



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

Request for Proposals for Design/Build Services

SINGLE-STAGE COMPETITION

Value Based Selection Method

June 5, 2015

ROOF-MOUNTED SOLAR PHOTOVOLTAIC SYSTEM MOAB REGIONAL CENTER

**DIVISION OF FACILITIES CONSTRUCTION
AND MANAGEMENT
MOAB, UTAH**

DFCM Project No. 14321300

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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 Division of Facilities Construction and Management (DFCM) intends to hire a Design/Build Team (Team) comprised of a General Contractor supported by subcontractors to design and construct the following project:

ROOF-MOUNTED SOLAR PHOTOVOLTAIC SYSTEM - MOAB REGIONAL CENTER
DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT - MOAB, UTAH
DFCM PROJECT NO. 14321300

This project includes design/build of an approximate 90 kW_{DC} roof-mounted solar PV system (ad-alternative 80 kW_{DC}) at the Moab Regional Center, 1165 South Highway 191, Moab, Utah.

This RFP is based on a value based selection method. DFCM is looking to select the Team providing good economic value for the project (based on DC Watt installed as well as AC equivalent and annual production) with investment grade design and material spec, while complying with all applicable design, permitting and code requirements.

The RFP documents will be available at 12:00 Noon on Friday, June 5, 2015 on the DFCM web page at <http://dfcm.utah.gov>. For questions regarding this project, contact Bianca Shama, DFCM, bshama@utah.gov. No others are to be contacted regarding this project.

A **MANDATORY** Pre-Proposal Meeting for all Teams will be held at 1:00 PM on Wednesday, June 17, 2015 at the Moab Regional Center, 1165 South Highway 191, Moab, Utah. Meet in the Main Lobby. All Teams wishing to submit on this project must attend the meetings.

The Response Document that is requested in the RFP must be submitted to DFCM in Room 4110 State Office Building, Capitol Hill Complex, Salt Lake City, Utah, by the date and time shown in the Project Schedule.

The Division of Facilities Construction and 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.

The exhibits to this RFP DFCM Project No. 14321300 cannot be warranted as correct. The size and layout in the RFP and its Exhibits, as stated, are approximate and for informational purpose only. Teams should use their own judgment in the design and layout of the solar system they are proposing.

Partial funding was procured through the Rocky Mountain Power Utah Solar Incentive Program (RMP USIP); therefore, the Teams should comply with the rules, regulations and specifications associated with the rebate, as well as the interconnect and net metering agreement with the utility. The minimum size of the project is approximately 90 kW_{DC} to maintain the procured USIP award. Teams should submit a proposal that is code compliant, taking into consideration that a smaller solar array under the USIP will result in a lower incentive award.

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

DESCRIPTION OF WORK

The scope of work includes the design/build of an approximate 90 kW_{DC} solar photovoltaic system on a flat roof in Moab, Utah. The system will offset about 80% of consumed power in the building. Additionally, Teams are asked to bid 80 kW_{DC} as an add-alternate.

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

DFCM will require the successful Team to provide the complete design and installation of the proposed solar electric system.

The overall RFP objective is to obtain the best value in terms of DC-Watts installed, AC-equivalent and 25-year kWh output, while complying with all required material specifications, codes and legal requirements. The Team offering the strongest combination of these variables, with proven capabilities, will achieve the optimal score, as set out later in this RFP document.

The exhibits to this RFP DFCM Project No. 14321300 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. Teams should use their own judgment in the design and layout of the solar system they are proposing.

The contractual requirements provided for in this RFP may be modified by reviews with the Utah Attorney General's Office. DFCM reserves the right to reject all proposals for any reason. Wages need not be 'prevailing wage'.

Objectives

DFCM seeks a Design/ Build Team for DFCM-owned solar electric energy generation facilities described below, which may include high efficiency mono or polycrystalline silicon solar cells, preferably of U.S. warranty, with the overall objective to offset the highest possible electrical consumption at the Moab Regional Center 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. A minimum 10-year workmanship warranty is required (all labor and materials).

<i>Address</i>	Moab Regional Center, 1165 South Highway 191, Moab, Utah 84532
<i>PV Solar Capacity (from USIP)</i>	90,000 W _{DC} ; 80,100 W _{ptc} ; 78,098 W CEC-AC System Rating
<i>Meter#</i>	1286569
<i>Account #</i>	92233026-028 0
<i>Rate Schedule</i>	6
<i>Annual Consumption</i>	157,467 kWh/yr
<i>Current Estimated Fully Blended Rate</i>	\$0.10/kWh
<i>Remarks</i>	No structural analysis has been carried out. The roof orientation is not perfectly north-south. The sun angle is approximately 205°. The racking system shall comply with the DFCM "Roofing Design Requirements" (see Exhibit B). The roof deck will be replaced in a separate project (to be completed July 2015). The roofing material will be 'membrane' (TPO, PVC, EPDM or similar). Teams are required to coordinate with the general contractor for the roofing project, and make sure that the roof is re-inspected after solar installation, with the roofing warranty re-instated by the manufacturer. There are significant mechanical units and a satellite disc on the roof, (see attached drawings in Exhibit A). Bid Alternates with micro-inverters or (other) string optimization techniques are encouraged.

The engineering and permit review for the project 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 Team to develop and propose, for mutual agreement, the concept, final system design and engineering, system specifications, materials procurement, construction and installation of a 90 kW_{DC} solar electric system at the location as described above.

As an alternative, the Team is asked to include pricing for an array with the smaller size of 80 kW_{DC}.

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 system.
- The newly installed solar PV systems must be installed and generating electricity no later than July 31, 2016.
- Select and contract with a highly qualified solar system developer, with demonstrated experience in outstanding system design and quality installation.
- Performance guarantees, and warranty provisions for the inverters and solar modules will be part of the contract.
- A **minimum** 10-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 the data made available through a web based energy monitoring system.
- Apply for and facilitate the process of obtaining the net metering and interconnect agreement with the utility, while complying with all specifications related to these agreements, as well as the requirements related to the USIP funding award. Team is responsible for obtaining the exact material spec and other requirements (such as the spec for the production meter) from the utility. Partial (pertinent) utility driven material spec and requirements are included 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).

In the construction and installation of the solar electric system, the selected solar vendor 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 (2011) National Electric Code¹ and the (2012) International Code Council family of codes and State of Utah amendments as approved by the Uniform Building Codes Commission (including the 2012 International Fire Code)². All work shall comply with the DFCM Standards of Work. Design professionals on the selected, qualified Teams are encouraged to contact the building official 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.

¹ NEC Code version will potentially change on July 1, 2015. Please note this **will** change solar design requirements.

² Please note that section 15.09.7 .2 of the 2012 IBC was deleted in the 2014 legislative session (effective for the Utah unified building code), meaning vendors are exempted from the fire classification of PV *systems* (under the testing regime of UL 2703) for systems permitted prior to July 1, 2016.

Deliverables

- A. Develop Solar Energy Project Final Plans and Specifications:** Upon the successful negotiation of the contract, the successful Team 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, and 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 Team.

- B.1. PV Module, Inverter and Balance of System - Component Specifications:** The selected Team 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 offered by a supplier (preferably) domiciled in the United States.
3. All modules shall be “investment grade”, 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 a supplier domiciled in the United States
2. Weighted CEC Efficiency of not less than 96% (95% for micro-inverter).
3. Micro-inverters or other string optimization techniques are allowed and encouraged as a main bid, or bid alternate.

Racking System: Contractor should know that so-called ballasted, low profile roof mounting systems are NOT acceptable for this project. All equipment, including solar systems, must be on a structural stand with a minimum of 12” above the finished roofing system.

- 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 weather conditions, access to cumulative historical data for a minimum 365 past days, and accessible by DFCM by dedicated users.

Once the solar system plans and specifications have been approved by DFCM staff, the plans will be returned to the successful Team, 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 Team 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.

Teams are advised that a net metering and interconnect application should be submitted to RMP as early on in the project as possible since a signed agreement is a mandatory part of the incentive payments, and to obtain PTO (permission to operate) and this process has proven to be on the ‘critical path’.

- D. **Construct the Solar Electric System:** The successful Team 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 the complete installation and commissioning of the solar power system, a solar panel cleaning plan, Operations and Maintenance Plan and Manual, web-based monitoring system and include 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 Team 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 DFCM. 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:
1. Starting up the solar electric system until it achieves the mutually agreed performance requirements;
 2. Conducting the successful delivery of power within thirty calendar days following the completion of the system, meeting system requirement as designed.
 3. Fulfilling any other noted requirement as specified by DFCM or other local authority, including sign-off by the Utility and execution of the net metering and interconnect contracts.
- G. **Maintenance and Operation Training of the System:** The selected Team shall provide on-site training to DFCM personnel for the operation and maintenance of the solar electric system. Prior to system start-up, the selected Team shall supply to 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 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 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 Team must submit to 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 calendar 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

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

1. Request for Proposals Documents for Design/Build Team

The Request for Proposals for Design/Build Services (RFP) 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, contractors shall not unduly contact or offer gifts or gratuities to DFCM, any Board 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. Contractors should be aware that selection committee members will be required to certify that they have not been contacted by any of the contractors 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:

Bianca Shama - DFCM Energy Program Director
Division of Facilities Construction and Management
Room 4110 State Office Building
Capitol Hill Complex
Salt Lake City, Utah 84114-1160
E-mail: bshama@utah.gov

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 Team is responsible for ensuring that delivery will be made directly to the required location. 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 emailed to Bianca Shama at DFCM (bshama@utah.gov).

8. Cost Proposal

Before submitting a proposal, each Team shall carefully examine the RFP, visit the site of the Work, fully inform themselves as to all existing conditions and limitations, and shall include in the Cost Proposal the cost of all items required by the RFP. The Team is responsible for complying with all applicable laws, building codes, rules and regulations.

The Cost Proposal, bearing original signatures, must be typed or handwritten in ink on the cost proposal form provided in the RFP and submitted in a *SEPARATE* sealed envelope at the location specified below prior to the deadline for submission of cost proposals indicated on the Project Schedule.

Cost Proposals will be accepted at the office of DFCM, Room 4110 State Office Building, Capitol Hill Complex, Salt Lake City, Utah 84114. Late proposals will be disqualified and returned to the proposer unopened. One copy of the cost proposal is required.

EXAMPLE OF COST PROPOSAL FORMAT:

	kW_{DC} Installed	Estimated Annual kWh Output	Total System Output after 25 Years (kWh)	Total Build Price
Moab Regional Center (90 kW _{DC})				
Alternative: Moab Regional Center (80 kW _{DC})				

Costs:	90 kW_{DC}	80 kW_{DC} (Alternate)
Materials	\$ _____	\$ _____
Labor	\$ _____	\$ _____
Total	\$ _____	\$ _____

Note:

- The system size is restricted by annual electrical consumption. Please show annual production estimates for a 25 year period (or give the cell degradation) and the total aggregate 25-year production.
- **All Teams are informed herewith and acknowledge by the submission of their bid proposal, that as a component of their project cost, the selected Team will be charged an administrative cost offset fee equivalent to \$0.17 per installed DC-Watt, and will be invoiced for such fee by DFCM promptly upon system commissioning.**

9. Listing of Subcontractors

A listing of subcontractors is not required at the time of submission in a design/build delivery, but is required to be submitted to DFCM at the time subcontractor selection is completed by the general contractor or within 24 hours of written notice from the DFCM representative. The subcontractors required to be listed are as specified in the Instructions and Subcontractors List Form which are included as part of this RFP. Requirements for listing additional subcontractors are as follows: **NO ADDITIONAL REQUIREMENTS**

As additional subcontractors are identified, the subcontractor list shall be updated and submitted to the DFCM representative. DFCM retains the right to audit or take other steps necessary to confirm compliance with requirements for the listing and changing of subcontractors. Any contractor who is found to not be in compliance with these requirements is subject to a debarment hearing and may be debarred from consideration for award of contracts for a period of up to three years.

10. Addendum

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 web site.

Any addenda issued prior to the submittal deadline shall become part of the Request for Proposals and any information required shall be included in your proposal.

11. Past Performance and References

If the Team 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 submitting Team shall provide five copies of the 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 construction project manager, the lead designer, and other critical members of the Team. It describes what talents their team brings to the 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 that have been completed by the Team, construction project manager, lead designer, and other team members. Include the 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 drawing should be included in the proposal. When addressing system components please identify:

- The designated roof-mounted PV system lay-out detail, the proposed mounting method
- The make, number and specifications of selected solar modules.
- The make, number and sizing of the selected grid-tied solar electric (PV) inverters and its/their location.
- Details regarding the monitoring and data collection provisions.
- The PV module and other component warranties.
- Identify Warranty Period of Team's System and Workmanship. Identify the length of and provisions of any warranty(ies) provided by the Team for the installed components.

Note: The system size is restricted by annual electrical consumption. Please show annual production estimates for a 25 year period (state the cell degradation) and the total aggregate 25-year production.

14. Management Plan

The Team shall submit five copies and two CDs of a Management Plan by the time indicated on the Project Schedule. The cover sheet of the management plan is to include the name and address of the firm, the contact person and the contact person's phone and e-mail. 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

One of the selection criteria will be proposed contract time. The Team will include in the Preliminary Management Plan the schedule for completing the work including any items required by DFCM. The RMP Incentive (USIP) funding requires that work is finished **no later than July 31, 2016**.

It is anticipated that an Agreement will be given to the contractor for signature following concurrence of the design and accepted scope of work, including any accepted deviations from the program and accepted cost adjustment if required. The actual notice to proceed will be promptly issued following the return of the signed Agreement and bonds by the contractor. The actual completion date will be based on the contractor's proposed schedule and any adjustments that are required due to the refined scope of work established following award, which are documented in the Agreement; all as agreed to by the DFCM.

All plans, schedules, and the cost proposals are required to reflect the proposed design and construction time. Non-compliance with the schedule will not result in automatic disqualification; it will be evaluated by the Selection Committee in determining the final selection.

16. 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 or agency. 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.

17. Selection Committee

The Selection Committee may be composed of individuals from DFCM, the User Agency / Institution, and representatives from the design or construction disciplines.

18. Interviews

Interviews will be conducted with all responsive and responsible Design/Build Teams except as follows. If more than nine Teams submit proposals and meet other requirements, DFCM may convene the Selection Committee to develop a list of contractors to be invited to interviews. This evaluation will be made using the selection criteria noted below. The information provided by the past performance/references, Preliminary Management Plan 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. It will also provide an opportunity for the Selection Committee to seek clarification of the Team's proposal.

The proposed primary project management personnel, including the project manager / site manager, should be in attendance. The project manager is the Team's representative who will have full responsibility for the design and construction of the project. The project manager has overall job authority, will be in attendance at all job meetings, and is authorized by the contractor to negotiate and sign any and all change orders in the field, if necessary. Unless otherwise noted, the attendance of sub-consultants and subcontractors is at the discretion of the contractor.

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.

19. Selection Criteria

The following criteria will be used in arriving at the successful Team. 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 criteria are not listed in any priority order. 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. 30 POINTS System Size, Estimated Annual Production, Total 25 – year System Output (kWh), System Components, Warranty and Design.** The Team's design and materials used, and warranty terms (including workmanship warranty), 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 Team'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 Team 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. 10 POINTS.** Each Team 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 supplemented by references submitted in the proposal.
- D. **Strength of Team (Team Capabilities and Statement of Qualifications) 10 POINTS** Based on the statements of qualifications, the interview, and management plan, the Selection Committee 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 Team will self perform and the strength brought to the team by critical (locally sourced) subcontractors including how they were selected and the success the Team 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 Committee 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 Team 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 Selection Committee 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. 30 POINTS.** The contractor's proposal will be considered with all other criteria to determine the ranking of firm.

TOTAL POSSIBLE POINTS: 100 POINTS.

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 contractor to construct the project as outlined. Individual contractors or alliances between two or more contractors are allowed in this process. The State will contract with only one legal entity.

21. Contract and Bond

The Design/Build Agreement will be in the form included in the RFP documents. The contract time will be as indicated in the proposal. The selected contractor, simultaneously with the execution of the contract agreement, will be required to furnish a performance bond and a payment bond, both bearing original signatures, upon the forms provided in the RFP. The performance and payment bonds shall be for an amount equal to one hundred percent (100%) of the contract sum 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 Team shall comply with and require all of its A/Es consultants, sub-consultants, and subcontractors to comply with the license laws as required by the State of Utah.

23. Permitting

In concurrence with the requirements for permitting in the General Conditions, it is the responsibility of the Contractor to obtain the fugitive dust plan requirements from the Utah Division of Air Quality and the SWPPP requirements from the Utah Department of Environmental Quality and submit the completed forms and pay any permit fee that may be required for this specific project. Failure to obtain the required permit may result in work stoppage and/or fines from the regulating authority that will be the sole responsibility of the Contractor. Any delay to the project as a result of any such failure to obtain the permit or noncompliance with the permit shall not be eligible for any extension in the Contract Time.

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 Team 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 Teams are informed herewith and acknowledge by the submission of their bid proposal that as a component of their project cost, the selected Team 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 Team for the cost offset fee, which invoice shall be paid within 30 days.

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



PROJECT SCHEDULE

PROJECT NAME: ROOF-MOUNTED SOLAR PHOTOVOLTAIC SYSTEM - MOAB REGIONAL CENTER
DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT - MOAB, UTAH
DFCM PROJECT NO. 14321300

Event	Day	Date	Time	Place
RFP for Design/Build Teams Available	Friday	June 5, 2015	12:00 NOON	DFCM web site *
MANDATORY Pre-Proposal Meeting	Wednesday	June 17, 2015	1:00 PM	Main Lobby Moab Regional Center 1165 South Highway 191 Moab, UT
Last Day to Submit Questions	Monday	June 22, 2015	4:00 PM	Bianca Shama- DFCM E- mail: bshama@utah.gov
Addendum Deadline (exception for bid delays)	Wednesday	June 24, 2015	3:00 PM	DFCM web site *
Response Document	Tuesday	July 7, 2015	12:00 NOON	DFCM Room 4110 State Office Bldg Capitol Hill Complex SLC, UT
Short Listing (if necessary)	Thursday	July 9, 2015	2:00 PM	DFCM web site *
Interviews	Wednesday	July 15, 2015	TBA	To be Announced
Announcement of Selection	Friday	July 17, 2015	4:00 PM	DFCM web site
Substantial Completion Date	Sunday	July 31, 2016		

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



Division of Facilities Construction and Management

COST PROPOSAL FORM

NAME OF PROPOSER _____ DATE _____

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

The undersigned, responsive to the "Notice to Contractors" and in accordance with the "Request for Proposals" for the ROOF-MOUNTED SOLAR PHOTOVOLTAIC SYSTEM - MOAB REGIONAL CENTER - DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT - MOAB, UTAH, DFCM PROJECT NO. 14321300 and having examined the Contract Documents and the site of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda: _____

For all work shown on the Drawings and described in the Specifications and Contract Documents, I/we agree to perform for the sum of:

Table with 5 columns: kW_DC Installed, Estimated Annual kWh Output, Total System Output after 25 Years (kWh), Total Build Price. Rows include Moab Regional Center (90 kW_DC) and Alternative: Moab Regional Center (80 kW_DC).

Costs table with columns for 90 kW_DC and 80 kW_DC (Alternate). Rows include Materials, Labor, and Total.

PROPOSAL FORM
PAGE NO. 2

I/We guarantee that the Work will be Substantially Complete by _____, should I/we be the successful proposer and agree to pay liquidated damages in the amount of \$TBD per day for each day after expiration of the Contract Time as stated in Article 3 of the Contractor's Agreement.

This bid shall be good for 45 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 ten (10) days, unless a shorter time is specified in the Contract Documents, and deliver acceptable Performance and Payment bonds 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



Division of Facilities Construction and Management

INSTRUCTIONS AND SUBCONTRACTORS LIST FORM

The three low bidders, as well as all other bidders that desire to be considered, are required by law to submit to DFCM within 24 hours of bid opening a list of ALL first-tier subcontractors, including the subcontractor's name, bid amount and other information required by Building Board Rule and as stated in these Contract Documents, based on the following:

DOLLAR AMOUNTS FOR LISTING

PROJECTS UNDER \$500,000: ALL FIRST-TIER SUBS \$20,000 OR OVER MUST BE LISTED
PROJECTS \$500,000 OR MORE: ALL FIRST-TIER SUBS \$35,000 OR OVER MUST BE LISTED

- Any additional subcontractors identified in the bid documents shall also be listed.
The DFCM Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law.
List subcontractors for base bid as well as the impact on the list that the selection of any alternate may have.
Bidder may not list more than one subcontractor to perform the same work.
If there are no subcontractors for the job that are required to be reported by State law (either because there are no subcontractors that will be used on the project or because there are no first-tier subcontractors over the dollar amounts referred to above), then you do not need to submit a sublist. If you do not submit a sublist, it will be deemed to be a representation by you that there are no subcontractors on the job that are required to be reported under State law. At any time, DFCM reserves the right to inquire, for security purposes, as to the identification of the subcontractors at any tier that will be on the worksite.

LICENSURE:

The subcontractor's name, the type of work, the subcontractor's bid amount, and the subcontractor's license number as issued by DOPL, if such license is required under Utah Law, shall be listed. Bidder shall certify that all subcontractors, required to be licensed, are licensed as required by State law. A subcontractor includes a trade contractor or specialty contractor and does not include suppliers who provide only materials, equipment, or supplies to a contractor or subcontractor.

SPECIAL EXCEPTION:

A bidder may list 'Special Exception' in place of a subcontractor when the bidder intends to obtain a subcontractor to perform the work at a later date because the bidder was unable to obtain a qualified or reasonable bid under the provisions of U.C.A.Section 63A-5-208(4). The bidder shall insert the term 'Special Exception' for that category of work, and shall provide documentation with the subcontractor list describing the bidder's efforts to obtain a bid of a qualified subcontractor at a reasonable cost and why the bidder was unable to obtain a qualified subcontractor bid. The Director must find that the bidder complied in good faith with State law requirements for any 'Special Exception' designation, in order for the bid to be considered. If awarded the contract, the Director shall supervise the bidder's efforts to obtain a qualified subcontractor bid. The amount of the awarded contract may not be adjusted to reflect the actual amount of the subcontractor's bid. Any listing of 'Special Exception' on the sublist form shall also include amount allocated for that work.

GROUNDS FOR DISQUALIFICATION:

The Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law. Director may withhold awarding the contract to a particular bidder if one or more of the proposed subcontractors are considered by the Director to be unqualified to do the Work or for

INSTRUCTIONS AND SUBCONTRACTORS LIST FORM
Page No. 2

such other reason in the best interest of the State of Utah. Notwithstanding any other provision in these instructions, if there is a good faith error on the sublist form, at the sole discretion of the Director, the Director may provide notice to the contractor and the contractor shall have 24 hours to submit the correction to the Director. If such correction is submitted timely, then the sublist requirements shall be considered met.

CHANGES OF SUBCONTRACTORS SPECIFICALLY IDENTIFIED ON SUBLIST FORM:

Subsequent to twenty-four hours after the bid opening, the contractor may change its listed subcontractors only after receiving written permission from the Director based on complying with all of the following criteria.

- (1) The contractor has established in writing that the change is in the best interest of the State and that the contractor establishes an appropriate reason for the change, which may include, but not is not limited to, the following reasons: the original subcontractor has failed to perform, or is not qualified or capable of performing, and/or the subcontractor has requested in writing to be released.
- (2) The circumstances related to the request for the change do not indicate any bad faith in the original listing of the subcontractors.
- (3) Any requirement set forth by the Director to ensure that the process used to select a new subcontractor does not give rise to bid shopping.
- (4) Any increase in the cost of the subject subcontractor work is borne by the contractor.
- (5) Any decrease in the cost of the subject subcontractor work shall result in a deductive change order being issued for the contract for such decreased amount.
- (6) The Director will give substantial weight to whether the subcontractor has consented in writing to being removed unless the Contractor establishes that the subcontractor is not qualified for the work.

EXAMPLE:

Example of a list where there are only four subcontractors:

TYPE OF WORK	SUBCONTRACTOR, "SELF" OR "SPECIAL EXCEPTION"	SUBCONTRACTOR BID AMOUNT	CONTRACTOR LICENSE #
ELECTRICAL	ABCD Electric Inc.	\$350,000.00	123456789000
LANDSCAPING	"Self" *	\$300,000.00	123456789000
CONCRETE (ALTERNATE #1)	XYZ Concrete Inc	\$298,000.00	987654321000
MECHANICAL	"Special Exception" (attach documentation)	Fixed at: \$350,000.00	(TO BE PROVIDED AFTER OBTAINING SUBCONTRACTOR)

* Bidders may list "self", but it is not required.

PURSUANT TO STATE LAW - SUBCONTRACTOR BID AMOUNTS CONTAINED IN THIS SUBCONTRACTOR LIST SHALL NOT BE DISCLOSED UNTIL THE CONTRACT HAS BEEN AWARDED.

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 it'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 approval of 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 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 approved by 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 approval of 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) **Specified Subcontractors:** The specifically cited subcontractors, along with their license number (if required) and estimated cost, have been listed as a submission with the DESIGN/ BUILD TEAM cost proposal. Any substantial variation from the original estimate, submitted on **(FILL IN DATE PROPOSAL WAS SUBMITTED)** _____ as part of the Cost Proposal, shall be accompanied by a written explanation from the Contractor justifying the variation and describing how the variation meets or exceeds the "value" to the DFCM on the project.

(3) **Non-Specified Subcontractors:** The non-specified subcontractor's scope of work and estimated costs shall be listed as a submission with the DESIGN/BUILD TEAM cost proposal. Within 24 hours after the Contractor "opens" the non-specified subcontractors bid and if the bid is from a subcontractor that would otherwise be required to be part of a sublist under UCA 63-5a-208 if the procurement was performed directly by DFCM in bidding process, the DESIGN/BUILD TEAM shall submit name of the subcontractor along with their license number (if required) and estimated cost to DFCM. During the competitive bid process by the DESIGN/BUILD TEAM for these subcontractors, DFCM shall have a representative at the bid opening and subcontractor's selection.

(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.

(5) If subcontractor's are selected through a proposal process and the DESIGN/ BUILD TEAM fails to comply with the sublist requirements of UCA 63-5a-208 for bids made applicable in this Agreement to proposals, the DESIGN/BUILD TEAM shall have 24 hours to cure such failure after receiving written notice from DFCM.

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.

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 within (FILL IN COMPLETION TIME) _____ (___) calendar days after the date of the Notice to Proceed. 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. Payment to the DESIGN/BUILD TEAM will be made within thirty (30) calendar days of receipt of payment application by DFCM.

The DESIGN/BUILD TEAM shall provide DFCM within thirty (30) days of request by DFCM, a schedule of accounts and budgets for Work which will be used as a basis for applications for payment. The DFCM agrees to pay the DESIGN/BUILD TEAM for the construction Work and the design services from time to time as the Work progresses, but not more than once each month after the date of Notice to Proceed, and only upon Certificate of the A/E as approved by DFCM which approval may not be unreasonably withheld, for Work performed during the preceding calendar month, ninety-five percent (95%) of the value of the labor performed and ninety-five percent (95%) of the value of materials furnished in place or on the site. The DESIGN/BUILD TEAM agrees to furnish to the DFCM invoices for materials purchased and on the site but not installed, for which the DESIGN/BUILDER requests payment and agrees to safeguard and protect such equipment or materials and is responsible for the safekeeping thereof and if such be stolen, lost or destroyed, to replace same.

Such evidence of labor performed and materials furnished as the DFCM may reasonably require shall be supplied by the DESIGN/BUILD TEAM at the time of request for Certificate of Payment on account. 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.

5.2 DESIGN/BUILD TEAM'S ACCOUNTING RECORDS. All Accounting Records shall be available to the DFCM or the DFCM's authorized representative at mutually convenient times.

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.

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 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,

arising out of or resulting from any 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, regardless of whether or not it is caused in part by a part indemnified hereunder. 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 without relieving the DESIGN/BUILD TEAM of any obligation hereunder.

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 Not Bound By Damage Limitations Under Certain Acts. 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.

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. All Drawings, Specifications, other Contract Documents, as well as studies and projects prepared by the DESIGN/BUILD TEAM under this Agreement, are and shall remain the property of the DFCM, and DFCM shall retain all common law, statutory and other reserved rights with respect thereto. All other provisions regarding the use, re-use and other provision regarding such items as stated in the General Conditions shall apply.

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 TEAMS'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.

IN WITNESS WHEREOF, the parties hereto have executed this DESIGN/BUILD TEAM's Agreement on the day and year stated hereinabove.

DESIGN/BUILD TEAM: _____

Signature Date

Title: _____

Please type/print name clearly

State of _____)
County of _____) ss.

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 by me duly sworn (or affirmed), did say that he (she) is the _____ (title or office) of the firm and that said document was signed by him (her) in behalf of said firm.

Notary Public

My Commission Expires _____

(SEAL)

APPROVED AS TO AVAILABILITY
OF FUNDS:

*/S/ David D. Williams, Jr.
David D. Williams, Jr.
CBA Financial Director

**DIVISION OF FACILITIES
CONSTRUCTION AND MANAGEMENT**

*/S/ DFCM
DFCM

APPROVED AS TO FORM:
ATTORNEY GENERAL
January 2, 2013
By: Alan S. Bachman
Asst Attorney General

APPROVED FOR EXPENDITURE:
*/S/ Division of Finance
Division of Finance

*Electronic signatures are effective when the AIM Status History page is attached to this agreement following this signature page. The AIM Status History page identifies the State signatures.

LIST OF ATTACHMENTS

Exhibit "A"	DESIGN/BUILD TEAM Leaders
Exhibit "B" (1.1.1)	Cost Proposal Form with Cost Breakdown
Exhibit "C" (1.3)	List of Competition Documents
Exhibit "D" (1.3)	Clarification Items

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: _____
Attorney-in-Fact (Seal)

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

PAYMENT BOND

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

KNOW ALL PERSONS BY THESE PRESENTS:

That _____ hereinafter referred to as the "Principal," and _____, a corporation organized and existing under the laws of the State of _____ authorized to do 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); with its principal office in the City of _____, 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 pay all claimants supplying labor or materials to Principal or Principal's Subcontractors in compliance with the provisions of Title 63, Chapter 56, of Utah Code Annotated, 1953, as amended, and in the prosecution of the Work provided for in said Contract, then, this obligation shall be void; otherwise it shall remain in full force and effect.

That said Surety to this Bond, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or to the Work to be performed thereunder, or the specifications or drawings accompanying same shall in any way affect its obligation on this Bond, and does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to the Work or to the specifications or drawings and agrees that they shall become part of the Contract Documents.

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: _____
Attorney-in-Fact (Seal)

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



Division of Facilities Construction and Management

DFCM

CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT: _____ PROJECT NO: _____

AGENCY/INSTITUTION _____

AREA ACCEPTED: _____

The Work performed under the subject Contract has been reviewed on this date and found to be Substantially Completed as defined in the General Conditions; including that the construction is sufficiently completed in accordance with the Contract Documents, as modified by any change orders agreed to by the parties, so that the State of Utah can occupy the Project or specified area of the Project for the use for which it is intended.

DFCM accepts the Project or specified area of the Project as Substantially Complete and will assume full possession of the Project or specified area of the Project at _____ (time) on _____ (date).

DFCM accepts the Project for occupancy and agrees to assume full responsibility for maintenance and operation, including utilities and insurance, of the Project subject to the itemized responsibilities and/or exceptions noted below:

The Owner acknowledges receipt of the following closeout and transition materials:

- O & M Manuals Warranty Documents Completion of Training Requirements

A list of items to be completed or corrected (Punch List) is attached hereto. The failure to include an item on it does not alter the responsibility of the Contractor to complete all the Work in accordance with the Contract Documents, including authorized changes thereof. The amount of (Twice the value of the punch list work) shall be retained to assure the completion of the punch list work.

The Contractor shall complete or correct the Work on the list of (Punch List) items appended hereto within ____ calendar days from the above date of issuance of this Certificate. If the list of items is not completed within the time allotted the Owner has the right to be compensated for the delays and/or complete the work with the help of independent contractor at the expense of the retained project funds. If the retained project funds are insufficient to cover the delay/completion damages, the Owner shall be promptly reimbursed for the balance of the funds needed to compensate the Owner.

CONTRACTOR (include name of firm) and PRINTED NAME E-MAIL DATE

A/E and PRINTED NAME E-MAIL DATE

AGENCY and PRINTED NAME E-MAIL DATE

DFCM and PRINTED NAME E-MAIL DATE



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

EXHIBIT A

DFCM Project No. 14321300

SITE IDENTIFICATION, PRELIMINARY LAY-OUT, AND ROOF FRAMING DETAIL

Disclaimer

The intent of this exhibit is to estimate the potential solar power generation capacity of the Moab Regional Center roof 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 DFCM and the other permitting agencies (if applicable).

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.

Moab Regional Center
Roof Mount (flat roof, EPDM/ TPO)
1140 S Highway 191
Utility: Rocky Mountain Power
Acc# 92233026-028 0
Meter # 1286569 schedule 6
Annual consumption 157,467 kWh/y
Voltage: 3 phase (120/ 208 Y) Main panel (600 amps, 3 phase) is on ground floor.
See attached drawings for layout of mechanical plant on roof. Height of mechanical units approximately 5'5". Note tree on northeast side and south side of building.

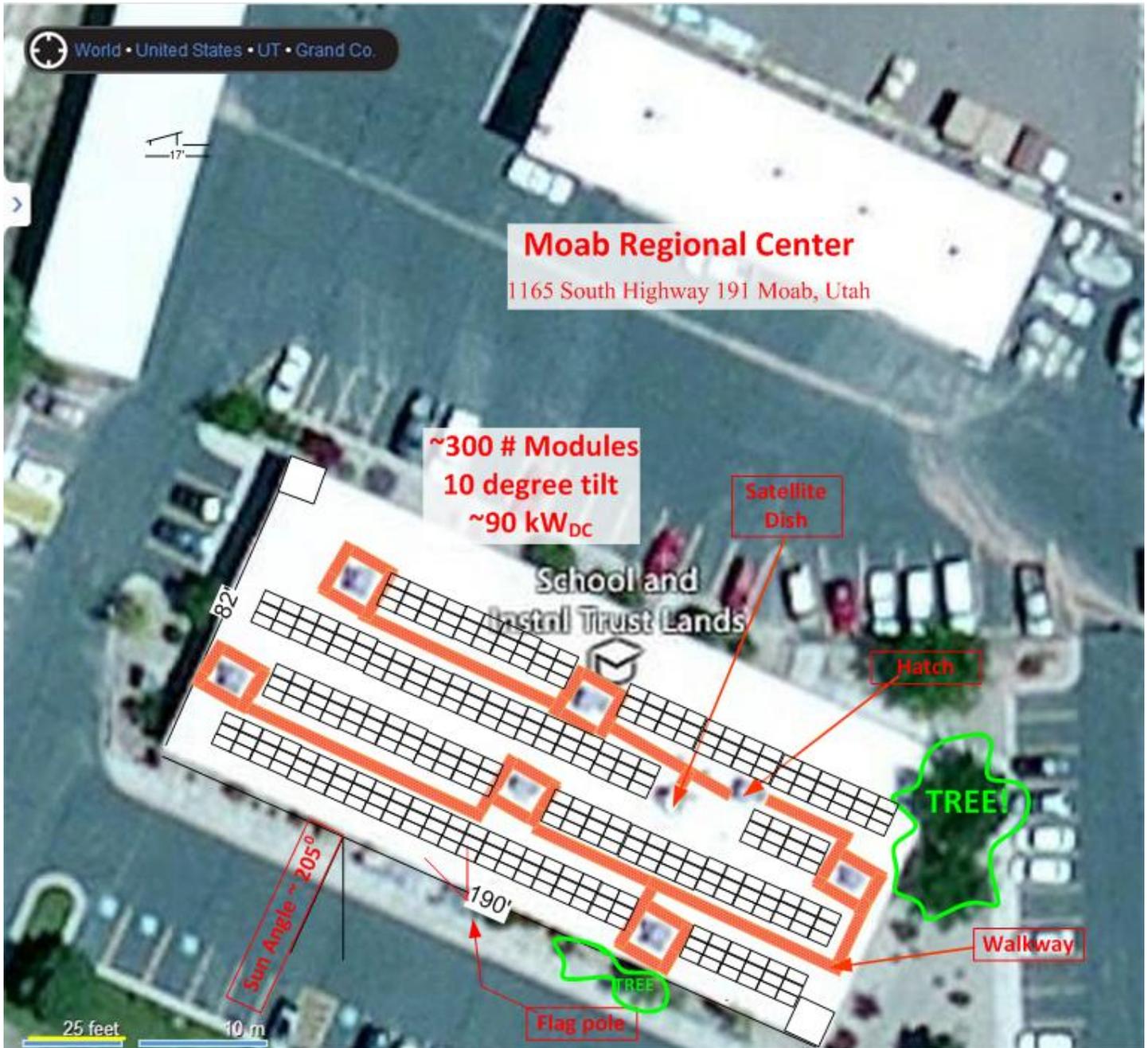


Figure 1 Estimation of Roof Capacity

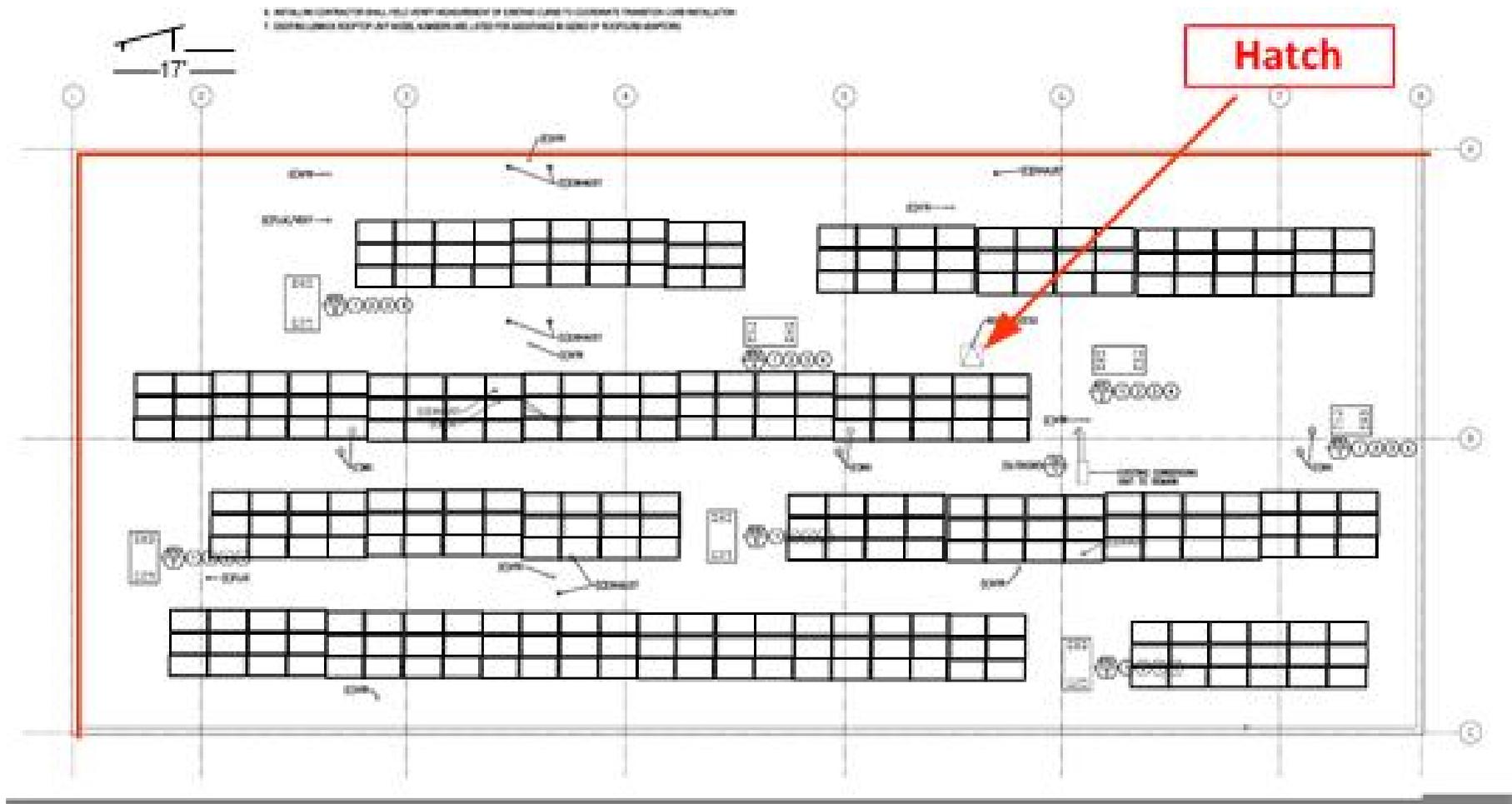


Figure 2 Layout Example



Figure 3 View of the Moab Regional Center from the Parking Area



Figure 4 View of the Regional Center Roof from Adjacent Building



Figure 5 Roof Overview, looking West

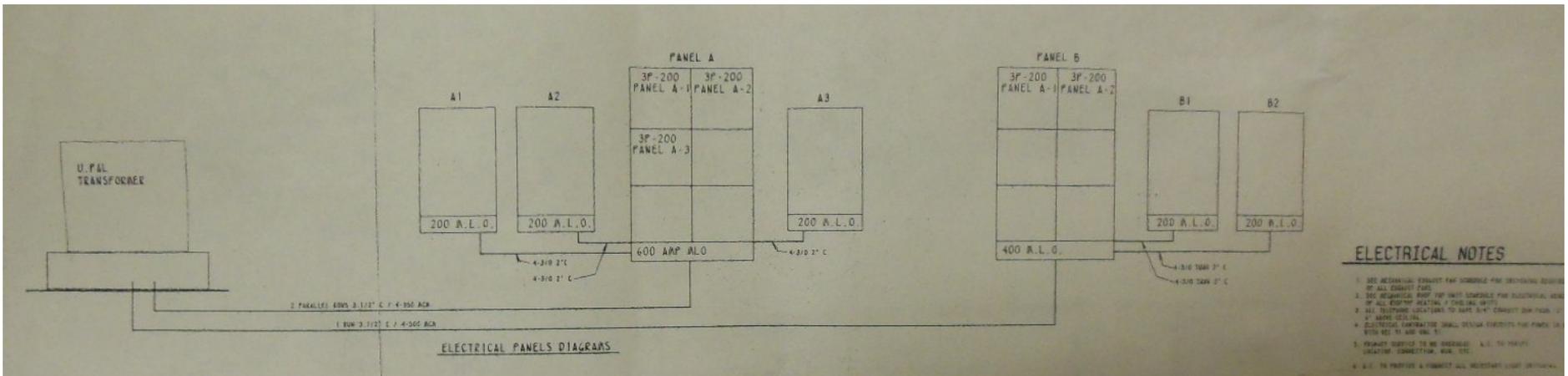


Figure 6 Electrical Panel Diagram



Figure 7 List of Agencies Housed in the Center

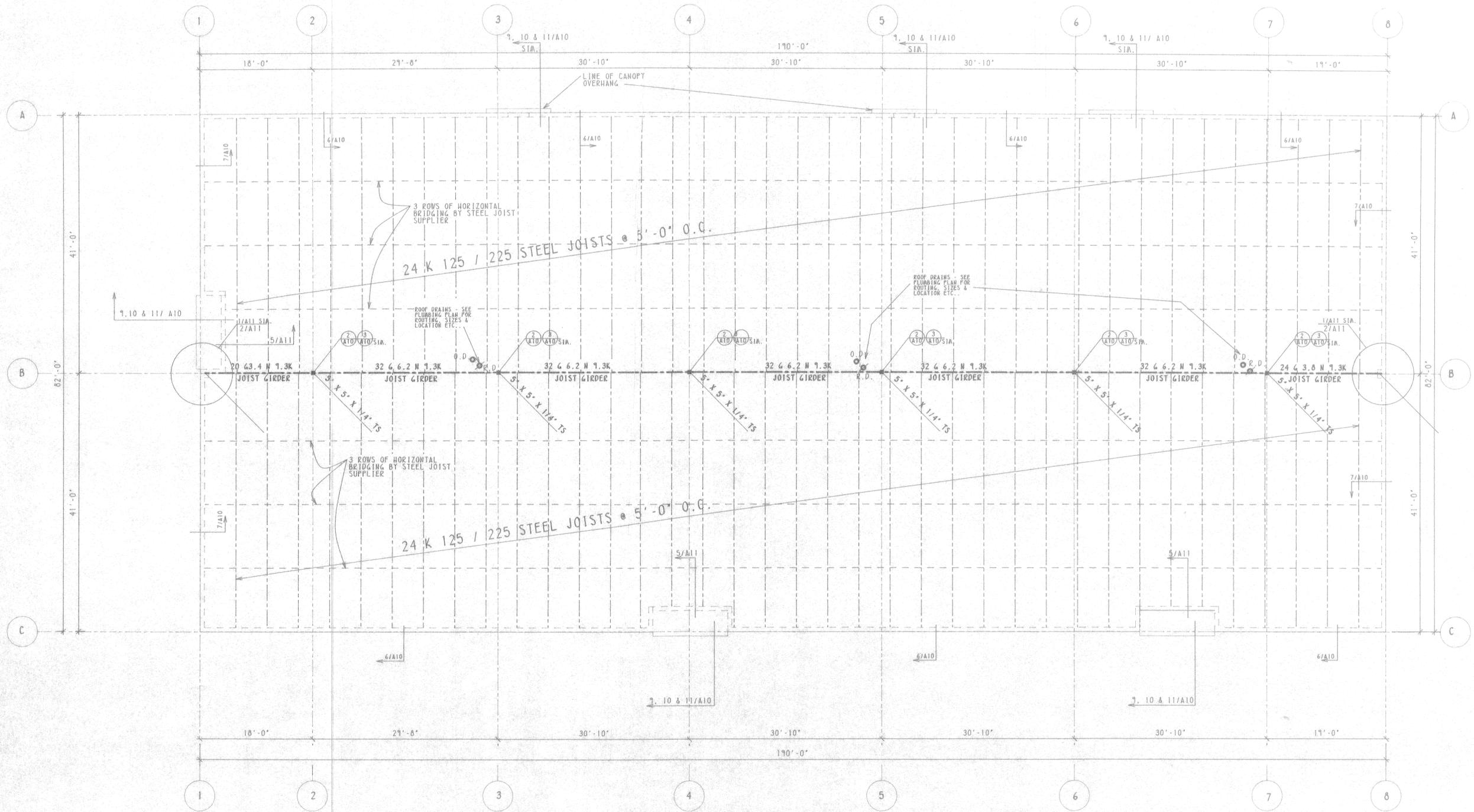


Figure 8 Meter # 1 286 569



Figure 9 Main Electrical Panel (600 amp breaker)

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R O O F F R A M I N G P L A N

SCALE: 1/8" = 1'-0"

- NOTE:**
- REFER TO ROOF PLAN FOR ROOF AND SECONDARY ROOF DRAIN LOCATIONS.
 - ROOFING TO BE 20 YEAR BUILT UP ROOF SYSTEM. INSTALL PER MANUFACTURER'S RECOMMENDATION.
 - NOT USED
 - 1 1/2" x 22 GA. "B" METAL DECK WITH 5 WELDS PER SHEET TO SUPPORT BUTTON PUNCH @ 24" O.C. ALL SIDE SEAMS 12" O.C. ALL EDGES. ALL WELDS TO BE GALV. G-60 WELD ALL SIDE SEAMS.
 - ALL WELDS TO BE GALVANIZED G-60. WELD ALL SIDE SEAMS.
 - ALL BRIDGING TO BE AS SPECIFIED IN DOCUMENTS.

DESIGN LOADS	
ROOF LOAD	25 pcf
DEAD LOAD	20 pcf
TOTAL = 50 pcf	
SEISMIC ZONE 1	
WIND	75 mph Exp. "C"
p = 14.5 x 1.06 x 1.33 = 1.0 + 20 pcf	
ALLOWABLE SOIL BEARING = 2,000 pcf with 3'-0" of engineered fill per soils report.	
CONCRETE	f'c = 3,000 psi @ 28 days
STEEL	Fy = 36,000 psi
REBAR	Fy = 60,000 psi
MASONRY	f'm = 1,500 psi



116-10089111
ROOF FRAMING PLAN
STATE OF UTAH
MOAB REGIONAL CENTER IN MOAB, UT
 DRAWN BY: M. SHEGROD DATE: MARCH 11, 1994 REVISION: 11/27/93

S-DEVCORP
 REAL ESTATE DEVELOPMENT & SALES
 A STANLEY COMPANY
 1515 WEST 2200 SOUTH SUITE E-2
 SALT LAKE CITY, UTAH 84119
 PHONE: (801) 473-7466 FAX: (801) 473-1500

SA ARCHITECTS
 165 SOUTH WEST TEMPLE #300
 SALT LAKE CITY, UTAH 84101
 (801) 521-4661

ARCHITECTURE
 INTERIOR DESIGN
 PLANNING



SHEET NUMBER
S 1.2



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

EXHIBIT B

DFCM Project No. 14321300

SOLAR ELECTRIC FACILITY INSTALLATION REQUIREMENTS AND MATERIAL SPECIFICATION

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 NOT acceptable for this project. All equipment, including solar systems, must be on a structural stand with a minimum of 12” above the finished roofing system. Equipment must be spaced to allow reasonable access to inspect and repair the roof as needed. The spacing of the solar system should account for access to existing mechanical equipment on the roof, but vendor is not required to install permanent padding for walkways) other than to protect the roof during construction.

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 Aluminum 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

The production meter has specifications dictated by the RMP USIP funding (see attached).

Additionally, a revenue grade net meter shall be installed, that complies with the requirements of the RMP net metering and interconnect agreements.

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. DFCM 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 DFCM 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 DFCM directly and through internet connection, free of charge, and with no additional charges for software, software upgrades and or training of DFCM 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. Current Relevant Weather Data
- d. System performance / system output (hourly, daily, monthly, annual, total to date)
- e. Relative climate/carbon offset impacts
- f. Current site electrical usage and percentage offset by the solar systems
- g. 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 DFCM 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

Please note that section 15.09.7 .2 of the 2012 IBC was deleted in the 2014 legislative session (effective for the Utah unified building code), meaning vendors are exempted from the fire classification of PV systems (under the testing regime of UL 2703) for systems permitted prior to July 1, 2016.

2011 National Electric Code is applicable for submittals before July 1st 2015. Vendors are advised to check whether NEC code version has changed if submitting after July 1st 2015.



Roofing Design Requirements – Updated January 4, 2015

Note: This document is subject to change. Please review the above date before starting design work to ensure compliance to the current roofing design requirements.

Low Slope Roofing Requirements – General Requirements

- New Construction
- Roof Replacement
- Insulation
- Low Slope Manufacturers
- Membrane
 - PVC Roof Systems
 - PVC / KEE Roof Systems
 - TPO Roof Systems
 - EPDM Roof Systems
 - Built Up Roof Systems
 - P.M.R. – Protected Membrane Roofing
 - Vegetated Roof Assemblies
 - Other Systems
- **Overburden On Flat Roofing Systems – Green, Plaza Decks, Solar, & Decorative**
- **Low Slope Contractor Requirements**
- Warranties & History Records

Steep Slope Roofing Requirements – General Requirements

- New Construction
- Roof Replacements
- Manufacture Requirements
- Warranties

Contractor Requirements – Low Slope & Steep Slope

NOTE: The DFCM Roofing program manager should review and approve any variance from standards listed hereto.

Low Slope Roofing - General Requirements

General Requirements for all low slope roofing systems (New and Replacement)

1. Energy efficient roof design using Energy Star & LEED rated products should be used on roofs. Exception can be taken when Built Up Roofing or EPDM is justified. Energy efficient designs should still be considered when using these systems.
2. Minimum Manufactures Warranty periods ~~should be 20~~ on a new construction projects is to be 25 years on appropriate DFCM Roofing Warranty. Designers are to calculate the life cycle cost difference

between the 25 year and the 30 year system. The designer is then to specify the most cost effective system based on the lowest yearly life cycle costs. PMR systems are to have the maximum warranty duration specified available as dictated by life cycle costs – typ. 20 years. Reroofing projects may receive a 20 year warranty where life cycle costs show that a 20 year system is most cost effective, & it is approved by the DFCM Roofing Program Manager.

3. Minimum Contractor workmanship Warranty period should be 5 years on DFCM Contractor Warranty.
4. Design & require a 99 90-m.p.h. minimum wind speed rider with all manufacturer's warranties in low wind areas and 100 110 m.p.h. minimum wind speed in known high wind areas. Refer to local wind speed maps for other wind speed design requirements. Please note that a 1-90 or a 1A-90 rating **does not** provide the necessary wind speed requirements.
5. A DFCM roof history record is required on all roofing systems (Contractors responsibility).
6. *Warranty Sign – Contractor to provide & install a metal sign with vinyl lettering containing the following information and similar format for all roofs:*

Caution

This roof is under warranty until (insert year) with (insert manufacturer). All access is to be restricted without facilities manager's permission & log entry. Repair work if necessary should be performed only by an authorized applicator. For leak repairs, contact (insert manufacturer) @ (insert manufacturer warranty claim department phone number) and provide them with warranty number. Questions regarding this roof or any potential work pertaining to this roof, please contact DFCM @ 801-538-3018.

Warranty #:

Warranty Type:

Installation Date:

Manufacturer's Address:

Roofing Contractor:

Contractor Telephone #:

Contractor Address:

Roof Membrane Type:

These signs are to be installed next to all roof access points inside a building as permit able, preferably next to the roof hatch ladder. Signs are to have rounded corners and with no sharp protrusions or edges. Signs are to be a minimum thickness of 20 gauge or greater, and no larger than 10" X 14" landscape setting.

7. Minimum flashing height requirements are 8" for all mechanical, skylights, wall flashings or any other item that extends above the roof line. This is a minimum flashing height; windows and doors or other such items should be well above 8" are to be a minimum of 16" above the roof line.
8. All mechanical equipment is required to be set on a structural roof curb attached to the roof deck. No equipment should be installed over insulation.
9. All metal associated with the roof should be 24 gauge, color clad, using standing seam joints where possible. Follow SMACNA guidelines for all metal work. All cap and edge metal should utilize a continuous clip on the outside edge. ~~All coping metal should be structurally sloped to drain back onto the roofing system.~~ The top of all parapets are to be structurally sloped to drain back onto the roof and structurally supported by a wood nailer.
10. All roof wall substrates are to be a wood or primed roof board suitable for adhering the roof wall flashings as approved by the roofing system manufacturer.
11. Only Mechanically fastened or fully adhered systems should be used. No ballasted systems will be allowed on single ply roof systems.

12. No concrete walkway pads are allowed on roof system. Manufacturer's walk pad should be attached when applicable to the membrane surface and a different color than the roofing membrane. Roof walk pad should be installed around all serviceable roof top equipment. Depending on roof type, a walk path should be installed to provide safe access to said roof top equipment.
13. Pre-manufactured accessories are required for all pipe flashings, inside and outside corners and any other location pre-manufactured accessories are available as required by the manufacturer's warranty requirements.
- ~~14. Guidelines of the NRCA, SMACNA, UL, LEED and SPRI should be followed when designing roof system and specific details.~~
15. Where manufacturer's standards show one or more possible approach for compliance to the standard, provide the most stringent approach as defined by the Architect or DFCM Roofing Project Manager.
16. Eliminate conflict between roof penetrations. ~~Provide 18" access for installing roofing components.~~ Roof penetrations must be a minimum of 18" away from any other roof penetration. Minimize penetrations (i.e. pipe penetrations) as much as possible. Multiple line sets are not allowed through a single roof flashing.
17. Provide reasonable access to all roof levels for maintenance personnel. Reasonable access is considered to be roof hatches, mounted ladders or door access. Portable ladder access is only considered reasonable on single story roof levels.
18. Determine the need for vapor retarder based on dew point calculations, and facility use.
19. The DFCM roofing program manager is to ~~should~~ review roofing specifications and roof details prior to bid.
20. The DFCM roofing program manager ~~should~~ is to be included in roofing pre-construction meeting and final inspection of roof system.
- ~~21. The DFCM roofing program manager should review and approve any variance from that listed above.~~
22. Please include in all specifications a note to bidders that if there are any discrepancies between or within the bidding documents, then the ~~more stringent document or~~ specification will be enforced that is more stringent as determined by the Architect or DFCM Roofing Project Manager.
23. **No Asbestos Containing Material** (ACM) is to be used during repairs or installation of new roofing system under any circumstances.
24. All roof top mounted equipment should not have any penetrations or fasteners through a horizontal surface that cannot provide a seal equal to the roof warranty.
25. Agencies requesting solar equipment, roof gardens, decorative rock, or any other decorative overburden on the roof surface, must sign an M.O.U. (Memorandum Of Understanding) with DFCM that the said agency will be responsible for all / any costs associated with the installation, maintenance, repair, or

removal of said overburden for the life of the ~~overburden on the~~ roof. Agencies will be responsible for said costs whether an M.O.U. is held by DFCM or not.

26. All drain bowls are to receive cast iron covers. Plastic drain bowl covers are not allowed.
27. All drain sumps are to be constructed out of manufactured taper insulation panels. Hand cut taper sumps are not allowed.
28. Roof drains that are elevated above the roof deck must be supported with a treated wood nailer or some sort of structural element that will minimize.
29. Secondary roof drains are to be positioned on the roof so that water will drain to the primary (upslope), and they should not be installed at the same elevation as the primary.

New Construction

1. Roof slope of ¼ per foot” minimum is required on all roof systems. Slope should be built into the structure on new buildings. Crickets should be installed behind all curbs that obstruct drainage. Cricket angles & slopes are to be constructed to maintain positive slope / drainage the entire distance of the valley. Roof slopes & crickets are to be designed to eliminate all ponding water on the roof.
2. Please review the specific roofing systems for system requirements – see appropriate section below.
3. Designers are to verify the compatibility of flat roofing systems and air barriers tie-ins as applicable.
4. Fall protection for maintenance personal should be considered in design. Parapets should be built at the appropriate height or anchor points should be included. Roof hatch guards should be installed on all roof hatches with self closing gates. All roof davits (anchor points) should be hot dipped galvanized with the galvanizing hole being below the roof surface.
5. Special consideration should be made during the design of the roofing system to account for feasibility & cost savings for future reroofing projects – i.e. roof to wall material transitions & flashings.
6. When feasible, HVAC equipment & design should be designed in order to keep said equipment off of the roof surface. Life cycle cost analysis should be conducted to provide justification when said equipment is to be installed on the roof top. Said analysis should incorporate roof temperatures and reduced equipment life cycles from being exposed to the elements.

Roof Replacements

1. Evaluate the feasibility of using existing insulation, sheet metal and other existing roof system components if they are in like new condition and will not have an adverse effect on the new roof system.
2. Existing roof membrane should be removed.
3. Existing slope should be evaluated and slope added with insulation to improve drainage as conditions allow.

4. Roof diaphragm should be evaluated by a structural engineer to determine whether the diaphragm needs to be upgraded to meet current seismic requirements as required by current State building code.
5. When new roofing systems will increase the roof load on a building, then the roof deck structure should be evaluated by a structural engineer to determine the existing dead and live load capacity as required by current State building code.
6. Existing roof top equipment should be evaluated and abandoned obsolete roof top equipment & associated penetrations removed – i.e. line sets & curbs.

Insulation Requirements

1. All insulation in the roofing system must be covered under the appropriate DFCM manufacture warranty for low slope roofing.
2. All insulation incorporated into roofing system must be approved and documented as a UL rated assembly that meet code requirements of the building roofing system is installed on.
3. Long Term Thermal Resistance (LTTR) should meet current code, the requirements of the building, and DFCM design standards.
4. Insulation should always be installed in a minimum of two layers with joints staggered one foot minimum in both directions. The only exception is when all that is required is a cover board. In such instances, the end joints of the cover board should be staggered also.
5. All insulation stored on project site should be elevated off the roof deck & covered with a weather tight barrier to protect from UV and water moisture on all sides. The factory wrap is not an acceptable cover material. Any wet or moisture damaged insulation is to be removed from the job site.
6. Expanded polystyrene EPS insulation that is used in a roofing system must be a minimum of a 1.25lb per square foot density, and it must be compatible with the surrounding roofing products.

Low Slope Manufacturer Requirements

1. Manufacture must be listed in NRCA's low slope roofing materials guide.
2. Manufacture must have a 10-year successful history as a roofing manufacture.
3. The system must have a five year successful history minimum with that product.
4. Manufacture must show documented proof of how they plan to meet warranty obligations. Must be provided in contractor's submittal package.
5. Manufactures must agree to and be willing to sign the appropriate State of Utah (DFCM) manufactures warranty for the roof system. The DFCM warranty not the manufactures standard

warranty will be required at project completion. By signing the State of Utah warranty, manufactures agree to relinquish any of the terms or conditions listed in any of their standard warranty conditions.

6. Manufacture must have a certified installer/contractor program. This program must include continuing education for the contractor.
7. Contractor must submit a pre-installation notice signed by an authorized representative of the ~~from~~ manufacture prior to start of any work. This will include confirmation that the membrane and all accessories being used meet requirements of specification. This will also include confirmation that the scope of work is in accordance with published technical data as per manufacture. This also includes confirmation that a warranty has been requested and will be issued on the DFCM manufacture warranty form at the completion of roofing. This document must be included in contractor's submittal package.
8. Manufacture will provide at no additional cost to owner, start up meeting, progress inspections and a final warranty inspection at project completion by a full time technical representative. Manufacture required inspections should be listed in specifications. All inspections will be scheduled by project architect.
9. Any portion of specification that does not meet manufacture requirements will be installed per manufacture requirements at no additional cost to owner. Any portion of the specification that exceeds the manufacture minimum requirements will be installed according to specifications not the manufacture minimum requirements.
10. Manufacture must have a history of meeting Warranty obligations.
11. Manufacture is required to release all inspection reports concerning warranted roof system to the contractor to submit to project architect.

Membrane Requirements

PVC – Polyvinyl Chloride

1. Membrane must be Energy Star & LEED Rated.
2. Only sheets with stable or low-migrating plasticizers will be acceptable.
3. 10-year minimum performance history on membrane. Minor formulation changes are acceptable as long as the membrane has a successful history.
4. Membrane must be manufactured with low-wicking scrim.
5. Only balanced sheets will be acceptable. Scrim must be near center of membrane with no less than 20 26 mils polymer above scrim.
6. Thickness: 60 mil (57mil minimum) polymer thickness, not over all thickness minimum. Polymer should be measured between the scrim. Variances from this will only be allowed by approval from DFCM Roofing Manager and on a performance type basis.

7. Must meet or exceed ASTM D 4434
8. Must meet or exceed ASTM D 4434 for linear dimensional change and for heat aging.
9. Must meet or exceed ASTM D 5635 for dynamic impact resistance.
10. Must meet or exceed ASTM D 2136 for low temperature flexibility.
11. Membrane rolls / sheets are not to be wider than eight feet on a mechanically fastened system.

KEE – Ketone Ethylene Ester & PVC – Polyvinyl Chloride

KEE Section

1. Must meet or exceed ASTM D 6754-02
2. Must meet or exceed ASTM D 751
3. Must meet or exceed ASTM D 2136
4. Must meet or exceed ASTM D 5602
5. Must be Energy Star & Leed Rated
6. 10 year performance history on the membrane. Minor formulation changes are acceptable as long as the membrane has a successful history.
7. Membrane must be manufactured with a non-wicking scrim.
8. Only balanced sheets are acceptable. The scrim must be near the center of the sheet w/ a minimum of 18 mils polymer above scrim.
9. Membrane should be a minimum of 50 (47 mil minimum) mils thickness, not overall thickness minimum. Polymer should be measured between scrim. Variances to this will only be allowed by approval from the DFCM Project Roofing Manager & on performance type basis per project
10. Sheets shall be no wider than eight feet and no longer than 100 feet on a mechanically fastened system.

PVC Section

12. Membrane must be Energy Star & LEED Rated.
13. Only sheets with stable or low-migrating plasticizers will be acceptable.
14. 10-year minimum performance history on membrane. Minor formulation changes are acceptable as long as the membrane has a successful history.
15. Membrane must be manufactured with low-wicking scrim.

16. Only balanced sheets will be acceptable. Scrim must be near center of membrane with no less than 26 mils polymer above scrim.
17. Thickness: 60 mil (57mil minimum) polymer thickness, not over all thickness minimum. Polymer should be measured between the scrim. Variances from this will only be allowed by approval from DFCM Roofing Manager and on a performance type basis.
18. Must meet or exceed ASTM D 4434
19. Must meet or exceed ASTM D 5635
20. Must meet or exceed ASTM D 2136
21. Membrane rolls / sheets are not to be wider than eight feet on a mechanically fastened system.

TPO – Thermoplastic Olefin

1. Must meet or exceed ASTM D 6878-03
2. 10-year minimum performance history on membrane.
3. Membrane must be manufactured with low-wicking scrim.
4. Only balanced sheets will be acceptable. Scrim must be in center of membrane with no less than 26 mils polymer above scrim.
5. 60 mil (57mil minimum) polymer thickness, not over all thickness minimum.
6. Resistance to xenon-arc weathering (ASTM G 155) must be tested and pass a minimum of 17,640 kJ/m² or 14,000 hours at an irradiance of 0.35 W/m²
7. Must meet or exceed ASTM D 4434 for linear dimensional change and for heat aging.
8. Must meet or exceed ASTM D 5635 for dynamic impact resistance.
9. Must meet or exceed ASTM D 2136 for low temperature flexibility.
10. Membrane must be Energy Star & Leed Rated.
11. Membrane rolls / sheets are not to be wider than eight feet on a mechanically fastened system.

EPDM – Ethylene Propylene Diene Monomer

1. Must meet or exceed ASTM D 4637
2. 20 year minimum performance history on membrane.

3. Only balanced sheets will be acceptable. Scrim must be in center of membrane with no less than 20 mils polymer above scrim.
4. 60 mil (57mil minimum) polymer thickness not over all thickness.
5. Heat Aging (ASTM D 573) must be tested and pass 28 days @ 240 f. with less than 1% dimensional change.
6. Resistance to xenon-arc weathering (ASTM G 155) must be tested and pass a minimum of 17,640 kJ/m² or 14,000 hours at an irradiance of 0.35 W/m²
7. Must meet or exceed ASTM D 2137 for low temperature flexibility must be tested using the dynamic impact test.
8. Membrane rolls / sheets are not to be wider than eight feet on a mechanically fastened system.

B.U.R. - Built Up Roofing

1. Type III (3) asphalt should be used at a minimum. Type IV (4) asphalt should be used if slope is greater than 1/4".
2. Low fuming asphalt should be used.
3. Cold process B.U.R. is acceptable and preferred on sites that smell is a concern.
4. Minimum of type VI (6) fiberglass felts and a 4-ply system should be used. Phazed construction as defined in the NRCA manual, current edition is not allowed.
5. Minimum #4 lb lead is required for all drains and any other location lead is used for flashing material.
6. Surfacing should be an Energy Star rated SBS modified FR cap sheet with granules where possible otherwise aggregate should meet requirements of ASTM D 1863, 3/8" or 9mm nominal.
7. No EPS or Extruded insulation will be allowed in any B.U.R. system.
8. No asbestos containing material (ACM) is to be used, i.e. mastics, coatings, paints, etc..

P.M.R. – Protected Membrane Roofing

1. Roof membrane must meet or exceed CSGB 37.50-M89
2. Roof membrane should be placed directly over an acceptable substrate as identified by the membrane manufacturer.
3. Design should prohibit the entrapment of water within the roof assembly.
4. 15 year minimum performance history without formulation changes on the membrane.

5. Contractors must have a successful track record installing P.M.R. systems of a minimum of 5 years and be approved by the membrane manufacturer. Foreman must have a minimum of 5 years successful track record of installing PMR systems.
6. Membrane must contain a filler that can provide resistance against fertilizers (ASTM D-896), acids (ASTM D 896-94), and building washes (ASTM D-896).
7. Roof membrane should be monolithic, with no seams, installed at 215 mils – fabric reinforced. Uncured neoprene detailing required at all critical roof areas per manufacturer’s recommendations.
8. Roof membrane must be 100% solids, no solvents.
9. The roofing membrane must be able to withstand moist environment for a prolonged period of time, & it shall have a successful performance history in moist environment.
10. Insulations must be highly resistant to moisture and physical damage, extruded polystyrene only.
11. Membrane must not be used as a traffic surface and must be protected from sunlight & traffic.
12. Protected roof membrane assembly should meet & conform to local wind design guidelines / codes and receive manufacturer system warranty for wind performance, thermal performance of the insulation (80% of original value) and overburden removal & replacement.
13. Insulation design should be capable of in-place reuse or recycle in future roof iterations.
14. All components including expansion joints shall be warranted by the same PMR manufacturer.
15. A 20 year minimum warranty is required. As availability of warranty durations increase, AE’s should perform a life cycle cost analysis to select the duration with the best life cycle cost.
16. Roofing membrane shall be tested by electronic conductive testing to ensure water tightness before application of overburden.

Vegetated Roof Assemblies:

1. Vegetated roof assemblies must be constructed using Protected Roof Membrane design requirements eliminating potential damage from landscaping operations.
2. The roofing membrane must be fully bonded to the permanent substrate and seamless.
3. The roofing membrane must be able to withstand a moist environment for a prolonged period of time. The roofing membrane should have a minimum 15 year successful performance track record in buried, moist environments.
4. The depending on the type of vegetated roof, the assembly should have an overburden consisting of protection course, root barrier, drain layer, insulation, moisture retention layer, reservoir layer, filter fabric layer, and engineered soil-based growth medium with plantings. To ensure compatibility all components of the vegetated roof assembly should be supplied and warranted by a single-source manufacture.

5. A minimum 40 psi compressive strength Extruded Polystyrene insulation should be used within the assembly.
6. The vegetated roof manufacturer must have minimum of 10 vegetated roof projects performing successfully for a minimum of 10 years.

Other System Requirements

1. The DFCM Roofing program manager is to review and approve any hybrid, non typical roofing, or assembly that is not listed in these guidelines.

Overburden On Flat Roofing Systems – Green, Plaza Decks, Solar Equipment

1. Any agency requesting overburden on the roof must first sign an M.O.U. as outlined in Low Slope Roofing – General Requirements: Item #24. Designers are to provide a detailed cost analysis for the agency of installation costs, maintenance costs, and removal costs of overburden prior to the agency signing the M.O.U..
2. Roofs that are to receive any of the aforementioned overburdens are not to be installed on roof areas that were not designed to receive said overburden – structurally or architecturally.
3. New roofing systems that will receive said overburden are to be designed with the maximum life expectancy / warranty possible with a successful fifteen year minimum past roofing system history.
4. Said overburden will not void the roofing manufacturer’s warranty.
5. All equipment, i.e. – solar panels, must be on a structural stand with a minimum of 12” above the finished roofing system. Equipment must be spaced to allow reasonable access to inspect and repair the roof as needed.
6. Overburden systems are to be designed as to withstand wind loads of the building areas.
7. Instances where overburden will eliminate the visibility of the roofing system, those sections of roofs are to receive a moisture test(s) prior to the installation of said overburden.
8. Redundancy is recommended in detail flashings / weak points in the roofing system.

Low Slope Contractor Requirements – see section entitled “Contractor Requirements” towards bottom of document.

Warranties and History Records – Provide the following as it relates to job specific roofing system:

1. Designers are to require the most current version of the warranties & forms available published on the DFCM website - <http://dfcm.utah.gov/constManage/roofingNpaving.html>

2. Roof Warranty Sign – See Low Slope Roof Requirements –Item #6.

Steep Slope Roofing

General Requirements

With the vast array of steep slope products available ~~no specific requirements have been set forth,~~ designers should carefully select a roofing system that will provide longevity and performance with the consideration of the buildings environmental factors in selecting a roofing system. The following items ~~should however be considered~~ are to be required unless prior written approval is given by the DFCM Roofing Manager.

1. Any product used in steep slope roofing should have a proven history and be recognized by the NRCA.
2. All eaves ~~should~~ are to overhang the wall a minimum of 16”.
3. Ice and water shield should extend 3’ past the inside the warm wall on the roof deck.
4. Valleys and gutters should be designed so ice dams will not be created. Designs should not allow for moisture to pond on the roof or drainage system. All designs are to have a clear drainage channel off of the roof –i.e. no dead valleys.
5. All roof slopes 4/12 and below are to have a full ice and water shield dry-in with a felt dry-in over the top of the ice & water shield. Roof slopes 5/12 to 8/12 are to have a felt dry-in with a minimum of 18” sidelaps & 12” endlaps. Roof slopes 9/12 and higher will require a dry-in with a minimum of 3” sidelaps & 12” endlaps.
6. A minimum of a #30 ASTM felt should be used as an underlayment. Synthetic underlayments may also be used in lieu of a #30 felt provided it is an acceptable substitute to the roofing manufacturer. The primary underlayment is to cover the secondary underlayment on all steep slope roofing systems.
7. Internal rain gutters are not allowed without written approval from the DFCM Roofing Manager.
8. All rain gutters, downspouts and internal drain systems are required to have high quality heat cable that is thermostatically controlled. All fasteners for heat cable shall be concealed within the roof system.
9. Only concealed fasteners will be acceptable in metal roofing. No exposed fasteners will be allowed.
10. Minimum of a 10 15 year leak free manufactures warranty is required on all steep slope roof systems.
11. Three tab shingles are not allowed. A minimum of a 40-year 270lb per square laminated shingles should be used that provides a 10 year 110 mph wind warranty.
12. ~~Roof pitch should have slope of greater than 4/12. Any slope less than 4/12 should have full ice and water shield installed.~~
13. ~~Shingles should be attached with six nails per full size shingle in accordance with manufacturer’s high wind application specifications.~~

14. All material and details should meet the requirements of ASTM, NRCA, SMACNA, UL and FM.
15. ~~Minimum of #30 felt should be used as underlayment.~~
16. Roofing systems that have a history of snow sliding off the roof must have an appropriate snow retention system that will protect the building occupants and pedestrians traffic around the building.
17. Minimum Contractor workmanship Warranty period should be 5 years on DFCM contractor Warranty.
18. A DFCM history record is required on all roofing systems.
19. Wood framed crickets filled with insulation should be installed on the up slope side of all curbs, units, chimneys, etc.
20. All application procedures should comply at minimum with the NRCA's standards & requirements, unless written specifications from a manufacturer's specific product requirements contradict NRCA's standards. In such instances, written permission must be obtained from the DFCM Roof Manager.
21. No asbestos containing material (ACM) is to be used.
22. Project designer are to verify that proper attic air intake & exhaust ventilation is specified to comply with roofing manufacturer requirements and State building codes.

New Construction

1. All penetrations ~~should~~ are to be located a minimum of 36" 48" away from the center of the valley.
2. Crickets ~~should~~ are to be installed behind (up slope side) of all curbs, units, chimneys, etc. to eliminate the possibility of ponding water.
3. Attic insulation baffles must be installed in order to prevent the obstruction of soffit intake vents caused by attic insulation.
4. Project designer ~~should~~ are to verify that proper attic air intake & exhaust ventilation is specified to comply with roofing manufacturer requirements and local & national State building codes.
5. Roof design should give consideration to project location, wind speeds, ice damming, rainfall, and building contents when designing a new structure / roofing system.

Roof Replacements

1. If there is more than one existing roof, existing roofing should be removed to the deck to comply with IBC Code 15.10.3 Item #3 before new roof is installed.

2. Provide adequate ventilation to comply with the current State of Utah adopted IBC Code.
3. Roof diaphragm should be evaluated by a structural engineer to determine whether the diaphragm needs to be upgraded to meet current seismic requirements.
4. Roof deck structure should be evaluated by a structural engineer to determine the existing dead and live load capacity.

Manufacturer Requirements

1. Manufacture must be listed in NRCA's steep slope roofing materials guide.
2. Manufacture must have a successful 10-year history as a roofing product manufacture (manufacture only not product).
3. Manufacturer must show 5 years successful use.
4. Manufacture must show documented proof of how they plan to meet warranty obligations.
5. Manufacture must have a certified installer/contractor program. This program must include continuing education for the contractor.
6. Contractor must submit a pre-installation notice signed by an authorized representative of the from manufacture prior to start of any work. This will include confirmation that the membrane roofing components and all accessories being used meet requirements of specification. This will also include confirmation that the scope of work is in accordance with published technical data as per manufacture. This also includes confirmation that a warranty has been requested and will be issued at the completion of roofing. This document must be included in contractor's submittal package.
7. Manufacture will provide at no additional cost to owner, start up meeting, progress inspections and a final warranty inspection at project completion by a full time technical representative. Manufacture required inspections should be listed in specifications. All inspections will be scheduled by project architect.
8. Any portion of specification that does not meet manufacture requirements will be installed per manufacture requirements at no additional cost to owner. Any portion of the specification that exceeds the manufacture minimum requirements will be installed according to specifications not manufacture minimum requirements
9. Manufacture must have a history of meeting warranty obligations.
10. Manufacture is required to release all inspection reports concerning warranted roof system to the contractor to submit to the project architect.

Warranties

1. DFCM contractor warranty
2. Manufactures warranty to be issued from manufacturer

3. Steep slope history record
4. Warranty Sign – Contractor to provide & install a metal sign with vinyl lettering containing the following information and similar format for those steep slope roof warranties that have a leak free warranty:

Caution

This roof is under warranty until (insert year) with (insert manufacturer). All access is to be restricted without facilities manager's permission & log entry. Repair work if necessary should be performed only by an authorized applicator. For leak repairs, contact (insert manufacturer) @ (insert manufacturer warranty claim department phone number) and provide them with warranty number. Questions regarding this roof or any potential work pertaining to this roof, please contact DFCM @ 801-538-3018.

Warranty #:
Warranty Type:
Installation Date:
Manufacturer's Address:

Roofing Contractor:
Contractor Telephone #:
Contractor Address:
Roof Membrane Type:

These signs are to be installed next to all roof access points inside a building as permit able, preferably next to the roof hatch ladder **or a designated location as selected by the agency maintenance personnel.** Signs are to have rounded corners and with no sharp protrusions or edges. Signs are to be a minimum thickness of 20 gauge or greater, and no larger than 10" X 14" landscape setting.

Roof Contractor Requirements – Steep Slope & Low Slope

1. Contractor must have Five (5) years experience as a roofing contractor.
2. Contractor must have Five (5) years experience with the specified product **or comparable product.**
3. Contractor must be a Manufacture certified installer of roofing system to be installed.
4. Contractor must document continuing education for the foreman that will daily oversee the work on the roofing system. A minimum of 12 hours per year is required.
5. On site foreman must be able to clearly communicate with building owner/occupants.
6. Contractor will provide a 24 hour emergency phone number to project manager and agency contact person
7. Contractor must be legally licensed to perform roofing work in the State of Utah and carry liability insurance as required by State of Utah law.
8. Contractor must be willing to sign and agree to the terms of the DFCM 5-year contractor roofing warranty.

Utah Solar Incentive Program Production Meter Requirements

Introduction

This documents the requirements for the Utah Solar Incentive Program production meter equipment, location and disconnect switch.

All Utah Solar Incentive installations require a production meter. It is the customer's responsibility to provide the metering equipment for the production meter. This document highlights the requirements for metering equipment. For complete details refer to the company's Electric Service Requirements manual (ESR).

Metering Equipment Requirements

The following table defines the type of metering required based on the output of the solar generation system.

Table 1 - Metering Requirements

Phase	Voltage	Amps	Metering Type
Single-phase	120/240 volts	<400 Amps	Direct Connect
Three-phase	120 to 480 volts	<200 Amps	Direct Connect
Single-phase	120/240 volts	>400 Amps	CT Metering
Three-phase	120 to 480 volts	>200 Amps	CT Metering
Any	120 to 480 volts	>800 Amps	Switchboard Metering
Any	Any	>4,000 Amps	Primary Metering

Direct Connect Metering

The customer is required to provide a meter base that meets the EUSERC/ANSI requirements and is Rocky Mountain Power approved per Table 2 below for residential services and Table 3 for commercial services. For additional information on direct connect metering, refer to the company ESR section 7.3 for residential services and 10.4 for commercial services.

Table 2 - EUSERC Drawings for Direct Connect Meter Sockets at Residential Installations

Phase	Voltage	Amps	Socket Requirements
Single-phase	120 to 480 volts	200 Amps max	Any of the ring type meter socket listed in the ESR section 7.3. For this application, overhead socket and underground sockets are interchangeable.



Let's turn the answers on.

Utah Solar Incentive Program Production Meter Requirements

Table 3 - EUSERC Drawings for Direct Connect Meter Sockets at Commercial Installations

Phase	Voltage	Amps	Socket Requirements
Single-phase	120 volts or 120/240 volts	100 Amps max	EUSERC 304
Single-phase	120 to 480 volts	200 Amps max	EUSERC 305
Single-phase, overhead only	120/240 volts	201-400 Amps	EUSERC 302B
Single-phase, overhead and underground	120/240 volts	201-400 Amps	Consult ESR Figure 10.4.3B
Network	120/208 volts	200 Amps max	EUSERC 305
Three-phase	120 to 480 volts	100 Amps max	EUSERC 304
Three-phase	120 to 480 volts	200 Amps max	EUSERC 305

CT Metering

For detailed information on current transformer (CT) metering, refer to Section 10.8 – 10.12 in the company ESR.

For CT metering, the customer is required to provide:

1. Approved meter base with provision for a test switch.
2. CT cabinet.
3. CT metering bracket.
4. Wire the line and load conductors to the CT cabinet.
5. The conduit between the meter socket enclosure and the CT cabinet.
6. The CT cabinet and meter shall be mounted outside the building as approved by Rocky Mountain Power. The meter shall not be mounted on the hinged side of a single-door CT cabinet.
7. Where metering equipment is installed in a location susceptible to being struck by a vehicle, the customer shall install and maintain barrier posts approved by Rocky Mountain Power (see ESR Section 9.9).
8. Bonding per Section 10.12 for all meter and CT enclosures.

Rocky Mountain Power will provide and install:

1. The meter.
2. A meter test switch.
3. Instrument current transformers and secondary metering wiring.



Let's turn the answers on.

Utah Solar Incentive Program Production Meter Requirements

ESR Table 10.8.1 – Current Transformer Meter Socket Types (EUSERC 339)

Type of Service	Socket Type
120/240 volt, single-phase, 3 wire	6 jaw
120/208 volt, three-phase, 4 wire	13 jaw*
277/480 volt, three-phase, 4 wire	13 jaw*
240/120 volt, three-phase, 4 wire	13 jaw*

*15 jaw sockets are approved, but not required.

ESR 10.8.2 Current Transformer Cabinet Requirements

The CT cabinet consists of two parts, the enclosure and the mounting base for the CTs.

ESR Table 10.8.2 – Current Transformer (CT) Cabinet Requirements

Type of Service	CT Enclosure EUSERC No.	Minimum Cabinet Dimensions			CT Mounting Base EUSERC No.
		Width	Height	Depth	
Single-phase, 3-wire 401-800 Amps*	EUSERC 316 and 317	241	481	111	328A, 328B
Three-phase, 4-wire 201-800 Amps*	EUSERC 316 and 318	361	481	111	329A, 329B
*A larger cabinet is required if both the line and load conductors enter and exit together from the bottom (or top) of the can.	316, 317, and 318	481	481	141	328A, 328B for 3W. 329A, 329B for 3PH, 3W or 4W.

Note: These cabinet dimensions are greater than EUSERC 317 and 318 minimums.

Switchboard Metering

For additional information on switchboard metering, refer to Section 10.14 in the company ESR. Switchboard and metering equipment shall be located outdoors.

The following table lists applicable EUSERC drawings for switchboard metering:



Let's turn the answers on.

Utah Solar Incentive Program Production Meter Requirements

ESR Table 10.14 – EUSERC Switchboard References

		EUSERC No.	Book Reference
Switchboard	--	325, 326, 354	10.14.1 10.14.2
	Underground Service	345	10.14.4
Termination	Overhead Service	348	10.14.5
	0 to 800 Amps, 1	319	Fig. 10.14.6.1
Instrument Transformer Compartment	0 to 1,000 Amps, 3	320	Fig. 10.14.6
	1,001 to 3,000 Amps	322	Fig. 10.14.6.3
	Above 3,000 Amps	324	Fig. 10.14.6.4

The customer shall provide and install:

1. The switchboard enclosure, instrument transformer mounting base, bus bars, panels and meter socket with provisions for a test switch.
2. Locking equipment for the metering enclosure allowing independent access by the Rocky Mountain Power.
3. A concrete mounting pad for the switchboard metering enclosure.

Rocky Mountain Power will provide and install:

1. The meter.
2. A meter test switch.
3. Instrument current transformers and secondary metering wiring.

Note: The customer shall consult Rocky Mountain Power for specifications on instrument transformers, secondary-side wiring of instrument transformers, and the meter test switch prior to ordering the metering enclosure. Enclosure and mounting pad drawings shall be provided to Rocky Mountain Power for approval.

Meter Clearance and Location

For additional information on meter clearance and location requirements, refer to Section 5.1 in the company ESR.

The customer must provide suitable space and provisions for mounting a meter base at a location approved by Rocky Mountain Power. Both the customer and Rocky Mountain Power share an interest in providing a location of the utmost convenience to both parties for reading, testing, repairing, disconnecting and replacing meters.

All metering equipment shall be installed in locations that are accessible to Rocky Mountain Power employees and their equipment.



Let's turn the answers on.

Utah Solar Incentive Program Production Meter Requirements

Metering equipment shall not be installed in locations such as:

1. Any location defined by NEC as a hazardous location for electrical equipment.
2. Directly over any window well, stairway, ramp or steps.
3. A doorway.
4. Within 3 feet of a window that has a view of living space or restrooms.
5. Any place where moisture, fumes or dust may interfere with the meter's operation or may damage the meter.
6. Any surface subject to excessive vibration, as determined by Rocky Mountain Power.
7. Rocky Mountain Power poles, transformers, cabinets or other equipment.
8. An area likely to be fenced.
9. A location where the door to the meter cabinet or meter face is obstructed (for instance, areas near property lines, walkways and driveways).
10. A drive-through service entrance side of a non-residential building.
11. On mobile structures such as trailers, barges, cranes, dredges, draglines, mobile pumping equipment, boat slips or floating dwelling units such as houseboats.
12. Closer than 36 inches horizontally from gas meters, gas valves, fixed or threaded fittings, separable valves or unions, or regulators. (See *ESR White Paper 5—Pipe Fittings.*)
13. Areas within 25 feet of fuel storage units, including generator fuel tanks, unless prior approval is obtained from Rocky Mountain Power.
14. Any unsafe or inconvenient location.

Meter Clearance Dimensions:

The following unobstructed level working spaces are required (NEC 110.26 A):

In front of a single meter:	78"	high,	36"	wide,	and	36"	deep
With current transformers:	78"	high,	70"	wide,	and	48"	deep
Meter installed in a cabinet:	36" deep from the edge of the cabinet door when it is opened 90 degrees.						

The center of any meter socket shall be set no more than 6 feet or no less than 4 feet above the finished grade or floor immediately in front of the meter.

Where there is no suitable location available on the structure, free-standing metering installation at a location approved by Rocky Mountain Power may mitigate clearance issues.

Access:

If a customer makes a meter inaccessible (as determined by Rocky Mountain Power), for example, by installing a fence or enclosure, the customer shall, at their expense, either modify the area to provide safe, unobstructed access to the meter, or move the meter socket to a location acceptable to Rocky Mountain Power.

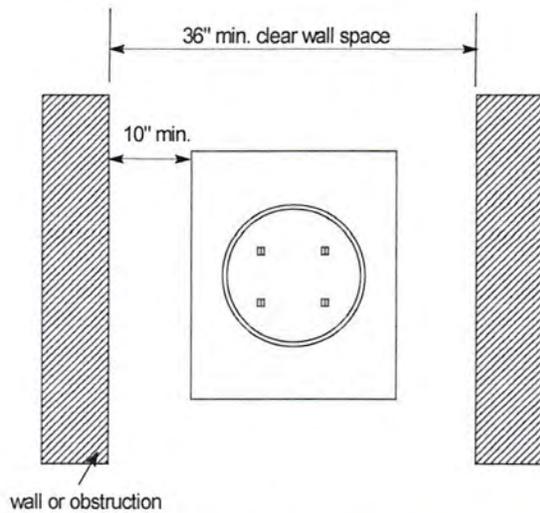
Devices mounted below the meter, with the exception of junction boxes, are not acceptable.



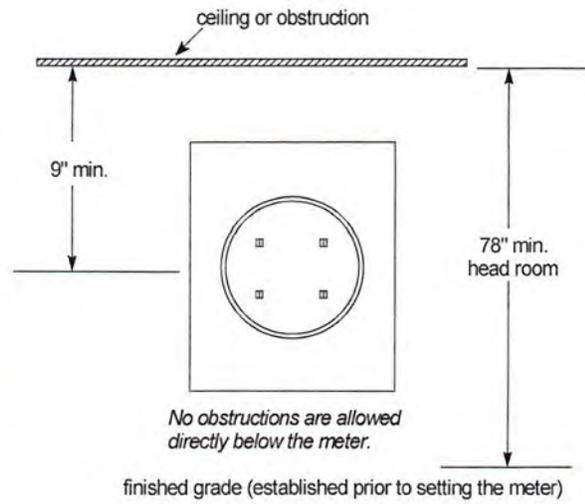
Let's turn the answers on.

Utah Solar Incentive Program Production Meter Requirements

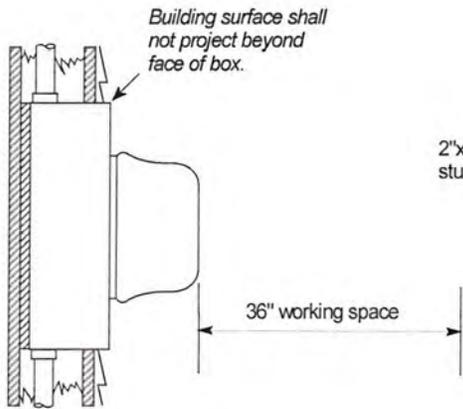
Figure 5.1.1 - Meter Socket Clearance Requirements



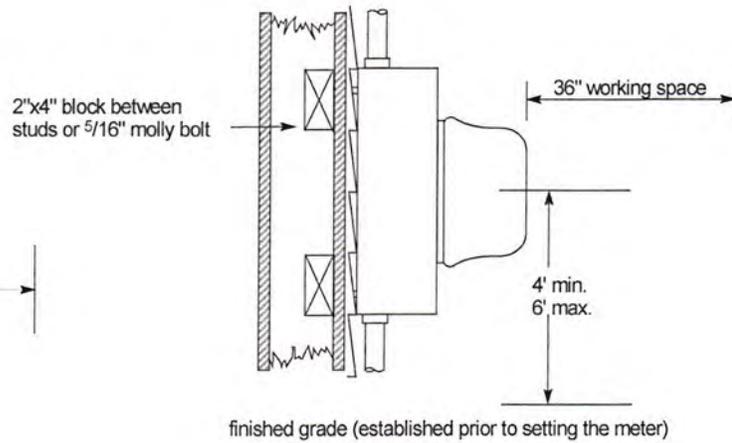
HORIZONTAL CLEARANCE
Flush or surface mount



VERTICAL CLEARANCE
Flush or surface mount



FLUSH MOUNT METER



SURFACE MOUNT METER

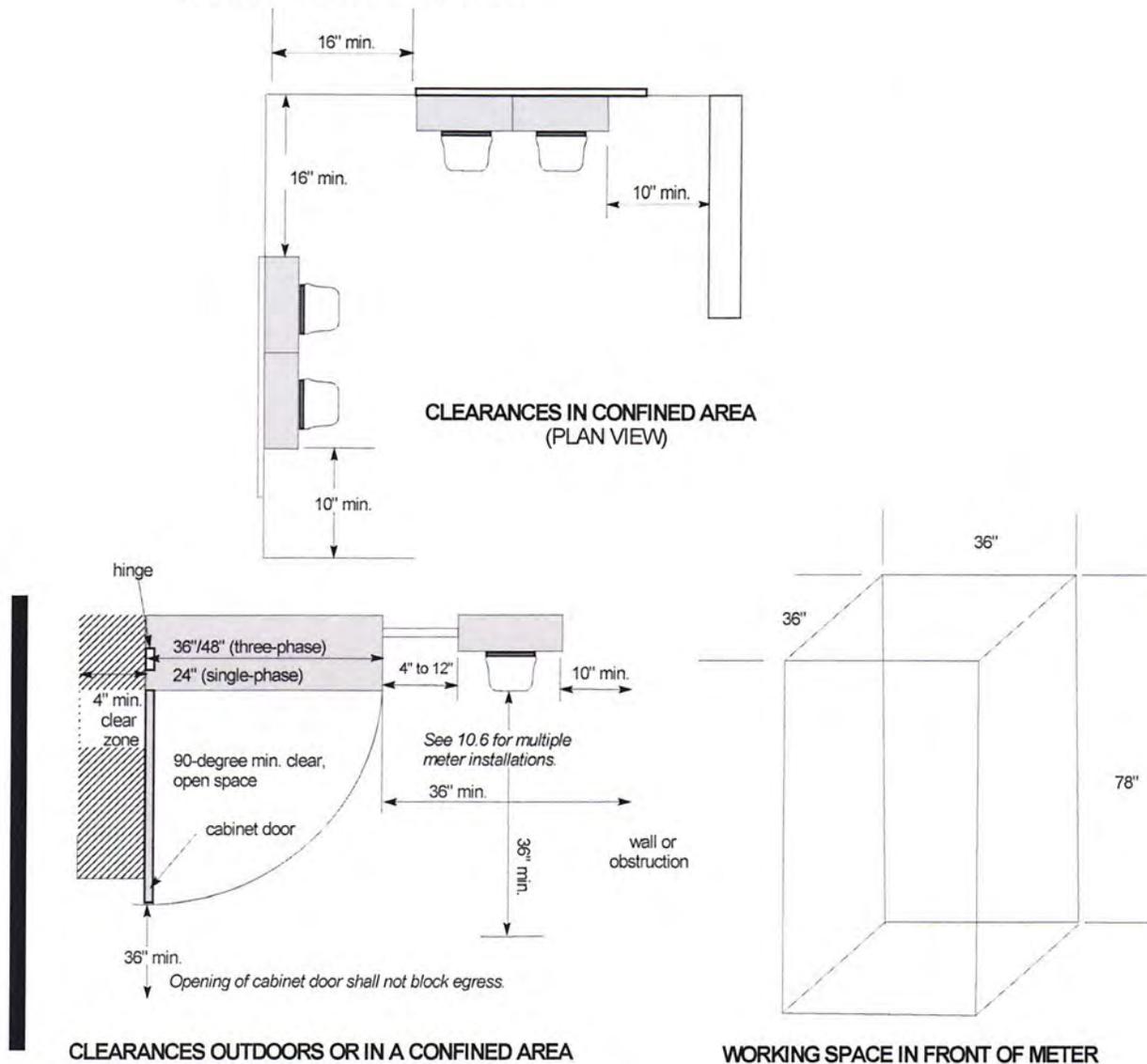
Note: Dimensions do not refer to meters housed in EUSERC-approved switchboards or enclosures, such as EUSERC 354.



Let's turn the answers on.

Utah Solar Incentive Program Production Meter Requirements

Figure 5.1.2 - Meter Working Space



Disconnect Switch Requirements

All installations that are 10 kW and above, will require a customer furnished disconnect switch installed within 10' of the service meter unless otherwise approved by Rocky Mountain Power.

The customer must affix a permanent sign adjacent to the meter base and disconnect switch noting "Parallel Generation on Site", identifying the manual disconnect switch with the words "Manual Disconnect for Parallel Generation". The sign shall be of sufficient durability to withstand the environment.



Let's turn the answers on.

Effective Grounding

Although more common on larger generation interconnections, effective grounding is required on some three phase four wire wye connected customer generation system less than 25 kW.

The requirement comes directly from individual state net metering rules and from IEEE 1547 guidelines.

Background

All PacifiCorp distribution is effectively grounded. Effective grounding prevents over voltage in the case of a fault from exceeding voltage levels that will damage the distribution system or customer equipment. There is often confusion concerning the term effective grounding. When discussed in this circumstance, effective grounding is defined by the National Electric Safety Code as:

"Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of voltages that may result in undue hazards to connected equipment or to persons."

More specific technical definitions involving symmetrical components of three phase systems are available. For the purpose here, avoiding the buildup of voltages that may result in undue hazards is sufficient.

Under fault conditions, the effectively grounded PacifiCorp distribution system will maintain the voltage of the three phases at acceptable levels. When protection equipment, such as a fuse or recloser opens to isolate the fault, a temporary island condition is created by the customers inverters. Inverters are not required by UL 1741 to shut off as quickly as the distribution system protection will respond. The islanding portion of the system is then susceptible to over voltage that must be controlled by effectively grounding the generating source system.

Exception

There are some cases of systems interconnected wye-wye 3 phase 4 wire, when effective grounding will not be required. Based on UL 1547.7 guidelines, when the aggregate ungrounded generation on a branch of a circuit is less than 10% of the minimum load (daytime minimum load for solar installations) the requirement can be waived. The high loads with respect to generation in that case will prevent the high voltage issue found on higher penetration circuits.

Individual branches behind a protective device in a distribution circuit can have very low minimum loads and it is possible for many 3 phase generation interconnections, regardless of size, to be required to install effective grounding.

Options

The most common 3 phase interconnection of customer generation at a wye- wye transformer is not effectively grounded unless the inverter neutral is connected to neutral ground of the transformer.

Effective grounding can be achieved in a number of ways including but not exclusively.

1. Interconnecting inverters 1 phase line to neutral. Balanced loads are required.

2. A Delta Wye or Zig Zag transformer grounding bank terminated on the customer side of the system.

When a grounding bank is used, neutral overcurrent protection is also required to protect equipment on the distribution side of the interconnection. This can be accomplished in several ways including ground fault protection or a relay. The connections to the grounding bank and the ac generation must open when the neutral over current protection trips.

3. Some inverter models allow or have a hard connection between the ground and the neutral providing the path for neutral current and are effectively grounded. Care must be taken in choosing the inverter. Many inverters have a neutral termination but no path for neutral current, the neutral is only monitored for harmonics control.

When found to be necessary, all designs providing effective grounding for a generation site are subject to PacifiCorp review and approval.

IEEE 1547.7.5.4

7.5.4 Sub-Criteria ID P4.4 - DR will not cause temporary over voltages during a phase-to-ground fault

If a preliminary review determines that there is no risk of temporary over-voltages to the Area EPS and other customers due to loss of system neutral grounding, this sub-criterion is satisfied. For the risk of temporary over-voltages due to loss of system neutral grounding to be null, one of the following grounding configurations need to be implemented:

- The DR is connected using a three-phase, three-wire configuration
- The DR is connected on a single phase distribution transformer and connected line-to-neutral
- The DR is connected to a three phase, four wire system and is effectively grounded or DR peak power is less than 10% of minimum load of smallest Area EPS section.

Based on the type of interconnection to be used for the DR, the Area EPS operator will determine from Table 7.2 if the proposed DR passes the sub-criterion after identifying the primary distribution line configuration that will serve the DR.

Table 7.2—Primary Distribution Interconnection Sub-Criterion

Primary Distribution	Type of Interconnection	Results/Criteria
1-phase, line-to-neutral	Any Type	Pass Sub-Criterion
3-phase, 3-wire	Any Type	Pass Sub-Criterion
3-phase, 4-wire	Effectively Grounded	Pass Sub-Criterion
3-phase, 4-wire	Floating and DR facility peak power is less than 10% of minimum load of smallest Area EPS section.	Pass Sub-Criterion
3-phase, 4-wire	Floating and DR facility peak power is greater than 10% of minimum load of smallest Area EPS section.	Fail Sub-Criterion

Note: If distribution system is a 3-phase, 3-wire section of a 3-phase, 4-wire circuit, the pertinent table entry for 3-phase, 4-wire primary distribution should be used.

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KEYED NOTES

- 1 PROVIDE AND INSTALL NEW ZONE DAMPER AND BYPASS DAMPER ACTUATORS ON EXISTING DAMPERS.
- 2 PROVIDE AND INSTALL NEW SENSOR. FIELD VERIFY LOCATION OF EXISTING THERMOSTATS.
- 3 TEST AND BALANCE. MEASURE AND BALANCE ALL AIRFLOWS TO VALUES AS SHOWN. MEASURE AND REPORT AIRFLOWS FOR EXISTING EXHAUST FANS. (TYPICAL OF ALL SYSTEMS).
- 4 NEW ATC PANEL.



VAN BOERUM & FRANK ASSOCIATES INC. CONSULTING ENGINEERS

WWW.VBFA.COM

330 South 300 East Salt Lake City, UT 84111 801.530.3148 T 801.530.3150 F



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Van Boerum & Frank Assoc., 2003

MOAB REGIONAL CENTER HVAC UPGRADES 1165 South Highway 191 Moab, Utah 84532

REVISIONS

VBFA PROJECT #: 06266 CHECKED BY: STS DRAWN BY: EJ CURRENT/BID DATE: 03/13/07

SHEET CONTENTS

MECHANICAL PLAN

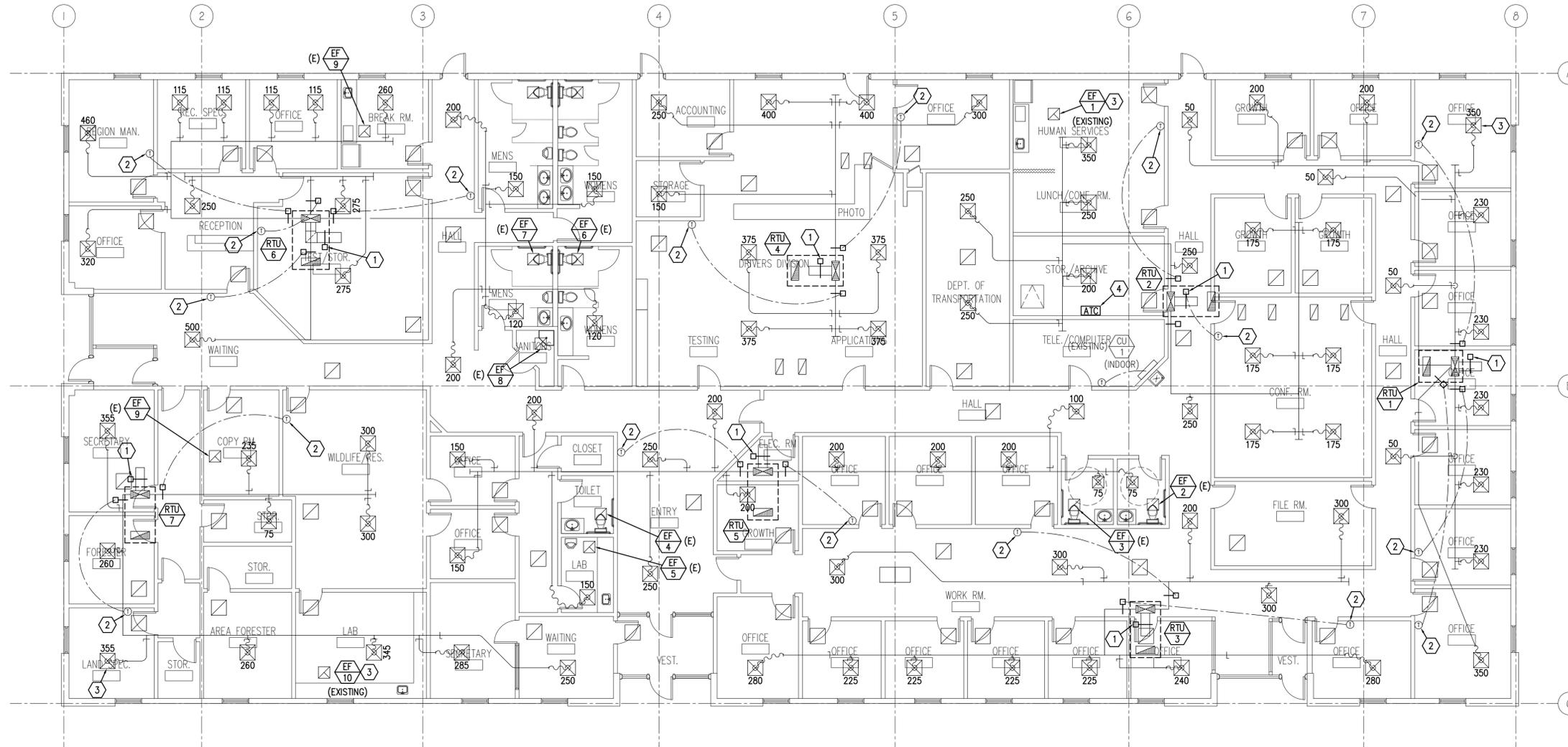
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1 MECHANICAL PLAN SCALE: 1/8" = 1'-0"



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PACKAGED ROOFTOP UNIT SCHEDULE

ID	MANUF.	MODEL	LOCATION	SUPPLY FAN			HEATING SECTION					COOLING SECTION					ELECTRICAL		PHYSICAL			EXISTING LENNOX RTU MODEL NO.	NOTES
				AIRFLOW RATE (CFM)	EXT. STATIC PRESSURE (IN. WATER)	OUTSIDE AIRFLOW (CFM)	HEATING INPUT (BTU/H)	HEATING OUTPUT (BTU/H)	ENT/LVG AIR TEMP. (°F)	MEDIUM	COOLING TOTAL (BTU/H)	COOLING SENSIBLE (BTU/H)	ENT AIR DB/WB (°F)	LVG AIR DB/WB (°F)	AMB AIR DB (°F)	TOTAL MCA	SUPPLY FAN MOTOR (BHP)	SINGLE POINT VOLT/PH/Hz	MAX WEIGHT (LBS)	MAX DIMENSION L x W x H (IN)			
RTU-1	CARRIER	48TME007	ROOF	2400	1.00	220	(115,000)	77,280	65 / 99.5	NAT GAS	65,610	63,930	80 / 62	51.4 / 51.4	95	40.7	2.90	208/3/60	945	74/45/34	GSC16-653-125-5Y	1.2,3,4,5,6	
RTU-2	CARRIER	48TME008	ROOF	3000	0.95	300	(180,000)	120,960	65 / 108.20	NAT GAS	78,250	76,100	80 / 62	52.8 / 52.4	95	44.9	2.40	208/3/60	945	87/58/42	GSC16-953-200-6Y	1.2,3,4,5,6	
RTU-3	CARRIER	48TME008	ROOF	3000	0.95	260	(180,000)	120,960	65 / 108.20	NAT GAS	78,250	76,100	80 / 62	52.8 / 52.4	95	44.9	2.40	208/3/60	945	87/58/42	GSC16-953-200-6Y	1.2,3,4,5,6	
RTU-4	CARRIER	48TME008	ROOF	3000	0.95	360	(180,000)	120,960	65 / 108.20	NAT GAS	78,250	76,100	80 / 62	52.8 / 52.4	95	44.9	2.40	208/3/60	945	87/58/42	GSC16-953-200-6Y	1.2,3,4,5,6	
RTU-5	CARRIER	48TME007	ROOF	2400	1.00	300	(115,000)	77,280	65 / 99.5	NAT GAS	65,610	63,930	80 / 62	51.4 / 51.4	95	40.7	2.90	208/3/60	645	74/45/34	GSC16-953-200-6Y	1.2,3,4,5,6	
RTU-6	CARRIER	48TME012	ROOF	4000	0.95	800	(224,000)	150,530	65 / 105.3	NAT GAS	101,840	100,900	80 / 62	53.0 / 52.6	95	51.1	2.90	208/3/60	1110	88/58/50	GSC16-1353-270-7Y	1.2,3,4,5,6	
RTU-7	CARRIER	48TME008	ROOF	3000	0.95	400	(180,000)	120,960	65 / 108.20	NAT GAS	78,250	76,100	80 / 62	52.8 / 52.4	95	44.9	2.40	208/3/60	945	87/58/42	GSC16-953-200-6Y	1.2,3,4,5,6	

- CAPACITIES BASED ON 4000 FT ELEVATION. CAPACITIES IN () AT 0 FT. ELEVATION
- FACTORY PROVIDED ECONOMIZER AND PROPELLER POWER EXHAUST
- FACTORY INSTALLED NON-FUSED DISCONNECT
- FACTORY INSTALLED, FIELD WIRED, CONVENIENCE OUTLET, GFCI PROTECTED, 20 AMP (NEMA 5-20R), WITH "RAINTIGHT WHILE IN USE" WEATHERPROOF COVER.
- PROVIDE ROOFCURB ADAPTOR. 0.30" EXT. SP (IN WG) IS INCLUDED IN THE TOTAL EXT. SP AS SCHEDULED.
- INSTALLING CONTRACTOR SHALL FIELD VERIFY MEASUREMENT OF EXISTING CURBS TO COORDINATE TRANSITION CURB INSTALLATION
- EXISTING LENNOX ROOFTOP UNIT MODEL NUMBERS ARE LISTED FOR ASSISTANCE IN SIZING OF ROOFCURB ADAPATORS.

KEYED NOTES

- REMOVE EXISTING ROOFTOP UNIT AND REPLACE WITH NEW UNIT.
- PROVIDE AND INSTALL NEW ROOFTOP UNIT INCLUDING ROOF CURB ADAPTER. FIELD VERIFY EXACT EXISTING ROOF CURB DIMENSIONS. SEE SCHEDULE FOR NEW AND EXISTING ROOFTOP UNIT INFORMATION.
- DISCONNECT AND RECONNECT EXISTING GAS PIPING TO NEW ROOFTOP UNIT. PROVIDE ADDITION PIPING AND EXTENSION TO RECONNECT TO NEW ROOFTOP UNIT AS REQUIRED.
- PROVIDE AND INSTALL PLASTIC LAMINATE EQUIPMENT IDENTIFICATION MAKERS ON EACH ROOFTOP UNIT IDENTIFYING EQUIPMENT TAG AND AIRFLOW.



VAN BOERUM & FRANK ASSOCIATES INC.
CONSULTING ENGINEERS

WWW.VBFA.COM

330 South 300 East
Salt Lake City, UT 84111
801.530.3148 T
801.530.3150 F



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MECHANICAL
ROOF PLAN

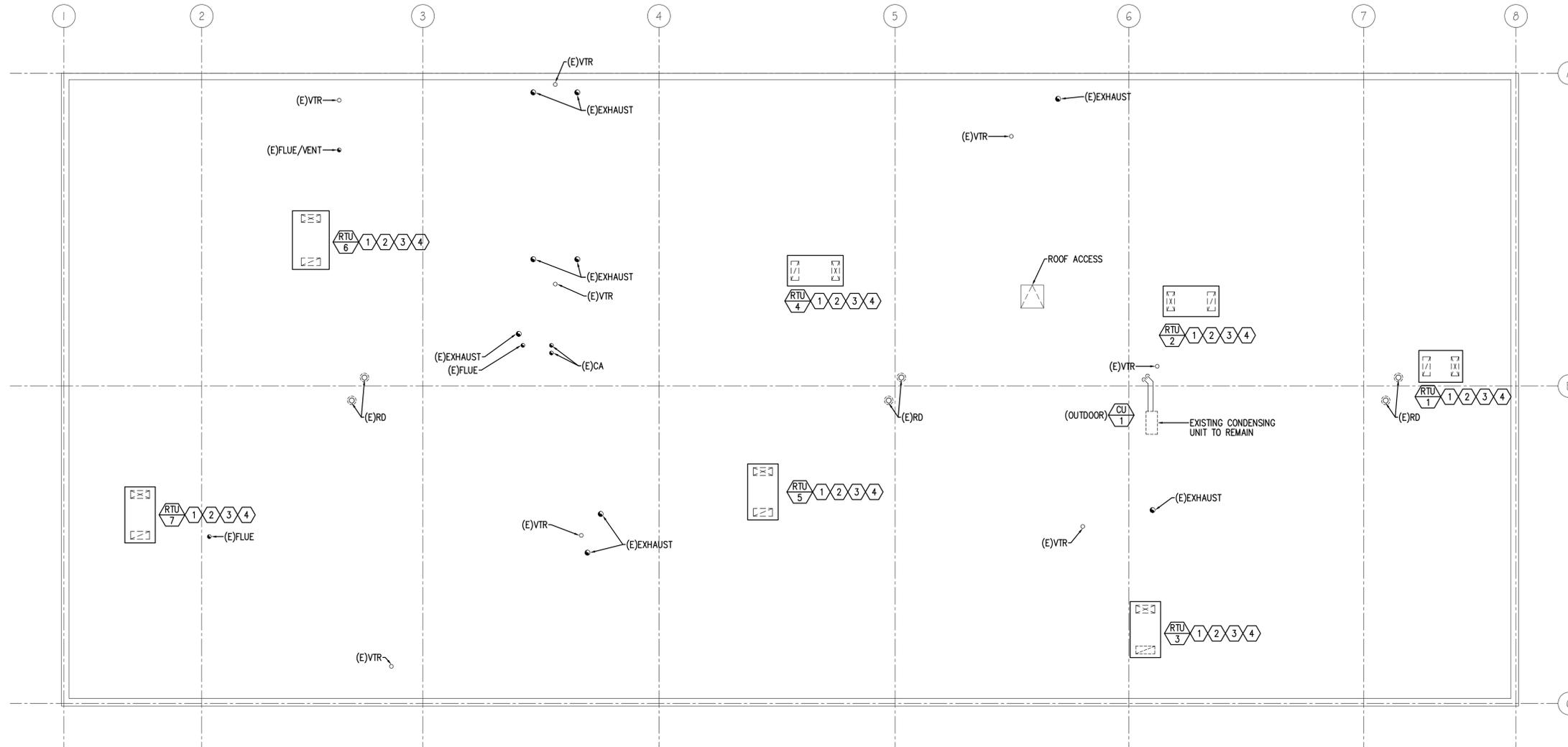
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1 MECHANICAL ROOF PLAN
M1.2 SCALE: 1/8" = 1'-0"



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EQUIPMENT SCHEDULE											
EQUIP. NO.	DESCRIPTION	CIRCUIT NUMBER	VOLTS	PHASE	WATTS HP.	BREAKER	STARTERS			AUX. CONT.	LOCATION
							FURNISH	INSTALL	SIZE		
RTU 1	PACKAGED ROOFTOP UNIT	FIELD VERIFY	208	3	29.6 AMP@	3P-40A MOCP	M	M	M	-	ON ROOF
RTU 2	PACKAGED ROOFTOP UNIT	FIELD VERIFY	208	3	36.6 AMP@	3P-45A MOCP	M	M	M	-	ON ROOF
RTU 3	PACKAGED ROOFTOP UNIT	FIELD VERIFY	208	3	36.6 AMP@	3P-45A MOCP	M	M	M	-	ON ROOF
RTU 4	PACKAGED ROOFTOP UNIT	FIELD VERIFY	208	3	36.6 AMP@	3P-45A MOCP	M	M	M	-	ON ROOF
RTU 5	PACKAGED ROOFTOP UNIT	FIELD VERIFY	208	3	29.5 AMP@	3P-40A MOCP	M	M	M	-	ON ROOF
RTU 6	PACKAGED ROOFTOP UNIT	FIELD VERIFY	208	3	42.3 AMP@	3P-60A MOCP	M	M	M	-	ON ROOF
RTU 7	PACKAGED ROOFTOP UNIT	FIELD VERIFY	208	3	36.6 AMP@	3P-45A MOCP	M	M	M	-	ON ROOF

NOTE:
 MAXIMUM OVERCURRENT PROTECTION (MOCP) LISTED IS BASED ON SPECIFIED CARRIER ROOFTOP UNIT. PROVIDE NEW CIRCUIT BREAKER SIZE TO MATCH MOCP RATING ON THE NAMEPLATE OF NEW ROOFTOP UNIT ACTUALLY FURNISHED TO THE JOB SITE.

E - ELECTRICAL CONTRACTOR
 M - MECHANICAL CONTRACTOR

ELECTRICAL NOTES:

1. LOCATIONS OF EXISTING ELECTRICAL EQUIPMENT, BRANCH CIRCUIT WIRING, ETC., ARE BASED ON INFORMATION PROVIDED BY OTHERS. FIELD VERIFY EXISTING LOCATIONS AND CIRCUITING AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY DISCREPANCIES WHICH MAY ADVERSELY AFFECT COMPLETION OF THE WORK.
2. COORDINATE MECHANICAL EQUIPMENT LOCATIONS WITH MECHANICAL PLANS AND MECHANICAL CONTRACTOR.
3. ALL MATERIALS AND EQUIPMENT REMOVED SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE TURNED OVER TO THE OWNER FOR STORAGE OR BE DISPOSED OF BY THE CONTRACTOR AS DIRECTED BY THE OWNER.
4. TAKE ALL PRECAUTIONS NECESSARY TO AVOID DAMAGE TO THE EXISTING BUILDING. REPAIR ALL DAMAGE INCURRED BY DEMOLITION AND NEW CONSTRUCTION TO EXACTLY MATCH SURROUNDING SURFACES AND/OR CONDITIONS WITHOUT ADDITIONAL COST TO THE OWNER. COORDINATE REPAIRS WITH THE GENERAL CONTRACTOR.



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FIRE ALARM SYSTEM NOTES:

1. THE EXISTING BUILDING IS PROTECTED THROUGHOUT BY AN AUTOMATIC FIRE ALARM SYSTEM WHICH IS TO REMAIN OPERATIONAL THROUGHOUT THE CONSTRUCTION PERIOD.
2. SUBMIT REQUESTS FOR FIRE ALARM SYSTEM OUTAGES TO THE OWNER NOT LESS THAN 1 DAY PRIOR TO ANY PROPOSED FIRE ALARM OUTAGES. IMMEDIATELY NOTIFY THE OWNER IF THE FIRE ALARM IS UNINTENTIONALLY DISABLED AND IMMEDIATELY MAKE REPAIRS TO RESTORE THE SYSTEM TO AN OPERATIONAL CONDITION.
3. THE CONTRACTOR SHALL MAINTAIN A FIRE WATCH DURING ALL FIRE ALARM SYSTEM OUTAGES IN ACCORDANCE WITH IFC SECTION 901.1.
4. ANY WORK PERFORMED ON THE FIRE ALARM SYSTEM SHALL BE APPROVED IN ADVANCE BY THE FIRE ALARM SYSTEM FACTORY REPRESENTATIVE. VERIFY REQUIREMENTS WITH OWNER.
5. TEST ALL EXISTING DUCT MOUNTED SMOKE DETECTORS AND FAN SHUT DOWN OPERATION PRIOR TO SUBSTANTIAL COMPLETION. TESTING SHALL BE PERFORMED BY A FACTORY AUTHORIZED AND TRAINED, NICET LEVEL II TECHNICIAN, OF THE EXISTING FIRE ALARM SYSTEM MANUFACTURER.

KEYED NOTES:

1. REMOVE EXISTING FUSED SAFETY SWITCH, EXISTING WIRE TO PANELBOARD, AND LIQUID-TIGHT FLEXIBLE STEEL CONDUIT ON ROOF. EXISTING CONDUIT THROUGH ROOF IS TO REMAIN. REMOVE EXISTING DUPLEX RECEPTACLE AND WIRING WHERE INDICATED.
2. EXTEND EXISTING CONDUIT FROM ROOF TO NEW ROOFTOP UNIT. PROVIDE NEW WIRE FROM ROOFTOP UNIT TO EXISTING PANELBOARD AND CONNECT TO NON-FUSED DISCONNECT FURNISHED WITH ROOFTOP UNIT.
3. PROVIDE NEW WIRE TO DUPLEX GFCI RECEPTACLE FURNISHED WITH ROOFTOP UNIT AND CONNECT TO EXISTING RECEPTACLE CIRCUIT.
4. APPROXIMATE LOCATION OF EXISTING PANELBOARD ON MAIN FLOOR BELOW. REPLACE ALL EXISTING CIRCUIT BREAKERS WITH NEW CIRCUIT BREAKERS SIZED TO MATCH MAXIMUM OVERCURRENT PROTECTION (MOCP) RATING ON NAMEPLATE OF NEW ROOFTOP UNITS.
5. EXISTING FIRE ALARM SYSTEM DUCT MOUNTED SMOKE DETECTOR FOR EXISTING ROOFTOP UNIT IS TO REMAIN IN PLACE FOR NEW ROOFTOP UNIT. CONTRACTOR TO VERIFY PROPER OPERATION OF EACH DUCT DETECTOR PRIOR TO SUBSTANTIAL COMPLETION.
6. DISCONNECT EXISTING FIRE ALARM SYSTEM FAN SHUT DOWN CIRCUIT FROM EXISTING ROOFTOP UNIT. EXTEND AND CONNECT TO NEW ROOFTOP AS REQUIRED FOR PROPER OPERATION OF THE FAN SHUT DOWN CIRCUIT.

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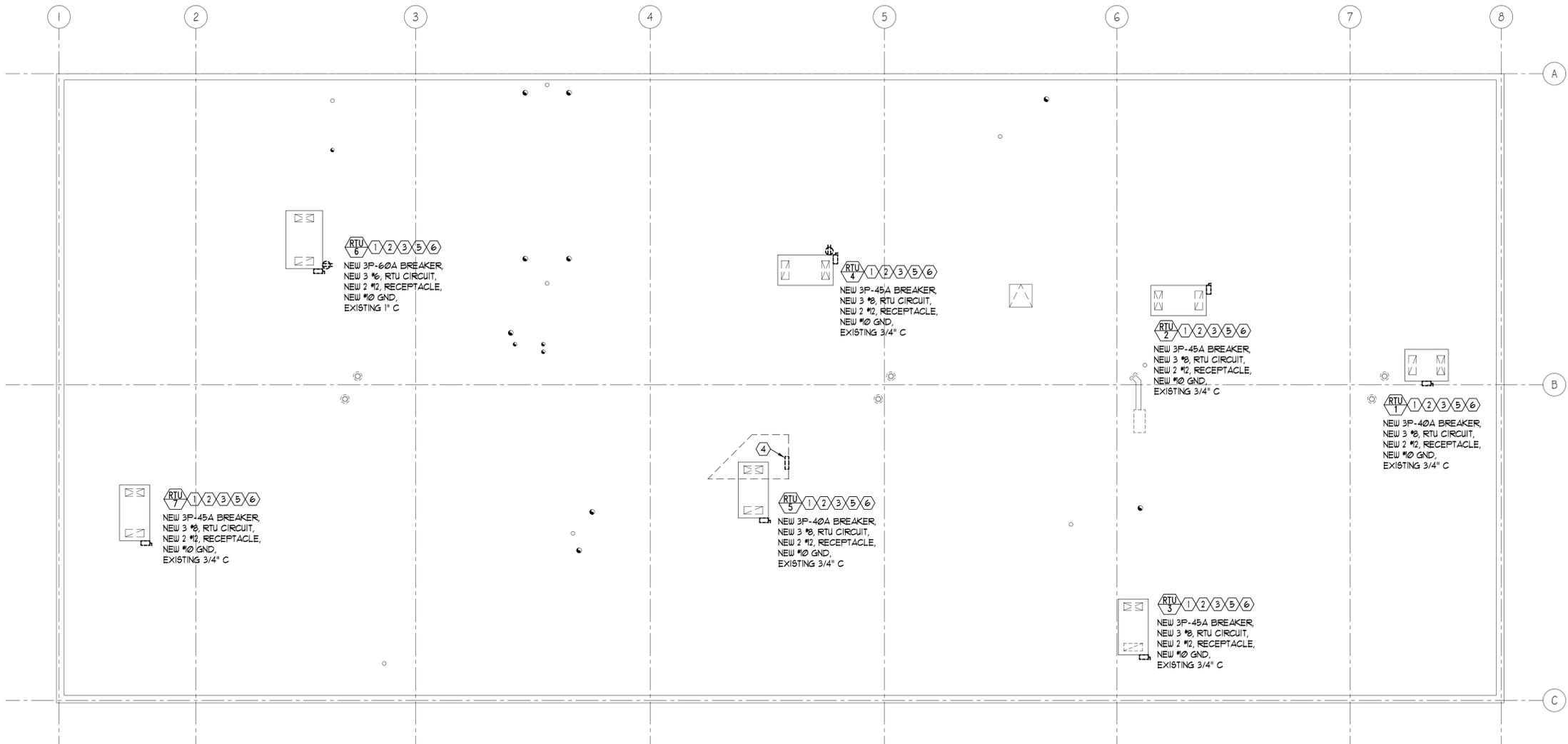
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ELECTRICAL ROOF PLAN
 SCALE: 1/8" = 1'-0"

