selection process or in a manner that gives the appearance of influencing the selection process. This prohibition applies before the RFP is issued as the project is developed, and extends through the award of a contract. Failure to comply with this requirement may result in a disqualification in the selection process. Proposers should be aware that selection committee members will be required to certify that they have not been contacted by any of the proposers in an attempt to influence the selection process.

3. **Requests for Information**

All requests for information regarding this project shall be in writing and directed to:

John Harrington - DFCM Energy Director
State of Utah
Division of Facilities Construction and Management
State Office Building Suite 4110
Capitol Hill
Salt Lake City, Utah 84114-1160
E-mail: jharrington@utah.gov
Facsimile: 801-538-3267

4. **Project Schedule**

The Project Schedule lists the important events, dates, times and locations of meetings and submittals. The terms of the project schedule are hereby incorporated by reference and must be met by the selected team.

5. **Mandatory Pre-Proposal Meeting**

Mandatory pre-submittal site visits will be held on the date and times and at the locations listed on the Project Schedule. A representative from each interested respondent team is required to attend. During the meetings, a presentation will be made to describe the overall scope of work and intended schedule. Interested firms may ask questions and request clarification about the project and the procurement process. The answers to questions that were asked during the visits will be posted as an addendum on the DFCM website. Sub-consultants and subcontractors are invited to attend this meeting, but it is not mandatory for them. Respondent's absence from the pre-submittal meeting and/or failure to register precludes participation as a submitting firm on this project.

6. Submittal Due Dates and Times

All required submittals must be delivered to, and be received by DFCM prior to the date and time indicated in the Project Schedule. Submittals received after the specified time will not be accepted. If using a courier service, the D/B Team is responsible for ensuring that delivery will be made directly to the required location before the dead line. It is your responsibility to allow for the time needed to park on Capitol Hill.

7. Last Day to Submit Questions

All questions must be received at the office of DFCM no later than the time and dated listed in the Project Schedule. Questions must be submitted in writing to John Harrington at DFCM.

8. Response Document

The Response Document should, at the least contain the following:

- A cover sheet that includes the title of this RFP, Project Number, the name and address of the firm, the contact person and the contact person’s phone and e-mail.
- Statement of Qualifications
- Management Plan
- Design Proposal
- Cost Proposal
- Signature Page
- Termination and Debarment Statement

There is no prescribed page limit to the Response document but Proposers are encouraged to keep the Response Document as concise as possible. Five printed copies and two CDs of the Response Document are required.

9. Cost Proposal

- 1) Total cost for the project, with full spec of the system, stating what is included (such as the component warranty terms, performance guarantee and workmanship warranty)
- 2) Terms of the proposal

The following format is suggested:

	kW_{DC} Installed	Price per Watt	Total Build Price
Camp Williams South West Series			
Camp Williams Jacobs Canal			
Camp Williams Jacobs Canal			
Camp Williams Series 9000			
Draper HQ			
West Jordan - Hangar			
West Jordan - Armory			
Blanding			
St George			
TOTAL			

Please note:

- UTARNG will provide trenching and the conduit for the distance between the ground mount and the substation at Camp Williams (Vendor to supply the wiring)
- The system size of Blanding is restricted by annual electrical consumption.
- The system size for the West Jordan projects is restricted by available roof and ground space. Please note that bidders are permitted to use their judgment to maximize the available space and submit slightly varying design capacity to those included in this document.
- The system size at St George depends on the allowable net metering capacity permitted by the local Utility. This is currently under negotiation. UTARNG is seeking to maximize the solar ground mount capacity, but with a production not exceeding approximately 80% of annual consumption (see Exhibit A5). The secondary objective is to have some portion of the solar system capacity backed up by a battery system. The budget for the project at the St George armory is not to exceed \$750,000. Vendors are encouraged to submit several alternate proposals given the stated limitations.
- **All Proposers are informed herewith and acknowledge by the submission of their bid proposal, that as a component of their project cost, the selected Proposer will be charged an administrative cost offset fee equivalent to \$0.17 per installed Watt for all systems, and will be invoiced for such fee by DFCM promptly upon system commissioning.**

Please show annual, 20 and 25 year production estimates.

10. **Addenda**

All responses to questions and requests for clarification will be in writing and issued as addenda to the Request for Proposals. The addenda will be posted on DFCM's website <http://dfcm.utah.gov>. It is the responsibility of the Respondent to check this web page from time to time, and to acknowledge receipt of any Addenda on the Cost Proposal Form Response.

11. **Past Performance and References**

If Proposer has completed project(s) for DFCM in the last five years, please identify the project(s) by name, number and DFCM project manager.

Each Team wishing to compete for this project, that has not completed at least three DFCM projects in the last five years, will be required to provide a list of references on *similar* projects for a total of **three** projects, providing at least the following information:

Point of Contact:	Person who will be able to answer any customer satisfaction questions.
Phone Number:	Phone number of the contact we will be surveying.
Agency Name:	Name of Company / Institution that purchased the solar system.
Project Identifier:	Name of the project.
Address:	Street, city and state where the work was performed.
Date Completed:	Date of when the work was completed.
Size:	Size of project kW _{DC} .
Type:	Type of the project (Roof/Ground Mount/Canopy/Other)

12. Statements of Qualifications

The Statement of Qualifications is a short document that addresses the selection criteria. It indicates the experience and qualifications of the Team, the project manager, the construction project manager, and other critical members of the team. It describes what talents their team brings to this project, how their knowledge of the subject will provide benefit to the process, how the team has been successful in the past and how that relates to this project. It should include information on similar projects completed by the Team. Include team member experience and special qualifications that are applicable to this project and/or are part of the project specific selection criteria.

13. Design Proposal and System Components

A preliminary layout, one-line diagram and/or sketches should be included in the proposal. When addressing system components please identify:

1. The designated roof-mounted, ground-mounted or canopy PV system lay-out detail, the proposed mounting method, and a sketch of the proposed solar canopies.
2. The make, number and specifications of selected solar modules (American-made only).
3. The make, number and sizing of the selected grid-tied solar electric (PV) inverters and its/their location (American-made only).
4. A preliminary one-line diagram for each system, and for the overall project, based on general assumptions and information provided during the site visits.
5. Details regarding the monitoring and data collection provisions.
6. The PV module and component warranties.
7. Identify Warranty Period of Proposer's System and Workmanship. Identify the length of and provisions of any warranty(ies) provided by the Proposer for the installed components.

14. Management Plan

The Management Plan should demonstrate how the Team is organized, the role of team members, and how the team will work together to achieve the objectives of the project. It should identify decision making authority and point of contact.

The Management Plan should address in a general manner how the Team will accomplish the objectives of the project, mitigate the project risks identified by the Team, and address any other selection criteria not addressed elsewhere in the Team's submittals. It should include a preliminary project schedule indicating how the Team will accomplish the desired completion timeframe.

The Management Plan should be concise yet contain sufficient information for evaluation by the Selection Committee.

15. Time

The RMP Incentive (USIP) and the Federal funding require that work is finished **no later than** July 31, 2015.

16. Proposal Terms

The Proposer shall include information specific to the financial terms of this proposal.

Furthermore, the vendor proposal must include an acknowledgment that the Proposer has reviewed each of the attached Exhibits and shall specifically include an outline of any changes the Proposer believes necessary to the attached Exhibits.

17. Termination or Debarment Certifications

The general contractor and prime design firm of the Team must submit a certification that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from soliciting work by any governmental department (Federal or State) or UTARNG. These firms must also certify that neither the firm nor its principals have been terminated during the performance of a contract or withdrew from a contract to avoid termination. If the firm cannot certify these two statements, the firm shall submit a written explanation of the circumstances for review by DFCM. Teams are to submit these certifications with their Statement of Qualifications.

18. Selection Committee

The Selection Committee may be composed of individuals from DFCM, the UTARNG, and representatives from the design or construction disciplines.

19. Interviews

Interviews will be conducted at the discretion of the DFCM selection committee. The interview evaluation will be made using the selection criteria noted below. The information provided by the past performance/references, Preliminary Management Plan, Price Proposal and Statement of Qualifications will be the basis for this evaluation.

The purpose of the interview is to allow the Team to present its qualifications, past performance and preliminary management plan and to elaborate on the Price Proposal. It will also provide an opportunity for the Selection Committee to seek clarification of the Team's proposal.

The method of presentation is at the discretion of the Team. The interviews will be held on the date and at the place specified in the Project Schedule.

20. Award of Contract

The selection of the Team will be made using the Value-Based Selection system (VBS). The award of the Contract shall be in accordance with the criteria set forth in the Request for Proposals (RFP). The State of Utah intends to enter into an agreement with the prime proposer to construct the project as outlined. Individual proposers or alliances between two or more proposers are allowed in this process. The State will contract with only one legal entity.

21. Contract Bond

The performance bonds shall be for an amount equal to one hundred percent (100%) of the contract sum for a one-year period and secured from a company that meets the requirements specified in the requisite forms. Subcontractors are not required to be bonded unless a specific requirement for such is included in the RFP documents.

22. Licensure

The D/B Team shall comply with and require all of its consultants, sub-consultants, and subcontractors to comply with the license laws as required by the State of Utah.

23. Permitting

The successful proposer must work with all local authorities and agencies, as needed, to ensure that plans and specifications meet relevant land use, building, and all other applicable codes, and must obtain the requisite building and other permits for the solar electric systems prior to construction.

24. Financial Responsibility of Contractors and Subcontractors

Contractors shall respond promptly to any inquiry in writing by DFCM to any concern of financial responsibility of the contractor or subcontractor.

25. Withdrawal of Proposals

Proposals may be withdrawn on written request received from proposer until the notice of selection is issued.

26. Time is of the Essence

Time is of the essence in regard to all the requirements of the contract documents.

27. Right to Reject Proposals

DFCM reserves the right to reject any or all proposals.

28. Administrative Cost Offset Fee Payment to DFCM

All Proposers are informed herewith and acknowledge by the submission of their bid proposal, that as a component of their project cost, the selected Proposer will account for an administrative cost offset fee equivalent to \$0.17 per installed Watt for all systems. Accordingly, upon project completion and commissioning, DFCM will invoice selected vendor for the cost offset fee, which invoice shall be paid within 30 days.

Such administrative cost offset fees will be applied to each project, on a separate, stand-alone basis, with payment tendered to DFCM within ten (10) days of commissioning of each system, respectively.

This administrative fee offsets DFCM's general project development, technical and RFP-related activity costs such as engineering, legal, design and finance reviews, proposer due diligence, proposer selection, project implementation management and inspections.

29. Selection Criteria

The following criteria will be used in arriving at the successful team. The requirements of the criteria are described in the previous sections. The criteria are not listed in any priority order. The Selection Committee will consider all criteria in performing a comprehensive evaluation of the proposal. The following criteria will be used in ranking each of the construction firms. The firm that is ranked the highest will represent the best value for the State. The selection committee will consider all criteria and determine how much weight to give to each item in performing a comprehensive evaluation of the proposal. Weights have been assigned to each criterion in the form of points.

- A. Design Proposal. (System Components, Warranty and Design) **25 POINTS**. The D/B Team's design and materials used, and warranty terms, as presented in the drawings and specifications and as clarified in the interviews will be evaluated as to how well it meets the objectives of the project.
- B. Schedule. **10 POINTS**. The proposer's schedule will be evaluated as to how well it meets the objectives of the project. Unless other objectives are stated the shorter the construction duration that is evaluated to be feasible while maintaining safety and quality in conformance with the construction documents is preferred. The proposer shall discuss during the interview the project schedule identifying major work items with start and stop dates that are realistic and critical subcontractors and if they have reviewed and agree to the schedule. The overall completion date shown on the schedule will be used in the contract as the contract completion date.
- C. Past Performance Rating. **20 POINTS**. Each proposer will be given a past performance rating. The rating will be based first on how well the firm did on past projects with DFCM. If the DFCM past performance ratings are not available a rating will be established using any DFCM past performance ratings that are available, supplemented by references supplied by the proposer at the time the proposals are submitted.
- D. Strength of Proposer's Team (Team Capabilities and Statement of Qualifications) **10 POINTS**. Based on the statements of qualifications, the interview, and management plan, the selection team shall evaluate the expertise and experience of the construction firm the project manager and the superintendent as it relates to this project in size, complexity, quality and duration. Consideration will also be given to the portions of the project that the proposer will self perform and the strength brought to the team by critical (locally sourced) subcontractors including how they were selected and the success the proposer has had in working with them.
- E. Project Management Approach. **10 POINTS**. Based on the information provided in the construction and management plan and information presented in the interview, the selection team shall evaluate how each team has planned the project and determined how to construct the project in the locations and in the time frame presented. The proposer should present how they plan to move material and people into and out of each site. Keep the sites safe; minimize disruption to the facilities, etc. The construction firm shall also discuss what portions of the project they plan to self perform. The selection team will also evaluate the degree to which risks to the success of the project have been identified and a reasonable solution has been presented.
- F. Cost (Proposer's offer and terms). **25 POINTS**. Up to three alternate price proposals may be submitted for this project.

TOTAL POSSIBLE POINTS: 100 POINTS.

**PROJECT SCHEDULE**

PROJECT NAME:	MULTIPLE SOLAR PV FACILITIES at CAMP WILLIAMS, DRAPER HQ, WEST JORDAN, BLANDING AND ST. GEORGE UTAH NATIONAL GUARD			
DFCM PROJECT NO.	14261480			
Event	Day	Date	Time	Place
Request for Proposals Available	Tuesday	June 10, 2014	3:30 PM	DFCM web site *
Mandatory Pre-Proposal Site Meetings	Tuesday	June 24, 2014	10:00 AM	Facilities Building Camp Williams-Utah National Guard Riverton, Utah
			12:00 NOON	Draper Headquarters 12953 S Minuteman Dr. Draper 84020 UT
			2:00 PM	7602 Airport Rd West Jordan 84084 UT (Armory Building)
			*See Below	*Blanding
Mandatory Pre-Proposal Site Meetings **See Below	Wednesday	June 25, 2014	10:00 AM	**St George Armory 1710 E Commerce Drive St George, Utah **See Below
Last Day to Submit Questions	Friday	June 27, 2014	4:00 PM	John Harrington- DFCM E- mail: jharrington@utah.gov
Addendum Issued (exception for bid delay)	Tuesday	July 1, 2014	3:00 PM	DFCM web site *
Response Document	Thursday	July 10, 2014	12:00 NOON	DFCM 4110 State Office Bldg SLC, UT
Short listing (if necessary)	Wednesday	July 16, 2014	4:00 PM	DFCM web site ***
Interviews	Tuesday	July 22, 2014	TBA	TBA
Announcement	Monday	July 28, 2014	4:00 PM	DFCM web site ***
Substantial Completion Date	Tuesday	July 31, 2015		

***Vendors are advised that in lieu of travel to Blanding; a video presentation of the site and the solar specification will be held during the meeting at Camp Williams.**

****Vendors are advised that travel to St George is not mandatory if Vendor does not intend to bid on the project in St George.**

***** DFCM's web site address is <http://dfcm.utah.gov>.**



COST PROPOSAL FORM

NAME OF PROPOSER _____ DATE _____

To the Division of Facilities Construction and Management
4110 State Office Building
Salt Lake City, Utah 84114

The undersigned, responsive to the "Notice to Design/Build Teams" and in accordance with the "Request for Proposals" for the **MULTIPLE SOLAR PV FACILITIES-INCLUDING PROJECTS AT CAMP WILLIAMS, DRAPER HQ, WEST JORDAN, BLANDING AND ST GEORGE-UTAH NATIONAL GUARD- DFCM PROJECT 14261480**, and having examined the Contract Documents and the site(s) of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project(s), including the availability of labor, hereby proposes to design and construct solar photovoltaic arrays as required for the Work in accordance with the Contract Documents, within the time set forth, at the price stated below. This price is to cover all expenses incurred in performing the Work required under this RFP and the Contract Documents.

I/We acknowledge receipt of the following Addenda: _____

The Proposer is responsible for complying with all applicable Utah State Sales and Use Tax exemption requirements.

The Proposer is responsible for payment of all Utah State Sales and Use Tax obligations that arise from the Proposer's failure to comply with exemption requirements. We encourage Proposers to visit www.dsireusa.org for further information. Please note, that this website does not include all information needed to meet this requirement. Proposers must use due diligence in obtaining all information on tax requirements.

	kW_{DC}	Price per Watt	Total Build Price	Terms (warranties etc) (Use Separate Sheet if Required)
Camp Williams “South West Series” Ground Mount				
Camp Williams “Jacobs Canal I” Ground Mount				
Camp Williams “Jacobs Canal II” Ground Mount				
Camp Williams “Series 9000“ Ground Mount				
Draper HQ Canopies				
West Jordan Hangar (roof and canopy)				
West Jordan Armory (roof and ground)				
Blanding Ground Mount				
TOTAL				

St George Ground Mount and Battery Back-up	kW_{DC}	Budgetary Price per Watt	Total Build Price	System Specification, including Batteries (Use Separate Sheet to Clarify System Spec if Required)
OPTION 1				
OPTION 2				
OPTION 3				

I/We guarantee that the Work will be Substantially Complete by **July 31, 2015**, should I/we be the successful proposer.

This bid shall be good for 60 days after bid opening.

The undersigned Contractor's License Number for Utah is _____

Upon receipt of notice of award of this bid, the undersigned agrees to execute the contract within thirty (60) days, unless a shorter time is specified in the Contract Documents, and deliver acceptable Performance Bond in the prescribed form in the amount of 100% of the Contract Sum for faithful performance of the contract.

Type of Organization:

(Corporation, Partnership, Individual, etc.)

Any request and information related to Utah Preference Laws:

Respectfully submitted,

Name of Proposer

ADDRESS:

Authorized Signature

PERFORMANCE BOND
(Title 63, Chapter 56, U. C. A. 1953, as Amended)

That _____ hereinafter referred to as the "Principal" and _____, a corporation organized and existing under the laws of the State of _____, with its principal office in the City of _____ and authorized to transact business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah, hereinafter referred to as the "Obligee, " in the amount of _____ DOLLARS (\$ _____) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee, dated the _____ day of _____, 20____, to construct _____ in the County of _____, State of Utah, Project No. _____, for the approximate sum of _____ Dollars (\$ _____), which Contract is hereby incorporated by reference herein.

NOW, THEREFORE, the condition of this obligation is such that if the said Principal shall faithfully perform the Contract in accordance with the Contract Documents including, but not limited to, the Plans, Specifications and conditions thereof, the one year performance warranty, and the terms of the Contract as said Contract may be subject to Modifications or changes, then this obligation shall be void; otherwise it shall remain in full force and effect.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the state named herein or the heirs, executors, administrators or successors of the Owner.

The parties agree that the dispute provisions provided in the Contract Documents apply and shall constitute the sole dispute procedures of the parties.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the Provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this ____ day of _____, 20_____.

WITNESS OR ATTESTATION:

PRINCIPAL:

By: _____ (Seal)
Title: _____

WITNESS OR ATTESTATION:

SURETY:

By: _____ (Seal)
Attorney-in-Fact

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, 20____, personally appeared before me _____, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney in-fact of the above-named Surety Company and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this _____ day of _____, 20_____.

My commission expires: _____
Resides at: _____

NOTARY PUBLIC

Agency: _____
Agent: _____
Address: _____
Phone: _____

Approved As To Form: May 25, 2005
By Alan S. Bachman, Asst Attorney General

EXHIBIT A1



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

Utah Army National Guard

Camp Williams, Riverton, UT

Site Identification and Preliminary Lay-out

DFCM Project No. 14261480

Issue Date: June 9, 2014

Disclaimer

The intent of this exhibit is to estimate the potential solar power generation capacity of the described Camp Williams National Guard site locations and to give guidance to potential bidders with respect to the available space, the obstacles that may cause shading and electrical infrastructure.

A structural analysis has NOT been carried out.

This report is NOT intended to serve as a detailed engineering design document. It should be noted that detailed structural and electrical design is still a requirement and a full design package is expected for submittal to the client and the various permitting agencies.

While the recommendations in this report have been reviewed for technical accuracy and are believed to be reasonably accurate, the findings are estimates and actual results may vary. As a result, BacGen is not liable if estimated production estimates are not actually achieved. All production and cost estimates in the report are for informational purposes, and are not to be construed as a design document or as guarantees.

The customer should independently evaluate any advice or direction provided in this exhibit. In no event will DFCM, BacGen or its associates be liable for the failure of the customer to achieve a specified electricity production, the operation of customer's facilities, or any incidental or consequential damages of any kind in connection with this exhibit or the installation of recommended projects.

Utah Army National Guard, Camp Williams (>1,000 kW Aggregated Solar Arrays)

Camp Williams, 17800 S Camp Williams Road, Riverton UT 84065-4999	
RMP Account #	54790086-001 6
Meter #	41049856
Schedule #	8
Average Annual Consumption	9,110,000 kWh/y
Average Annual Expense	\$820,000

The Ground Mount solar systems are to be interconnected at the Camp Williams electrical building, where the meter and the transformer are located.

	South West Ground Mount	Jacobs Canal West Ground Mount I	Jacobs Canal East Ground Mount II	Series 9000 Ground Mount
<i>Project Identifier</i>	project No 4914023	project No 4914041	project No 4914042	project No 4914009
<i>(Estimated) Capacity</i>	325 kW	325 kW	325 kW	325 kW

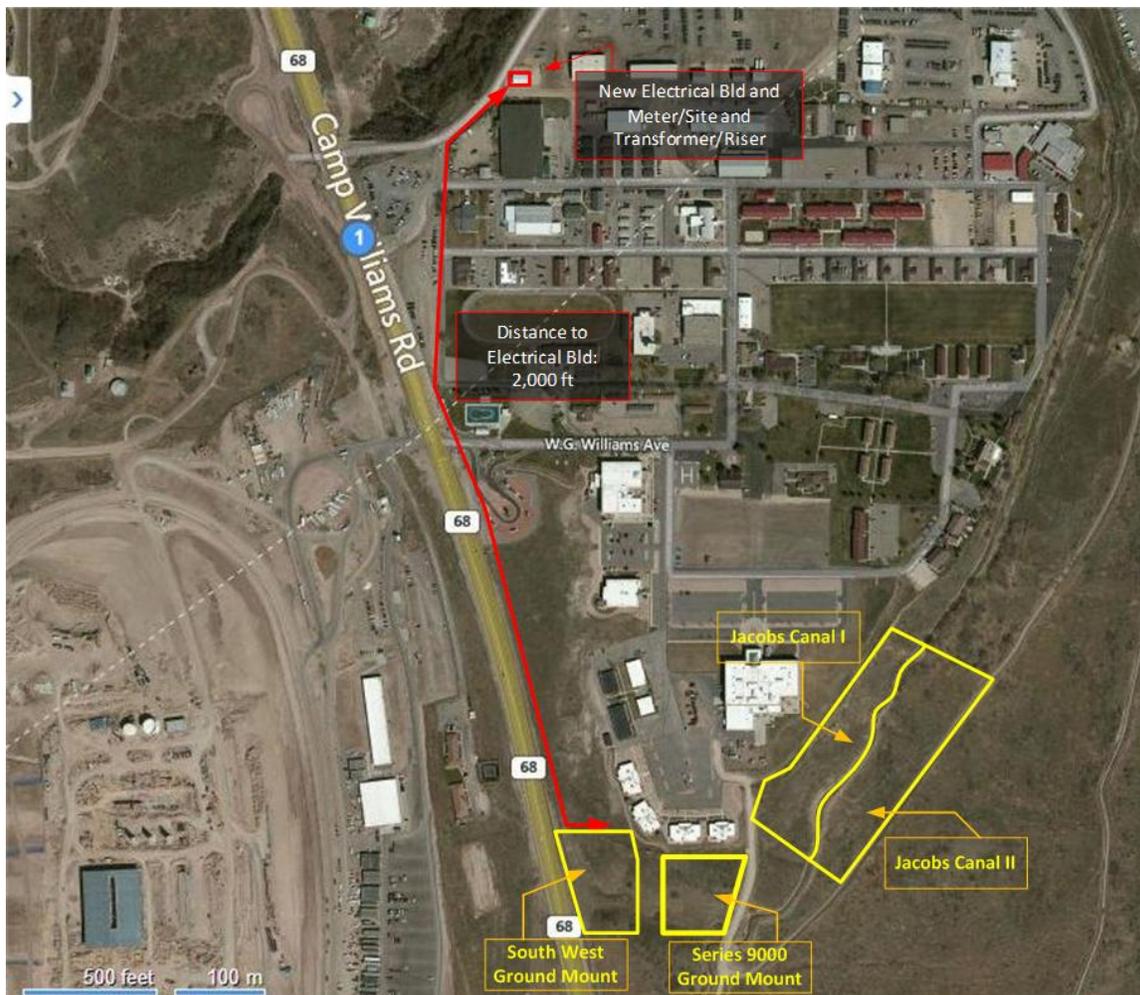


Figure 1 Site Overview with System Location Identification

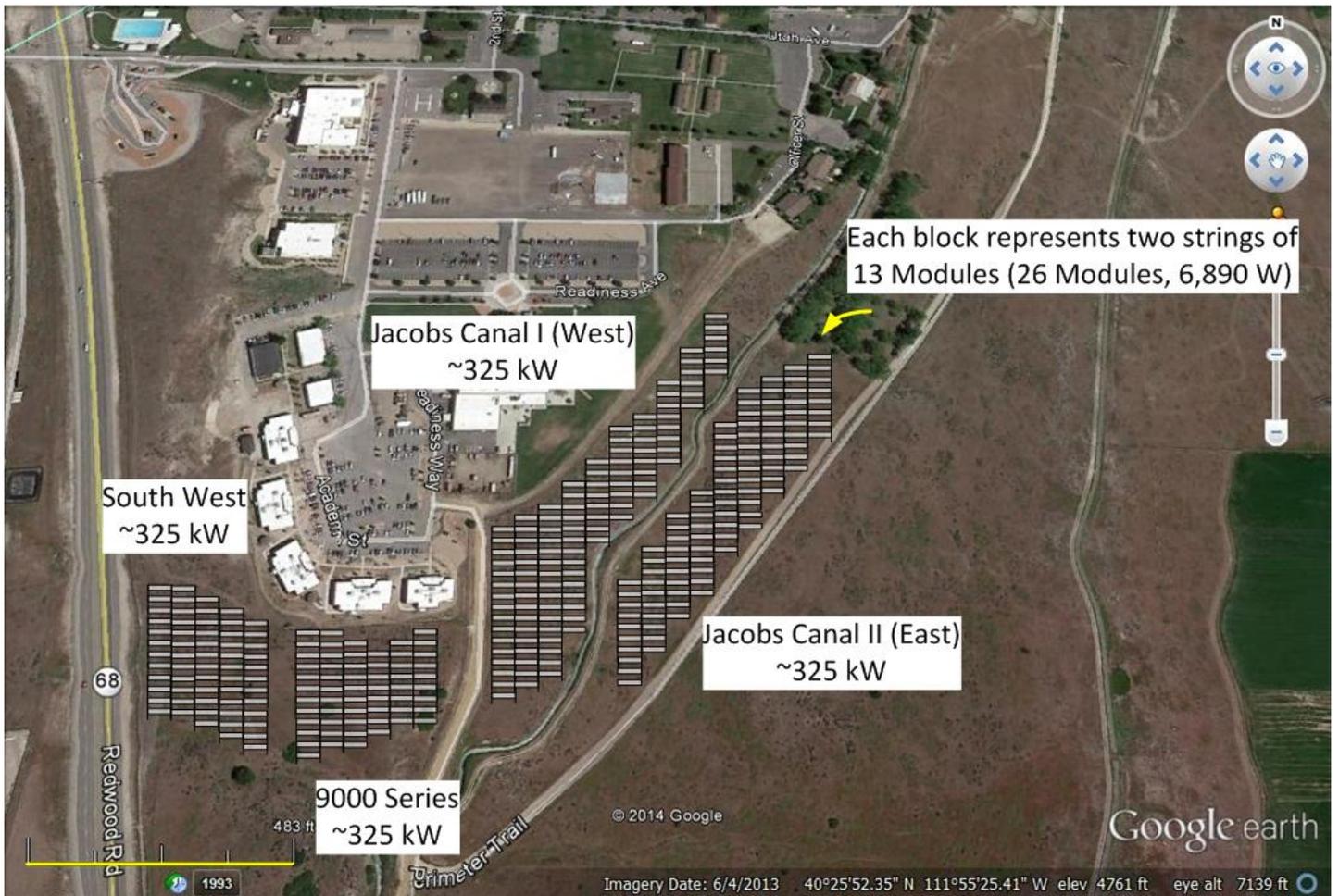


Figure 2 System Identification and Overview Sketch



Figure 3 Jacobs Canal Terrain



Figure 4 The Arrow Indicates the Approximate Location of the South West Ground Mount

**REPORT
GEOTECHNICAL STUDY
PROPOSED CAMP WILLIAMS SOLAR ARRAY
SOUTHEAST END OF CAMP WILLIAMS
CAMP WILLIAMS-BLUFFDALE, UTAH**

Submitted To:

Forsgren Associates, Inc.
370 East 500 South, Suite 200
Salt Lake City, Utah 84111

Submitted By:

GSH Geotechnical, Inc.
473 West 4800 South
Salt Lake City, Utah 84123

May 1, 2014

Job No. 0802-018-14



May 1, 2014
Job No. 0802-018-14

Mr. Dave Waldron
Forsgren Associates, Inc.
370 East 500 South, Suite 200
Salt Lake City, Utah 84111

Mr. Waldron:

Re: Report
Geotechnical Study
Proposed Camp Williams Solar Array
Southeast End of Camp Williams
Camp Williams-Bluffdale, Utah
(40.43099 North; 111.92364° West)

1. INTRODUCTION

1.1 GENERAL

This report presents the results of our geotechnical study performed at the site of the proposed Camp Williams solar array located at the southeast end of Camp Williams, Camp Williams-Bluffdale, Utah. The general location of the site with respect to major topographic features and existing facilities, as of 1999, is presented on Figure 1, Vicinity Map. The site location and surrounding facilities are presented on an aerial-based map as Figure 2, Site Plan. The locations of the test pits in conjunction with this study are also presented on Figure 2.

1.2 OBJECTIVES AND SCOPE

The objectives and scope of this study were planned in discussions between Mr. Dave Waldron of Forsgren Associates, Inc. and Mr. Alan Spilker of GSH Geotechnical, Inc. (GSH).

In general, the objectives of this study were to:

1. Define and evaluate the subsurface soil and groundwater conditions across the site area.

2. Provide recommendations and parameters for drilled pier foundations, thickened concrete slab, and geoseismic information to be utilized in the design and construction of the proposed facility.

In accomplishing these objectives, our scope has included the following:

1. A field program consisting of the excavating, logging, and sampling of 6 test pits to depths of 13 to 17 feet.
2. A laboratory testing program.
3. An office program consisting of the correlation of available data, engineering analyses, and the preparation of this summary report.

1.3 AUTHORIZATION

Authorization was provided by returning a signed copy of our Professional Services Agreement No. 14-0320 dated March 11, 2014.

1.4 PROFESSIONAL STATEMENTS

Supporting data upon which our recommendations are based are presented in subsequent sections of this report. Recommendations presented herein are governed by the physical properties of the soils encountered in the exploration test pits, projected groundwater conditions, and the layout and design data discussed in Section 2, Proposed Construction, of this report. If subsurface conditions other than those described in this report are encountered and/or if design and layout changes are implemented, GSH must be informed so that our recommendations can be reviewed and amended, if necessary.

Our professional services have been performed, our findings developed, and our recommendations prepared in accordance with generally accepted engineering principles and practices in this area at this time.

2. PROPOSED CONSTRUCTION

The project will consist of constructing a solar panel array over an approximately area 1,000 feet long by 450 feet along an existing slope at the southeast end of the Camp Williams development. Each panel will likely be supported by single- or multiple-concrete drilled piers that extend to depths of 10 to 15 feet depending on size, weight, and over-turning load. Vertical and over-turning loads are anticipated to be light. Associated thickened slabs may also be incorporated.

The slope is roughly at a 4 to 5 horizontal to 1 vertical and in some areas much flatter. Projected site development will be minimal requiring earthwork grading of 1 to 2 feet of cut/fill.

3. SITE INVESTIGATIONS

3.1 FIELD PROGRAM

In order to define and evaluate the subsurface soil and groundwater conditions at the site, 6 test pits were advanced to depths of 13 to 17 feet below existing grade. The test pits were excavated with a track-mounted excavator. The location of the test pits are presented on Figure 2.

The field portion of our study was under the direct control and continual supervision of an experienced member of our geotechnical staff. During the course of the drilling operations, a continuous log of the subsurface conditions encountered was maintained. In addition, samples of the typical soils encountered were obtained for subsequent laboratory testing and examination. The soils were classified in the field based upon visual and textural examination. These classifications have been supplemented by subsequent inspection and testing in our laboratory. Detailed graphical representation of the subsurface conditions encountered is presented on Figures 3A through 3F, Log of Test Pits. Soils were classified in accordance with the nomenclature described on Figure 4, Key to Boring Log (USCS).

Sampling in test pits consisted of bag samples of soils excavated. Additionally, a 2.42-inch inside diameter thin-wall hand sampler was utilized in the subsurface sampling at the site.

Following completion of excavating and logging, each test pit was backfilled. Although an effort was made to compact the backfill with the backhoe, backfill was not placed in uniform lifts and compacted to a specific density. Consequently, settlement of the backfill with time is likely to occur.

Following completion of the excavation, a 1.25-inch diameter slotted PVC pipe was installed in Test Pit TP-5 in order to provide a means of monitoring future groundwater fluctuations.

3.2 LABORATORY TESTING

3.2.1 General

In order to provide data necessary for our engineering analyses, a laboratory testing program was performed. The program included moisture, density, partial gradation, and chemical tests. The following paragraphs describe the tests and summarize the test data.

3.2.2 Moisture and Density Tests

To aid in classifying the soils and to help correlate other test data, moisture and density tests were performed. The results of the tests are presented on Figures 3A through 3F, Log of Test Pits.

3.2.3 Partial Gradation Tests

To aid in classifying the granular soils, partial gradation tests were performed. Results of the tests are tabulated below:

Test Pit No.	Depth (feet)	Percent Moisture	Percent Passing No. 200 Sieve	Soil Classification
TP-1	2.0	8.9	23.7	SC
TP-1	8.0	4.1	15.1	SM
TP-4	4.5	11.0	33.9	SM
TP-4	7.0	22.8	65.3	CL/SC
TP-6	6.0	9.0	31.2	SM

3.2.4 Chemical Tests

The following chemical tests were performed on a representative sample of the natural clayey gravel soils encountered at 2 feet below the existing surface in Test Pit TP-3. The results of the chemical tests are tabulated below:

Test Pit No.	Depth (feet)	Soil Classification	pH	Total Water Soluble Sulfate (mg/kg-dry)
TP-3	2.0	GC	6.7	75.6

4. SITE CONDITIONS

4.1 SURFACE

The proposed site is roughly 1,000 feet long by 450 feet wide and is located on a slope at southeast end of the Camp Williams facility, directly east/southeast of the Readiness Center (Building No. 9000). The site is sloped at roughly 4 to 5 horizontal to 1 vertical or shallower and is presently vacant with the exception of the Jacob Canal, which divides the site lengthwise roughly down the middle. The canal has recently been piped. The site is bordered downslope by a roadway titled "Perimeter Trail" and upslope by a paved construction access roadway into Camp Williams. Vegetation consists of various grass, weeds, and brush.

4.2 SUBSURFACE SOIL AND GROUNDWATER

The soils encountered in each test pit were fairly similar. A layer of major roots and topsoil, roughly 8 inches on average, blankets the site at each test pit.

Below the topsoil, a layer of gravelly clay, clayey gravel, and clayey sand extend to depths of 1.5 to 4.0 feet, which are loose/medium stiff, moist, and brown in color.

Underlying the upper clay soil sequence in Test Pits TP-1 through TP-3, TP-5 and TP-6 and extending to the full depths penetrated, 12 to 16 feet, the natural soils consist of sands and gravels with varying silt/clay content and with occasional to some thin layer of silty clay. These granular soils are loose to medium dense, dry to slightly moist, and light brown to brown in color.

Observed excavation caving was severe at 7 feet in Test Pit TP-2. At Test Pit TP-3, some caving was observed at 5 and 12 feet. Minor to slight caving was also noted in Test Pits TP-5 and TP-6 at a depth of approximately 14 feet.

From 1.5 to 4.0 feet in Test Pit TP-4, a layer of clayey silt/silty clay with pinholes was observed. This layer was dry to slightly moist. A pinhole structure indicates potentially collapsible soils. From 4 to 7 feet, a layer of silty sand with occasional clay laminants up to 2 inches thick was encountered. This sand layer is loose to medium dense, moist, and brown. From 7 to 9 feet, sandy clay/clayey sand was encountered underlain by interbedded clay and silty sand extending to the full depth penetrated, 17 feet. The sandy clay/clayey sand was stiff/medium dense, moist, and brown. The interbedded clay and sand layers between 9 and 17 feet ranged in thickness between 1/8 inch and 3 inches thick and were stiff/medium dense, slightly moist, and light brown to brown in color.

Groundwater was not encountered within any of the test pits at the time of excavation.

5. DISCUSSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

The site is suitable for the proposed construction utilizing a drilled pier foundation and thickened edge Portland cement concrete slab. On-site granular soils may be re-utilized as site grading fills. Some of the natural granular soils are non-proctorable due to the large aggregate and, therefore, may not be compaction tested by standard means (field nuclear densometer). For these soils, suitable compaction must be determined by observation of qualified personnel.

The geotechnical aspect of the site that will most influence the design and construction of the proposed solar array foundations is the sidewall caving of clean granular soils encountered at some of the test pits.

Severe soil caving was encountered at 7.5 feet in Test Pit TP-2 with minor to some caving/soil sloughing at 5, 12, and 14 feet in other test pits. Drilling piers through these soils may be very difficult and require casing or other methods to keep the holes open for concrete placement.

Potentially collapsible soils were encountered within the upper 4 feet at Test Pit TP-4. However, we anticipate that the foundations will consist primarily of drilled piers extending 10 feet below the surface. Therefore, pier related settlement is not anticipated to occur from these upper soils.

In the following sections, detailed discussions pertaining to on-site soil parameters for temporary excavations, utility trench backfill, drilled pier foundations, slab support, and the geoseismic setting of the site are provided.

5.2 EARTHWORK

5.2.1 Site Preparation

Initial site preparation will consist of the removal of surface vegetation, topsoil, any other deleterious materials, loose/disturbed surface soils from beneath an area extending out at least 4 feet from the perimeter of proposed foundations and 2 feet beyond flatwork areas.

Subsequent to the above operations and prior to the placement of structural fill, the exposed subgrade must be proofrolled by passing moderate-weight rubber tire-mounted construction equipment over the surface at least twice. If any loose, soft, or disturbed zones are encountered, they must be completely removed and replaced with granular structural fill. If additional removal required is greater than 2 feet, GSH must be notified to review conditions.

5.2.2 Structural Fill

Structural fill is defined as all fill which will ultimately be subjected to structural loadings, such as imposed by foundations and slabs. Structural fill will be required as backfill for foundations and utilities. All structural fill must be free of sod, rubbish, topsoil, frozen soil, and other deleterious materials.

Structural site grading fill is defined as fill placed over fairly large open areas to raise the overall site grade. For structural site grading fill, the maximum particle size should generally not exceed 4 inches; although, occasional larger particles, not exceeding 8 inches in diameter, may be incorporated if placed randomly in a manner such that "honeycombing" does not occur and the desired degree of compaction can be achieved. The maximum particle size within structural fill placed within confined areas should generally be restricted to 2 inches.

Imported granular soils shall consist of relatively well graded mixtures of sands and gravels containing less than 15 percent fines (clays/silts) and no more than 30 percent retained on the 0.75-inch sieve. Fine-grained soils are not recommended as structural fill. Imported road base must meet UDOT specifications.

Non-structural site grading fill is defined as all fill material not designated as structural fill and may consist of any cohesive or granular soils not containing excessive amounts of degradable material.

5.2.3 Fill Placement and Compaction

All structural fill shall be placed in lifts not exceeding 8 inches in loose thickness. Structural fills shall be compacted in accordance with the percent of the maximum dry density as determined by the AASHTO¹ T-180 (ASTM² D-1557) compaction criteria in accordance with the following table:

Location	Total Fill Thickness (feet)	Minimum Percentage of Maximum Dry Density
Beneath an area extending a minimum 1 and 4 feet beyond the perimeter of slabs on grade and pier foundations respectively	0 to 5	95
Outside area defined above	0 to 5	90

Structural fills greater than 5 feet thick are not anticipated at the site.

Subsequent to stripping and prior to the placement of structural site grading fill, the subgrade shall be prepared as discussed in Section 5.2.1, Site Preparation, of this report. In confined areas, subgrade preparation should consist of the removal of all loose or disturbed soils.

Non-structural fill may be placed in lifts not exceeding 12 inches in loose thickness and compacted by passing construction, spreading, or hauling equipment over the surface at least twice.

5.2.4 Excavations

Temporary construction excavations, such as utility trenches, etc., in cohesive soil, not exceeding 4 feet in depth and above or below the groundwater table, may be constructed with near-vertical sideslopes. Temporary excavations up to 8 feet deep in fine-grained cohesive soils, may be constructed with sideslopes no steeper than one-half horizontal to one vertical.

For granular (cohesionless) soils, construction excavations not exceeding 4 feet should be no steeper than one-half horizontal to one vertical. For excavations up to 8 feet in granular soils, the slopes should be no steeper than one horizontal to one vertical. Excavations encountering loose,

¹ American Association of State Highway and Transportation Officials

² American Society for Testing and Materials

clean, and/or saturated cohesionless soils will be very difficult as these soils tend to flow into the excavation and will require very flat sideslopes and/or shoring/ bracing/dewatering.

As discussed previously, minimal to severe excavation sidewall caving/sloughing was encountered in clean, dry to slightly moist granular soils at some of the test pits as shallow as 5.0 to 7.5 feet below the surface.

All excavations must be inspected periodically by qualified personnel. If any signs of instability or excessive sloughing are noted, immediate remedial action must be initiated.

5.2.5 Utility Trenches

All utility trench backfill material below structurally loaded facilities (flatwork, etc.) shall be placed at the same density requirements established for structural fill. If the surface of the backfill becomes disturbed during the course of construction, the backfill shall be proofrolled and/or properly compacted prior to the construction of any exterior flatwork over a backfilled trench. Proofrolling shall be performed by passing moderately loaded rubber tire-mounted construction equipment uniformly over the surface at least twice. If excessively loose or soft areas are encountered during proofrolling, they shall be removed to a maximum depth of 2 feet below design finish grade and replaced with structural fill.

Most utility companies and City-County governments are now requiring that Type A-1a or A-1b (AASHTO Designation – basically granular soils with limited fines) soils be used as backfill over utilities. These organizations are also requiring that in public roadways, the backfill over major utilities be compacted over the full depth of fill to at least 96 percent of the maximum dry density as determined by the AASHTO T-180 (ASTM D-1557) method of compaction. We recommend that as the major utilities continue onto the site that these compaction specifications are followed.

In non-structural areas, backfill above the bedding zone may consist of on-site soils. Additionally, some of the on-site granular soils may meet the above criteria for structural areas.

Fined-grained soils (clays/silts) are not recommended as trench backfill in structural areas.

5.3 DRILLED PIER FOUNDATIONS

5.3.1 Design Parameters

Shallow drilled concrete pier foundations will likely be used to support the proposed solar panels. We anticipate that drilled pier design will be governed by lateral loading and acceptable lateral deflections. Soil parameters presented in this report for lateral design were calculated utilizing the LPILE computer method. The primary parameter for evaluation of lateral pile and drilled pier capacity is the coefficient of lateral subgrade reaction (k).

In this report, recommended values for k are presented as k_{LPILE} for the different soil strata encountered and are based on average soil types and conditions. Recommended soil parameter values for the soils encountered in the test pits for lateral pier design are provided in the table below:

Depth (feet)	Soil Type*	Est. Effective Unit Weight (pcf)	Estimated Cohesion (psf)	Estimated ϕ	Static k_{LPILE} Recommended (pci)	ϵ_{50}
0-2.0	CL	118	200	---	---	.02
2.0-4.0	CL/GC/SC	120	1500	---	200	.007
4.0-7.0	SM/GM/GP	120	0	32	60	---
7-17	SM/GP/SP	118	0	32	90	---

* General soils encountered within the test pits.

Drilled piers are anticipated to extend a minimum of 10 feet below the ground surface with a minimum diameter of 2 feet. Average values for bearing capacity and side friction of drilled piers may be taken from the table below. These values are based on the general soil conditions encountered within the test pits and should not be used in new fill areas unless the fill is placed as structural fill. Additionally, these values are based on a clean pier excavation bearing in/on suitable natural undisturbed soils. Potentially collapsible soils are not considered suitable.

Depth (feet)	Ultimate End-Bearing (psf)	Skin Friction (psf)	Uplift Friction (psf)
0-2.0	NA	NA	NA
2.0-4.0	NA	350	230
4.0-7.0	2,000	625	420
7.0-17.0	3,500	850	565

GSH performed a lateral analysis utilizing the values in the tables above for a 2-foot diameter pier extending 10 feet below the surface. Our analysis indicates that an ultimate maximum shear (lateral) load of 10 kips may be applied to the top of the pier to create a 1-inch pile-head deflection within a 2-foot diameter drilled shaft pier. This limited shear is based on surficial potentially collapsible soil in the upper 4 feet. Where they are not present, the lateral load will be higher. GSH may provide further lateral analysis for individual piers. A vertical load of 1,000 pounds was used in the calculations. A moment load at the pile head was not incorporated.

5.3.2 Installation

Due to the relatively clean sands/gravel encountered, the drilling contractor must be prepared to case some of the drilled pier excavations.

The pier excavation shall be inspected to ensure it is clean of loose soil that may slough into the excavation. The pier excavation should have a straight smooth side and not be allowed to flare near the ground surface. Each excavation shall be inspected for irregularities that may affect the pier performance to determine if the excavation meets the structural engineer's design tolerances. The pier should be reinforced its entire length. Concrete shall be placed immediately following drilling to reduce drying of the upper soils and to reduce the safety risk of the open excavation.

Concrete shall be pumped or tremmied to the bottom of the excavation and not allowed to free-fall more than 3 feet. A positive concrete head of a minimum 2 to 3 feet within the casing is recommended as the casing is withdrawn. Placement of the concrete shall continue to be pumped until all floating water/cement paste is expelled and coarse aggregate is visible at the surface.

5.3.3 Settlements

Static settlements of drilled piers designed with a minimum embedment depth of 10 feet are projected to be less than 1 inch.

5.4 THICKENED CONCRETE FOUNDATION/FLOOR SLABS

Lightly loaded slabs (200 psf or less) must be supported on a minimum 4 inches of UDOT-specified road base over suitable natural soils. More heavily loaded slabs (500 to 1,000 psf) must be underlain by a minimum 12 inches of road base extending to suitable natural soils.

5.5 GEOSEISMIC SETTING

5.5.1 General

Utah municipalities have adopted the International Building Code (IBC) 2012. The IBC 2012 code determines the seismic hazard for a site based upon 2008 mapping of bedrock accelerations prepared by the United States Geologic Survey (USGS) and the soil site class. The USGS values are presented on maps incorporated into the IBC code and are also available based on latitude and longitude coordinates (grid points).

5.5.2 Faulting

Based upon our review of available literature, no active faults are known to pass through or immediately adjacent to the site. The site is located 6 to 7 miles west of the Wasatch Fault.

5.5.3 Soil Class

For dynamic structural analysis, the Site Class D – Stiff Soil Profile, as defined in Chapter 20 of ASCE 7 (per Section 1613.3.2, Site Class Definitions, of IBC 2012) can be utilized.

5.5.4 Ground Motions

The IBC 2012 code is based on 2008 USGS mapping, which provides values of short and long period accelerations for the Site Class B boundary for the Maximum Considered Earthquake (MCE). This Site Class B boundary represents average bedrock values for the Western United States and must be corrected for local soil conditions. The following table summarizes the peak ground and short and long period accelerations for the MCE event and incorporates the appropriate soil amplification factor for a Site Class D soil profile. Based on the site latitude and longitude (40.43099 degrees north and 111.92364 degrees west, respectively), the values for this site are tabulated below:

Spectral Acceleration Value, T	Site Class B		Site Class D		Design Values (% g)	
	Boundary		[adjusted for site class effects]			
	[mapped values]	Site Coefficient	(% g)			
Peak Ground Acceleration	44.9		$F_a = 1.051$		47.2	31.5
0.2 Seconds (Short Period Acceleration)	$S_S = 112.2$	$F_a = 1.051$	$S_{MS} = 117.9$		$S_{DS} = 78.6$	
1.0 Second (Long Period Acceleration)	$S_1 = 38.0$	$F_v = 1.640$	$S_{M1} = 62.3$		$S_{D1} = 41.5$	

5.5.5 Liquefaction

The site is located in an area that has been mapped as having a “very low” liquefaction potential. Liquefaction is defined as the condition when saturated, loose, finer-grained sand-type soils lose their support capabilities because of excessive pore water pressure which develops during a seismic event. Clay soils, even if saturated, are unlikely to liquefy.

Based on the lack of groundwater, liquefaction is not anticipated to occur at the site within the depths penetrated during the design seismic event.

5.6 SITE OBSERVATIONS

A log of soils excavated should be recorded during drilling of the individual piers and compared to the design soils. A geotechnical engineer from GSH or his representative must observe the drilling to provide verification and further recommendations, as needed.

Forsgren Associates Inc.
Job No. 0802-018-14
Geotechnical Study
May 1, 2014



If you have any questions or would like to discuss these items further, please feel free to contact us at (801) 685-9190.

Respectfully submitted,

GSH Geotechnical, Inc.

Bryan N. Roberts
Bryan N. Roberts, P.E.
State of Utah No. 276476
Senior Geotechnical Engineer



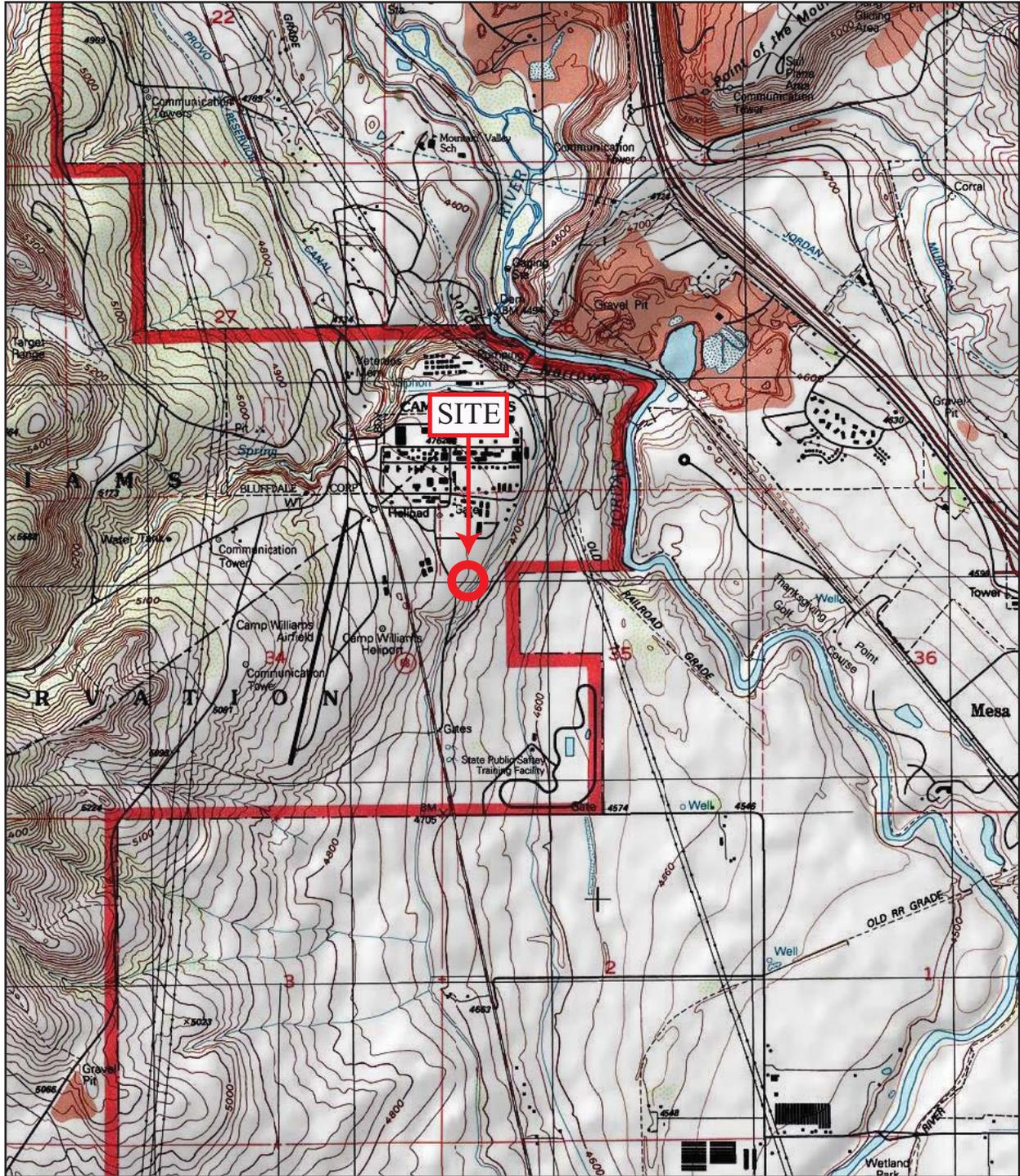
Reviewed by:

Alan D. Spilker
Alan D. Spilker, P.E.
State of Utah No. 334228
President/Senior Geotechnical Engineer

BNR/ADS;jlh

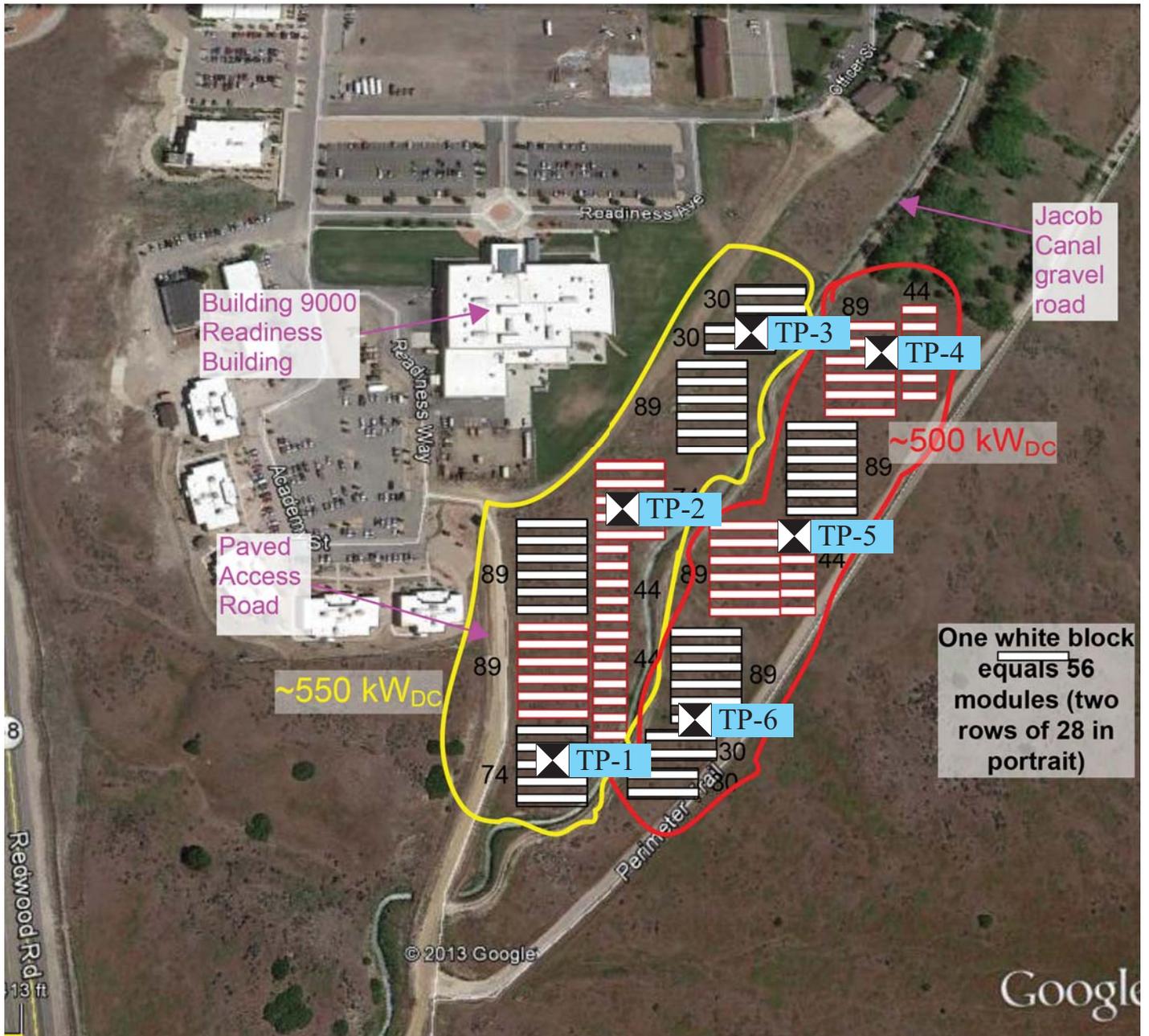
- Encl. Figure 1, Vicinity Map
- Figure 2, Site Plan
- Figure 3, Log of Boring
- Figure 4, Key to Boring Log (USCS)

Addressee (email)



REFERENCE:
USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAP(S)
ENTITLED "JORDAN NARROWS, UTAH"
DATED 1999

FIGURE 1
VICINITY MAP
 GSH



REFERENCE:
ADAPTED FROM AERIAL PHOTOGRAPH
DOWNLOADED FROM GOOGLE EARTH
IMAGERY DATE: 6/17/2010.

FIGURE 2
SITE PLAN
 GSH



CLIENT: Forsgren Associates, Inc. PROJECT NUMBER: 0802-018-14
 PROJECT: Camp Williams Solar Array DATE STARTED: 4/18/14 DATE FINISHED: 4/18/14
 LOCATION: Southeast Portion of Camp Williams, Camp Williamsl, Utah GSH FIELD REP.: BNR
 DRILLING METHOD/EQUIPMENT: JCB 214S - Backhoe HAMMER: WEIGHT: DROP:
 GROUNDWATER DEPTH: Not Encountered (4/18/14) ELEVATION: ---

WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	SC	CLAYEY FINE TO COARSE SAND with some fine and coarse gravel; major roots (topsoil) to 8"; brown			8.9		23.7			moist loose
	SM	SILTY FINE SAND with some fine and coarse gravel and trace to some cobbles; light brown	5							slightly moist to moist
					4.1		15.1			dry to slightly moist
			10							medium dense
										slightly moist
	SP	GRAVELLY FINE TO COARSE SAND with trace silt and fine and coarse gravel; light brown	15							slightly moist
		End of Exploration at 16.0' No significant sidewall caving. No groundwater encountered at time of excavation.	20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 3A



TEST PIT LOG

TEST PIT: TP-2

Page: 1 of 1

CLIENT: Forsgren Associates, Inc. PROJECT NUMBER: 0802-018-14
 PROJECT: Camp Williams Solar Array DATE STARTED: 4/18/14 DATE FINISHED: 4/18/14
 LOCATION: Southeast Portion of Camp Williams, Camp Williams, Utah GSH FIELD REP.: BNR
 DRILLING METHOD/EQUIPMENT: JCB 214S - Backhoe HAMMER: WEIGHT: DROP:
 GROUNDWATER DEPTH: Not Encountered (4/18/14) ELEVATION: ---

WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL	FINE AND COARSE GRAVELLY CLAY with some fine and coarse sand; major roots (topsoil) to 8" brown to dark brown								moist loose/medium stiff
	GM	SILTY GRAVEL with some sand and trace to some cobbles; brown	5							medium dense slightly moist medium dense
	GP	SANDY FINE AND COARSE GRAVEL with trace silt and trace to some cobbles; brown								dry to slightly moist loose
		End of Exploration at 13.0' Significant sidewall caving at 7.5'. No groundwater encountered at time of excavation.	15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 3B



CLIENT: Forsgren Associates, Inc. PROJECT NUMBER: 0802-018-14
 PROJECT: Camp Williams Solar Array DATE STARTED: 4/18/14 DATE FINISHED: 4/18/14
 LOCATION: Southeast Portion of Camp Williams, Camp Williamsl, Utah GSH FIELD REP.: BNR
 DRILLING METHOD/EQUIPMENT: JCB 214S - Backhoe HAMMER: WEIGHT: DROP:
 GROUNDWATER DEPTH: Not Encountered (4/18/14) ELEVATION: ---

WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							moist medium dense
		GC CLAYEY FINE AND COARSE GRAVEL with some fine to coarse sand and cobbles; major roots (topsoil) to 8"; brown								
		GP SANDY FINE AND COARSE GRAVEL with trace silt and cobbles; light brown	5							dry to slightly moist
		SP GRAVELLY FINE TO MEDIUM SAND with trace silt; light brown								dry loose to medium dense
		grades with occasional silt layers up to 1/4" thick and with occasional oxidation	10							
		End of Exploration at 15.0' Some sidewall caving at 5.0' and 12.0'. No groundwater encountered at time of excavation.	15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 3C



CLIENT: Forsgren Associates, Inc.

PROJECT NUMBER: 0802-018-14

PROJECT: Camp Williams Solar Array

DATE STARTED: 4/18/14

DATE FINISHED: 4/18/14

LOCATION: Southeast Portion of Camp Williams, Camp Williams, Utah

GSH FIELD REP.: BNR

DRILLING METHOD/EQUIPMENT: JCB 214S - Backhoe

HAMMER:

WEIGHT:

DROP:

GROUNDWATER DEPTH: Not Encountered (4/18/14)

ELEVATION: ---

WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							moist
	CL	SILTY CLAY with some fine sand; major roots (topsoil) to 10"; brown								
	CL/ ML	SILTY CLAY/CLAYEY SILT with trace to some pinholes/root holes; light brown			13.5	84				medium stiff dry to slightly moist
	SM	SILTY SAND with occasional layers of laminated silty clay up to 2" thick; light brown with some oxidation	5		11		33.9			moist loose to medium dense
	CL/ SC	FINE TO MEDIUM SANDY CLAY/CLAYEY FINE TO MEDIUM SAND with numerous silty/sandy clay layers up to 2" thick; light brown			22.8		65.3			moist stiff/medium dense
	CL/ SM	INTERBEDDED SILTY SAND AND SILTY CLAY layers vary from 1/8" to 3" for sands and 0.5" to 2.5" for clay; light brown to brown	10							slightly moist to moist
										moist
		End of Exploration at 17.0' No significant sidewall caving. No groundwater encountered at time of excavation.	15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 3D



CLIENT: Forsgren Associates, Inc.

PROJECT NUMBER: 0802-018-14

PROJECT: Camp Williams Solar Array

DATE STARTED: 4/18/14

DATE FINISHED: 4/18/14

LOCATION: Southeast Portion of Camp Williams, Camp Williams, Utah

GSH FIELD REP.: BNR

DRILLING METHOD/EQUIPMENT: JCB 214S - Backhoe

HAMMER: WEIGHT: DROP:

GROUNDWATER DEPTH: Not Encountered (4/18/14)

ELEVATION: ---

WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface								
	GC	CLAYEY GRAVEL with some cobbles; major roots (topsoil) to 8"; brown	0							slightly moist to moist
	GM	SILTY FINE GRAVEL with some coarse gravel and fine to coarse sand; light brown								moist loose
		grades fine and coarse gravel poorly cemented	5							medium dense to dense dry to slightly moist
	GP	SANDY FINE TO COARSE SAND with trace silt; brown								slightly moist to moist medium dense
	SP	FINE TO MEDIUM SAND with some gravel and trace silt; brown with some oxidation								slightly moist to moist
		End of Exploration at 16.0' Slight sidewall caving at 14.0'. No groundwater encountered at time of excavation. Installed 1.25" diameter slotted PVC pipe to 15.0'.								
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 3E



GSH

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-6

CLIENT: Forsgren Associates, Inc. PROJECT NUMBER: 0802-018-14
 PROJECT: Camp Williams Solar Array DATE STARTED: 4/18/14 DATE FINISHED: 4/18/14
 LOCATION: Southeast Portion of Camp Williams, Camp Williamsl, Utah GSH FIELD REP.: BNR
 DRILLING METHOD/EQUIPMENT: JCB 214S - Backhoe HAMMER: WEIGHT: DROP:
 GROUNDWATER DEPTH: Not Encountered (4/18/14) ELEVATION: ---

WATER LEVEL	U S C S	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	GC	CLAYEY FINE AND COARSE GRAVEL with some sand and trace cobbles; major roots (topsoil) to 8"; brown								slightly moist to moist medium dense
	GM	SILTY FINE AND COARSE GRAVEL with some sand; brown								slightly moist loose
			5							
	SM	SILTY FINE SAND with some fine sandy clay layers up to 1/8" thick; light brown with slight oxidation poorly cemented			9.0	31.2				slightly moist
		grades with fine to coarse sand and trace gravel								medium dense
			10							slightly moist to moist
		grades fine to medium sand								moist
			15							
		End of Exploration at 16.0' Minor sidewall caving at 14.0'. No groundwater encountered at time of excavation.								
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 3F

EXHIBIT A2



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

Utah Army National Guard

Headquarters, Draper, UT
Site Identification and Preliminary Lay-out

DFCM Project No. 14261480

Issue Date: June 9, 2014

Disclaimer

The intent of this exhibit is to estimate the potential solar power generation capacity of the Draper National Guard site and to give guidance to potential bidders with respect to the available space, the obstacles that may cause shading and electrical infrastructure.

This report is NOT intended to serve as a detailed engineering design document. It should be noted that detailed structural and electrical design is still a requirement and a full design package is expected for submittal to the client and the various permitting agencies.

While the recommendations in this report have been reviewed for technical accuracy and are believed to be reasonably accurate, the findings are estimates and actual results may vary. As a result, BacGen is not liable if estimated production estimates are not actually achieved. All production and cost estimates in the report are for informational purposes, and are not to be construed as a design document or as guarantees.

The customer should independently evaluate any advice or direction provided in this exhibit. In no event will DFCM, BacGen or its associates be liable for the failure of the customer to achieve a specified electricity production, the operation of customer's facilities, or any incidental or consequential damages of any kind in connection with this exhibit or the installation of recommended projects.

Utah Army National Guard, Draper Headquarters (~250 kW Solar Array)

Table 1 shows the Meter and Account number for the North-East meter, which would be the preferred interconnect location for the 250 kW solar canopy project. Currently a solar roof project is under development on the west side of the roof, which is connected to the south-west meter.

Table 1 Draper HQ Meter Details

12953 S Minuteman Dr, Draper 84020 UNG, Rocky Mountain Power			
	South Transformer, 1000 kVA, Schedule 6	North-East Meter, Schedule 6	North-West Transformer, 750 kVA, Schedule 6
Account #	31126376-001 0		
Meter #	1810953	1924690	35524216
Schedule #	6	6	6
Average Annual Consumption	2,711,068 kWh/y	1,014,548 kWh/y	1,079,792 kWh/y
Typical Demand (kW)	648	267	174



Figure 1 Aerial Overview of the Draper Headquarters

Figures 1 and 2 show the approximate location and layout for the solar parking canopies.

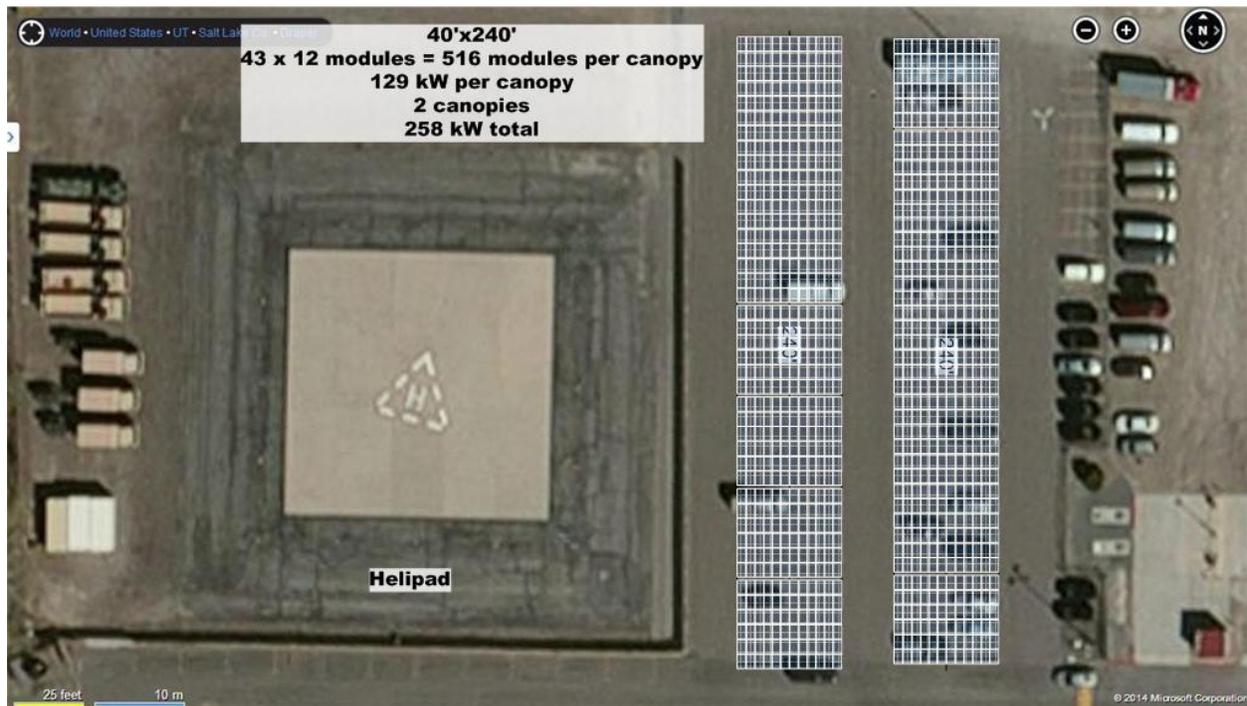


Figure 2 Example Lay-out of a Solar Parking Canopy

The configuration and layout shown here is a recommendation only, vendor should use their own judgment in determining the design of the canopies.

Please note the following:

- There are two main feeders to the building (north and south). Both have a generator, 1,100 kW on the South and (larger, newer) on the North side.
- The voltage is 3 phase 480 V.
- The total Draper HQ annual electrical consumption is approximately 5,000,000 kWh/y.
- There is room for the inverter on the north side close to the switch gear/transformer units.

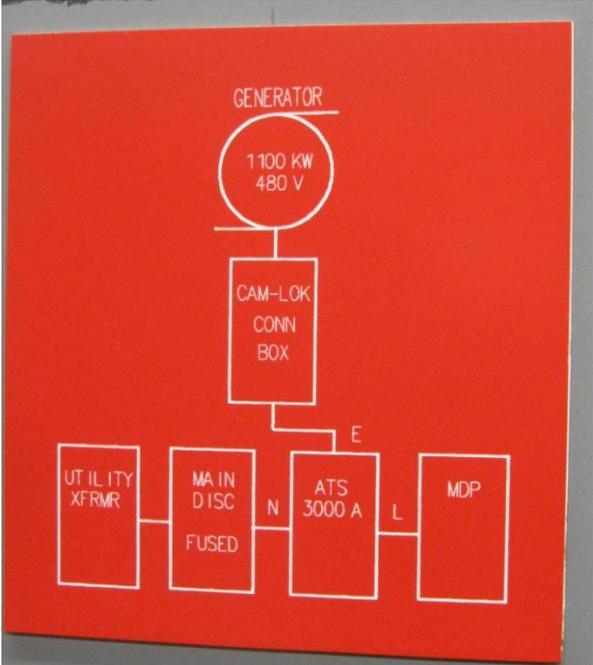


Figure 3 Main Electrical Panel Configuration (both North and South, although North Generator is now a Larger Size)



Figure 4 Switchgear and Transformer on the North Side

EXHIBIT A3



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

Utah Army National Guard

West Jordan Armory and Hangar

Site Identification and Preliminary Lay-out

DFCM Project No. 14261480

Issue Date: June 9, 2014

Disclaimer

The intent of this exhibit is to estimate the potential solar power generation capacity of the West Jordan National Guard roofs and grounds and to give guidance to potential bidders with respect to the available space, the obstacles that may cause shading and electrical infrastructure.

A structural analysis has NOT been carried out.

This report is NOT intended to serve as a detailed engineering design document. It should be noted that detailed structural and electrical design is still a requirement and a full design package is expected for submittal to the client and the various permitting agencies.

While the recommendations in this report have been reviewed for technical accuracy and are believed to be reasonably accurate, the findings are estimates and actual results may vary. As a result, BacGen is not liable if estimated production estimates are not actually achieved. All production and cost estimates in the report are for informational purposes, and are not to be construed as a design document or as guarantees.

The customer should independently evaluate any advice or direction provided in this exhibit. In no event will DFCM, BacGen or its associates be liable for the failure of the customer to achieve a specified electricity production, the operation of customer's facilities, or any incidental or consequential damages of any kind in connection with this exhibit or the installation of recommended projects.

Utah Army National Guard, West Jordan, UT – Hangar and Armory Building

	East Side, Aircraft Hangars	West Side – Armory Building
	7563 Airport Rd, West Jordan 84084 (hangars)	7563 Airport Rd, West Jordan 84084 (Armory)
RMP Account #	37932266-001 8	37937306-001 9
Meter #	35857423	35857426
Schedule #	6	6
Average Annual Consumption	922,903 kWh/y	699,127 kWh/y
Proposed Solar Systems:	~215 kW Roof Mount ~85 kW Parking Canopy	~150 kW Roof Mount ~100 kW Ground Mount
Remarks		Vendors are advised that the Armory Building will undergo a construction upgrade in parallel with the solar project. Close coordination with the construction team will be required

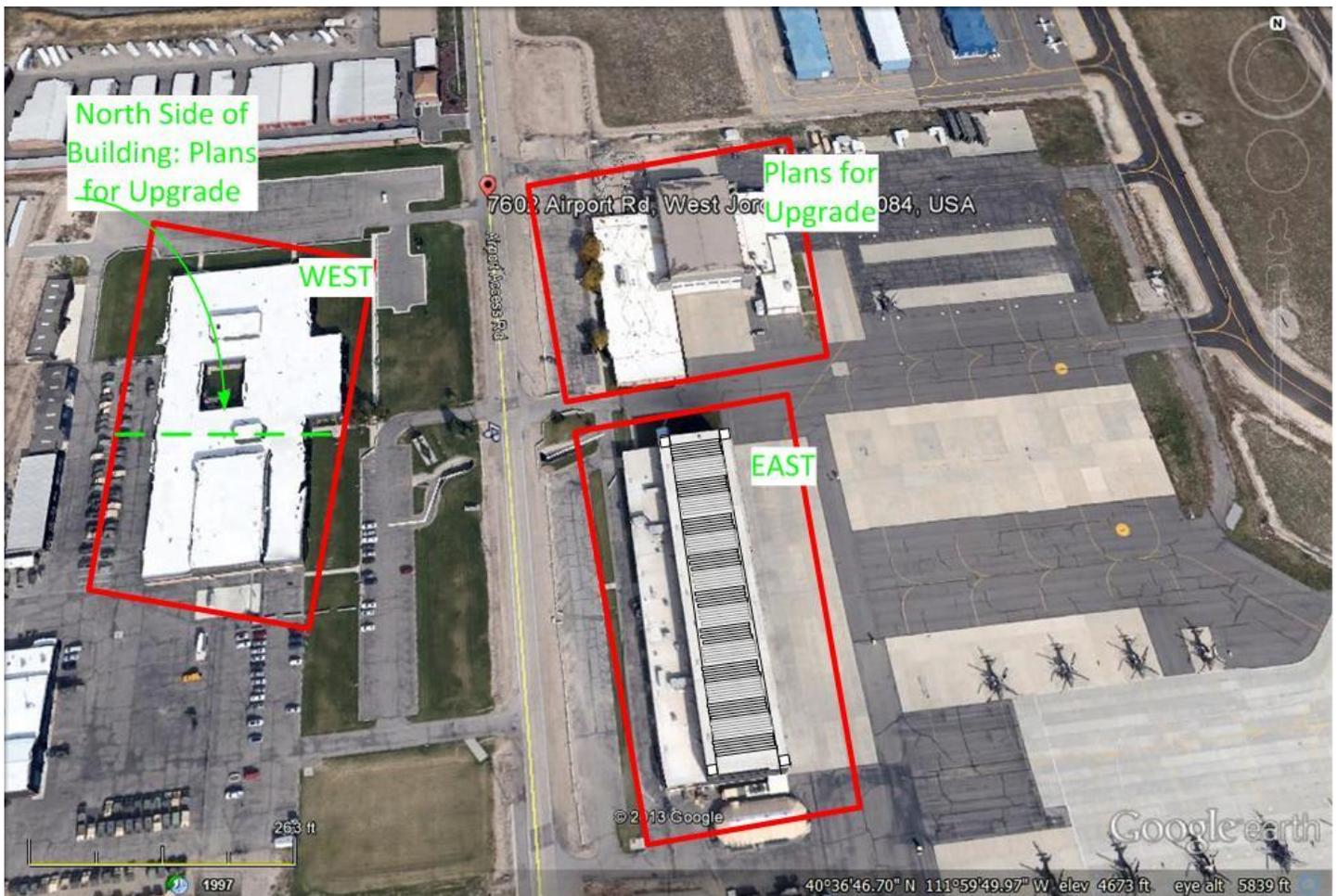


Figure 1 Aerial Overview with Hangar on Eastside of Airport Way and Armory Building on Westside

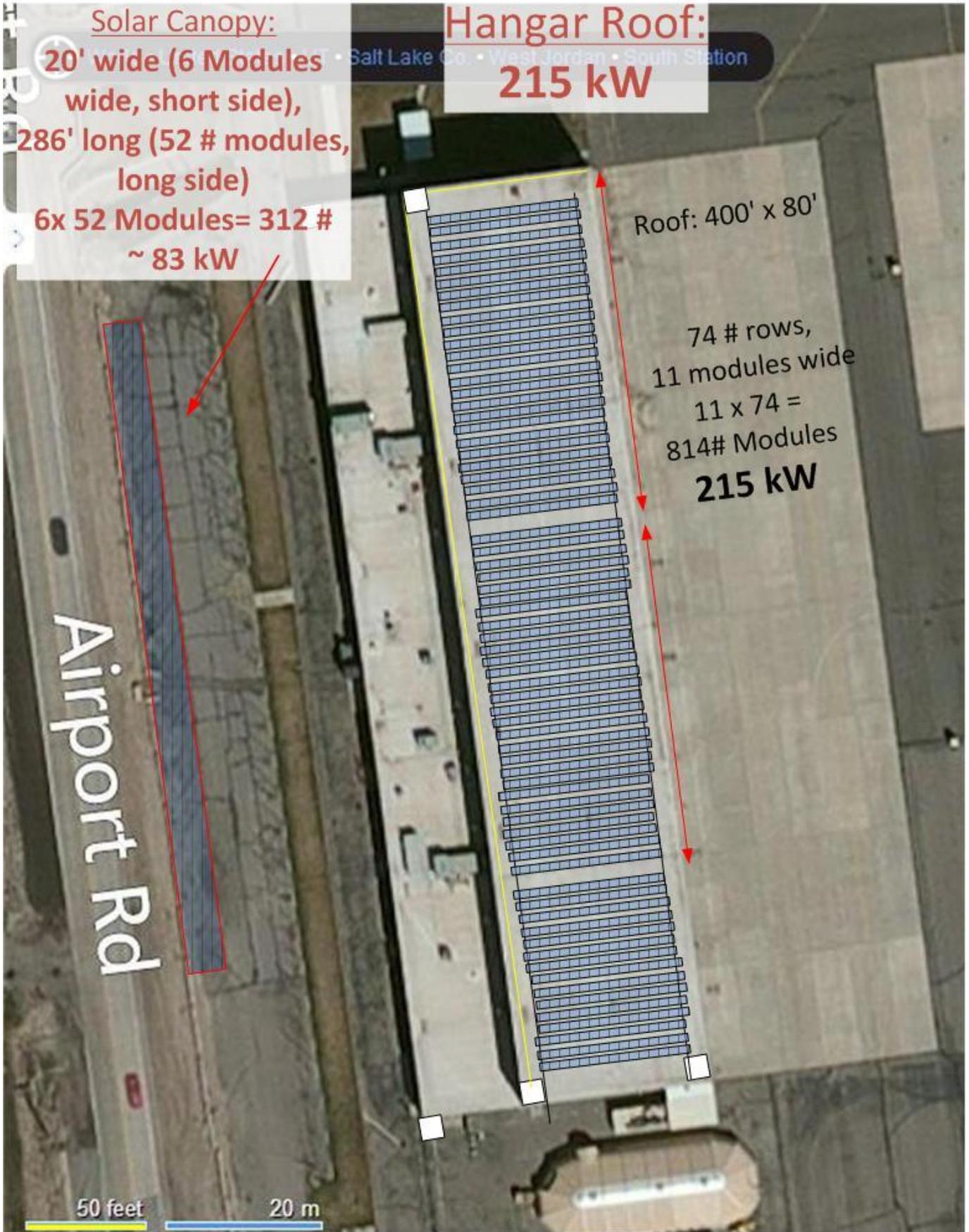


Figure 2 Preliminary Lay-out Sketch of a Low-Profile Solar Roof Mount (Roof Dimension 400' x 80'; EPDM) and Parking Canopy, West of the Hangar Building



Figure 3 Hangar Roof Looking South



Figure 4 Roof Structure (Hangar)



Figure 5 Joist Tags Vulcraft 761656 J 101

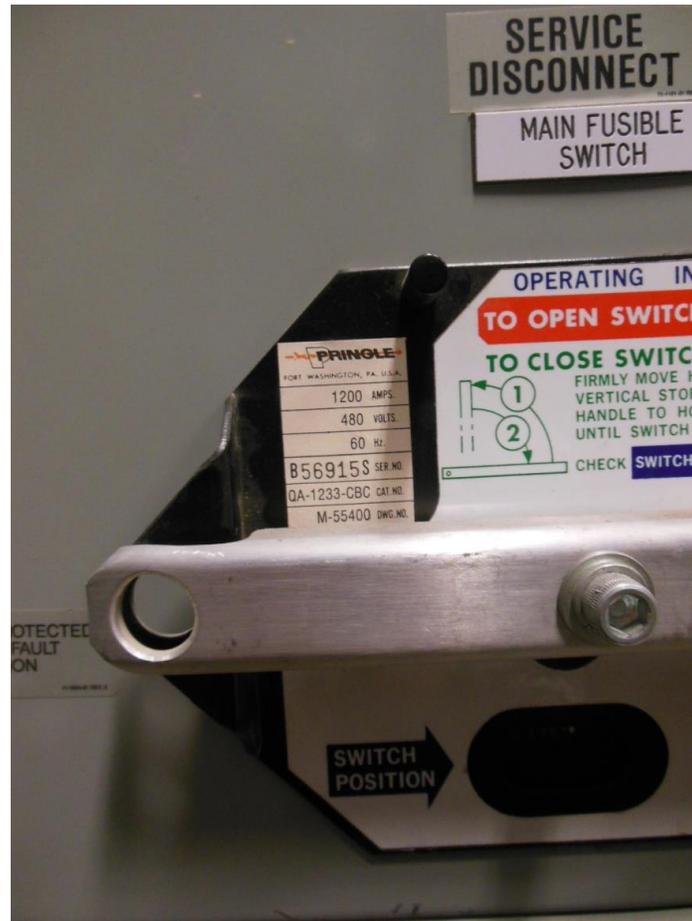


Figure 6 Hangar Main Breaker (1,200 amps, 480 V)



Figure 7 Overview of Potential Options for Armory



World • United States • UT • Salt Lake Co. • West Jordan • South Station



Figure 8 Potential Areas for Solar Modules for Armory Building



Figure 9 Armory Building, South-East Side Looking South



Figure 10 Potential Area for Ground Mount, Adjacent to Armory Building



Figure 11 Armory Building Main Breaker (800 amps / 480V)



Figure 12 Possible Layout for the Solar Ground Mount, West of the Armory Building



May 30, 2014

Maud de Bel
BacGen
4015 Beach Drive SW
Seattle, WA 98116

Ref: Utah National Guard; West Jordan, Utah
Subject: Solar Panel Roof Evaluation

Ms. de Bel,

In response to your request, BHB Consulting Engineers has performed a structural evaluation of the roof of the army aviation support facility for the addition of the proposed solar panel units.

We were provided access to the as-built drawings of the structure by the managers of the facility and allowed to physically visit the building and observe that the as built structure appeared to be consistent with the drawings. We were also able to obtain the roof shop drawings from Vulcraft by obtaining a joist tag from the project. From these two sets of drawings and our observations, we were able to determine that the roof was initially designed for total load of 60 psf and a snow load of 31 psf.

From our observations of the building, we were able to calculate the actual dead load of waterproofing membrane, metal roof deck, joists/girders, and mechanical equipment including fans and the fire suppression system to be 20 psf. With an allowance of 3 psf for miscellaneous items and the 31 psf snow load, this gives an actual total load of 51 psf, which leaves a capacity of 9 psf.

The calculations of the loads and capacity of the roof are attached, and copies of the drawings can be provided if necessary.

From the information provided to us that the proposed solar panel systems averages approximately 5 psf, the roof of this building is structurally adequate to carry the added loads of the proposed solar panels. The proposed locations can be seen in the attached aerial image.

Sincerely,

A handwritten signature in black ink, appearing to read 'Gerald McKenzie'.

Gerald Mckenzie, SE
BHB Consulting Engineers, P.C.





World • United States • UT • Salt Lake Co. • West Jordan • South Station

West Hangar:
215 kW

Roof: 400' x 80'

74 # rows,
11 modules wide
 $11 \times 74 =$
814# Modules
215 kW

Airport Rd

50 feet

20 m

Project:

Utah National Guard Hangar Roof Evaluation

2766 South Main Street • Salt Lake City • Utah 84115
 Phone: 801.355.5656 • Fax 801.355.5950

Sheet:

Job#:

14428

Date:

5/30/14

By:

DLH

Joists: 16 k2 w/ span = 20'-0"

G.F. 368 plf TL, 297 plf LL

Joist Spacing = 6'-2"

$$\Rightarrow TL = \frac{(368 \text{ plf})}{6.17 \text{ ft}} = 60 \text{ psf}$$

$$LL = \frac{297 \text{ plf}}{6.17 \text{ ft}} = 48 \text{ psf}$$

Dead Loads: (assumed from site observations)

Waterproofing Membrane: 3 psf

Metal Roof Deck: 3 psf

Joists/Girders: 5 psf

Mechanical, including fans, fire suppression system, etc: 6 psf

Misc: 3 psf

$$\Sigma = 20 \text{ psf}$$

$$LL = SL = 31 \text{ psf}$$

$$DL = 20 \text{ psf}$$

$$\Rightarrow TL = 51 \text{ psf}$$

$$TL \text{ capacity} = 60 \text{ psf} - 51 \text{ psf} = 9 \text{ psf}$$

$$LL \text{ capacity} = 48 \text{ psf} - 31 \text{ psf} = 17 \text{ psf}$$

Using DL of 5 psf for solar panels, Ok

Girders: Designed for 7.2k point loads @ each joist

$$\text{Load applied w/ solar panels: } TL = (51 \text{ psf})(20 \text{ ft})(6.17 \text{ ft}) = 6.3 \text{ k} \quad \text{Ok}$$



June 3, 2014

Maud de Bel
BacGen
4015 Beach Drive SW
Seattle, WA 98116

Ref: Utah National Guard; West Jordan, Utah
Subject: Solar Panel Roof Evaluation

Ms. de Bel,

In response to your request, BHB Consulting Engineers has performed a structural evaluation of the roof of the Utah National Guard armory building for the addition of the proposed solar panel units.

We performed a site visit and walked the roof to get a good idea of the types of loads are currently being imposed on the roof structure. We were also able to obtain a joist tag from the building, which enabled us to get the original shop drawings and associated calculations for the original construction of the roof. These allowed us to corroborate our assumptions of expected loads.

From our observations of the building, we were able to calculate the actual dead load of waterproofing membrane, metal roof deck, joists/girders, and mechanical equipment to be 12 psf. With an allowance of 3 psf for miscellaneous items and the 31 psf snow load, this gives an actual total load of 46 psf.

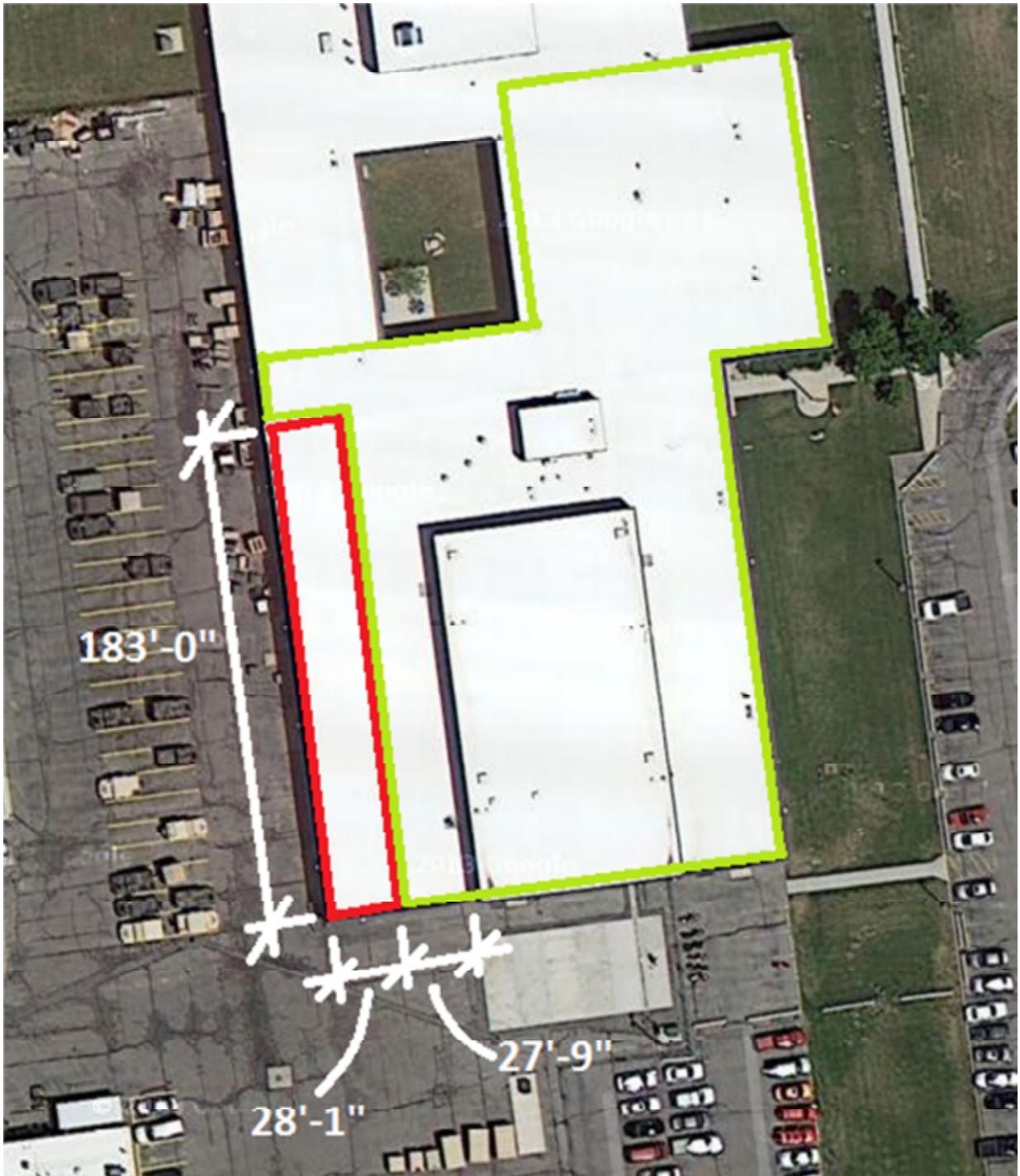
All of the proposed locations for the solar panels, with the exception of one bay, have ample available capacity based on these loads. The westernmost bay on the south end of the building (a 183'-0" x 28'-1" rectangular area) is the area that doesn't have capacity to support the approximately 5 psf of added weight for the solar panels. The location of this bay can be seen in the aerial image attached, which outlines the acceptable locations in green and outlines the unacceptable areas in red.

The calculations of the loads and capacity of the roof are attached, and copies of the drawings can be provided if necessary.

Sincerely,


Gerald McKenzie, SE
BHB Consulting Engineers, P.C.





High Roof

Joists = 14K1: G.F. 284 plf TL, 197 plf LL (span = 20'-0")

Joist spacing = 4'-9"

$$\Rightarrow TL = \frac{(284 \text{ plf})}{4.75 \text{ ft}} = 59.8 \text{ psf}$$

$$LL = \frac{197 \text{ plf}}{4.75 \text{ ft}} = 41.5 \text{ psf}$$

Actual Loads

$$SL = 31 \text{ psf}$$

Dead Loads: (assumed from observations on site visit)

Waterproofing Membrane: 3 psf

Metal Roof Deck: 3 psf

Joists/Girders: 3 psf

Mechanical: 3 psf

Misc: 3 psf

$$\Sigma = 15 \text{ psf}$$

$$\Rightarrow LL = SL = 31 \text{ psf}$$

$$DL = 15 \text{ psf}$$

$$TL = 46 \text{ psf}$$

$$\Rightarrow TL \text{ capacity} = 59.8 \text{ psf} - 46 \text{ psf} = 13.8 \text{ psf}$$

$$LL \text{ capacity} = 41.5 \text{ psf} - 31 \text{ psf} = 10.5 \text{ psf}$$

Using DL of 5 psf for solar panels, OK

Girders designed for 6k point loads

$$\text{Actual point load} = (46 \text{ psf})(4.75 \text{ ft})(20 \text{ ft}) = 4.37 \text{ k}$$

$$\text{With solar panels} = 4.37 \text{ k} + (5 \text{ psf})(4.75 \text{ ft})(20 \text{ ft}) = 4.8 \text{ k} \quad \text{OK}$$



Project:

Utah National Guard Armory Roof Evaluation

2766 South Main Street • Salt Lake City • Utah 84115
Phone: 801.355.5656 • Fax 801.355.5950

Sheet:

Job#:

14428

Date:

6/3/14

By:

DLH

Low Roof

East Side:

Joists: 24K10, span = 34'-2" (worst case)

G.F. 502 plf TL, 337 plf LL

⇒ @ Joist spacing = 6 ft

$$L = \frac{502 \text{ plf}}{6 \text{ ft}} = 84 \text{ psf}$$

$$LL = \frac{337 \text{ plf}}{6 \text{ ft}} = 56 \text{ psf}$$

Actual Loads Expected Same as above

$$\Rightarrow \text{TL capacity} = 84 \text{ psf} - 46 \text{ psf} = 38 \text{ psf}$$

$$\text{LL capacity} = 56 \text{ psf} - 31 \text{ psf} = 25 \text{ psf}$$

For DL of 5 psf for solar panels, Ok

West Side:

West Bay:

Joists: 20K3, span = 28'-1"

G.F. 281 plf TL, 211 plf LL

Joist spacing = 6'-0"

$$\Rightarrow \text{TL} = \frac{281 \text{ plf}}{6 \text{ ft}} = 46.8 \text{ psf}$$

$$\text{LL} = \frac{211 \text{ plf}}{6 \text{ ft}} = 35.2 \text{ psf}$$

From calcs obtained from Vulcraft, design loads are:

$$\text{TL} = \frac{259.4 \text{ plf}}{6 \text{ ft}} = 42.4 \text{ psf}$$

$$\text{LL} = \frac{181.5 \text{ plf}}{6 \text{ ft}} = 30.25 \text{ psf}$$

$$\text{TL capacity} = 46.8 \text{ psf} - 42.4 \text{ psf} = 4.4 \text{ psf}$$

Not enough capacity to accommodate 5 psf for solar panels.

Low Roof, West Side, East Bay:

Joists: 20k9, span = 27'-9"

G.F. 517 plf TL, 353 plf LL

Joist spacing = 6'-0"

$$\Rightarrow TL = \frac{517 \text{ plf}}{6 \text{ ft}} = 86 \text{ psf}$$

$$LL = \frac{353 \text{ plf}}{6 \text{ ft}} = 58.8 \text{ psf}$$

Expected actual loads same as for high roof

$$TL \text{ capacity} = 86 \text{ psf} - 46 \text{ psf} = 40 \text{ psf}$$

$$LL \text{ capacity} = 58.8 \text{ psf} - 31 \text{ psf} = 27.8 \text{ psf}$$

For 5 psf load of solar panels, OK

Girder designed for 10k point loads

$$\text{Actual point load} = (46 \text{ psf})(6 \text{ ft})(14 \text{ ft} + 13.9 \text{ ft}) = 7.7 \text{ k}$$

$$\text{With solar panels} = 7.7 \text{ k} + (5 \text{ psf})(6 \text{ ft})(17.9 \text{ ft}) = 8.1 \text{ k}$$

Solar panels can be added to this bay

East of Atrium:

Worst Case Joists: 20K5, span = 27'-5"

Joist spacing = 6'-0"

G.F. 353 plf TL, 248 plf LL

$$\Rightarrow TL = \frac{353 \text{ plf}}{6 \text{ ft}} = 59.2 \text{ psf}$$

$$LL = \frac{248 \text{ plf}}{6 \text{ ft}} = 41.3 \text{ psf}$$

Same expected loads

$$\Rightarrow TL \text{ capacity} = 59.2 \text{ psf} - 46 \text{ psf} = 13.2 \text{ psf}$$

$$LL \text{ capacity} = 41.3 \text{ psf} - 31 \text{ psf} = 10.3 \text{ psf}$$

OK for 5 psf from solar panels

Girders designed for 9.3k point loads

$$\text{Actual point load} = (46 \text{ psf})(6 \text{ ft})(27.5 \text{ ft}) = 7.6 \text{ k}$$

$$\text{With solar panels} = 7.6 \text{ k} + (5 \text{ psf})(6 \text{ ft})(27.5 \text{ ft}) = 8.4 \text{ k}$$

OK

EXHIBIT A4



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

Utah Army National Guard

Armory at Blanding, UT

Site Identification and Preliminary Lay-out

DFCM Project No. 1426180

Issue Date: June 9, 2014

Disclaimer

The intent of this exhibit is to estimate the potential solar power generation capacity of the Blanding National Guard site and to give guidance to potential bidders with respect to the available space, the obstacles that may cause shading and electrical infrastructure.

This report is NOT intended to serve as a detailed engineering design document. It should be noted that detailed structural and electrical design is still a requirement and a full design package is expected for submittal to the client and the various permitting agencies.

While the recommendations in this report have been reviewed for technical accuracy and are believed to be reasonably accurate, the findings are estimates and actual results may vary. As a result, BacGen is not liable if estimated production estimates are not actually achieved. All production and cost estimates in the report are for informational purposes, and are not to be construed as a design document or as guarantees.

The customer should independently evaluate any advice or direction provided in this exhibit. In no event will DFCM, BacGen or its associates be liable for the failure of the customer to achieve a specified electricity production, the operation of customer's facilities, or any incidental or consequential damages of any kind in connection with this exhibit or the installation of recommended projects.

Utah Army National Guard, Blanding, UT -Armory Building

Blanding
project No 4914010
Ground Mount, Previously paved and graded
10 W. Freedom Way, Blanding 84511
Meter # 36260397
Account # 59461326-001 9
Schedule 23
Annual Consumption 62,111 kWh/y
\$0.08/kWh

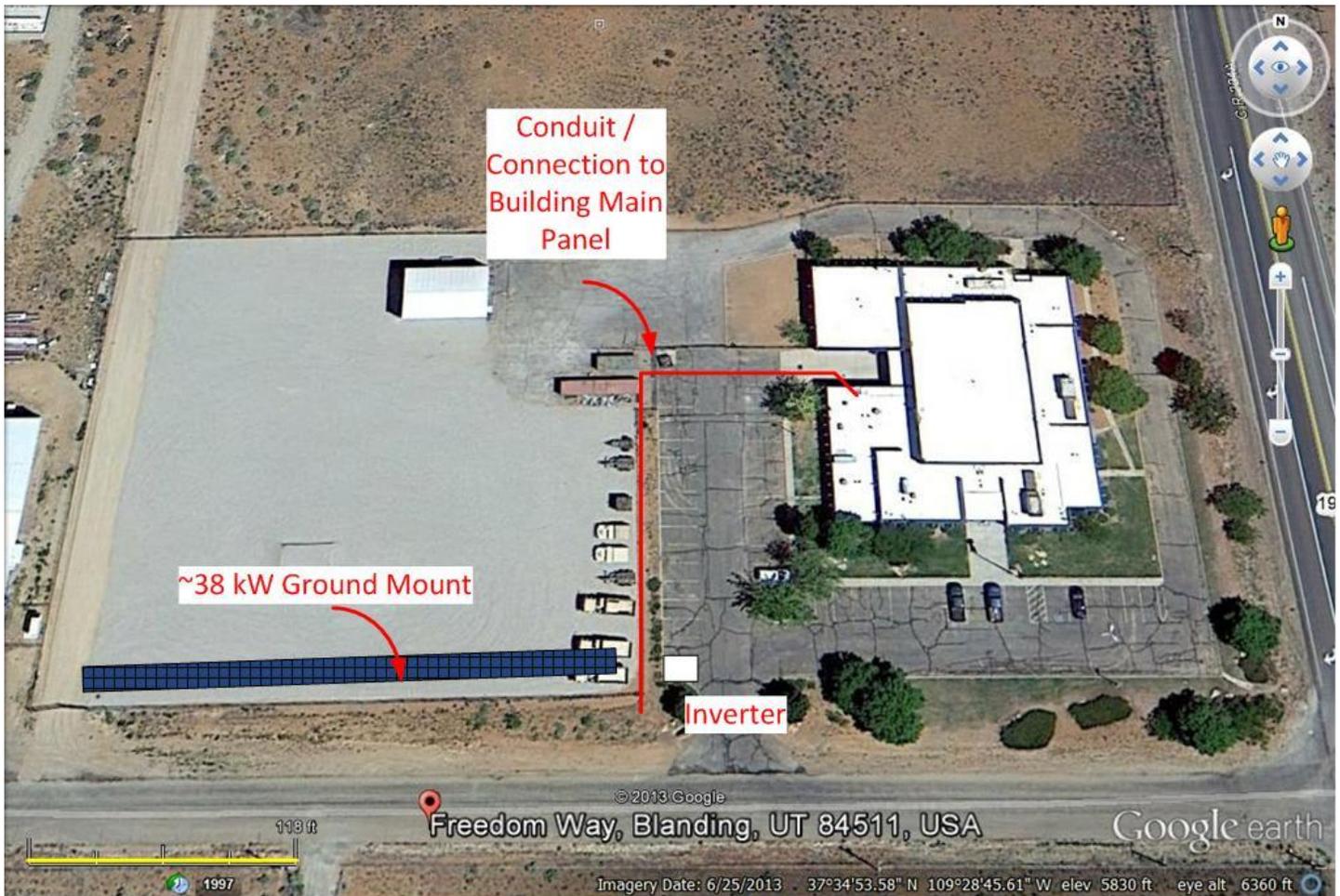


Figure 1 Potential Lay-out for the Ground Mount next to the Blanding Armory Building



Figure 2 View of Ground Mount Site from Building Roof



Figure 3 Main Electrical Panel (208 V/Y; 400 amps breaker)

EXHIBIT A5



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

Utah Army National Guard

Armory at St George, UT
Site Identification and Preliminary Lay-out

DFCM Project No. 14261480

Issue Date: June 9, 2014

Disclaimer

The intent of this exhibit is to estimate the potential solar power generation capacity of the St George National Guard site and to give guidance to potential bidders with respect to the available space, the obstacles that may cause shading and electrical infrastructure.

This report is NOT intended to serve as a detailed engineering design document. It should be noted that detailed structural and electrical design is still a requirement and a full design package is expected for submittal to the client and the various permitting agencies.

While the recommendations in this report have been reviewed for technical accuracy and are believed to be reasonably accurate, the findings are estimates and actual results may vary. As a result, BacGen is not liable if estimated production estimates are not actually achieved. All production and cost estimates in the report are for informational purposes, and are not to be construed as a design document or as guarantees.

The customer should independently evaluate any advice or direction provided in this exhibit. In no event will DFCM, BacGen or its associates be liable for the failure of the customer to achieve a specified electricity production, the operation of customer's facilities, or any incidental or consequential damages of any kind in connection with this exhibit or the installation of recommended projects.

Utah Army National Guard, St George, UT –Armory Building

St George Armory
project No 4914050
Ground Mount
1710 E Commerce Drive, St George, UT 84790
Utility: Dixie Escalante
Acc# 209132
Meter # 10-946-318 (OMS Bld) 198,910 kWh/y (demand charges 50% of bill)
Meter # 06-296-497 (1710 E Commerce Dr) 186,870 kWh/y
Meter # 10-946-315 (Armory Bld) 56,577 kWh/y



Figure 1 Lay-out Sketch of ~200 kW Ground Mount Facility Adjacent to the St George Armory

The armory complex in St George has three building, each with a separate meter. The Utility provider is Dixie Escalante. The net metering and interconnect arrangement with this Utility are currently under negotiation.

UTANG wishes this project to be a hybrid net metered and battery back-up system. Vendors are asked to submit a budgetary price range, taking into consideration the following parameters:

- The ground mount system will be between 50 kW and 200 kW. Vendors are asked to submit a budgetary price per Watt for this portion of the project.
- A battery system to support the solar system, taking into consideration annual average electricity usage and seasonal variation (a Utility bill is attached).

Vendors are advised that the total budget for this project should not exceed \$750,000. Vendors are encouraged to submit more than one design & budgetary alternative.



71 E Hwy 56 • Beryl, Utah 84714 • (435) 439-5311
 145 W. Brigham Rd. • St. George, Utah 84790 • (435) 673-3297
 Arizona Contact • (928) 347-5870

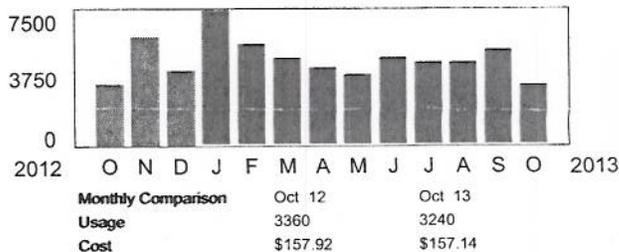
To View & Pay Your Bill Online Visit
www.dixiepower.com

Customer: UTAH NATIONAL GUARD SMD
Account Number: 209132
Statement Date: 10/31/13
Due Date: November 20, 2013

Previous Balance: \$2,803.28
Payments - Thank You: -\$2,803.28
New Charges: \$1,701.96
Amount Due: \$1,701.96

Meter# 10-946-315
Current Reading 10/21/13 3422
Previous Reading 09/23/13 3341
Multiplier
Usage 40
Demand 3240
Days 23.6
 28

ELECTRIC USAGE HISTORY



Customer Charge \$20.00
Energy Charge \$157.14
Demand Charge \$32.40
Sales/Energy Tax \$12.57
Total for: ARMORY BLDG 1710 E 4100S \$222.11

1.5% INTEREST WILL BE ASSESSED ON ALL PAST DUE BALANCES

PLEASE RETURN BOTTOM PORTION WITH PAYMENT



000020913200001701960

Account Number: 209132	Statement Date: 10/31/13
Due Date: November 20, 2013	Amount Due: \$1,701.96
Multi Meter	

PLEASE PRINT CHANGE OF ADDRESS OR PHONE # ON BACK OF REMITTANCE STU

005249
 UTAH NATIONAL GUARD SMD
 12953 S MINUTEMAN DR
 DRAPER UT 84020-9286

DIXIE POWER
 71 E HWY 56
 BERYL, UTAH 84714-5197



71 E Hwy 56 • Beryl, Utah 84714 • (435) 439-5311
 145 W. Brigham Rd. • St. George, Utah 84790 • (435) 673-3297
 Arizona Contact • (928) 347-5870

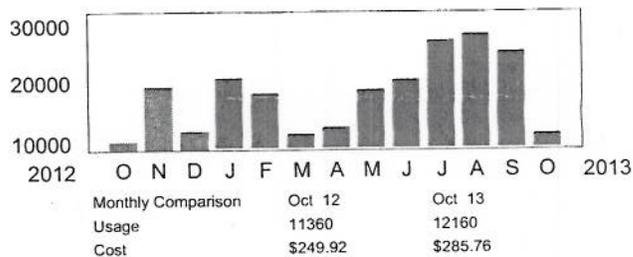
To View & Pay Your Bill Online Visit
www.dixiepower.com

Customer: UTAH NATIONAL GUARD SMD
Account Number: 209132
Statement Date: 10/31/13
Due Date: November 20, 2013

Previous Balance: \$2,803.28
Payments - Thank You: -\$2,803.28
New Charges: \$1,701.96
Amount Due: \$1,701.96

Meter# 10-946-318
Current Reading 10/21/13 6387
Previous Reading 09/23/13 6235
Multiplier 80
Usage 12160
Demand 40.8
Days 28

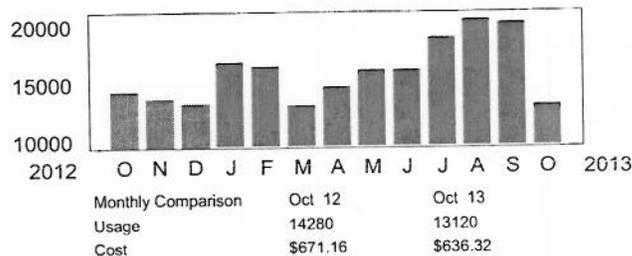
ELECTRIC USAGE HISTORY



Customer Charge \$40.00
Energy Charge \$285.76
Demand Charge \$367.20
Sales/Energy Tax \$41.58
Total for: OMS BLDG 1710 E 4100 S \$734.54

Meter# 06-296-497
Current Reading 10/21/13 16684
Previous Reading 09/23/13 16356
Multiplier 40
Usage 13120
Demand 25.2
Days 28

ELECTRIC USAGE HISTORY



Customer Charge \$20.00
Energy Charge \$636.32
Demand Charge \$46.80
Sales/Energy Tax \$42.19
Total for: 1710 E COMMERCE DR \$745.31

EXHIBIT B



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

Solar Electric Facility Installation Requirements and Material Specification

DFCM Project No. 14261480

Issue Date: June 9, 2014

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1.0 Purpose

This Solar Electric Installation Requirements document details the requirements and *minimum* criteria for a solar electric (“photovoltaic” or “PV”) system (“System”) installed by a solar electric facilities contractor, licensed in Utah, for the Division of Facilities Construction and Management (“DFCM”).

Where local code or contract specifications call for standards other than those incorporated herein, the standard deemed by local building official and or the authorized State of Utah contracting and code authorities to be the more rigorous, shall supersede.

The purpose of these installation requirements is to help promote the performance and longevity of systems installed on State or State affiliated buildings or landholdings, or that of its direct or indirect agencies. DFCM specifically reserves the right to require compliance with installation specifications that may exceed manufacturer or code requirements. Final design specifications, including any variations from the installation requirements called out herein, shall be mutually approved and receive prior written approval from the authorized DFCM agent(s).

2.0 System Requirements

2.1 General

2.1.1 System shall be grid-connected and installed on real property in Utah that receives electrical service directly from Rocky Mountain Power, a Local Electrical Utility recognized by the Utah Public Service Commission, or a mutually agreed provider.

2.1.2 System shall meet local utility interconnection and net metering requirements, as applicable.

2.1.3 The installation shall be of industry standard and workmanlike quality.

2.1.4 System should be designed for optimal annual performance, without sacrificing aesthetics, and design shall be mutually agreed. *See Section 2.5.*

2.1.5 System design shall be documented with a schematic diagram that accurately describes all electrical components to be installed and the wiring design. Diagram should include:

- Module series/parallel wiring
- Conductor and ground wire types and sizing
- Conduit types and sizing
- Voltage drop calculations
- AC breaker sizing

2.1.6 System shall be properly permitted, inspected, and in compliance with all applicable State of Utah building and electrical codes, including but not limited to those listed in the DFCM Design Standards.

2.1.7 System equipment installers shall be licensed according to the Utah Building Codes Division and shall be directly licensed, or working for a contractor that is licensed according to the Utah Construction and Contractors Board.

2.2 Materials

2.2.1 Materials used outdoors shall be sunlight/UV-resistant and listed for outdoor locations.

2.2.2 Materials used shall be designed to withstand the temperatures to which they are exposed.

- 2.2.3 Dissimilar metals that have galvanic action (such as aluminum and steel) shall be isolated from one another using industry standard practices (such as non-conductive shims, washers, or other methods).
- 2.2.4 Aluminum shall not be placed in direct contact with concrete materials.
- 2.2.5 Only stainless steel fasteners shall be used. The fasteners shall be coated with an anti-seize lubricant to prevent galling and allow for ease of removal during system maintenance or repair.
- 2.2.6 Structural members shall be either:
- High general corrosion resistance/SCC resistant aluminum, with characteristics suitable for marine environments. Clear anodizing is preferred.
 - Hot-dip galvanized steel per ASTM standard A123 equivalent or better.
 - Stainless steel (recommended for all environments).

2.3 Equipment and Installation

- 2.3.1 All installed system components shall be new.
- 2.3.2 All components shall be mounted securely.
- 2.3.3 All electrical equipment shall meet appropriate current electrical standards and shall be listed by a nationally recognized testing laboratory (e.g. UL, ETL).
- Inverters shall meet IEEE 929, 1374 and 1547 (listed to UL 1741) or their successor standards and shall have been certified by the [California Energy Commission](http://www.gosolarcalifornia.ca.gov/equipment/inverter.php) (<http://www.gosolarcalifornia.ca.gov/equipment/inverter.php>).
 - Photovoltaic modules shall meet IEEE 1262 (listed to UL 1703) or their successor standards and shall have been certified by the [California Energy Commission](http://www.gosolarcalifornia.ca.gov/equipment/pvmodule.html) (<http://www.gosolarcalifornia.ca.gov/equipment/pvmodule.html>).
- 2.3.4 Manufacturer warranties shall cover:
- Inverter for a minimum of 10 years against manufacturer's defects.
 - PV modules for a minimum of 20 years against degradation of performance below 80% of original output under standard test conditions
- 2.3.5 All electrical equipment shall be listed for the voltage and current ratings necessary for the application, reference 2011 NEC (NFPA 70) and 2009 IEC, or supercedents.
- 2.3.6 Equipment shall not be modified such that it voids the listing or manufacturer warranty.
- 2.3.7 All required over-current protection shall be included in the system and accessible for maintenance. The inspection or maintenance of combiner or feed through junction boxes shall not require the removal or displacement of modules or other obstructions.
- 2.3.8 A listed means of disconnection from all sources of power (both AC and DC) shall be provided such that inverter source and output circuits can be safely isolated for service or in an emergency. Disconnects shall be designed to be switched under load without an arcing hazard (e.g., blade-type or circuit breaker). Pull-out style disconnects shall not be used.
- 2.3.9 All electrical terminations shall be torqued to specification, secured, and strain-relieved as appropriate. Wire ends shall be coated with anti-corrosive compound prior to termination.
- 2.3.10 All cables, conduit, exposed conductors, and electrical boxes shall be secured and supported according to code requirements and in accordance with their performance ratings (i.e. NEMA).
- 2.3.11 Array equipment grounding conductors (EGC) and DC grounding electrode conductors (GEC) shall be copper and shall be either minimum 6 AWG or protected from physical damage and sized to conform to applicable Utah Electrical Codes, reference 2011 NEC (NFPA 70) and 2009 IEC, or supercedents:
- EGC shall be sized and protected according to applicable Utah code.
 - GEC shall be sized and protected according to applicable Utah code
 - If a single conductor is used for the EGC and GEC, conductor sizing and protection shall conform to all applicable Utah codes, or referenced codes. Contractor is responsible for identifying any additional code sections that may apply. For most applications, a 6 AWG conductor will be the minimum required to meet code.

2.3.12 Twist-on wire connectors shall not be used on DC conductors or ground wires. Instead, these wire connections shall be made using terminal strips in combiner boxes, feed through blocks in junction boxes, or other similar mechanical wire splicing devices. When outdoors or exposed to moisture, twist-on wire connectors used for AC connections shall be listed for usage in a damp/wet location.

2.3.13 Junction boxes and combiner boxes shall be listed and suitable for their environment and conditions of use.

2.3.14 Permanent labels shall be applied to system components as required by the applicable Utah Electrical Codes, or referenced codes.

2.3.15 Disconnect switch cover plates (not switch handles) shall be secured closed for safety (i.e. padlock, zip tie, etc.).

2.3.16 Micro-inverters, if used, shall be installed to meet the requirements of this document and all applicable codes, and shall:

- Include the installation of manufacturer-provided equipment that allows local monitoring of system performance and identification of inverter errors.
- Have appropriate AC disconnect switch at each inverter output circuit junction box to provide isolation for each string of inverters.

2.4 Array Mounting

2.4.1 ***Subject to project specific requirements***, which should be fully understood by installer, if the solar array will be roof-mounted, the roofing material shall have a minimum of 15 years of useful life remaining to ensure the roof will not need repair or replacement early in the System's operational life. Contractor shall be responsible for verification of roof condition and suitability, and if in question, evidence of this requirement may be met by providing either a copy of a recent roof inspection or a receipt showing the date of the most recent roof replacement.

2.4.2 Vendor shall obtain a copy of the roof warranty and arrange for a roof inspection after project completion, and provide evidence that the roof warranty has been upheld.

2.4.3 If roof-mounted, the roof system must be capable of handling the additional load of the System. Augmentation of the structure may be required by prevailing building codes.

2.4.4 Subject to project specific requirements, the array racking and mounting systems shall be engineered and installed to meet local wind, snow and seismic load requirements.

2.4.5 Unless specifically called out in project specifications, all roof penetrations shall be made watertight using roofing industry-standard methods of flashing that protect the warranty of the roof. Sealant compounds used shall be appropriate for the roofing material and application and shall not be the sole method of waterproofing.

2.4.6 All mounting hardware shall be installed according to manufacturer specifications.

Special Note Regarding Ballasted Roof Mounting Systems

Contractor should know that so-called ballasted, low profile roof mounting systems are acceptable for DFCM managed buildings (which is applicable to UTARNG buildings) only if a 'Memorandum of Understanding' (MOU) is co-signed with the building owner (UTARNG), acknowledging that DFCM will not be responsible for maintenance of said building for the time period that the solar system is present on the roof. An example letter has been attached.

2.5 Solar Access

2.5.1 Solar resource shall be measured with an approved shading analysis tool from the point on the collector(s) where shading is most significant. Currently approved are reports generated from either the Pathfinder Site Analysis Tool Assistant Software, Solmetric SunEye Shading Analysis Tool, or the Wiley

ASSET Solar Site Evaluation Tool. Other analysis tools may be approved from time to time or accepted by prior written approval for specific projects.

2.5.2 Total Solar Resource Fraction (“TSRF”) shall be 75% or greater at all points on the array.

2.5.3 It is recommended that the System be installed in as aesthetic a manner as is possible, and in a manner that blends well with the building architecture. System installation design and specifications shall be mutually approved by the authorized DFCM authority prior to submission for permits. Small trade-offs in system performance due to sub-optimal tilt and orientation may greatly enhance the aesthetics of the installation and thereby increase long term public support for solar.

2.6 Performance

2.6.1 Array shall be sized to operate within the current, voltage and power limits approved and warranted by the inverter manufacturer. The temperature-adjusted array voltage shall remain within the inverter limits at the historical record high and record low temperatures for the location where System will be installed. When calculating voltage at record high temperature, the appropriate adder from the table below shall be used. Systems on a roof that are tilted up 10° or more from the roof plane may be considered “Rack” mounted.

Temperature Adders for High Temperature Voltage Calculation - Array Mounting Temperature Adder

- Roof 35 °C
- Rack 30 °C
- Pole 25 °C

2.6.2 Wires shall be sized to keep voltage drop at or below 2% in the DC conductors from the array to the inverter, including the existing wire whips on the PV modules. Voltage drop will be calculated using temperature-adjusted V_{mp} (max power voltage) of the array for the location’s average high temperature.

2.6.3 Wires also shall be sized to keep voltage drop at or below 2% in the AC conductors from the inverter to the service panel to maintain the AC voltage within the inverter’s operating limits.

2.6.4 Aluminium wiring **is not acceptable**.

2.6.5 Voltage mismatch caused by partial shading of the array, different orientations of strings within the array and or by variations in module voltages, shall be minimized, allowing the inverter to operate within its maximum power point window.

2.7 Output Meter

2.7.1 A “revenue quality” electric meter which meets the following specifications shall be installed on the AC output of the System, which measures ONLY the AC output of the PV array(s). Refurbished meters may not be used.

- ANSI C-12 tested and certified revenue meter
- Electromechanical meters accurate to within 2% of actual system output (ANSI C-12.10)
- Electronic meters accurate to within 1% of actual system output (ANSI C-12.16)
- One of the following configurations
 - Single-phase 120 volt – Form 1S – Class 100
 - Single-phase 240 volt – Form 2S – Class 200
 - Three-phase 120-480 volt – Form 14-16S – Class 200
- Meter warranty of not less than 1 year

2.7.2 Multiple-inverter systems may either combine output through a dedicated sub-panel from which the output is metered, or use one electric meter for each inverter.

2.7.3 Because the meter may be located near the utility meter, the solar system meter shall have a UV-resistant label, clearly identifying it as the Solar Generator Output.

2.7.4 All meters shall be set at 000000 or 999999 at time of shipment to the installer to ensure accurate and consistent “start” readings for every system.

2.8 Battery-Based Systems – Where Applicable

2.8.1 Batteries shall be located in a secure enclosure that meets seismic requirements and is weatherproof as needed.

2.8.2 Access to live battery terminals shall be limited per State of Utah specified Electrical Codes.

2.8.3 Flooded lead acid batteries shall be housed in an enclosure with adequate spill containment and vented to the outdoors, with a nearby clearly marked safety kit.

2.8.4 Battery interconnect and inverter cables shall be properly sized, with secured crimps and lugs on ends. Lugs and terminals shall be listed for the wire type used.

2.8.5 Charge controller and inverter settings shall be appropriate for the installation’s batteries, and set for grid-tied optimum performance.

2.8.6 Temperature compensation probes for inverter and/or charge controller shall be installed to control battery charge properly.

2.8.7 Array configuration shall operate within current and voltage limits of charge controller, accounting for temperature-adjusted array voltage under record high and low temperatures for that location.

2.8.8 For hybrid systems utilizing wind or micro-hydro turbines in addition to PV, battery overcharge protection using turbine regulation and/or diversion controller and diversion load shall be installed.

2.8.9 Ground fault protection shall be added to the System if required by code and not included in the inverter.

2.8.10 Customer manual shall include instructions for operation, maintenance and safety procedures for batteries, charge controller and inverter.

2.8.11 AC output meter shall be of the 5-jaw type, and correctly wired to meter power flows to both utility and AC loads.

3.0 Customer Manual and Maintenance Training

Upon completion of installation, installer/contractor shall provide the system owner with a manual (the “Customer Manual”) and fully instruct the owner on proper system operation and maintenance.

Training sessions should be provided at each solar system location so that production losses, through the years, are minimized. UTARNG needs to allocate the appropriate staff hours for maintenance and operation of the solar systems; therefore, it is important that training concerning the O&M of these systems are approached in a systematic manner.

The Customer Manual shall provide accurate system documentation for the current system owner, as well as future owners and potential service personnel. The Customer Manual shall be bound in a durable and professional-looking binder, and shall contain, at minimum, three sections: 1) System Design and Operation, 2) Warranties and Installation Documentation, 3) Manuals and Data Sheets.

3.1 Section 1 — System Design and Operation

- System Overview Page

An overview page that summarizes the system’s operating conditions and provides emergency information.

- Operation & Maintenance Instructions

Installer’s written instructions for system start-up and shutdown procedures, troubleshooting guidelines and recommended routine maintenance schedule.

- Electrical As-Built Diagrams

Schematic diagram that accurately depicts all electrical components installed, plus main service panel and utility connection. Shall depict module series/parallel wiring, conductor and ground wire types and sizing, conduit types and sizing, and voltage drop calculations

- Mechanical Design

Description of array support structure, including engineering specifications of structural elements and manufacturer installation instructions. Provide drawings describing racking, pole mount or roof attachment methods systems.

3.2 Section 2 — Warranties and Installation Documentation

- Contractor Warranty

Installer’s 5-year minimum, full system warranty, covering labor and materials.

- Manufacturers’ Warranties

Written warranties and product registration instructions for PV modules and inverters.

- Permit(s)

Copy of approved electrical and, as applicable, building permits for the system installation.

- Utility Interconnection / Net Metering Agreement

Copy of the agreement between the utility customer and the utility.

3.3 Section 3 — Manuals and Data Sheets

- Parts and Source List

Bill of materials, listing all system components including part numbers. Inverter and module serial numbers should be recorded to facilitate replacement in the case of product recall or recovery in the case of theft.

- Inverter Owner’s Manual

Documentation from inverter manufacturer.

- Manufacturer Data Sheets for Major Components

Including but not limited to: inverters, PV modules, rack/mounting system, charge controller, batteries, disconnect switches, ground fault protection equipment, lightning arrestors, and combiner boxes.

Operation and maintenance instruction manuals shall have all required safety warnings and instructions clearly provided where applicable.

All parts of the User Manual are to be made available in paper copy as well as electronically.

4.0 Monitoring and Data Recording

Monitoring of system performance is a required element of the selected proposer's performance of services. All proposed systems must include an online, turnkey, remote data acquisition and display system available for UTARNG internal and public viewing.

The Performance Monitoring System shall utilize a software-based graphical display to provide real-time monitoring of the output and efficiency of the system for energy production and failure diagnostics, accessible by UTARNG directly and through internet connection **and via the site SCADA system**, free of charge, and with no additional charges for software, software upgrades and or training of UTARNG personnel.

This system shall allow monitoring, analysis and display of historical and live solar electricity generation data. The regularly collected data should reflect, but not be limited to, the following:

- a. DC System Size, other relevant system characteristics (summary of system design)
- b. Instantaneous System AC power Output (kW) and production (kWh)
- c. Local Solar Resource / Solar Radiation / ambient temperature
- d. Current Relevant Weather Data
- e. System performance / system output (hourly, daily, monthly, annual, total to date)
- f. Relative climate/carbon offset impacts
- g. Current site electrical usage and percentage offset by the solar systems
- h. Monthly reporting for diagnostics purposes.

Data shall be transmitted via wired or wireless internet to a server managed by the selected proposer or approved subcontractor. The selected proposer shall be responsible for data storage, management and display, and must submit its proposed display formats for approval by UTARNG prior to installation.

5.0 Utah Building Codes

Utah's building codes are mandatory statewide. Local jurisdictions may amend them but only with state approval.

Current and applicable codes and the authorities having jurisdiction (“AHJ”), including but not limited to the code types listed below, should be identified by Contractor prior to any design, engineering and or specification development.

Code Type
Building/Dwelling Code
Structural Code
Plumbing Code
Mechanical Code
Electrical Code
Fire/Life Safety Code
Energy Code

2012 Building Code will be applicable for submittals after July 1st 2013. Vendors are advised that certain sections of this code, pertaining to the fire rating of roof mounted solar PV *systems*, were amended in HB326 in the 2014 legislative session.

September 9, 2013

Mr Matt Boyer
Division of Facilities and Construction Management
4110 State3 Office Building
Salt Lake City, UT 84114

This letter is to serve as an official M.O.U., Memorandum Of Understanding, between Salt Lake Community College and the State of Utah, Division of Facilities Construction & Management, regarding the photovoltaic (PV) solar system that will be installed on the XXX building located at XXX.

The Utah Army National Guard (UTARNG) has requested a nonstructural mounted photovoltaic system that is in conflict with DFCM roof standards. As such, UTARNG agrees to pay any & all associated roof costs relating to the photovoltaic solar system that is installed on the XXX Building for the life of photovoltaic system.

DFCM acknowledges that if the photovoltaic system is removed from the roof, and the roof is returned to its original condition, then this M.O.U. will be terminated alleviating UTARNG of any further financial obligations as it relates to the roofing system.

Sincerely,

EXHIBIT C

	<p>STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES</p> <p>Division of Facilities Construction and Management</p>	<p>DFCM</p>
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DFCM AND DESIGN/BUILD TEAM AGREEMENT

DFCM Project No. 14261480

Issue date: June 9, 2014

DFCM AND DESIGN/BUILD TEAM AGREEMENT

THIS AGREEMENT made and entered into this _____ day of _____, 20____, by and between the DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT, hereinafter referred to as the "DFCM", and **(FILL IN DESIGN/BUILD FIRM)** _____, a corporation authorized to do business in the State of Utah and consisting of a legally recognized business entity in the State of Utah and general contracting/ construction management and architectural/engineering components, which are to be performed by **FILL IN DESIGN/BUILD FIRM** _____, or entities under contract with **(FILL IN DESIGN/BUILD FIRM)** _____, as appropriate. **(FILL IN DESIGN/ BUILD FIRM)** _____, shall hereinafter be referred to as "DESIGN/BUILD TEAM".

WITNESSETH: WHEREAS, DFCM intends to have Work performed at

WHEREAS, DESIGN/BUILD TEAM agrees to perform the Work for the sum stated herein.

NOW, THEREFORE, DFCM and DESIGN/BUILD TEAM for the consideration provided in this Agreement, agree as follows:

INTRODUCTION:

This Agreement is between DFCM and DESIGN/BUILD TEAM, consisting of the prime general contractor who shall also responsibly represent its architect/engineer's (A/E's), architect's, engineer's, suppliers, consultants, subconsultants and subcontractors at any tier. There are designer and general contractor responsibilities identified in this Agreement. There are important documents incorporated by reference. While the DESIGN/BUILD TEAM maintains liability for all design and general contractor functions, the specific functions referred to in this Agreement as well as the documents incorporated by reference, shall be performed by the respective personnel of the DESIGN/ BUILD TEAM that are qualified architects/engineers and general contractors.

The identity of the leaders of the specific functions of the DESIGN/BUILD TEAM are attached to this Agreement, entitled Exhibit "A." and made a part of this Agreement. Said leadership shall not be changed or substituted without written notice to the DFCM.

ARTICLE 1. DOCUMENTS INCORPORATED BY REFERENCE AND GENERAL PROVISIONS

1.1 DOCUMENTS INCORPORATED BY REFERENCE:

1.1.1 **Request for Proposals and General Conditions.** The DESIGN/ BUILD TEAM and DFCM shall be bound by their respective obligations, duties and rights as referred to in the Request for Proposals

identified as "Announcement of Design/Build Competition for the Design and Construction of the (**FILL IN TITLE OF RFP DOCUMENT**) _____, herein after identified as "Announcement of Design/Build Competition" and dated _____, inclusive of all addenda, as well as the DFCM General Conditions dated May 25, 2005 ("General Conditions") and the DFCM Supplemental General Conditions ("also referred to as the DFCM General Conditions"), (<http://dfcm.utah.gov/StdDocs/index.html>) and on file with the Division of Facilities Construction and Management and by this reference incorporated herein. The Cost Proposal Form is hereby attached and made part of this agreement and is entitled Exhibit "B". It is intended that this DESIGN/BUILD TEAM's Agreement not reiterate all the applicable provisions of said Request for Proposals and the General Conditions and the fact that some provisions are reiterated herein does not lessen the importance of the provisions that are not so reiterated. Unless the context provides otherwise, all the definitions and interpretations of provisions of this DESIGN/BUILD TEAM's Agreement shall be as stated in said Announcement of Design Build Competition and the General Conditions. In case of conflict between the provisions of this DESIGN/BUILD TEAM's Agreement, the Announcement of Design/Build and the General Conditions, the following shall indicate which provision controls:

(1) This Agreement shall control over conflicting provisions in the Announcement of Design/Build Competition and/or General Conditions.

(2) The Announcement of Design/Build Competition shall control over conflicting provisions in the General Conditions.

Said General Conditions shall be construed in such a manner as that any reference to a right, responsibility, or duty of the General Contractor (Contractor) referred to in the General Conditions shall be deemed to refer to the DESIGN/BUILD TEAM. Any reference to A/E in the General Conditions shall be deemed to refer to the DESIGN/BUILD TEAM Architect/Engineer as applicable, and shall also be bound by the provisions in the General Conditions that refer to the duties and responsibilities of the A/E in the General Conditions. Unless otherwise specified by this Agreement, the definitions in the General Conditions shall apply to this Agreement.

1.1.2 The Project Defined. The Project is the total design and construction for which the DESIGN/BUILD TEAM is responsible, including all professional design services and all labor, materials and equipment used or incorporated in such design and construction for the project referenced by the Announcement of Design/Build Competition in Paragraph 1.1.1 above.

1.1.3 The Work Defined. The Work comprises the completed construction designed under the Project and includes labor necessary to produce such construction, and materials and equipment incorporated or to be incorporated in such construction.

1.2 EXECUTION, CORRELATION, CONTRACTUAL RELATIONSHIP AND INTENT

1.2.1 This Agreement shall be signed in not less than duplicate by the DFCM and DESIGN/ BUILD TEAM.

1.2.2 Nothing contained in this Agreement and the Contract Documents shall create a professional obligation or contractual relationship between the DFCM and any third party, including subcontractors, A/E's, consultants and suppliers at any tier of the DESIGN/BUILD TEAM.

Notwithstanding this, it is understood and agreed that the DFCM is the intended third party beneficiary of all contracts for design or engineering services, all subcontracts, purchase orders and other agreements between the DESIGN/BUILD TEAM and third parties.

The DESIGN/BUILD TEAM shall incorporate the applicable or otherwise appropriate obligations of this Agreement into its respective subcontracts, supply agreements and purchase orders. The DESIGN/BUILD TEAM shall also be responsible to the DFCM for wrongful or negligent acts, errors or omissions of its A/E, consultants, subcontractors, suppliers, agents and employees or those in privity with the DESIGN/BUILD TEAM, at any tier.

1.3 CONTRACT DOCUMENTS. The Contract Documents consist of the General Conditions adopted by the Utah State Building Board on May 25, 2005; the current DFCM Design Manual on file with the office of DFCM; this Agreement; the Conditions of the Contract (General and Supplementary Conditions); and all competition documents provided by DFCM to DESIGN/BUILD TEAM and all competition documents provided by DESIGN/BUILD TEAM to DFCM, which are identified in a list entitled Exhibit "C", hereby attached and made part of this Agreement. Clarifications to said proposal documents are hereby identified in Exhibit "D", which is hereby attached and made part of this Agreement. All such Contract Documents referred to in this Paragraph 1.3 are hereby incorporated by reference herein. Any reference in this Agreement to certain provisions of the Contract Documents shall in no way be construed as to lessen the importance or applicability of any other provisions of the Contract Documents.

1.4 CONTRACT DOCUMENTS COMPLIANCE, TERMS, INDEPENDENT CONTRACTOR. The Work to be performed shall be in accordance with all of the Contract Documents. All terms used in this Agreement shall be as defined in the Contract Documents, and in particular, the General Conditions, except as otherwise provided in this Agreement. The DESIGN/ BUILD TEAM Agrees to furnish labor, materials and equipment to complete the Work as required in the Contract Documents which are hereby incorporated by reference. It is understood and agreed by the parties hereto that all Work shall be performed as required in the Contract Documents and shall be subject to inspection and approval of DFCM or its authorized representative. The relationship of the DESIGN/BUILD TEAM to the DFCM hereunder is that of an independent contractor.

ARTICLE 2. **DESIGN/BUILD TEAM**

2.1 RESPONSIBILITY ALLOCATION. The components of the Design Team shall have primary responsibilities as follows:

2.1.1 Design services shall be performed by the A/E of the DESIGN/BUILD TEAM as well as the appropriate consultants (engineers, etc) selected and paid by the DESIGN/BUILD TEAM and acting in the interest of the DESIGN/BUILD TEAM. As part of the proposal of DESIGN/ BUILD TEAM, (**FILL IN NAME OF DESIGN FIRM**) _____ has been selected as the A/E for the Project and is, or shall be promptly, under contract with the DESIGN/BUILD TEAM. DESIGN/BUILD TEAM shall notify DFCM of any substantial change in the composition of the A/E assigned to the Project, including but not limited to any major changes of staffing or assignments of architects to the Project. Any substantial change in the composition of the A/E must be reported to DFCM in writing. The identity of the leader of the specific functions of (**FILL IN NAME OF DESIGN FIRM**) _____ is (**FILL IN NAME OF DESIGN FIRM REPRESENTATIVE**) _____, principal in charge of

coordination of all design services. Said leadership shall not be changed or substituted without written notice to the DFCM.

2.1.2 Construction shall be performed in accordance with this Agreement and the Contract Documents by the qualified general contractor component of the DESIGN/BUILD TEAM as well as the appropriate subcontractors and suppliers at any tier in privity with the DESIGN/BUILD TEAM. Design Work shall be performed in accordance with this Agreement and the Contract Documents by the A/E component of the DESIGN/BUILD TEAM as well as the appropriate consultants at any tier in privity with the A/E.

2.1.3 The DESIGN/BUILD TEAM shall be responsible to the DFCM for wrongful or negligent acts, errors or omissions of the DESIGN/BUILD TEAM's employees and parties in privity of contract with the DESIGN/BUILD TEAM, at any tier, to perform any portion of the Work, including their agents and employees.

2.2 BASIC DESIGN SERVICES. The DESIGN/BUILD TEAM's Basic Design Services consist of those described below and any other services identified in this DESIGN/BUILD TEAM Agreement as part of Basic Services related to design, including normal structural, mechanical, electrical, and architectural as well as other consulting services reasonably necessary to fulfill the design duties and responsibilities under this Agreement and the Contract Documents. The DESIGN/BUILD TEAM shall prepare and promptly distribute minutes of all meetings. Said minutes shall not be considered official minutes until approved by the DFCM.

2.3 DESIGN DEVELOPMENT PHASE.

2.3.1 **Design Development Documents.** Based on the approved Design/Build Proposal, written authorization to proceed to Design Development signed by the DFCM, and any adjustments authorized by the DFCM in the program, or scope of work, schedule or construction budget, the DESIGN/BUILD TEAM shall prepare, for approval by the DFCM, Design Development Documents consisting of drawings and other documents to fix and describe the size and character of the Project as to architectural, structural, mechanical and electrical systems, materials and such other elements as may be appropriate. The Design Development Documents shall include the items listed in the Design Development Phase Checklist of the DFCM Design Manual incorporated by reference into this Agreement.

2.3.2 **Design Revisions.** The DFCM reserves the right to request minor design revisions and the DESIGN/BUILD TEAM shall promptly perform such revisions with no increase in cost beyond the Guaranteed Fixed Costs for all the Work of this Project.

2.4 CONSTRUCTION DOCUMENTS PHASE.

2.4.1 **Construction Documents.** Based on the approved Design Development Documents, and written authorization to proceed to the Construction Documents Phase signed by the DFCM, and any further adjustments in the scope or quality of the Project or in the construction budget authorized by the DFCM, the DESIGN/BUILD TEAM shall prepare, for approval by the DFCM, Construction Documents consisting of Drawings and Specifications setting forth in detail the requirements for the construction of the Project. The Construction Documents shall include the items listed in the Contract Document Phase Checklist of the DFCM Design Manual incorporated by reference into this Agreement.

2.4.2 **Market Changes.** It is understood that the DESIGN/BUILD TEAM assumes the risk and cost of market changes with respect to the DESIGN/BUILD TEAM's scope of work. In the event any supplier under a Purchase Agreement with the State of Utah fails to perform according to the terms of his agreement, the DESIGN/BUILD TEAM will be entitled to an equitable adjustment of the contract price and time. The DESIGN/BUILD TEAM will use its best efforts in managing those suppliers to maintain the project schedule.

2.4.3 **Assist With Filing For Governmental Approval.** When requested by the DFCM, the DESIGN/BUILD TEAM shall assist the DFCM in all reasonable requests in connection with the DFCM's responsibility for filing documents required for approval of governmental authorities having jurisdiction over the Project.

2.5 **BIDDING OR NEGOTIATION PHASE.**

2.5.1 **Duties; In General.** After receipt of the written authorization to proceed to the Bidding or Negotiation Phase by DFCM, the DESIGN/BUILD TEAM shall obtain bids or negotiate proposals and award contracts to subcontractors, subconsultants and suppliers which are consistent with the Design/Build Agreement. The term "bid" in the Agreement is also meant to mean "proposal" where the DESIGN/BUILD TEAM is using a request for proposal procurement process.

(1) The DESIGN/BUILD TEAM shall promptly supply ten (10) complete sets of Final Construction Documents to DFCM.

(2)

(4) The DESIGN/BUILD TEAM shall at all reasonable times be available personally, or have available, a responsible member of his or her staff to make such interpretations of the Contract Documents as are necessary to facilitate completion of the construction contract by the DESIGN/BUILD TEAM's subcontractors and suppliers.

2.6 CONSTRUCTION PHASE-ADMINISTRATION OF THE CONSTRUCTION.

2.6.1 Advise And Consult. The DESIGN/BUILD TEAM shall advise and consult with the DFCM during the Construction Phase. No one shall be entitled to rely upon any representation by the DESIGN/BUILD TEAM unless it is in writing and signed by the DESIGN/BUILD TEAM Project Manager or a principal of the DESIGN/BUILD TEAM.

2.6.2 Representations by Third Parties, and Officials, Other Than DFCM. DESIGN/ BUILD TEAM may not rely on any representations of other state agencies, officials or any third parties unless specifically approved in writing by DFCM.

2.6.3 Record Copy at Site. The DESIGN/BUILD TEAM shall maintain in good order at the site one record copy of the drawings, specifications, product data, samples, shop drawings, Change Orders and other Modifications, marked currently to record changes made during construction. At the conclusion of the Construction Phase the DESIGN/BUILD TEAM shall prepare and furnish to the DFCM a complete set of Record Drawings (corrected original tracings or re-plotted CADD drawings), one set of mylar reproducible Record Drawings and two (2) sets of Specifications depicting the Project.

CADD Criteria. The “DFCM CADD Criteria” which is a part of the Design Manual shall be reviewed by the A/E and shall be used to define and/or supplement any terms or responsibilities under this Agreement. The DFCM CADD Criteria in the Design Manual in case of conflict, shall supersede any provision of this Agreement.

2.7 ADDITIONAL SERVICES: IN GENERAL.

2.7.1 Written Authorization Required. The DESIGN/BUILD TEAM shall perform all duties and responsibilities required by this Agreement and the Contract Documents for the Guaranteed Fixed Price. If the DESIGN/BUILD TEAM reasonably believes that a particular duty or responsibility is beyond that identified by this Agreement or the Contract Documents, then the DESIGN/ BUILD TEAM shall not be entitled to any amount which would result in an increase in the Guaranteed Fixed Price unless, prior to performing the subject duty or responsibility, the DESIGN/BUILD TEAM has requested in writing a Modification to this Agreement and the Modification has been approved, in writing, by DFCM. The provisions of the General Conditions regarding Modifications, requests for additional time and additional monies shall apply to this Agreement.

2.7.2 When Not Paid by DFCM. Notwithstanding anything to the contrary in this Agreement, DFCM shall not be responsible to pay and the DESIGN/BUILD TEAM shall not be entitled to receive, compensation for any Contingent Additional Services if such services were required due to the fault of the DESIGN/BUILD TEAM or the DESIGN/BUILD TEAM's failure to perform in accordance with the terms of this Agreement. Notwithstanding this, there shall be no right to payment for additional services or contingent additional services if such services are not approved in advance by DFCM in writing.

2.8 STANDARD FOR PERFORMANCE.

2.8.1 Due Care and Diligence; In General. DESIGN/BUILD TEAM shall exercise the degree of skill and diligence as exercised by members of the DESIGN BUILD TEAM'S profession having substantial experience on projects similar in type, magnitude and complexity to the Project that is the

subject of this Agreement and all of the services under this Agreement shall be performed as expeditiously as is consistent with said standards. The DESIGN/BUILD TEAM shall be liable to the Owner for claims, liabilities, additional burdens, penalties, damages or third party claims, to the extent caused by wrongful or negligent acts, errors or omissions that do not meet this standard of care.

2.8.2 Due Care and Diligence; Discovering and Reporting Defects and Deficiencies. The DESIGN/BUILD TEAM shall exercise due care and diligence in discovering and promptly reporting to the DFCM any defects or deficiencies in the Work. Any defective Designs or Specifications furnished by the DESIGN/BUILD TEAM shall be promptly corrected by the DESIGN/ BUILD TEAM at no cost to the DFCM, and the DESIGN/BUILD TEAM shall promptly reimburse the DFCM for all damages, if any, resulting from the use of such defective Designs or Specifications. The DFCM's approval, acceptance, use of or payment for all or any part of the DESIGN/ BUILD TEAM'S services hereunder or of the Project itself shall in no way alter the DESIGN/BUILD TEAM'S obligations or the DFCM's rights hereunder.

2.9 TESTS, INSPECTIONS AND REPORTS.

2.9.1 DFCM shall be responsible for all structural (soils and concrete), mechanical, electrical testing required by law or code. It shall be DESIGN/BUILD TEAM's responsibility to determine when, which, and to the extent that such tests, inspections and reports are required by the Contract Documents. The DFCM may review and comment, when appropriate, on the accuracy of the tests and information furnished by the DESIGN/BUILD TEAM pursuant to this Paragraph 2.9.1. The DFCM will be monitoring tests and inspections for the subject work. The DESIGN/BUILD TEAM shall coordinate all test and inspections with the DFCM. All other tests or inspections required by contract documents shall be furnished at the DESIGN/BUILD TEAM's expense.

2.9.2 The DFCM shall be responsible for all chemical, air and water pollution tests, tests for hazardous material, and other laboratory and environmental tests, inspections and reports, including those required by law or the Contract Documents. It shall be DFCM's responsibility to determine when, which, and to the extent that such tests, inspections and reports are required by the Contract Documents. The DFCM may review and comment, when appropriate, on the accuracy of the tests and information furnished by the DESIGN/BUILD TEAM pursuant to this Paragraph 2.9.2. The services, information, surveys and reports required by this Paragraph 2.9.2 shall be furnished at the DFCM's expense. The DFCM will be monitoring tests and inspections for the subject work. The DESIGN/BUILD TEAM shall coordinate all test and inspections with the DFCM.

ARTICLE 3. **DFCM'S RESPONSIBILITIES**

3.1 INFORMATION. The DFCM shall provide full information regarding requirements for the Project, including a program or scope of work which shall set forth the DFCM's objectives, schedule, constraints, and criteria, including space requirements and relationships, flexibility, expandability, special equipment, systems and site requirements. DESIGN/BUILD TEAM shall be entitled to rely on such information provided by DFCM.

3.2 RESPONSE TO DESIGN/BUILD TEAM. The DFCM shall give reasonable consideration to all sketches, estimates, working drawings, specifications, proposals, and other documents presented by the

DESIGN/BUILD TEAM; and to inform the DESIGN/BUILD TEAM of the decisions, in writing, within a fourteen (14) day time period.

3.3 DFCM PROJECT MANAGER. The DFCM shall designate a DFCM Project Manager authorized to act on the DFCM's behalf with respect to the Project. The DFCM or such Project Manager shall render decisions within a fourteen (14) day time period pertaining to documents submitted by the DESIGN/BUILD TEAM in order to avoid unreasonable delay in the orderly and sequential progress of the DESIGN/BUILD TEAM's services and Work. The DFCM may appoint an on-site project representative to observe the Work and to have such other responsibilities as the DFCM deems necessary to facilitate this Agreement.

3.4 COMMUNICATIONS. DFCM shall communicate with subcontractors at any tier and material suppliers of the DESIGN/BUILD TEAM only through the DESIGN/BUILD TEAM. DESIGN/BUILD TEAM shall communicate to DFCM directly and not through the User or any other governmental agency. DESIGN/BUILD TEAM shall not rely on any comments or writings of User without express consent in writing of DFCM.

ARTICLE 4. **TIME**

4.1 DESIGN FUNCTION SCHEDULE. Time limits provided by the RFP shall not be exceeded by the DESIGN/BUILD TEAM or DFCM. Any extensions of time from the schedule shall be void and of no force and effect until such adjustments are agreed to in writing by the DFCM and DESIGN/BUILD TEAM.

4.2 CONSTRUCTION FUNCTION SCHEDULE. TIME OF COMPLETION OF CONSTRUCTION WORK AND DELAY REMEDY. The Construction Work shall be Substantially Complete by **(FILL IN COMPLETION DATE)** _____. DESIGN/BUILD TEAM agrees to pay liquidated damages in the amount of \$_____ per day for each day after expiration of the Contract Time until the DESIGN/BUILD TEAM achieves Substantial Completion in accordance with the Contract Documents, if the DESIGN/BUILD TEAM's delay makes the damages applicable. The provision for liquidated damages is: (a) to compensate the DFCM for delay only; (b) is provided for herein because actual damages can not be readily ascertained at the time of execution of this Design/Build Agreement; (c) is not a penalty; and (d) shall not prevent the DFCM from maintaining Claims for other non-delay damages, such as costs to complete or remedy defective Work.

No PRE, Claim or action shall be maintained by the DESIGN/BUILD TEAM or Subcontractor or material supplier of DESIGN/BUILD TEAM at any tier, against the DFCM for damages or other claims due to losses attributable to hindrances or delays from any cause whatsoever, including acts and omissions of the DFCM or its officers, employees or agents, except as expressly provided in the General Conditions, including procedural, timing and substantive provisions of the General Conditions.

ARTICLE 5. **PAYMENTS**

5.1 COMPENSATION. The DFCM shall compensate the DESIGN/BUILD TEAM for work properly performed in accordance with the Contract Documents after the DFCM's receipt and approval of the DESIGN/BUILD TEAM's detailed monthly statement and any lien waivers or releases previously requested by DFCM.

5.1.1 **Guaranteed Fixed Contract Amount.** The DFCM agrees to pay and the DESIGN/BUILD TEAM agrees to accept in full performance of the design work and the construction Work under this DESIGN/BUILD TEAM's Agreement, not more than the sum of **(FILL IN CONTRACT AMOUNT)** _____ **DOLLARS AND NO CENTS (\$_____.**00) which sum is the proposal amount submitted on _____ and which sum shall be the guaranteed fixed contract amount according to the following schedule:

- (a) Payment 1: 10% of the Contract Price upon the execution of this Agreement;
- (b) Payment 2: 10% of the Contract Price upon DFCM's approval of the Design Documents;
- (c) Payment 3: 40% of the Contract Price when materials are onsite;
- (d) Payment 4: 30% of the Contract Price when construction is complete;
And;
- (e) Payment 5: 10% of the Contract Price upon final completion.

Final payment shall be due and payable when System interconnection is complete. If there are minor items to be completed, DESIGN/BUILD TEAM and the DFCM shall list such items and DESIGN/BUILD TEAM shall deliver, in writing, its guarantee to complete said items within a reasonable time thereafter. The DFCM may retain a sum equal to 125% of the estimated cost of completing any unfinished items, provided that said unfinished items are listed separately and the estimated cost of completing any unfinished items is likewise listed separately. Thereafter, the DFCM shall pay to DESIGN/BUILD TEAM, monthly, the amount retained for incomplete items as each of those items is completed. The making of the final payment shall constitute a waiver of all claims by the DFCM except those arising from unsettled liens or warranty claims pursuant to Section 7.9 below.

The DESIGN/BUILD TEAM agrees to safeguard and protect such equipment or materials as are delivered to the site and is responsible for the safekeeping thereof and if such be stolen, lost or destroyed, to replace same.

Materials for which payment has been made cannot be removed from the job site without DFCM's written approval. Five percent (5%) of the earned amount shall be retained from each monthly payment. Additional retainage shall be imposed if, in the written opinion of the Director of the Division of Facilities Construction and Management, special circumstances or considerations justify the imposition of additional retainage in the interest of the State.

5.1.2 **DESIGN/BUILD TEAM Expenses.** The guaranteed fixed contract amount shall include all expenses of the DESIGN/BUILD TEAM, including travel, lodging, per diem and other costs associated with the performance of the duties and work under this Agreement.

ARTICLE 6. **CHANGES IN THE WORK**

6.1 ADDITIONAL WORK. It is understood and agreed by the parties hereto that no money will be paid to the DESIGN/BUILD TEAM for additional labor or materials furnished unless a new contract in writing or a Modification hereof in accordance with the General Conditions and Contract Documents for such additional labor or materials has been executed. The DFCM specifically reserves the right to modify or amend this

Agreement and the total sum due hereunder either by enlarging or restricting the scope of the Work.

Modifications shall be issued in accordance with the General Conditions. No action, conduct, omission, prior failure or course of dealing by the DFCM shall act to waive, modify, change, or alter this requirement. Written modifications are the exclusive method for effecting any change to the contract sum or contract time. The DESIGN/BUILD TEAM understands and agrees that the contract sum and contract time cannot be changed by implication, oral agreements, actions, inactions, course of conduct or contractor initiated change order.

ARTICLE 7. INSURANCE, BONDS AND INDEMNIFICATION

7.1 IN GENERAL. To protect against liability, loss and/or expense arising in connection with the performance of services described under this DESIGN/BUILD TEAM's Agreement, the DESIGN/BUILD TEAM shall obtain and maintain in force during the entire period of this DESIGN/BUILD TEAM's Agreement, at its own expense, the following insurance from insurance companies authorized to do business in the State of Utah and rated "A" or better with a financial size category of Class X or larger. An exception to the above-stated rating and financial size category requirements is for the professional liability insurance referred to in 7.2.1(1) below, in which case the rating must be "B" or better with a financial size category of Class VIII or larger. All said ratings and financial size categories shall be as published by A.M. Best Company at the time this DESIGN/BUILD TEAM's Agreement is executed.

7.2 DESIGN/BUILD TEAM INSURANCE. Insurance for the general construction management and architectural components of the DESIGN/BUILD TEAM shall be provided as required below:

7.2.1 General Contractor's Insurance. In addition to the insurance required in Section 7.4 below, the DESIGN/BUILD TEAM shall meet all the insurance requirements for a General Contractors as required by the General Conditions.

7.3 GENERAL CONTRACTOR'S BONDS. In addition to the insurance required above, the bonds for the General Contractor functions under this Agreement shall be provided as required by the General Conditions. The 100% performance and payment bonds may exclude the amount attributable to design services as agreed to by DFCM. The performance and payment bonds must be in effect and provided to DFCM on the standard DFCM forms prior to the issuance of a notice to proceed for the actual construction work. Notwithstanding any language to the contrary in this Agreement and solely to the extent a performance and/or payment bond is being issued to DFCM:

- i. Performance bond liability. Any performance bond issued for a site or system will cease one (1) year from the completion of construction. If a warranty or guarantee is provided under the terms of this Agreement, the balance of any warranty or guarantee beyond one year term of the applicable performance bond shall continue to be guaranteed solely by DESIGN/BUILD TEAM under the terms of this Agreement. The performance bond does not guarantee any property restorative requirements.
- ii. Payment bond liability. Any payment bond issued will cease at the termination of any time required by law.
- iii. Performance Guarantee. Neither payment bonds, whether for labor or materials, nor performance bonds are applicable to any specified performance guarantee.

7.4 DESIGN INSURANCE. In addition to the insurance required above, the following insurance for the design services under this Agreement shall be provided:

7.4.1 DESIGN/BUILD TEAM Designer's Professional Liability Insurance. The DESIGN/ BUILD TEAM shall maintain a professional liability insurance policy on a claims made basis, annual aggregate policy limit based on the following chart, unless modified in an attachment to this Agreement.

Construction Budget	Minimum Liability Coverage
\$50,000,000 and above	\$2,000,000 per claim, \$4,000,000 aggregate
\$25,000,000 and above, but under \$50,000,000	\$2,000,000 per claim, \$2,000,000 aggregate
\$1,500,000 and above but under \$25,000,000	\$1,000,000 per claim, \$1,000,000 aggregate
Under \$1,500,000	\$ 500,000 per claim, \$ 500,000 aggregate

7.4.2 Valuable papers and Records Coverage and/or Electronic Data Processing (Data and Media) Coverage. The DESIGN/BUILD TEAM and all engineering consultants of the DESIGN/BUILD TEAM shall provide coverage for the physical loss of or destruction to their work product including drawings, specifications and electronic data and media.

7.5 ADDITIONAL COVERAGE. The DFCM reserves the right to require additional coverage from that stated hereinabove, at the DFCM's expense for the additional coverage portion only. DFCM also reserves the right to require project specific insurance, and if such right has been exercised it shall be indicated as an exhibit to this DESIGN/BUILD TEAM's Agreement. Unless project specific insurance is required by the DFCM, the coverage may be written under a practice policy with limits applicable to all projects undertaken by the firm but must be maintained in force for the discovery of claims for a period of three (3) years after the date final payment is made to the DESIGN/BUILD TEAM under this DESIGN/ BUILD TEAM's Agreement. All policies provided by the DESIGN/BUILD TEAM must contain a "retroactive" or "prior-acts" date which precedes the earlier of, the date of the DESIGN/BUILD TEAM's Agreement or the commencement of the DESIGN/BUILD TEAM's services. The DESIGN/BUILD TEAM's policy must also include a contractual liability endorsement applicable to the indemnity provision contained under this Article of this DESIGN/ BUILD TEAM's Agreement. Any review and approval by the DFCM does not relieve the DESIGN/BUILD TEAM of any responsibility of liability for an error, omission, submittal or work.

7.6 FURNISH EVIDENCE OF INSURANCE, CERTIFICATES, ADDITIONAL INSURED. The DESIGN/BUILD TEAM shall submit certificates in form and substance satisfactory to the DFCM as evidence of the insurance requirements of this Article. Such certificates shall provide the DFCM with thirty (30) days notice (ten (10) days in the event of non-payment of premiums) prior to the cancellation, material change or non-renewal of the applicable coverage, as evidenced by return receipt, certified mail, sent to DFCM. The DESIGN/BUILD TEAM shall notify DFCM within thirty (30) days of any claim(s) against the DESIGN/BUILD TEAM which singly or in the aggregate exceed 20% of the applicable required insured limits, and the DFCM may require the DESIGN/BUILD TEAM to reinstate the policy to provide full protection at the original limits.

The State of Utah shall be named as an insured party, as primary coverage and not contributing, on all the insurance policies required by this Article except the professional liability and workers' compensation policies. The DFCM reserves the right to request the DESIGN/BUILD TEAM to provide a loss report from their insurance carrier.

7.7 DFCM RECOURSE. The DESIGN/BUILD TEAM agrees to maintain the insurance described in this Article during the required term. If the DESIGN/BUILD TEAM fails to furnish and maintain said required

insurance, the DFCM may purchase such insurance on behalf of the DESIGN/BUILD TEAM, and the DESIGN/BUILD TEAM shall pay the cost thereof to the DFCM upon demand and shall furnish to the DFCM any information needed to obtain such insurance.

7.8 INDEMNIFICATION.

7.8.1 In General. To the fullest extent permitted by law, the DESIGN/BUILD TEAM shall indemnify and hold harmless the State of Utah, its institutions, agencies, departments, divisions, authorities, and instrumentalities, boards, commissions, elected or appointed officers, employees, agents, authorized volunteers (hereinafter the above listing of entities and persons is referred to as "indemnities") from and against every kind and character of claims, damages, losses and expenses, including but not limited to attorneys' fees, resulting from any third party actions relating to an act or omission in the performance of the Work under this DESIGN/ BUILD TEAM's Agreement including the work of anyone directly or indirectly employed by the DESIGN/ BUILD TEAM, the DESIGN/BUILD TEAM's agent, consultant or independent contractor, or anyone for whose acts any of them may be liable, provided that any such claim, damage, loss or expense is caused in whole or in part by the negligent or intentional act or omission of the DESIGN/BUILD TEAM, anyone directly or indirectly employed by the DESIGN/BUILD TEAM, the agent, consultant or independent contractor of any of them or anyone for whose acts any of them may be liable, provided, however, that nothing herein shall require the Indemnifying Party to indemnify the Indemnified Party for any Liabilities to the extent caused by or arising out of the negligent acts or omissions of, or the willful misconduct of, the Indemnified Party. The DESIGN/ BUILD TEAM shall defend all actions brought upon such matters to be indemnified hereunder and pay all costs and expenses incidental thereto, but the State of Utah shall have the right, at its option, to participate in the defense of any such action at its own expense without relieving the DESIGN/BUILD TEAM of any obligation hereunder.

DFCM shall deliver to DESIGN/BUILD TEAM a notice describing the facts underlying its indemnification claim and the amount of such claim (each such notice a "Claim Notice"). Such Claim Notice shall be delivered promptly to DESIGN/BUILD TEAM after DFCM receives notice that an action at law or a suit in equity has commenced. DESIGN/BUILD TEAM shall have no liability under this Section 7.8 for any claim for which such Claim Notice is not provided if DESIGN/BUILD TEAM has been prejudiced by such failure.

It is mutually agreed that DFCM shall be responsible for its own acts and omissions. Should any claim for damage or injury arise under this agreement, each party preserves any and all rights and defenses each may have under Utah State Law, the Federal Tort Claims Act (28 U.S.C. Section 1346(b)), or the National Guard Claims Act (32 U.S.C. Section 715).

7.8.2 Not Reduce Current Rights. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person under this DESIGN/BUILD TEAM's Agreement.

7.8.3 Limitations on Remedies, Liabilities, and Damages; Not Bound By Damage Limitations Under Certain Acts.

- (a) In claims against any person or entity indemnified under this Paragraph 7.8 by an employee of the DESIGN/BUILD TEAM, anyone directly or indirectly employed by the DESIGN/BUILD TEAM, the agent, consultant or independent contractor of any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Paragraph 7.8 shall not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for the DESIGN/BUILD TEAM or said employee, agent, consultant,

independent contractor or anyone for whose acts any of them may be liable, under workers' or workmen's compensation acts, disability benefits acts or other employee benefit acts.

(b) Limitation on Remedies, Liability, and Damages.

i. FOR BREACH OF ANY PROVISION FOR WHICH AN EXPRESS SOLE REMEDY OR MEASURE OF DAMAGES IS PROVIDED, THAT EXPRESS SOLE REMEDY OR MEASURE OF DAMAGES SHALL BE THE SOLE AND EXCLUSIVE REMEDY, THE OBLIGATOR'S LIABILITY SHALL BE LIMITED AS SET FORTH IN SUCH PROVISION, AND ALL OTHER REMEDIES OR DAMAGES AT LAW OR IN EQUITY ARE WAIVED.

ii. IF NO REMEDY OR MEASURE OF DAMAGES IS EXPRESSLY PROVIDED IN THIS SPPA, THE OBLIGOR'S LIABILITY SHALL BE LIMITED TO DIRECT, AND ACTUAL DAMAGES ONLY.

iii. UNLESS EXPRESSLY PROVIDED IN THIS AGREEMENT, NEITHER PARTY SHALL BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, PUNITIVE, EXEMPLARY OR INDIRECT DAMAGES, LOST PROFITS OR OTHER BUSINESS INTERRUPTION DAMAGES, BY STATUTE, IN TORT, IN CONTRACT OR OTHERWISE.

iv. Except as provided in Section 7.8.3(a), notwithstanding any other provision of this Agreement to the contrary, DESIGN/BUILD TEAM's total liability arising out of relating to this Agreement shall in no event:

1. For System Failure or Replacement: exceed the total cost of the System; and
2. For damages to the Facility: exceed two million dollars (\$2,000,000) provided that for any damages to be recovered under this section they must be (i) caused solely by DESIGN/BUILD TEAM or the System; and (ii) such damage must be covered by DESIGN/BUILD TEAM's insurance.

7.9 LIMITED WARRANTY

7.9.1 **Work Warranty**. DESIGN/BUILD TEAM warrants as follows:

- (a) the Work shall be (i) free from defects in assembly and workmanship, and be new, unused, and undamaged when installed; (ii) in compliance with the requirements of this Agreement; and (iii) in compliance with all applicable laws; and
- (b) the Work will be performed (i) in a good and workmanlike manner, (ii) in accordance with the requirements of this Agreement, and (iii) in compliance with all applicable laws.

Collectively (a) and (b) are the "Work Warranty."

Work Warranty Period. The Work Warranty shall commence on the date of interconnection and shall continue until and expire upon the tenth (10th) anniversary of the date of interconnection (such applicable period, the "Work Warranty Period"); *provided, however*, that if Work is repaired or replaced pursuant to the Work Warranty, then the Work Warranty Period with respect to such component shall continue until the later of (i) the expiration of the Work Warranty Period or (ii) one (1) year from the date of completion of such repair or replacement.

7.9.2 Roof Warranty. If DESIGN/BUILD TEAM penetrates the Facility roof in performing the installation services under the Purchase and Installation Agreement DESIGN/BUILD TEAM will warrant roof damage it causes to areas that are within a three (3) inch radius of its roof penetrations. This roof warranty will run the *longer of* (i) one (1) year following the Substantial Completion Date; and (ii) the remainder of any existing installer's warranty on the Facility's roof where such installation was made in accordance with manufacturer's specifications (the "Roof Warranty") (the "Roof Warranty Period").

7.9.3 Repair Promise. If any failure or breach of the Work Warranty or the Roof Warranty occurs prior to the end of the Work Warranty Period or the Roof Warranty Period (as applicable), upon notice from DFCM or Contractor otherwise becoming aware of such failure or breach, Contractor, at its sole cost and expense (including the cost of materials, transportation, labor and equipment), will as soon as reasonably practicable, repair or replace the Work, or take some other corrective action to cause the Work to conform to the Work Warranty or the Roof Warranty (as applicable). DESIGN/BUILD TEAM may use new or reconditioned parts when making such repairs or replacements. DESIGN/BUILD TEAM may also, at no additional cost to DFCM, upgrade or add to any part of the System to ensure that it performs according to the Warranty set forth in this Agreement.

7.9.4 Exclusions from the Warranties. The Work Warranty and Roof Warranty do not apply to any repair, replacement or correction required due to the following:

- (a) materials and equipment covered by Manufacturer Warranties;
- (b) someone other than DESIGN/BUILD TEAM or its approved service providers installed, removed, re-installed or repaired the System;
- (c) destruction or damage to the System or its ability to safely produce energy not caused by DESIGN/BUILD TEAM or its approved service providers while servicing the System (e.g., a tree falls on the System);
- (d) DFCM's failure to perform, or breach of, DFCM's obligations hereunder. (such as if DFCM modifies or alters the System);
- (e) DFCM's breach of this Agreement including being unavailable to provide access or assistance to us in diagnosing or repairing a problem or failing to maintain the System as stated in the Solar Operation and Maintenance Guide;
- (f) any Force Majeure Event (as defined below);
- (g) a power or voltage surge caused by someone other than DESIGN/BUILD TEAM including a grid supply voltage outside of the standard range specified by the utility;
- (h) shading from foliage that is new growth or is not kept trimmed to its appearance on the date the System was installed;
- (i) any System Failure not caused by a System defect (e.g., such as making roof repairs);
- (j) theft of the System;
- (k) DFCM's failure to only have the System repaired pursuant to this Limited Warranty and reasonably cooperate with the person performing the repairs when repairs are being made;

This Agreement gives you specific rights, and the DFCM may also have other rights which vary from state to state. This Agreement does not warrant any specific electrical performance of the System.

7.10 Manufacturer's Warranties. Upon receipt of payment in full of the Contract Price, Contractor hereby assigns to DFCM all warranties provided by suppliers of materials included in the System (e.g., PV

modules, inverters, racking) (“**Manufacturer Warranties**”).

7.11 SolarGuard. During the Work Warranty Period, DESIGN/BUILD TEAM will provide DFCM, at no additional cost the SolarGuard Monitoring Service (“SolarGuard”). SolarGuard is a proprietary monitoring system designed and installed by DESIGN/BUILD TEAM that captures and displays historical energy generation data over an Internet connection and consists of hardware located on site and software hosted by DESIGN/BUILD TEAM. The SolarGuard service requires a high speed Internet line to operate. Therefore, during the Work Warranty Period, DFCM agrees to maintain the communication link between SolarGuard, the System and the Internet. DFCM agrees to maintain and make available, at DFCM cost, a functioning indoor Internet connection with one available wired Ethernet port and standard AC power outlet within eighty (80) feet of the System’s AC/DC inverter(s). This communication link must be a 10/100 Mbps Ethernet connection that supports common internet protocols (TCP/IP and DHCP).

7.12 Maintenance and Operation. Except for honoring Work Warranty and Roof Warranty claims, DESIGN/BUILD TEAM will have no obligation to service, operate or maintain the System. DESIGN/BUILD TEAM will provide DFCM with a copy of DESIGN/BUILD TEAM’s Solar Operation and Maintenance Guide. This guide provides DFCM with System operation and maintenance instructions, answers to frequently asked questions, troubleshooting tips and service information.

7.13 Claims Process. DFCM can make a claim under the Work Warranty or Roof Warranty by (a) emailing DESIGN/BUILD TEAM at the email address on the first page of this Agreement; (b) writing DESIGN/BUILD TEAM a letter and sending it overnight mail with a well-known service; or (c) sending DESIGN/BUILD TEAM a fax at the number on the first page of this Agreement.

7.14 Transferable. DESIGN/BUILD TEAM will accept and honor any valid and properly submitted Work Warranty or Roof Warranty claim made during the applicable warranty period by any person who purchases the System from DFCM, provided that either (i) the System is not relocated from the Premises in connection with such purchase, or (ii) DFCM engages DESIGN/BUILD TEAM, as an Additional Service, to relocate the System from the Premises to a new site.

7.15 Scope of Additional Services. DFCM agrees that if (i) the System needs any repairs that are not the responsibility of DESIGN/BUILD TEAM under this Agreement, (ii) the System needs to be removed and reinstalled to facilitate remodeling of the Facility or (iii) the System is being relocated to another Facility pursuant to this Warranty (collectively, items (i) - (iii) are "**Additional Services**"), DFCM will have DESIGN/BUILD TEAM, or another similarly qualified service provider, at DFCM's expense, perform such repairs, removal and reinstallation, or relocation on a time and materials basis.

7.16 Approved Service Providers. DFCM's retention of a third party to perform Additional Services that is not qualified to perform such Additional Services will void the Work Warranty and the Roof Warranty. To prevent voiding the Work Warranty and the Roof Warranty, DFCM should obtain the written consent of DESIGN/BUILD TEAM prior to engaging a third party to perform Additional Services. If DFCM engages a third party service provider to perform Services without the prior consent of DESIGN/BUILD TEAM, DFCM does so at the risk that DESIGN/BUILD TEAM will subsequently determine such service provider was not qualified to perform the Additional Services.

ARTICLE 8. **DISPUTE RESOLUTION**

8.1 DISPUTES. Any dispute, PRE or Claim between the parties shall be subject to the provisions of Article 7 of the General Conditions. DFCM reserves all rights to pursue its rights and remedies as provided in the General Conditions.

ARTICLE 9.
TERMINATION, SUSPENSION OR ABANDONMENT

9.1 IN GENERAL. This Agreement may be terminated, suspended or abandoned in accordance with the General Conditions.

ARTICLE 10.
**OWNERSHIP AND USE OF DRAWINGS,
SPECIFICATIONS AND OTHER DOCUMENTS**

10.1 IN GENERAL. Upon receipt of payment in full of the Contract Price by DESIGN/BUILD TEAM, title to the System will pass to the DFCM free and clear of all liens, claims, security interests or encumbrances (hereinafter referred to as “**Liens**”). Notwithstanding the foregoing, DESIGN/BUILD TEAM retains sole and exclusive ownership of all right, title and interest in and to all intellectual property rights associated with the System including any patent, copyright, trademark or any other rights.

ARTICLE 11.
MISCELLANEOUS PROVISIONS

11.1 GOVERNING LAW AND VENUE. Unless otherwise provided, this DESIGN/BUILD TEAM's Agreement shall be governed by the laws of the State of Utah. Salt Lake County, State of Utah, shall be the venue of any legal proceeding regarding the terms or enforcement of this DESIGN/BUILD TEAM's Agreement.

11.2 WAIVER TO EXTENT OF RECOVERY OF INSURANCE MONIES. The DFCM and DESIGN/BUILD TEAM waive all rights against each other and against the DESIGN/BUILD TEAM's consultants, subcontractors, agents and employees of the other for damages, but only to the extent covered by the DFCM provided Builder's Risk Policy concerning damage to the Work during construction, except such rights as they may have to the proceeds of such insurance as set forth in the General Conditions. The DFCM and DESIGN/BUILD TEAM each shall require similar waivers from their contractors, subcontractors, consultants and agents at any tier.

11.3 BINDING AGREEMENT AND ASSIGNMENT PROVISIONS. The DFCM and DESIGN/BUILD TEAM respectively, bind themselves, their successors, assigns and legal representatives to the other party to this DESIGN/BUILD TEAM's Agreement and to the partners, successors, assigns and legal representatives of such other party with respect to all covenants of this DESIGN/BUILD TEAM's Agreement. Neither the DFCM nor the DESIGN/BUILD TEAM shall assign its interest in this Agreement without the written consent of the other, except that the Contractor hereby consents to the assignment of the DFCM's interest herein as provided in this Article 11.

11.4 INTEGRATION AND AMENDMENT. This DESIGN/BUILD TEAM's Agreement represents the entire and integrated agreement between the DFCM and DESIGN/BUILD TEAM and supersedes all prior negotiations, representations or agreements, either written or oral. Except for Construction Change Directives issued under the General Conditions, this Agreement may be amended only by written instrument signed by both DFCM and DESIGN/BUILD TEAM.

11.5 THIRD PARTIES. Except for DFCM's third party beneficiary rights described in this Agreement, nothing contained in this Agreement shall create a contractual relationship with or a cause of action in favor of a third party against either the DFCM or DESIGN/BUILD TEAM.

11.6 HAZARDOUS MATERIALS. The responsibilities of the DFCM and the DESIGN/BUILD TEAM regarding Hazardous Materials shall be as specified in the General Conditions and the Contract Documents.

11.7 PROMOTION. The DESIGN/BUILD TEAM shall have the right to include accurate representations of the design of the Project, including photographs of the exterior and interior, among the DESIGN/BUILD TEAM's promotional and professional materials. The DESIGN/BUILD TEAM's materials shall not include the DFCM's or the State's confidential or proprietary information if the DFCM has previously advised the DESIGN/BUILD TEAM in writing of the specific information considered by the DFCM to be confidential or proprietary. The DFCM shall provide professional credit for the DESIGN/ BUILD TEAM on the construction sign and in the promotional materials for the Project. For purposes of this Paragraph 11.7, reference to the "DESIGN/BUILD TEAM" shall include the DESIGN/BUILD TEAM's consultants.

11.8 INDEPENDENT CONTRACTOR. The DESIGN/BUILD TEAM shall be considered an independent DESIGN/BUILD TEAM, and as such, shall have no authorization, express or implied, to bind the State of Utah or the DFCM to any agreement, settlement, liability or understanding whatsoever, nor to perform any acts as agent for the State of Utah or DFCM, except as specifically set forth in this DESIGN/BUILD TEAM's Agreement.

11.9 WRITTEN NOTICE. DFCM and DESIGN/BUILD TEAM shall be subject to the written notice provisions of the General Conditions.

11.10 DFCM/AGENCY REVIEW. DFCM or any other entity's (including agency user's of the State of Utah) plan reviews or any other type or nature of review shall in no way relieve the DESIGN/BUILD TEAM of design liability or contractual responsibility under this DESIGN/BUILD TEAM's Agreement. Any guidelines, specifications, drawings or plans provided by the DFCM or any other entity to the DESIGN/ BUILD TEAM shall not relieve the DESIGN/BUILD TEAM of design liability or contractual responsibility under this Agreement.

11.11 CONSULTANTS.

11.11.1 Not Use "Sales" or "Agent" A/E's or Consultants. The DESIGN/ BUILD TEAM agrees not to use "sales" or "agent" A/E's or consultants. Said A/E's or Consultants are not to benefit financially either directly or indirectly from the sale or use of any product on or in the Project.

11.11.2 A/E and Consultant Qualifications. All A/E and Consultants must be licensed in Utah for the professional practice used on the Project and be approved in writing, in advance, by the DFCM.

11.12 A/E, CONSULTANTS, SUBCONTRACTORS OF DESIGN/BUILD TEAM. Any A/E, subcontract, supplier, or consultants agreement that the DESIGN/BUILD TEAM may enter into in regard to the Project of this DESIGN/BUILD TEAM's Agreement, shall require conformance with the provisions of this DESIGN/ BUILD TEAM's Agreement, to the extent applicable.

11.13 WORK BY DFCM OR DFCM'S CONTRACTORS. The DFCM reserves the right to perform work related to, but not part of, the Project and to award separate contracts in connection with other work at the site. The DESIGN/BUILD TEAM shall cooperate with the DFCM to afford the DFCM's other contractors a reasonable opportunity for access and storage of their materials and equipment for execution of their work. The DESIGN/BUILD TEAM shall incorporate and coordinate the DESIGN/BUILD TEAM's Work with work of the DFCM's separate contractors as required by the Contract Documents. The DESIGN/BUILD TEAM shall promptly notify the DFCM if any such independent action will in any way compromise the DESIGN/ BUILD TEAM's ability to meet the DESIGN/BUILD TEAM's responsibilities under this Agreement.

11.14 SEVERABILITY. In case a provision of this Agreement is held to be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not be affected.

11.15 OBSERVATIONS. The Work shall be observed for acceptance in accordance with the General Conditions. DESIGN/BUILD TEAM shall have a Utah duly licensed architect or engineer, visit the site at least once per week during construction and shall make appropriate observations and promptly write and send to the DFCM written reports for each site visit. DFCM may request more periodic site observations by

the A/E if needed. The A/E shall be compensated for additional work properly performed and approved in advance in writing by DFCM as well as not caused by errors and/or omissions of DESIGN/BUILD TEAM. The A/E shall report promptly any deficiencies, defects or problems with the Work or site conditions.

11.16 RELATIONSHIP OF THE PARTIES AND ASSIGNMENT. The DESIGN/BUILD TEAM accepts the relationship of trust and confidence established by this DESIGN/BUILD TEAM's Agreement and covenants with the DFCM to cooperate with the DFCM and utilize the DESIGN/ BUILD TEAM's best skill, efforts and judgment in furthering the interest of the DFCM; to furnish efficient business administration and supervision; to make best efforts to furnish at all times an adequate supply of workers and materials; and to perform the Work in the best and most expeditious and economic manner consistent with the interests of the DFCM.

11.17 SUCCESSORS AND ASSIGNS. The DFCM and DESIGN/BUILD TEAM, respectively bind themselves, their partners, successors, assigns and legal representatives to the other party to this Agreement, and to partners, successors, assigns and legal representatives of such other party with respect to all covenants, provisions, rights and responsibilities of this Agreement. The DESIGN/BUILD TEAM shall not assign the Contract without the prior written consent of the DFCM, nor shall the DESIGN/BUILD TEAM assign any moneys due or to become due as well as any rights under the Contract, without prior written consent of the DFCM.

The DFCM agrees to exercise reasonable best efforts to enable the DESIGN/BUILD TEAM to perform the Work by furnishing and approving in a timely way, information required by the DESIGN/BUILD TEAM in accordance with the requirements of the Contract Documents.

11.18 AUTHORITY TO EXECUTE AND PERFORM AGREEMENT. DESIGN/BUILD TEAM and DFCM each represent that the execution of this DESIGN/BUILD TEAM's Agreement and the performance thereunder is within their respective duly authorized powers.

11.19 ATTORNEY FEES AND COSTS. Except as otherwise provided in the dispute resolution provisions of the General Conditions, the prevailing party shall be entitled to reasonable attorney fees and costs incurred in any action in the District Court and/or appellate body to enforce this DESIGN/BUILD TEAM's Agreement or recover damages or any other action as a result of a breach thereof.

11.20 EXTENT OF AGREEMENT. This Agreement represents the entire agreement between the DFCM and DESIGN/BUILD TEAM and supersedes any prior negotiations, representations or agreements. This Agreement may be amended only by written instrument signed by both DFCM and DESIGN/BUILD TEAM. The DESIGN/BUILD TEAM and DFCM for themselves, their heirs, successors, executors, and administrators, whichever may be applicable, hereby agree to the full performance of this Agreement and the Contract Documents.

DESIGN/BUILD TEAM and DFCM each represent that the execution of this DESIGN/BUILD TEAM's Agreement and the performance thereunder is within their respective duly authorized powers.

DFCM Project No. _____
DFCM Contract No. _____

EXHIBIT "A"
DESIGN/BUILD TEAM Leaders

DFCM Project No. _____
DFCM Contract No. _____

EXHIBIT "B"
Cost Proposal Form with Cost Breakdown

DFCM Project No. _____
DFCM Contract No. _____

EXHIBIT "C"
List of Competition Documents

EXHIBIT “D”
Clarification Items